ROHM
SEMICONDUCTOR

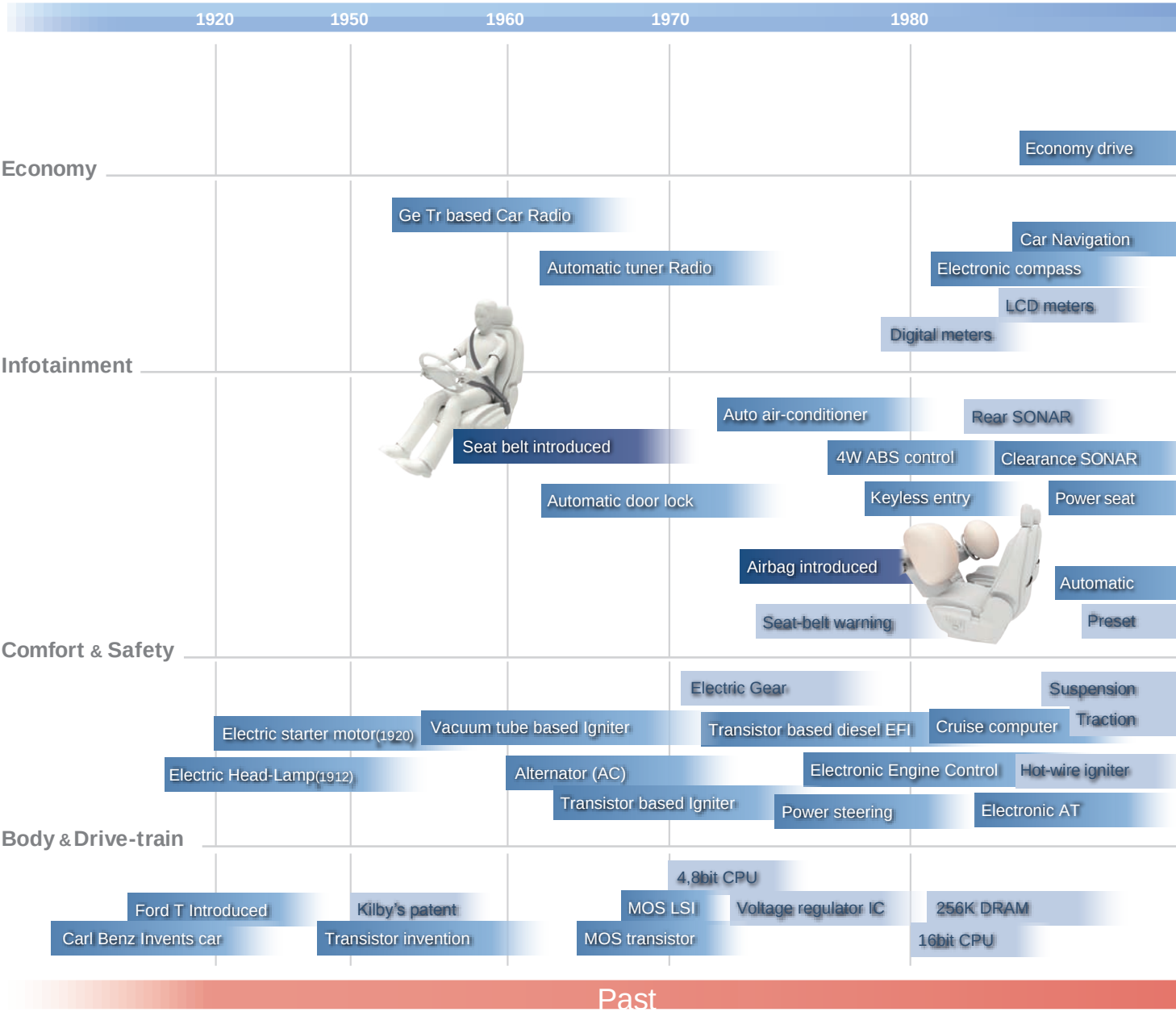
Creating the future of Automobiles

AUTOMOTIVE

PRODUCT CATALOGUE Ver.2.2

Creating the future of Automobiles

Automotive evolution



Integrated, in-house production, along with a comprehensive BCM system, allow ROHM to continue product development to meet customer and market needs.

Next-Generation Power Devices

New device development (i.e. SiC, GaN) yields breakthrough efficiency, heatresistance, and miniaturization

Body

- Low quiescent current LDOs, DC/DC
- LED lamp drivers
- LF antenna drivers for smart keys
- High efficiency motor drivers

Powertrain

- Ultra-low quiescent current LDOs
- Intelligent power switches
- I/F ASICs
- Communication ICs
- Sensor signal processing ASICs

HEV/EV

- High-speed isolators
- Isolated gate drivers
- IGBT temperature monitors

Next-Generation Commuter

Expanding technology cultivated in the consumer electronics sector to automotive systems contributes to increased safety, security, comfort, and miniaturization.

Car Audio/ Navigation

- LDOs, DC/DC
- System power supplies
- Sound processors
- Audio decoders

Car Multimedia

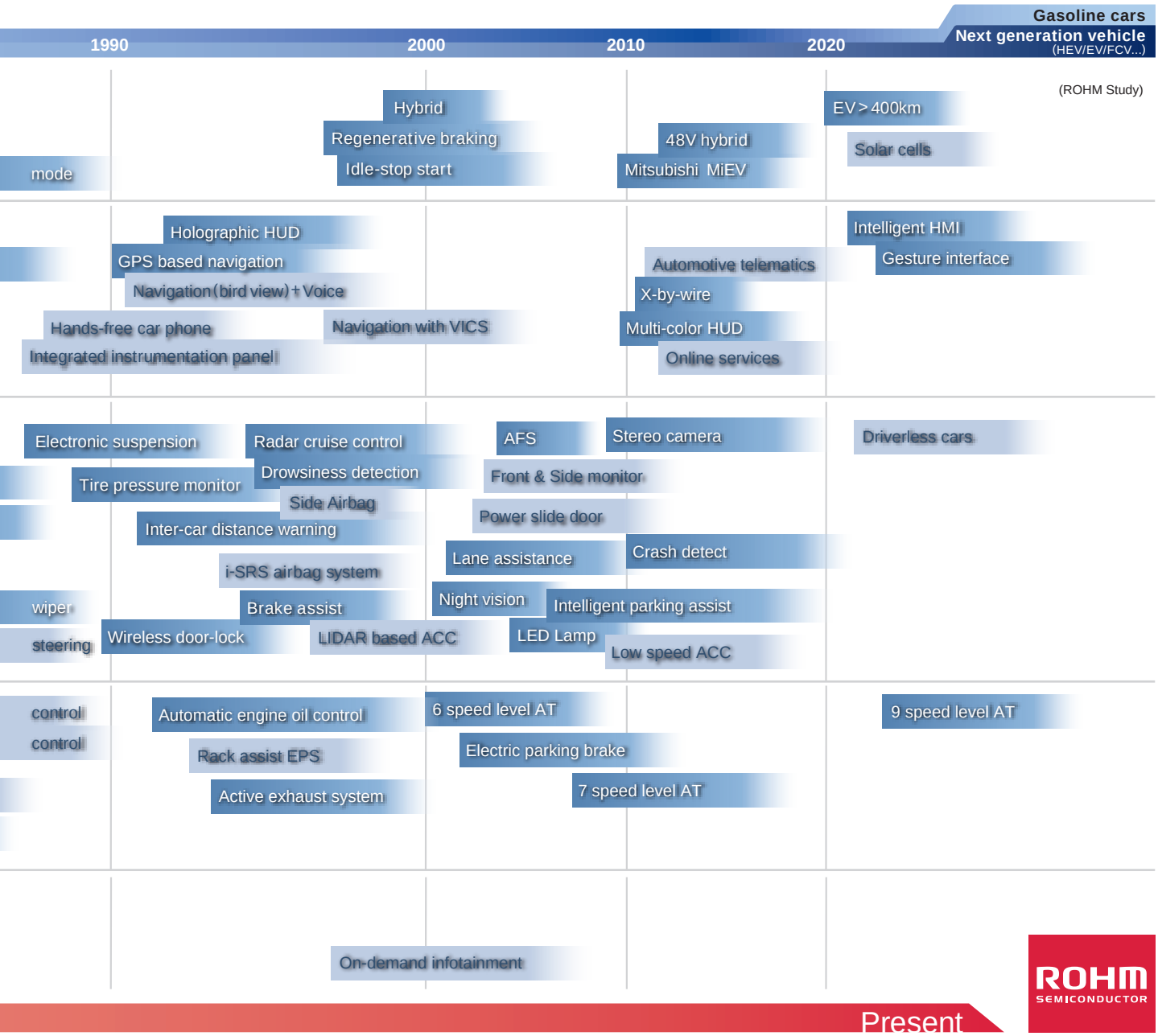
- Backlight LED drivers
- Segment drivers

ITS

- LVDS
- Bluetooth®

Bluetooth® is a registered trademark of Bluetooth® SIG

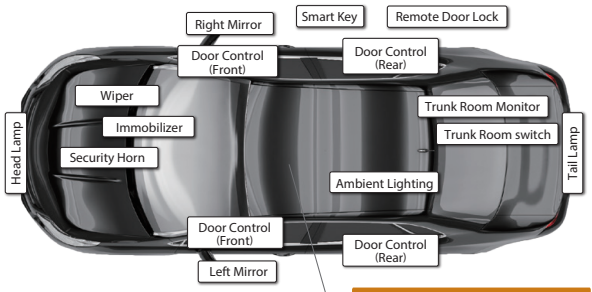
ROHM, which offers a variety of car audio ICs and discrete solutions, is expanding its product lineup to meet the needs of new and emerging applications in the automotive industry, including for car navigation and multimedia systems. In addition, following the increased digitization of vehicles and ITS, ROHM is developing ICs and discretes for body and powertrain systems. And as vehicles become increasingly safe, comfortable, and more efficient ROHM will continue to bring new products and devices to market.

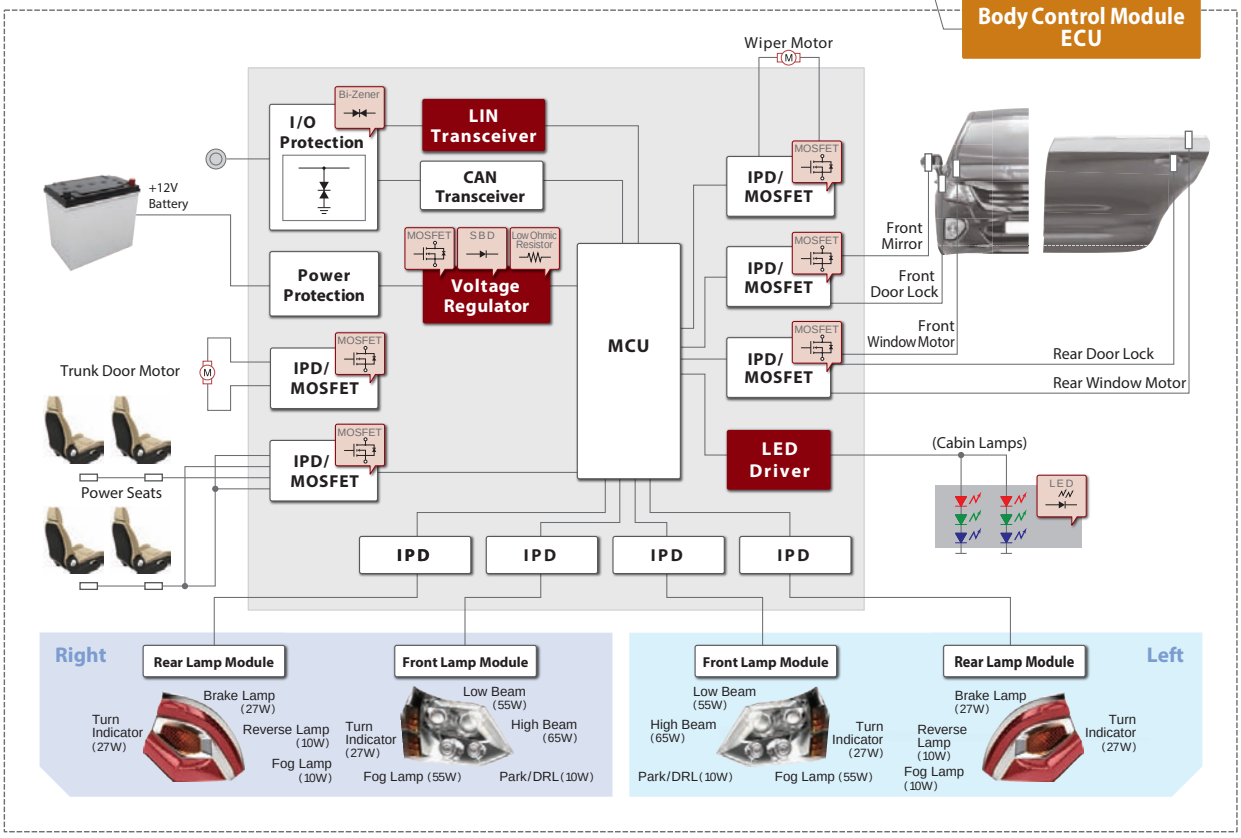


Contents

BODY CONTROL MODULE

The Body Control Module (BCM) ECU, provides centralized control of all body systems, from interior/exterior lighting, HVAC, doors and mirrors, windows, and wipers. BCM functionality is rapidly expanding as vehicle manufacturers transition to electronic systems and control to provide greater comfort, fuel economy, safety, and entertainment features.
However, with this comes increased weight due to the greater number of wiring harnesses needed.
To minimize this added weight, communication such as LIN and CAN are often adopted.





Memory | Op.Amps Comparators

BODY CONTROL MODULE Products

LIN Transceiver — BD41020FJ-C

Complies with the automotive local network standard LIN Ver. 2.1.

SOP-J8

• • • P.27

RGB LED Driver — BD2808MUV-M

Integrated 8bit dimming function and 6bit current DAC for RGB make it possible to produce a broad range of colors.

VQFN48MCV070

• • • P.24

MOSFET — 60V Series / 100V Series

Suitable for a variety of drive circuits (i.e. LEDs). Advanced processes provide low ON resistances.

SOP8

• • • P.48 to 50

Schottky Barrier Diodes — Ultra Low I_R Series / Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

• • • P.55 to 62

Bi-Directional Zener Diode — RSB Series

Bi-Directional Zener Diode series optimized for LIN & CAN.

UMD2

• • • P.67, P.69

High power Low Ohmic Chip Shunt Resistors — GMR Series (Under development)

Adopting a new structure results in high heat dissipation and superior temperature characteristics. 3W rated power guaranteed in a compact 6432 size.

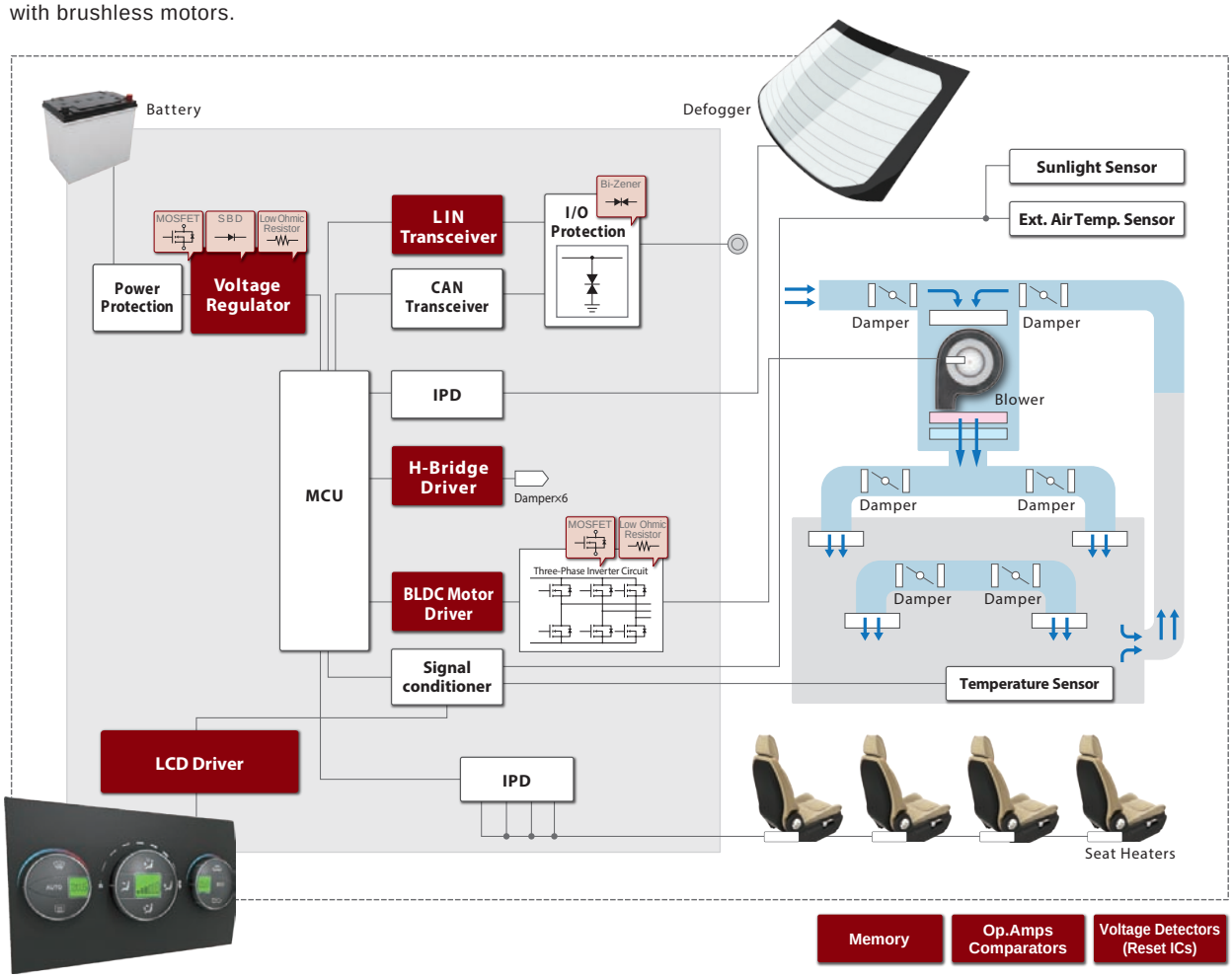
GMR100

• • • P.75

HVAC CONTROL MODULE

The HVAC (Heating Ventilation and Air Conditioning) system cools the interior using the refrigeration cycle using a compressor and warms by extracting the engine's waste heat from the coolant. It often includes a manual mode for operating the fan and adjusting the percentage of warm and cold air mixture, and an automatic mode that adjusts the temperature and air flow rate based on a preset temperature.

The following figure shows the block diagram of a typical HVAC system. Switching the power source from the gas engine in conventional vehicles to the electric motor in HEVs and EVs results in a much quieter cabin, which can make the blower noise from the AC or seat heating/cooling fan motor's noise particularly noticeable. Therefore, to minimize this noise and improve thermal efficiency, it is customary to replace the conventional brushed DC motors used for blower and fan motors with brushless motors.



HVAC CONTROL MODULE Products

LCD Driver — BU97530KVT-M

Includes all functions required for panel operation, such as LCD control, button detection, and LED dimming.

• • • P.27 TQFP100V

LCD Driver — ML94xx Series

Broad lineup offered, supports a wide range of needs, from high reliability types and EMS-tolerant units to highly integrated models that minimize board space by minimizing the external parts.

• • • P.27 QFP100

BLDC Motor Driver — BD16805FV-M

180° commutation reduces noise and improves efficiency through advance control.

• • • P.25 SSOP-B40

H-Bridge Driver — BD16936EFV-M

Built-in low ON resistance MOSFET improves efficiency while reducing heatgeneration.

• • • P.25 HTSSOP-B28

MOSFET — 40V Series / 60V Series

Optimized for a variety of drive circuits (i.e. motor drive). Advanced processes provide low ON resistances.

DPAK

• • • P.48 to 56

Schottky Barrier Diodes — Ultra Low I_R Series / Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

• • • P.55 to 62

High power Ultra Low Ohmic Chip Shunt Resistors — PSR Series

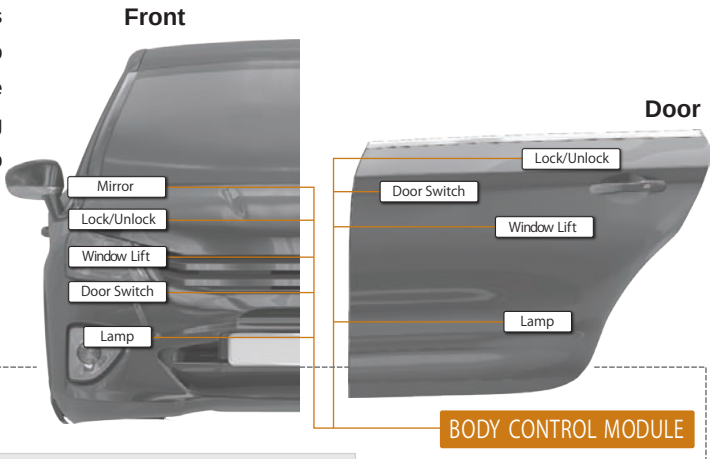
5W rated power guaranteed in the ultra-low-resistance region from 0.2mΩ.

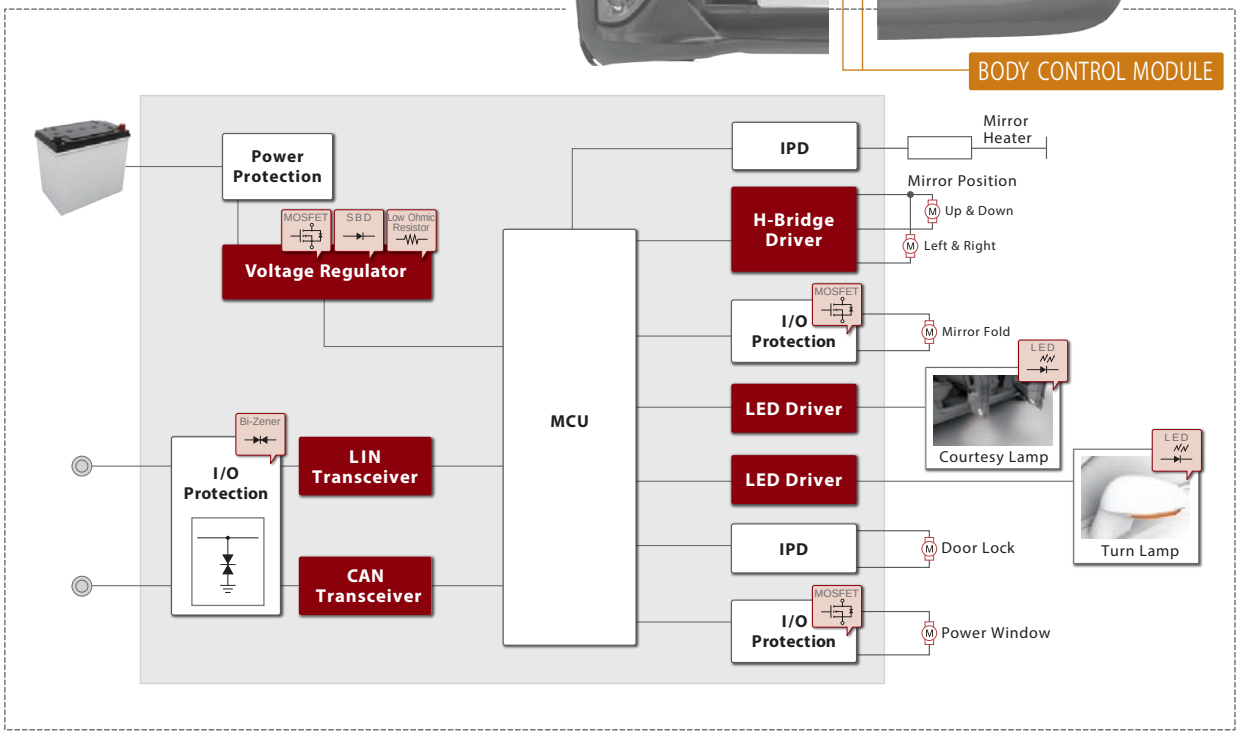
PSR500

• • • P.75

DOOR & MIRROR CONTROL MODULE

This ECU is responsible for controlling the door locks and power windows. Control for the side mirrors is also provided, typically using 2 motors, one for adjusting the mirror in the X and Y directions, and another for folding the mirror assembly when not in use. This module also has LED drivers for driving the coutesy lamps.





Memory | Op.Amps Comparators | Voltage Detectors (Reset ICs)

DOOR & MIRROR CONTROL MODULE Products

LIN Transceiver — BD41020FJ-C

Complies with LIN Ver. 2.1, the standard for automotive local networks.

SOP-J8

• • • P.27

H-Bridge Driver — BD16936EFV-M

Built-in low ON resistance MOSFET improves efficiency while reducing heat generation.

HTSSOP-B28

• • • P.25

MOSFET — 40V Series 60V Series

Supports a variety of drive circuits (i.e. motors). Advanced processes provide low ON resistances.

DPAK

• • • P.48 to 50

Schottky Barrier Diodes — Ultra Low I_R Series Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

• • • P.55 to 62

Low Ohmic Chip Resistors — LTR Series PMR Series

Broad lineup of high power high reliability low ohmic resistors offered in a range of sizes (1005 to 6432).

LTR18

• • • P.81

Bi-Directional Zener Diode — RSB Series

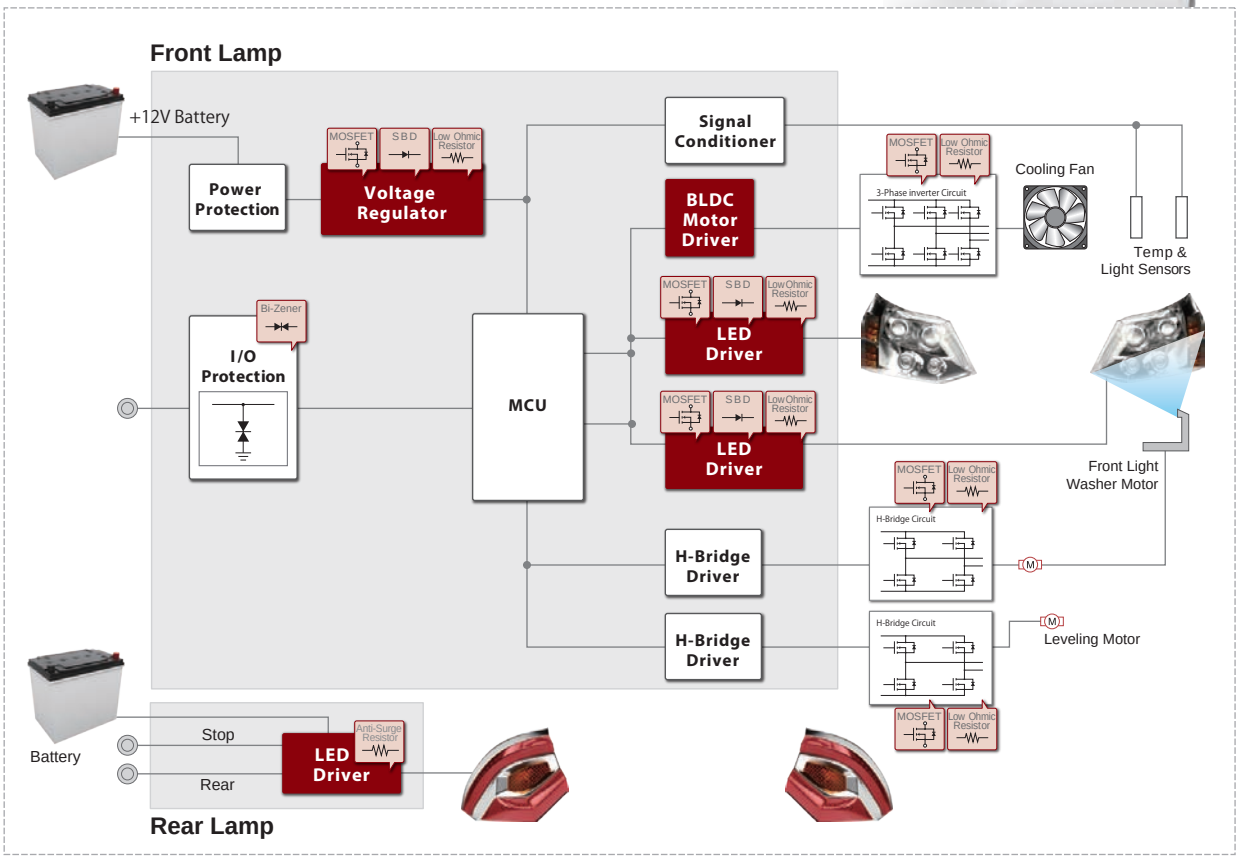
Bi-directional Zener diode series optimized for LIN & CAN.

UMD2

• • • P.67, P.69

LAMP MODULE

Automotive exterior lamps, can be broadly classified into head and rear lamps. These lamps are increasingly transitioning to the use of LEDs, which feature lower power consumption and longer life besides providing a greater design flexibility. One of the biggest drawback of LEDs, is that they generate a relatively large amount of heat, and therefore require cooling, sometimes using fans, particularly for the high and low beam lamps (see block diagram below). Fan speed is adjusted based on the amount of heat generated by the LEDs.
Many newer vehicles also integrate a self-leveling headlight function that determines if the car is tilted forward or back and adjusts the headlights accordingly to ensure they are pointed at road at all times no matter the position of the car in order to prevent blinding oncoming drivers. This functionality is called levelling. ROHM offers a wide range of dedicated LED drivers optimized for automotive LED applications.



Memory | Op.Amps Comparators | Voltage Detector (Reset ICs)

LAMP MODULE Products

LED Driver (For Headlights) — BD8381AEFV-M

Built-in boost-buck switching regulator supports a variety of LED configurations, while an internal PWM dimming function enables control without an MCU.

HTSSOP-B28

• • • P.24

LED Drivers (For Rear Lamps) — BD8374EFJ-M, BD8374HFP-M

Integrated high-performance constant current circuit ensures an LED current accuracy of ±3%. Multiple protection functions also included (e.g. open/short detection).

HTSOP-J8

HRP7

• • • P47, P54 to 55

MOSFET — 60V Series, 100V Series

Supports a variety of drive circuits (i.e. LEDs). Advanced processes provide low ON resistances.

DPAK

• • • P.48 to 50

Schottky Barrier Diodes — Ultra Low IR Series, Low VF Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

• • • P.55 to 62

Low Ohmic Chip Resistors — LTR Series, PMR Series

Broad lineup of high power high reliability low ohmic resistors offered in a range of sizes (1005 to 6432).

LTR18

• • • P.81

Bi-Directional Zener Diode — RSB Series

Bi-Directional Zener Diode series optimized for LIN & CAN.

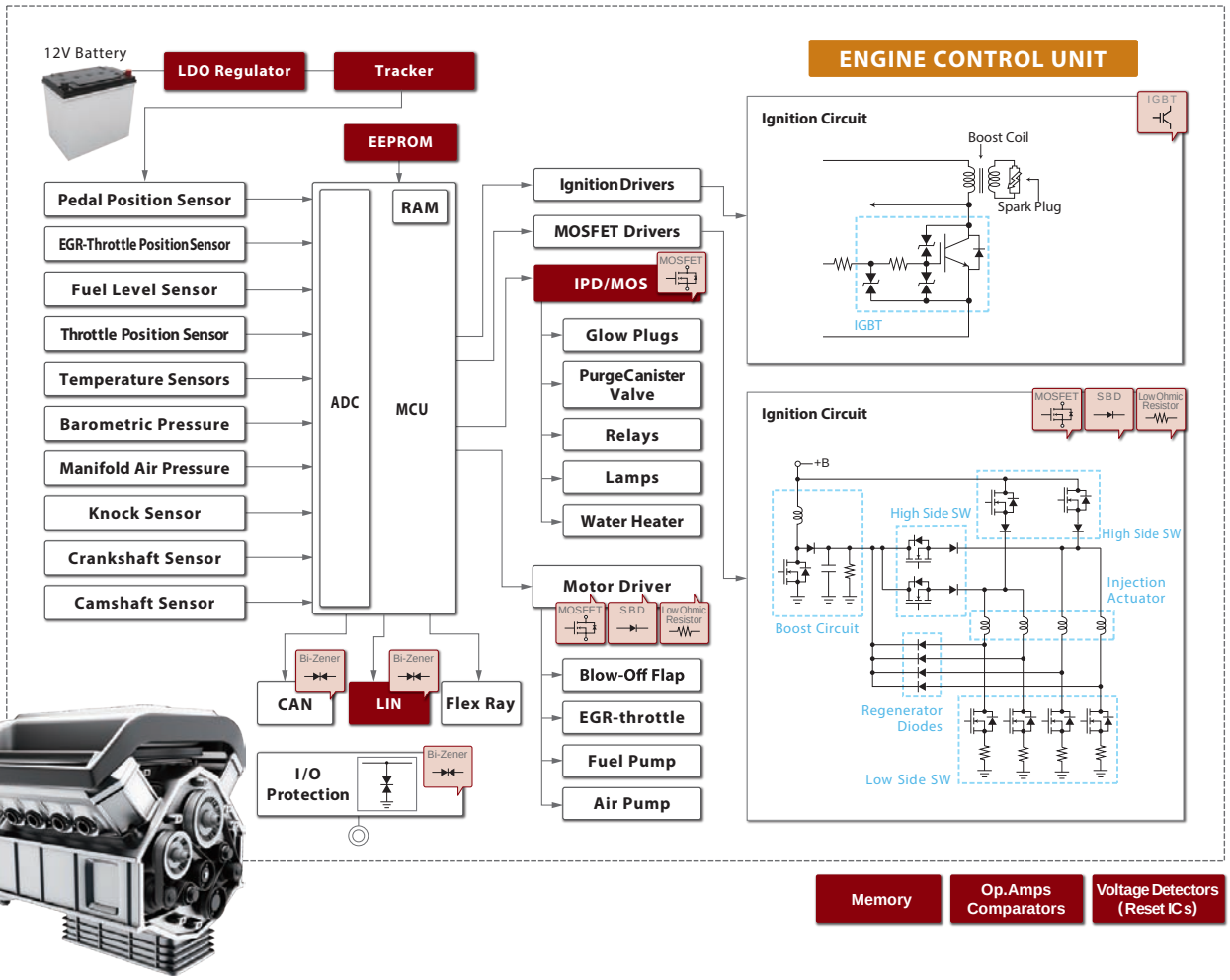
UMD2

• • • P.67, P.69

ENGINE CONTROL UNIT

With an emphasis on reducing emissions and increasing fuel economy, there is a race on increasing the engine efficiency . The purpose of the engine control unit is to sense the status of the engine and the surrounding systems and control the engine, especially the ignition.

Sensor and driver accuracy play a large role in engine efficiency. This applies to power supplies as well. ROHM offers a wide lineup of power supplies that contribute to greater energy savings, miniaturization, and performance in ECUs of all types. ROHM has also developed a broad portfolio of automotive-grade discrete products, including IGBTs for ignition control.



ENGINE CONTROL UNIT Products

LIN Transceiver — BD41020FJ-C

Complies with LIN Ver. 2.1, the standard for automotive local networks.


SOP-J8

• • • P.27

MOSFET — 60V/100V/200V/250V Series

Supports a variety of drive circuits (i.e. actuators). Advanced processes provide low ON resistances.


DPAK

• • • P.48 to 50

Schottky Barrier Diodes — Ultra Low I_R Series / Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

• • • P.55 to 62

Anti-surge Chip Resistors — SDR Series / ESR Series

Newly developed lineup features improved surge resistance, contributing to greater reliability.


SDR03


ESR03

• • • P.77

Bi-Directional Zener Diode — RSB Series

Bi-Directional Zener Diode series optimized for LIN & CAN.


UMD2

• • • P.67, P.69

IPD — BM2LB110FJ-C

IPDs for driving a variety of application including relays and solenoids


SOP-J8

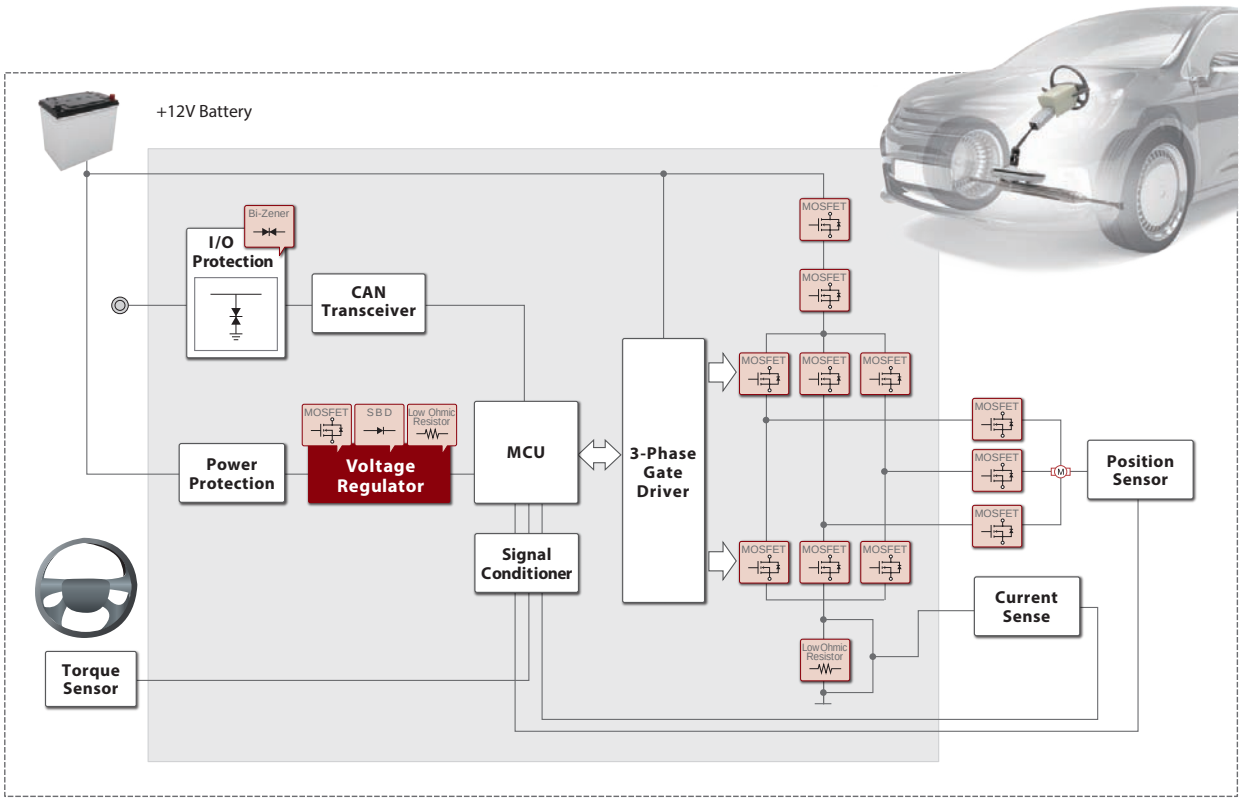
• • • P.25

ELECTRONIC POWER STEERING (EPS)

Electronic Power Steering (EPS) has seen increased adoption over hydraulic power steering in recent years, with most new cars now being equipped with EPS. Shifting towards electrification eliminates the need for a power steering pump, reducing the weight and reducing the overall fuel consumption by around 3%.

EPS also provides better driveability and performance by adjusting the torque via software based on vehicle speed, generating active torque when needed to improve vehicle safety. And additional driver support features such as lane and parking assist are possible by expanding the EPS functionality.

EPS is achieved by detecting the steering position via a torque sensor, and the with motor is driven using a gate driver and power transistor combination (see block diagram below). For controlling, motor feedback is used, the position and torque output of the motor are adjusted based on the supply current to the motor.



Memory | Op.Amps Comparators

ELECTRONIC POWER STEERING (EPS) Products

MOSFET — 40V Series / 60V Series

Supports a variety of drive circuits (i.e. motors). Advanced processes provide low ON resistances.


DPAK

・・・P.48 to 50

High power Ultra Low Ohmic Chip Shunt Resistors — PSR Series

5W rated power guaranteed in the ultra-low-resistance region from 0.2mΩ.

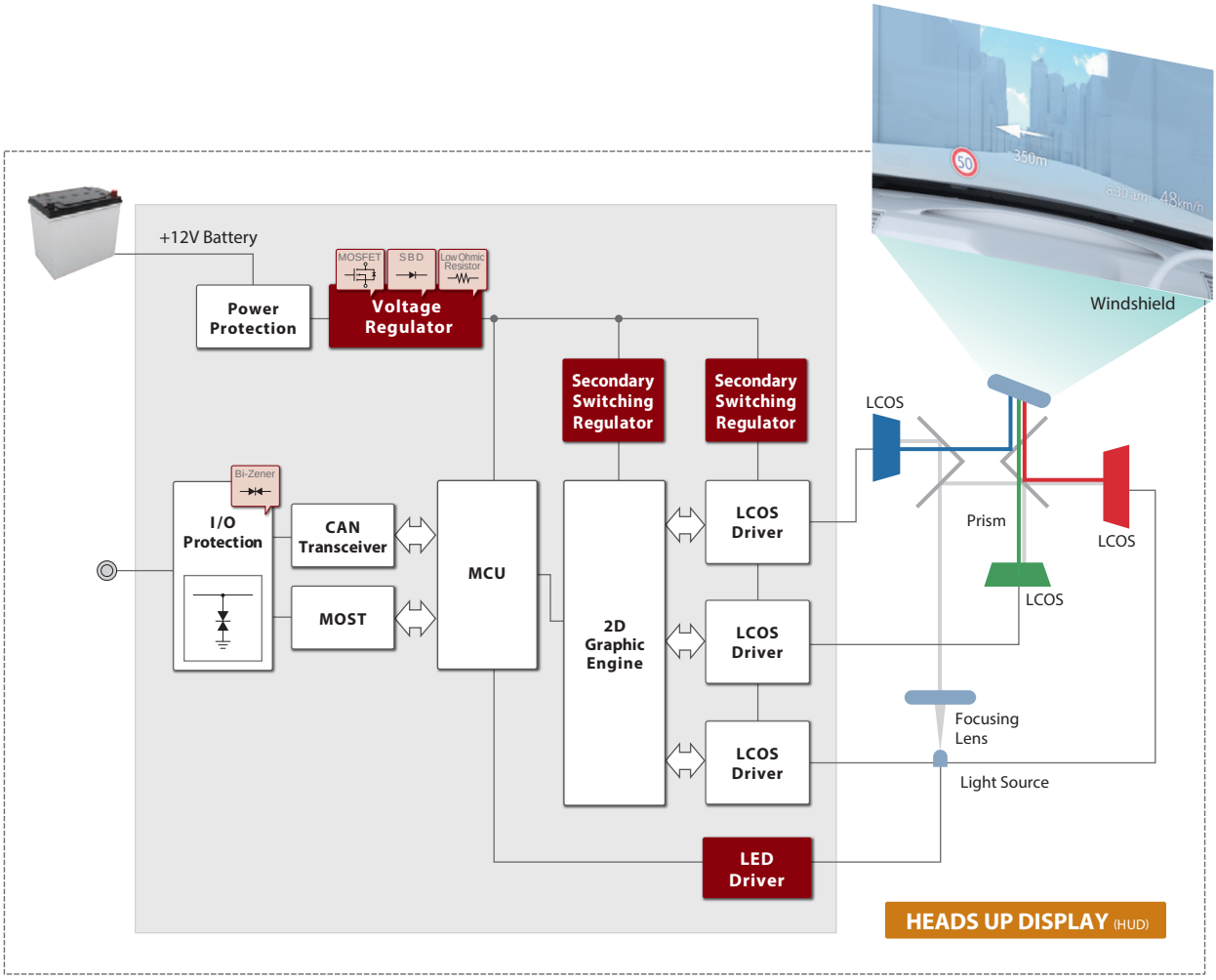

PSR500

・・・P.82

Memory ・・・P.32
Operational Amplifier Comparator ・・・P.34
Voltage Detector (Reset ICs) ・・・P.35

HEAD UP DISPLAY (HUD)

Head-Up Display (HUD) systems in cars are normally mounted on or near the windshield to present useful information to driver. This technology, first introduced in fighter planes, is getting adopted in the automotive industry for improving the safety by enabling drivers to view relevant data, such as time, vehicle speed, and navigation information, without having to take their eyes off the road. The block diagram below shows a sample HUD solution, in which the relevant information is first processed and divided into RGB pixels, then displayed using LCOS (Liquid Crystal On Silicon).



Memory | Op.Amps Comparators | Voltage Detectors (Reset ICs)

HEAD UP DISPLAY Products

LED Driver (For Backlighting) — BD81A44EFV-M, BD81A44MUV-M

Built-in boost-buck switching regulator ensures stable operation even during battery fluctuations.

• • • P.24

MOSFET — 40V Series, 60V Series

Optimized for a variety of drive circuits (i.e. switching power supply). Advanced processes provide low ON resistances.

• • • P.48 to 50

Schottky Barrier Diodes — Ultra Low I_R Series, Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.

• • • P.55 to 62

Low Ohmic Chip Resistors — PMR Series, LTR Series

Broad lineup of high power high reliability low ohmic resistors offered in a range of sizes (1005 to 6432).

• • • P.81

Bi-Directional Zener Diode — RSB Series

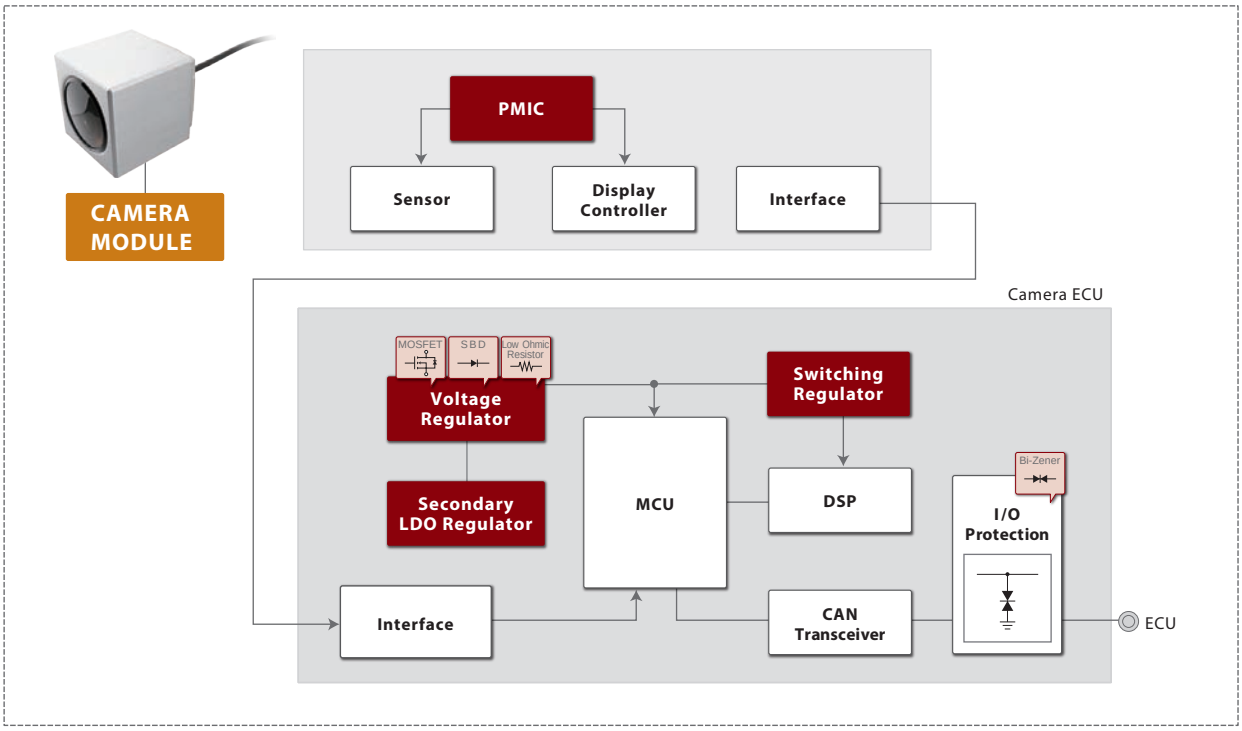
Bi-Directional Zener Diode series optimized for LIN & CAN.

• • • P.67, P.69

CAMERA MODULE/ECU for ADAS

Broad lineup supports a wide range of needs for greater miniaturization, larger currents, multiple outputs, hybrid configurations, and more

Following on the heels of legislation enacted in the US approving the use of cameras to improve vehicle and driver safety, the number of camera-equipped vehicles has risen dramatically. However, mounting cameras on vehicles without sacrificing design poses several challenges, requiring that the camera module and PMIC be as small as possible and the number of external components kept to a minimum. Information on surrounding objects is obtained by the camera module, millimeter-wave radar, or other source and processed by the camera ECU, which then transmits signals and commands to other ECUs for controlling the steering and brakes to improve driver safety. Power supplies for the high-performance MCUs (or DSPs) used in camera ECUs require large current-handling capability, high efficiency, reduced voltage operation, and other key characteristics. ROHM offers an extensive lineup of high-voltage/secondary LDOs and switching regulators compatible with direct battery connection as well as system power supplies (PMICs) optimized for camera ECUs.



Memory | Op.Amps Comparators | Voltage Detectors (Reset ICs)

CAMERA MODULE/ECU for ADAS Products

PMIC for Automotive Camera Modules — BD8682MUV

Multi-channel PMIC integrated into a compact form factor. Broad lineup compatible with CMOS and CCD sensors.

VQFN32SV5050

・・・P.23

MOSFET — 40V Series / 60V Series

Optimized for a variety of drive circuits (i.e. switching power supply). Advanced processes provide low ON resistances.

SOP8

・・・P.48 to 50

Schottky Barrier Diodes — Ultra Low I_R Series / Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

・・・P.55 to 62

Low Ohmic Chip Resistors — UCR Series

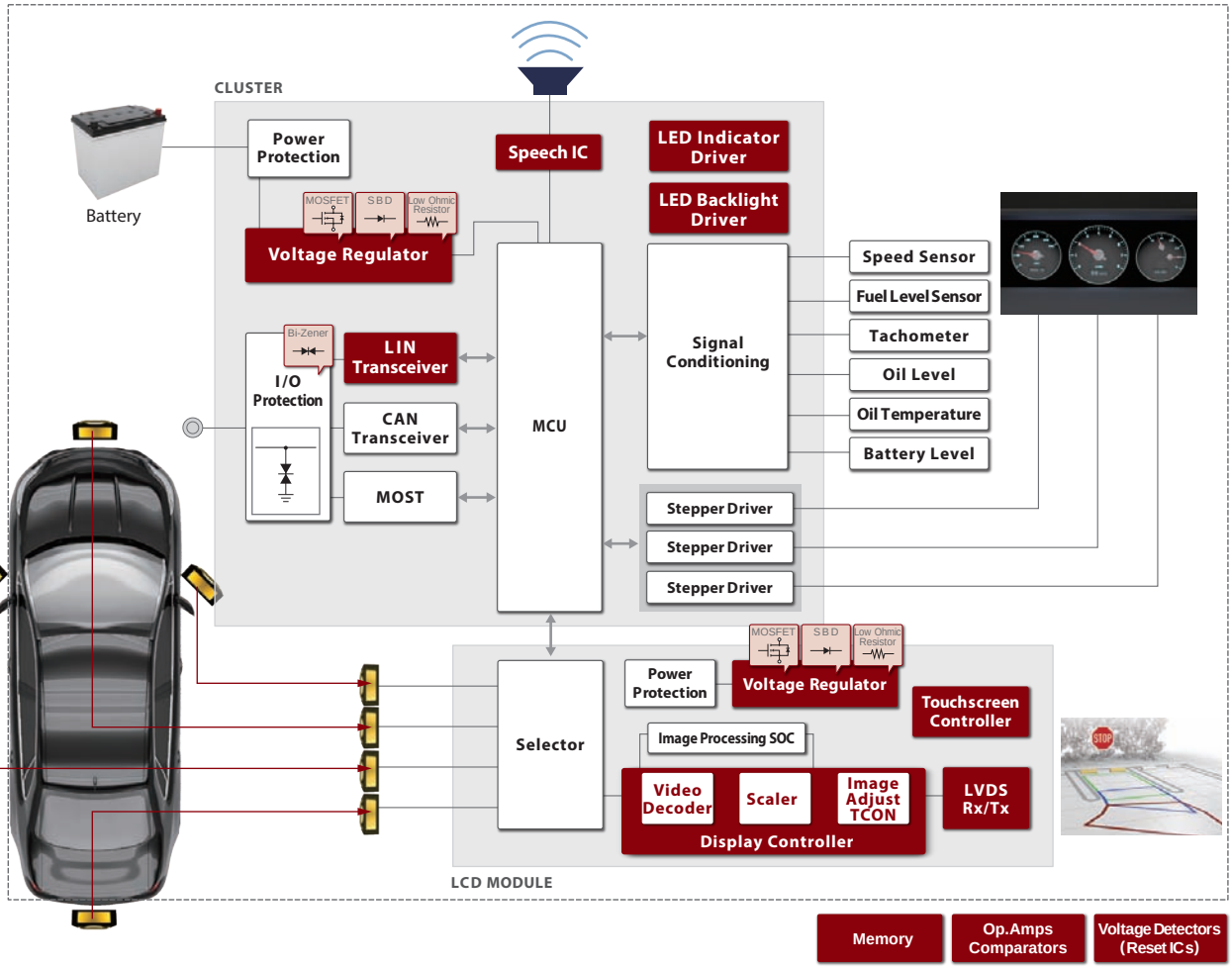
Compact, high heat resistance low-ohmic lineup delivers superior rated power in a variety of sizes, from 0603 to 3216.

UCR006

・・・P.80

AUTOMOTIVE CLUSTER & LCD MONITOR

The instrument cluster (or dashboard) refers to the group of meters and indicators that provides the driver with information about the engine and other parameters like vehicle speed, fuel level, and engine oil level.
Along with the computerization of cars and emergence of Advanced Driver Assist Systems (ADAS), conventional meters are being replaced with LCD panels for displaying detailed information using rich graphics. ROHM contributes to greater energy conservation with a broad array of switching and linear regulators for automotive clusters.



AUTOMOTIVE CLUSTER & LCD MONITOR Products

LED Drivers (For Backlighting) — BD81A44EFV-M, BD81A44MUV-M

Built-in boost-buck switching regulator ensures stable operation even during battery fluctuations.


HTSSOP-B28


VQFN28SV5050

• • • P.24

LVDS Interface ICs — BU17101AKV, BU17102AKV

Capable of single-pair transmission of 24bit parallel data at 1.63Gbps with a clock speed of 30 to 50 MHz.


VQFP48

• • • P.28

Touch Screen Controller — BU21024FV-M

Enables 2-point touch detection in 4-wire resistive touchscreens.


SSOP-B28

• • • P.27

LED Drivers (For Indicators) — BD8378FV-M, BD8379FV-M

Compact packages contribute to increased space savings. Supports cascade connections for efficient driving of multiple LEDs.


SSOP-B16

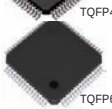

SSOP-B20

• • • P.24

Video Decoder — ML86101A, ML86V7675

Compatible with the 3 major global standards (NTSC/PAL/SECAM), making them suitable for video devices worldwide.


TQFP48


TQFP64

• • • P.30

Speech LSI — BD8378FV-M, BD8379FV-M

Features include 4ch mixing, built-in speaker amp, guaranteed operation up to +105°C, and multiple fail-safe functions required by automotive applications.


SSOP30

• • • P.29

MOSFET — SML-D15 Series

High-brightness single-rank LEDs that eliminate brightness variations offered in a standard surface-mount package.

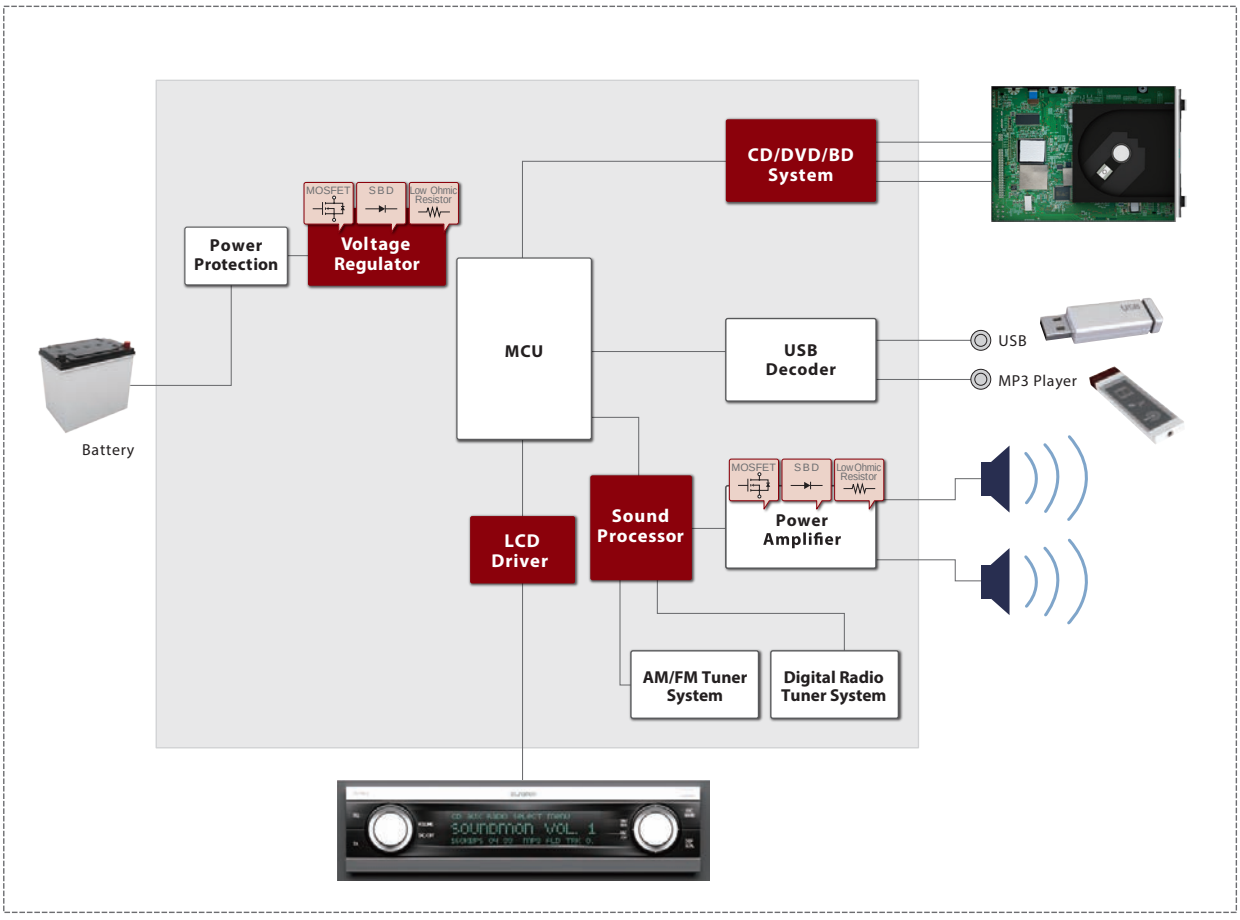

1.6x0.8(t=0.55)

• • • P.85 to 86

CAR AUDIO

Providing greater comfort through high fidelity audio

Car audio is becoming indispensible for not only creating a comfortable space for the driver and passengers through music, but for providing useful information as well. Recent years have also seen the rapid proliferation of new audio sources such as MP3 players and USB flash memory.
ROHM provides products designed for both conventional music sources such as CDs and radio, and also easy-to-use solutions that enable plug-and-play connectivity for the latest USB and MP3 players.
In addition, ROHM brings in analog technology that matured over many years of experience to develop high fidelity sound processors that significantly improve the listening experience by reducing noise at low frequencies optimized for high resolution audio sources as well as HEVs and EVs with quieter interiors that demand superior audio quality.



Memory | Op.Amps Comparators | Voltage Detectors (Reset ICs)

CAR AUDIO Products

Sound Processor — BD37033FV, BD37034FV

Leveraging market-leading analog technology, matured over the years, and that has allowed ROHM to integrate an RF noise removal function that cuts RF noise interference in audio equipment due to mobile phone calls.


SSOP-B28

・・・P.29

MOSFET — 40V Series, 60V Series

Supports a variety of drive circuits (i.e. switching power supply). Advanced processes provide low ON resistances.


SOP8

・・・P.48 to 50

System Motor Driver for ODD — BD8266EFV, BD8255MUV

Hall-equipped driver enables ultra-quiet operation while the custom built protection functions provide superior reliability.


HTSSOP-B28
VQFN48SV7070

・・・P.25

Schottky Barrier Diodes — Ultra Low I_R Series, Low V_F Series

Select from among 4 different series to meet application requirements for V_F and I_R.


PMDU

・・・P.55 to 62

LCD Driver — BU97530KVT-M

Includes all functions required for panel operation, such as LCD control, button press detection, and LED dimming.


TQFP100V

・・・P.27

Low Ohmic Chip Resistors — UCR Series

Compact, high heat resistance low-ohmic lineup delivers superior rated power in a variety of sizes, from 0603 to 3216.


UCR10

・・・P.80

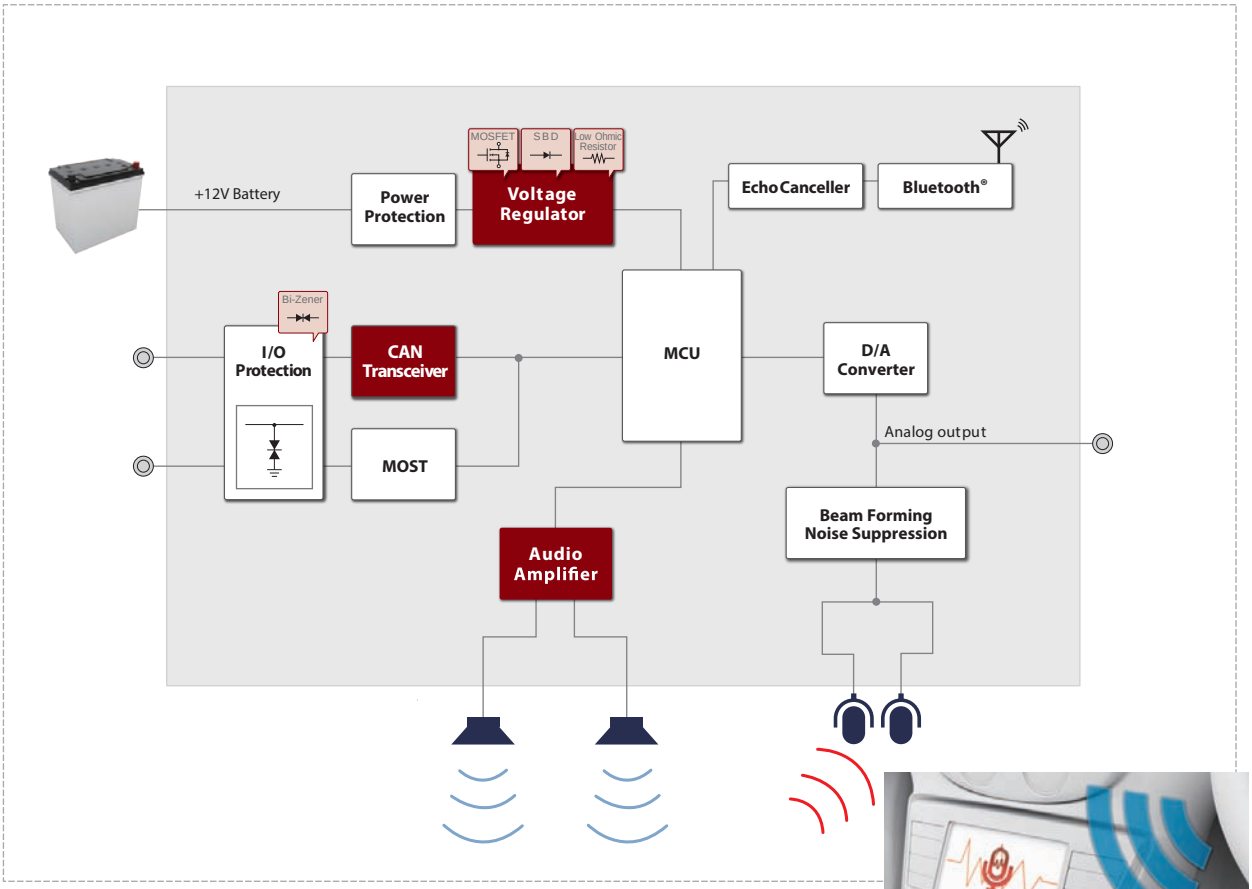
VOICE INTERFACE

Supports hands-free operation for safer driving

Voice control functionality is seeing increased adoption in vehicles in order to prevent driver distractions by enabling hands-free operation. Noise reduction is also an important consideration when implementing voice I/F to ensure optimum performance when traveling in noisy environments.

One method involves using beamforming technology to capture only the intended sounds. In this system only sounds in the direction of the driver are recognized, with sounds from all other directions treated as noise and suppressed.

Connecting the ECU to the HVAC and cluster makes it possible to perform a variety of operations via voice control, including temperature adjustment, changing/selecting songs, and making telephone calls.



Memory | Op.Amps Comparators | Voltage Detectors (Reset ICs)

VOICE INTERFACE Products

Audio Amplifier — BH7824FVM

Provides clear audio playback in a compact, space-saving form factor.

MSOP8

・・・P.29

MOSFET — 40V Series / 60V Series

Supports a variety of drive circuits (i.e.switching power supply). Advanced processes provide low ON resistances.

SOP8

・・・P.48 to 50

Schottky Barrier Diodes — Ultra Low IR Series / Low VF Series

Select from among 4 different series to meet application requirements for V_F and I_R.

PMDU

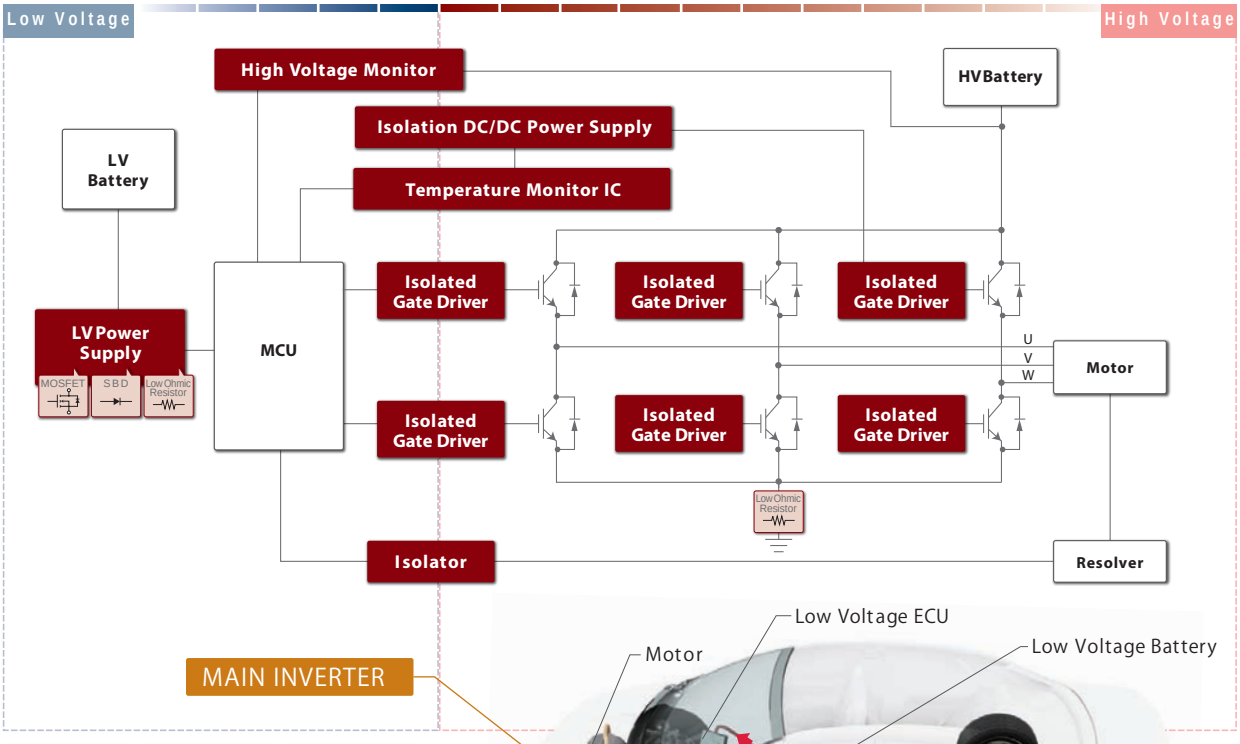
・・・P.55 to 62

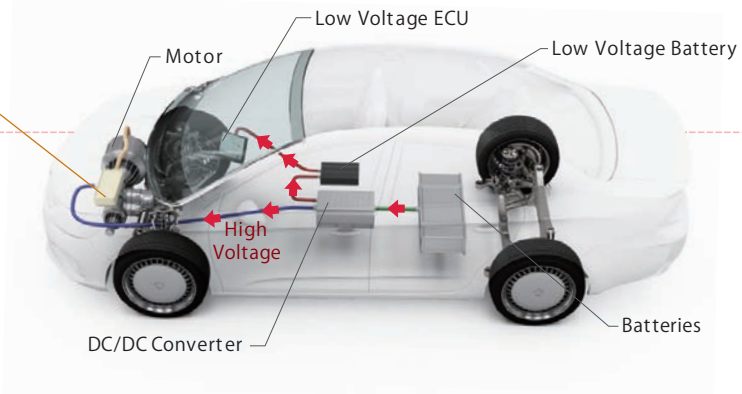
CAN Transceiver — BD41040FJ-C

Compliant with industry standard ISO 11898-2.5

MAIN INVERTER

The main inverter converts the constant DC voltage from the battery into a 3-phase AC voltage to drive the motors.
ROHM is developing a wide variety of high reliability isolated gate drivers optimized for the main inverters.
And although power devices such as IGBTs with integrated protection diodes are commonly used, SiC MOSFETs and SiC SBDs is seeing greater adoption due to their lower RDS(ON) and the resulting switching losses.
ROHM, a pioneer in SiC devices, also offers products designed for industrial and automotive applications that demand extreme reliability. In addition, ROHM utilizes on-chip transformer technology to design gate drivers that feature built-in isolation, contributing to greater miniaturization and longer life.





MAIN INVERTER Products

Isolated Gate Driver BM6104FV-C

Integrates isolation and gate driver functions into a compact SSOP-B20W package.

SSOP-B20W

・・・P.31

Isolators BM67220FV-C BM67221FV-C

Isolates the high and low-voltage sides, enabling fast, safe signal transmission.

SSOP-B20W

・・・P.32

Temperature Monitor BM66002FV-C

Monitors the temperature of the IGBT, SiC and Power MOSFET.

SSOP-B20W

・・・P.32

High Voltage Monitor BM67290FV-C

Protects the IGBT by sending voltage data to the MCU to prevent excessive IGBT drive voltage.

SSOP-B20W

・・・P.32

Power Supply IC BD9031FV-C

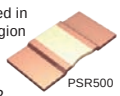
Isolated boost-buck power supply IC that provides regulated power to the MCU.

SSOP-B16

・・・P.23

High power Ultra Low Ohmic Chip Shunt Resistors PSR Series

5W rated power guaranteed in the ultra-low-resistance region from 0.2mΩ.



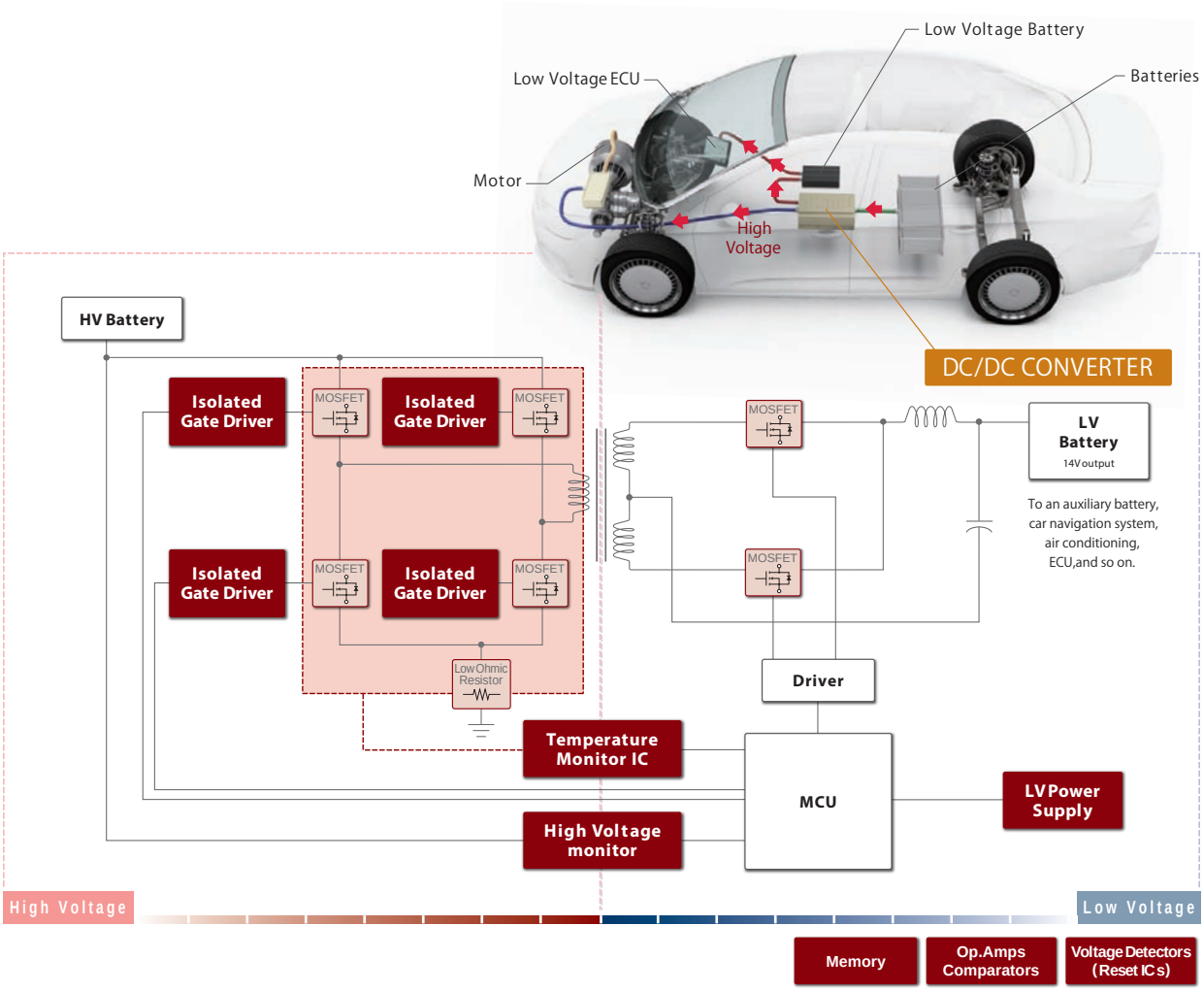
PSR500

・・・P.82

DC/DC CONVERTER

In HEVs and EVs, where the engine frequently stops and starts while driving, DC/DC converters are proving to be more efficient than conventional alternator at supplying power to the engine under all operating conditions. DC/DC converters work by converting the high battery voltage to 14V DC using a power element and transformer to perform high-frequency switching and voltage conversion in order to charge the low-voltage battery.

In addition, isolator ICs are required to electrically isolate all signals as well as ground between the low voltage and high voltage boards in order to prevent possible electrical shock and fire. ROHM is currently developing robust isolator ICs that feature greater compactness and longer life.



DC/DC CONVERTER Products

Isolated Gate Driver BM6104FV-C

Integrates isolation and gate driver functions into a compact SSOP-B20W package.

SSOP-B20W

・・・P.31

Isolators BM67220FV-C BM67221FV-C

Isolates the high and low-voltage sides, enabling fast, safe signal transmission.

SSOP-B20W

・・・P.32

Temperature Monitor BM66002FV-C

Monitors the temperature of the IGBT, SiC and Power MOSFET.

SSOP-B20W

・・・P.32

High Voltage Monitor BM67290FV-C

Sends voltage data to the MCU to protect the power MOSFET and other components.

SSOP-B20W

・・・P.32

Power Supply IC BD9031FV-C

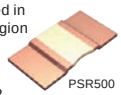
Isolated boost-buck power supply IC that provides regulated power to the MCU.

SSOP-B16

・・・P.23

High power Ultra Low Ohmic Chip Shunt Resistors PSR Series

5W rated power guaranteed in the ultra-low-resistance region from 0.2mΩ.



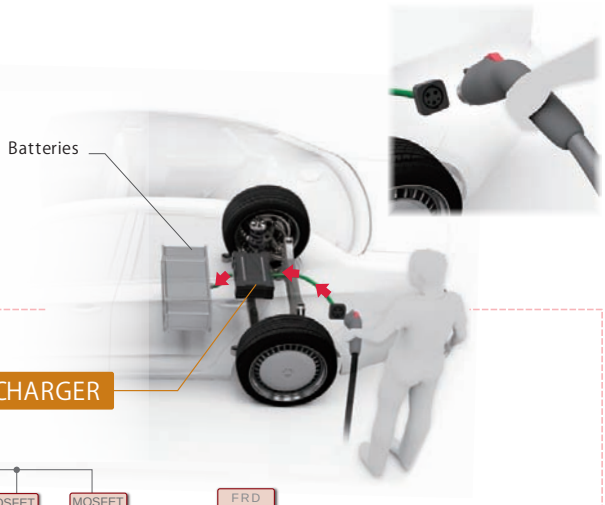
PSR500

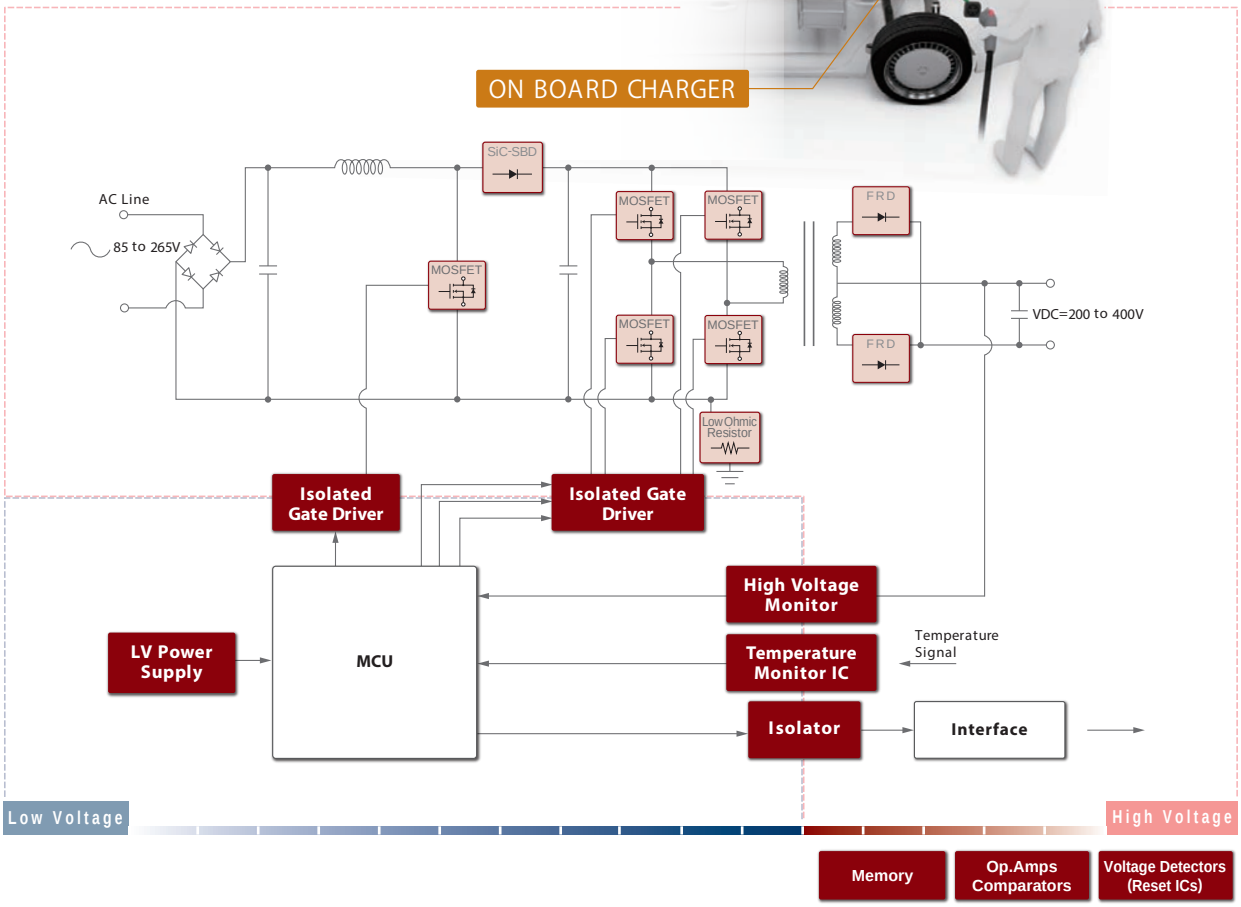
・・・P.82

ON BOARD CHARGER

Automotive (onboard) chargers are AC/DC converters that convert the household AC (100V to 240V) supply to DC in order to charge the high voltage battery array. To ensure universal compatibility, most onboard chargers support a wide voltage range, usually between 85V and 265V. However, due to input voltage fluctuations, safer and more efficient devices are required.

In addition to isolator ICs, ROHM offers a broad range of power devices, including SiC SBDs.





ONBOARD CHARGER Products

Isolated Gate Driver — BM6104FV-C

Integrates isolation and gate driver functions into a compact SSOP-B20W package.


SSOP-B20W

• • • P.31

Isolators — BM67220FV-C, BM67221FV-C

Isolates the high and low-voltage sides, enabling fast, safe signal transmission.


SSOP-B20W

• • • P.32

Temperature Monitor — BM66002FV-C

Monitors the temperature of the IGBT, SiC and Power MOSFET.


SSOP-B20W

• • • P.32

High Voltage Monitor — BM67290FV-C

Monitors the output voltage of the DC/DC converter.


SSOP-B20W

• • • P.32

Power Supply IC — BD9031FV-C

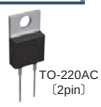
Isolated boost-buck power supply IC that provides regulated power to the MCU.


SSOP-B16

• • • P.23

SiC-SBD — SiC-SBD Series

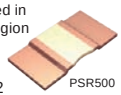
Industry-low VF provides unmatched circuit efficiency.


TO-220AC [2pin]

• • • P.45

High power Ultra Low Ohmic Chip Shunt Resistors — PSR Series

5W rated power guaranteed in the ultra-low-resistance region from 0.2mΩ.


PSR500

• • • P.82

Automotive
【IC】

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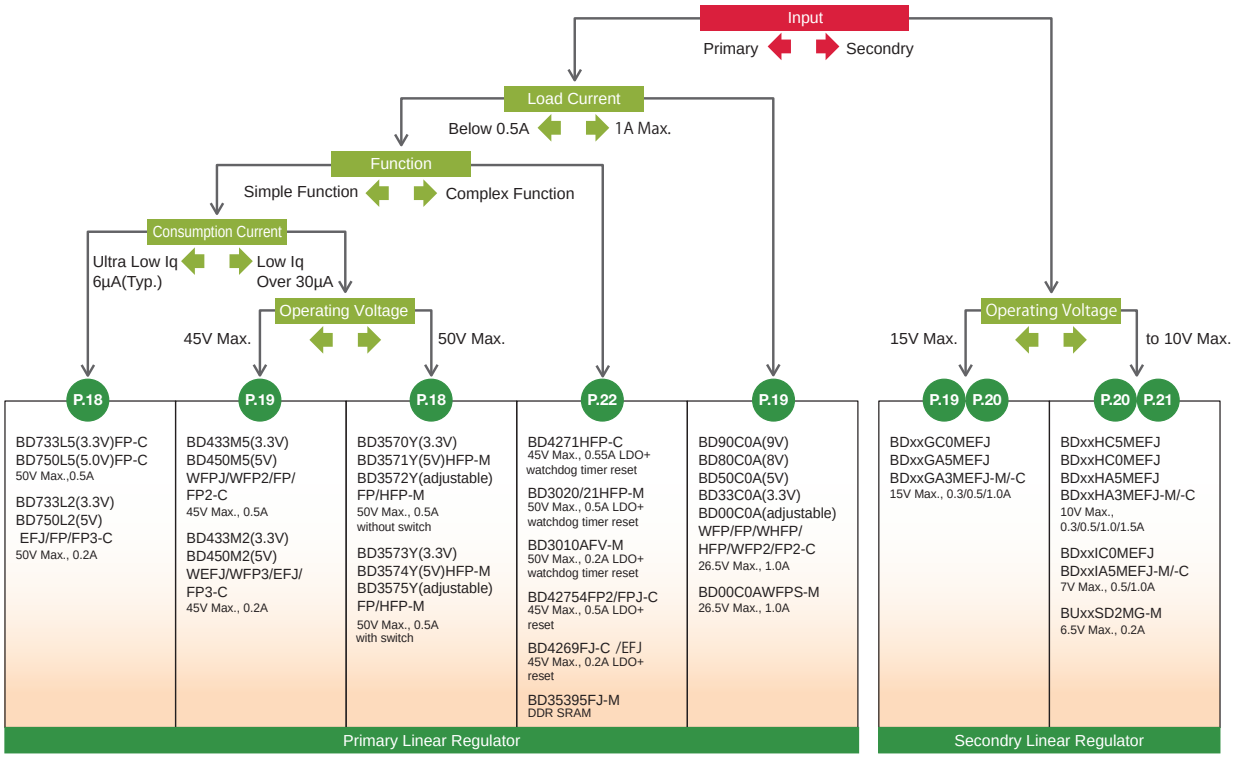
Power Management

Linear Regulators

Automotive DC/DC system diagram



Single-Output LDO Regulators

Please ensure that minimum input voltage always exceeds the sum of output voltage and drop out voltage for the device.

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision(%)	Output Current (A)	Saturation Voltage : Io=200mA(V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package
50V Resistance Output 500mA LDO Regulators										
BD3570YFP-M	4.5 to 36.0	3.3	±2 (Ta=−40 to +125°C)	0.5	–	30	Ta=−40 to +125	–	Over-Current / Temperature	TO252-3
BD3570YHFP-M										HRP5
BD3571YFP-M	5.5 to 36.0	5.0			0.25					TO252-3
BD3571YHFP-M										HRP5
BD3572YFP-M	4.5 to 36.0	Variable 2.8 to 12.0								TO252-5
BD3572YHFP-M										HRP5
BD3573YFP-M		3.3			–			✓		TO252-5
BD3573YHFP-M										HRP5
BD3574YFP-M	5.5 to 36.0	5.0			0.25					TO252-5
BD3574YHFP-M										HRP5
BD3575YFP-M	4.5 to 36.0	Variable 2.8 to 12.0								TO252-5
BD3575YHFP-M										HRP5
50V Resistance Output Low quiescent current 200mA LDO Regulators (AEC-Q100)										
BD733L2EFJ-C	4.37 to 45.0	3.3	±2 (Ta=−40 to +125°C)	0.2	0.6	6.0	Ta=−40 to +125	–	Over-Current / Temperature	HTSOP-J8
BD750L2EFJ-C	5.8 to 45.0	5.0			0.4			–		HTSOP-J8
BD733L2FP-C	4.37 to 45.0	3.3			0.6			–		TO252-3
BD733L2FP3-C								–		SOT223-4
BD750L2FP-C	5.8 to 45.0	5.0			0.4			–		TO252-3
BD750L2FP3-C								–		SOT223-4
50V Resistance Output Low quiescent current 500mA LDO Regulators (AEC-Q100)										
BD733L5FP-C	4.17 to 45.0	3.3	±2 (Ta=−40 to +125°C)	0.5	0.4	6.0	Ta=−40 to +125	–	Over-Current / Temperature	TO252-3
BD750L5FP-C	5.6 to 45.0	5.0			0.25			–		TO252-3

Single-Output LDO Regulators

Please ensure that minimum input voltage always exceeds the sum of output voltage and drop out voltage for the device.

45V Resistance Output Low quiescent current 500mA LDO Regulators (AEC-Q100)

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (Tj)	Shutdown Switch	Protection Circuit	Package Part No.			
										TO252-3	TO263-3	TO263-5	TO252-J5
BD433M5	4.0 to 42.0	3.3	±2 (Tj = −40 to +150°C)	0.5	0.25 (Io=300mA)	38	−40 to +150°C	—	Over-Current / Temperature	BD433M5FP-C	BD433M5FP2-C	—	—
BD450M5	5.5 to 42.0	5.0			0.2 (o=300mA)			—		BD450M5FP-C	BD450M5FP2-C	—	—
BD433M5W	4.0 to 42.0	3.3			0.25 (Io=300mA)			✓		—	—	BD433M5WFP2-C	BD433M5WFPJ-C
BD450M5W	5.5 to 42.0	5.0			0.2 (Io=300mA)			✓		—	—	BD450M5WFP2-C	BD450M5WFPJ-C

45V Resistance Output Low quiescent current 200mA LDO Regulators (AEC-Q100)

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference(V)	Circuit Current (μA)	Operating Temperature (Tj)	Shutdown Switch	Protection Circuit	Package Part No.	
										HTSOP-J8	SOT223-4
BD433M2	3.9 to 42.0	3.3	±2 (Tj = −40 to +150°C)	0.2	0.2 (Io=100mA)	40	−40 to +150°C	—	Over-Current / Temperature	BD433M2EFJ-C	BD433M2FP3-C
BD450M2	5.5 to 42.0	5.0			0.16 (Io=100mA)			—		BD450M2EFJ-C	BD450M2FP3-C
BD433M2W	3.9 to 42.0	3.3			0.2 (Io=100mA)			✓		BD433M2WEFJ-C	BD433M2WFP3-C
BD450M2W	5.5 to 42.0	5.0			0.16 (Io=100mA)			✓		BD450M2WEFJ-C	BD450M2WFP3-C

36V Resistance Output 300mA LDO Regulator (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (mA)	Operating Temperature (°C)	Protection Circuit	Package
BD3650FP-M	5.6 to 30.0	5.0	±2 (Ta=−40 to +125°C)	0.3	0.2 (Io=200mA)	0.5	−40 to +125°C	Over-Current / Temperature	TO252-3

35V Voltage Resistance 1A LDO Regulators (AEC-Q100)

35V Voltage Resistance 1A LDO Regulators (AEC-Q100) : ✻ Vo is Output voltage / Unit : V

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (V)	Protection Circuit	Package Part No.		
										TO252-3	HRP5	TO263-3
BD33C0A	4.3 to 26.5	3.3	±3.0% (Ta=−40 to +125°C)	1.0	0.5	—	55	✻ Vo×0.01 (Io=5mA to 1A)	Over-Current / Temperature	BD33C0AFP-C	BD33C0AHFP-C	BD33C0AFP2-C
BD50C0A	6.0 to 26.5	5.0				0.3 (Io=500mA)				BD50C0AFP-C	BD50C0AHFP-C	BD50C0AFP2-C
BD80C0A	9.0 to 26.5	8.0					50			BD80C0AFP-C	BD80C0AHFP-C	BD80C0AFP2-C
BD90C0A	10.0 to 26.5	9.0								BD90C0AFP-C	BD90C0AHFP-C	BD90C0AFP2-C

35V Voltage Resistance 1A LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Saturation Voltage (V)	Circuit Current (mA)	Operating Temperature (°C)	Protection Circuit	Package
BD00C0AWFPS-M	4.0 to 26.5	Variable 3.0 to 15.0	±3 (Ta=−40 to +105°C)	1.0	0.3 (Io=500mA)	0.5	−40 to +105°C	Over-Current/ Temperature	TO252S-5

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (V)	Protection Circuit	Package Part No.		
										TO252-5	HRP5	TO263-5
BD00C0AW	4.0 to 26.5	Variable 1.0 to 15.0	±3.0 (Ta=−40 to +125°C)	1.0	0.5	0.3 (Io=500mA)	55	Vo×0.01 (Io=5mA to 1A)	Over-Current/ Temperature	BD00C0AWFP-C	BD00C0AWHFP-C	BD00C0AWFP2-C
BD33C0AW	4.3 to 26.5	3.3				—				BD33C0AWFP-C	BD33C0AWHFP-C	BD33C0AWFP2-C
BD50C0AW	6.0 to 26.5	5.0				0.3 (Io=500mA)				BD50C0AWFP-C	BD50C0AWHFP-C	BD50C0AWFP2-C
BD80C0AW	9.0 to 26.5	8.0					50			BD80C0AWFP-C	BD80C0AWHFP-C	BD80C0AWFP2-C
BD90C0AW	10.0 to 26.5	9.0								BD90C0AWFP-C	BD90C0AWHFP-C	BD90C0AWFP2-C

15V Voltage Resistance 1A LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00GC0MEFJ-M	4.5 to 14.0	Variable 1.5 to 13.0	±1.0 (Ta=25°C) / ±3.0 (Ta= −40 to +105°C)	1.0	0.6	0.6 (Io=1A)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15GC0MEFJ-M		1.5											HTSOP-J8
BD18GC0MEFJ-M		1.8											HTSOP-J8
BD25GC0MEFJ-M		2.5											HTSOP-J8
BD30GC0MEFJ-M		3.0											HTSOP-J8
BD33GC0MEFJ-M		3.3											HTSOP-J8
BD50GC0MEFJ-M		5.0											HTSOP-J8
BD60GC0MEFJ-M		6.0											HTSOP-J8
BD70GC0MEFJ-M		7.0											HTSOP-J8
BD80GC0MEFJ-M		8.0											HTSOP-J8
BD90GC0MEFJ-M		9.0											HTSOP-J8
BDJ0GC0MEFJ-M		10.0											HTSOP-J8
BDJ2GC0MEFJ-M		12.0											HTSOP-J8

Single-Output LDO Regulators

Please ensure that minimum input voltage always exceeds the sum of output voltage and drop out voltage for the device.

15V Voltage Resistance 500mA LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (µF)	Output Capacitor (µF)	Shutdown Switch	Protection Circuit	Package
BD00GA5MEFJ-M	4.5 to 14.0	Variable 1.5 to 13.0	±1.0 (Ta=25°C) / ±3.0 (Ta= −40 to +105°C)	0.5	0.6	0.6 (Io=500mA)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15GA5MEFJ-M		1.5											HTSOP-J8
BD18GA5MEFJ-M		1.8											HTSOP-J8
BD25GA5MEFJ-M		2.5											HTSOP-J8
BD30GA5MEFJ-M		3.0											HTSOP-J8
BD33GA5MEFJ-M		3.3											HTSOP-J8
BD50GA5MEFJ-M		5.0											HTSOP-J8
BD60GA5MEFJ-M		6.0											HTSOP-J8
BD70GA5MEFJ-M		7.0											HTSOP-J8
BD80GA5MEFJ-M		8.0											HTSOP-J8
BD90GA5MEFJ-M		9.0											HTSOP-J8
BDJ0GA5MEFJ-M		10.0											HTSOP-J8
BDJ2GA5MEFJ-M		12.0											HTSOP-J8

15V Voltage Resistance 300mA LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (µF)	Output Capacitor (µF)	Shutdown Switch	Protection Circuit	Package
BD00GA3MEFJ-M	4.5 to 14.0	Variable 1.5 to 13.0	±3.0 (Ta= −40 to +105°C)	0.3	0.6	0.6 (Io=300mA)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15GA3MEFJ-M		1.5											HTSOP-J8
BD18GA3MEFJ-M		1.8											HTSOP-J8
BD25GA3MEFJ-M		2.5											HTSOP-J8
BD30GA3MEFJ-M		3.0											HTSOP-J8
BD33GA3MEFJ-M		3.3											HTSOP-J8
BD50GA3MEFJ-M		5.0											HTSOP-J8
BD60GA3MEFJ-M		6.0											HTSOP-J8
BD70GA3MEFJ-M		7.0											HTSOP-J8
BD80GA3MEFJ-M		8.0											HTSOP-J8
BD90GA3MEFJ-M		9.0											HTSOP-J8
BDJ0GA3MEFJ-M		10.0											HTSOP-J8
BDJ2GA3MEFJ-M		12.0											HTSOP-J8

10V Voltage Resistance 1.5A LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (µF)	Output Capacitor (µF)	Shutdown Switch	Protection Circuit	Package
BD00HC5MEFJ-M	4.5 to 8.0	Variable 1.5 to 7.0	±1.0 (Ta=25°C) / ±3.0 (Ta= −40 to +105°C)	1.5	0.6	0.6 (Io=1.5A)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 1.5A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HC5MEFJ-M		1.5											HTSOP-J8
BD18HC5MEFJ-M		1.8											HTSOP-J8
BD25HC5MEFJ-M		2.5											HTSOP-J8
BD30HC5MEFJ-M		3.0											HTSOP-J8
BD33HC5MEFJ-M		3.3											HTSOP-J8
BD50HC5MEFJ-M		5.0											HTSOP-J8
BD60HC5MEFJ-M		6.0											HTSOP-J8
BD70HC5MEFJ-M		7.0											HTSOP-J8

10V Voltage Resistance 1A LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (µF)	Output Capacitor (µF)	Shutdown Switch	Protection Circuit	Package
BD00HC0MEFJ-M	4.5 to 8.0	Variable 1.5 to 7.0	±1.0 (Ta=25°C) / ±3.0 (Ta= −40 to +105°C)	1.0	0.6	0.6 (Io=1A)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HC0MEFJ-M		1.5											HTSOP-J8
BD18HC0MEFJ-M		1.8											HTSOP-J8
BD25HC0MEFJ-M		2.5											HTSOP-J8
BD30HC0MEFJ-M		3.0											HTSOP-J8
BD33HC0MEFJ-M		3.3											HTSOP-J8
BD50HC0MEFJ-M		5.0											HTSOP-J8
BD60HC0MEFJ-M		6.0											HTSOP-J8
BD70HC0MEFJ-M		7.0											HTSOP-J8

Single-Output LDO Regulators

Please ensure that minimum input voltage always exceeds the sum of output voltage and drop out voltage for the device.

10V Voltage Resistance 500mA LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (µF)	Output Capacitor (µF)	Shutdown Switch	Protection Circuit	Package
BD00HA5MEFJ-M	4.5 to 8.0	Variable 1.5 to 7.0	±1.0 (Ta=25°C) / ±3.0 (Ta=-40 to +105°C)	0.5	0.6	0.6 (Io=500mA)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HA5MEFJ-M		1.5											HTSOP-J8
BD18HA5MEFJ-M		1.8											HTSOP-J8
BD25HA5MEFJ-M		2.5											HTSOP-J8
BD30HA5MEFJ-M		3.0											HTSOP-J8
BD33HA5MEFJ-M		3.3											HTSOP-J8
BD50HA5MEFJ-M		5.0											HTSOP-J8
BD60HA5MEFJ-M		6.0											HTSOP-J8
BD70HA5MEFJ-M		7.0											HTSOP-J8

10V Voltage Resistance 300mA LDO Regulators with Shutdown Switch (AEC-Q100)

BD00HA3MEFJ-M	4.5 to 8.0	Variable 1.5 to 7.0	±1.0 (Ta=25°C) / ±3.0 (Ta=-40 to +105°C)	0.3	0.6	0.6 (Io=300mA)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HA3MEFJ-M		1.5											HTSOP-J8
BD18HA3MEFJ-M		1.8											HTSOP-J8
BD25HA3MEFJ-M		2.5											HTSOP-J8
BD30HA3MEFJ-M		3.0											HTSOP-J8
BD33HA3MEFJ-M		3.3											HTSOP-J8
BD50HA3MEFJ-M		5.0											HTSOP-J8
BD60HA3MEFJ-M		6.0											HTSOP-J8
BD70HA3MEFJ-M		7.0											HTSOP-J8

7V Voltage Resistance 1A LDO Regulators with Shutdown Switch (AEC-Q100)

BD00IC0MEFJ-M	2.3 to 5.5	Variable 0.8 to 4.5	±3.0 (Ta=-40 to +105°C)	1.0	0.3	0.4 (Io=1A)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD10IC0MEFJ-M	2.4 to 5.5	1.0											HTSOP-J8
BD12IC0MEFJ-M		1.2											HTSOP-J8
BD15IC0MEFJ-M		1.5											HTSOP-J8
BD18IC0MEFJ-M		1.8											HTSOP-J8
BD25IC0MEFJ-M		2.5											HTSOP-J8
BD30IC0MEFJ-M		3.0											HTSOP-J8
BD33IC0MEFJ-M		3.3											HTSOP-J8

7V Voltage Resistance 500mA LDO Regulators with Shutdown Switch (AEC-Q100)

BD00IA5MEFJ-M	2.3 to 5.5	Variable 0.8 to 4.5	±1.0 / ±3.0 (Ta=-40 to +105°C)	0.5	0.25	0.4 (Io=500mA)	60 (f=100Hz, 50mVpp, Io=0A)	25 (Io=0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD10IA5MEFJ-M		1.0											HTSOP-J8
BD12IA5MEFJ-M		1.2											HTSOP-J8
BD15IA5MEFJ-M		1.5											HTSOP-J8
BD18IA5MEFJ-M		1.8											HTSOP-J8
BD25IA5MEFJ-M		2.5											HTSOP-J8
BD30IA5MEFJ-M		3.0											HTSOP-J8
BD33IA5MEFJ-M		3.3											HTSOP-J8

200mA CMOS LDO Regulators with Shutdown Switch (AEC-Q100)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (µA)	Output Short Current (mA)	Input Capacitor (µF)	Output Capacitor (µF)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Package
BU12SD2MG-M	1.7 to 6.0	1.20	±2 (Ta=-40 to +105°C)	0.2	400 (Io=100mA)	68	1 (Io=1mAto 200mA)	33	100	1.0	1.0	✓	✓	✓	✓	SSOP5
BU15SD2MG-M		1.50			280 (Io=100mA)											SSOP5
BU18SD2MG-M		1.80			150 (Io=100mA)											SSOP5
BU25SD2MG-M		2.50			100 (Io=100mA)											SSOP5
BU28SD2MG-M		2.80			85 (Io=100mA)											SSOP5
BU30SD2MG-M		3.00														SSOP5
BU33SD2MG-M		3.30														SSOP5

LDO Regulators with Voltage Detector and Watchdog Timer

Part No.	Input Voltage (V)	LDO				Voltage Detector			Circuit Current (μA)	Operating Temperature (°C)	Package
		Output Voltage(V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)	Function			
500mA Output LDO Regulators with Voltage Detector and Watchdog Timer (AEC-Q100)											
BD4271HFP-C	5.5 to 45	5	±2 (Tj=−40 to +150°C)	0.55	0.3 (Io=300mA)	4.65	±2.6 (Tj=−40 to +150°C)	4.65V Voltage Detector+WDT	75	Tj= −40 to +150	HRP7
500mA Output LDO Regulators with Voltage Detector and Watchdog Timer											
BD3021HFP-M	5.6 to 36.0	5	±2 (Ta=−40 to +125°C)	0.5	0.3 (Io=200mA)	4.5	±2	4.5V Voltage Detector+WDT (Active switch)	80	Ta= −40 to +150	HRP7
BD3020HFP-M						Variable (at VS open : 4.2V)		Adjustable Voltage Detector+WDT			HRP7
200mA Output LDO Regulators with Voltage Detector and Watchdog Timer											
BD3010AFV-M	5.6 to 36.0	5	±2 (Ta=−40 to +125°C)	0.2	0.25 (Io=150mA)	Variable (at RADJ open : 4.25V)	±3	Adjustable Voltage Detector+WDT	80	Ta= −40 to +150	SSOP-B20

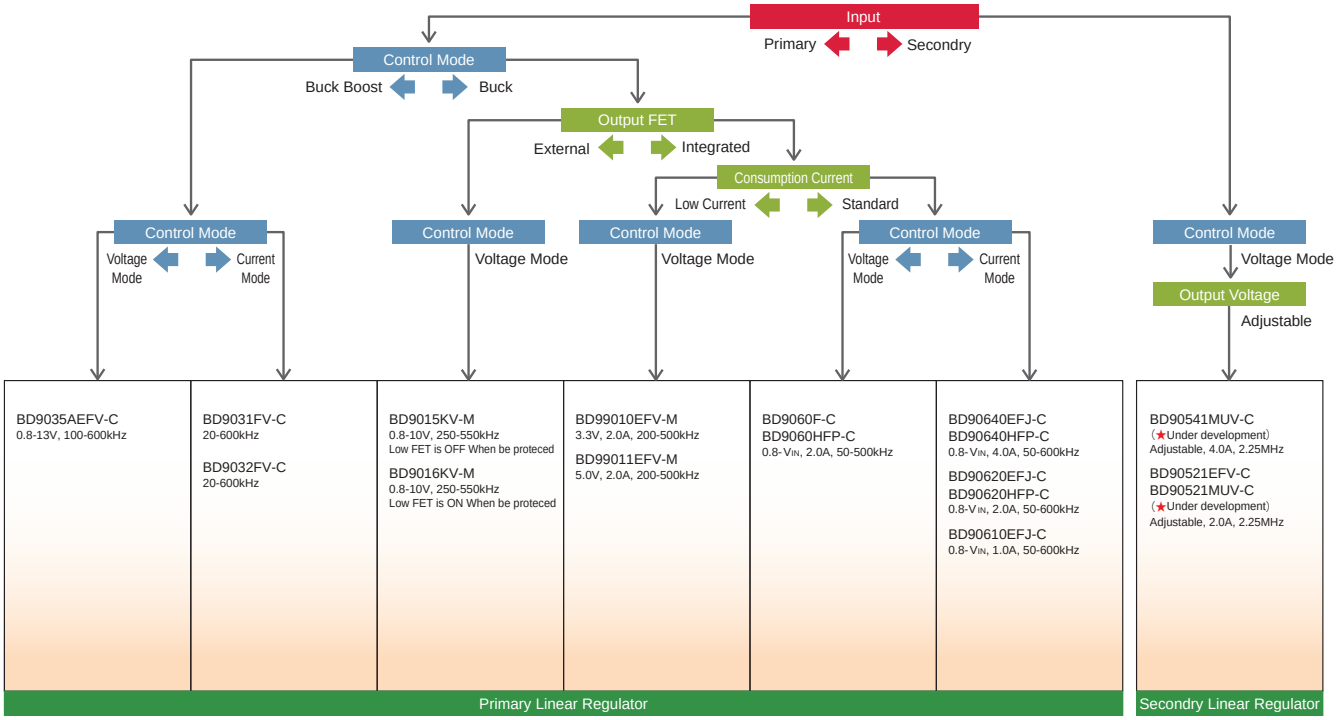
LDO Regulators with Voltage Detector

Part No.	Input Voltage (V)	Voltage Detector				Voltage Detector			Circuit Current (μA)	Operating Temperature (°C)	Package
		Output Voltage(V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)	Function			
500mA Output LDO Regulators with Voltage Detector (AEC-Q100)											
New **BD42754FP2-C**	5.5 to 45.0	5	±2 (Tj=−40 to +150°C)	0.5	0.25 (Io=300mA)	4.62	−2.6%+2.8% (Tj=−40 to +150°C)	4.62V Voltage Detector	75	Tj= −40 to +150	TO263-5
200/300mA Output LDO Regulators with Voltage Detector (AEC-Q100)											
Part No.	Input Voltage (V)	Voltage Detector				Voltage Detector		Battery Voltage Detector	Circuit Current (μA)	Operating Temperature (Tj)	Package
		Output Voltage(V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)	Detection Voltage (V)			
New **BD4269FJ-C**	5.5 to 45.0	5	±2 (Tj=−40 to +150°C)	0.2	0.25 (Io=100mA)	Variable (at RADJ open : 4.62V)	±2.6	Variable	70	Tj= −40 to +150	SOP-J8
New **BD4269EFJ-C**				0.3		Variable (at not used RADJ : 4.62V)					HTSOP-J8

Linear Regulators for DDR SDRAM

Part No.	V_{CC} Input Voltage (V)	V_{TT_IN} Termination Input Voltage (V)	V_{DDQ} Reference Input Voltage (V)	V_{TT} Output Voltage (V)	V_{TT} Voltage Precision (mV)	V_{TT} Output Current (A)	V_{REF} Output Current (mA)	Features																Package
								Enable	Soft Start	Power Good	UVLO	Output Ceramic Capacitors	Thermal Protection	DDR (VDDQ)											
														DDR1 (2.5V/2.6V)	DDR2 (1.8V)	DDR2L (1.5V)	LPDDR2 (1.2V)	DDR3 (1.5V)	DDR3L (1.35V)	DDR3U (1.25V)	LPDDR3 (1.2V)	DDR4 (1.2V)		
Termination Regulators for DDR SDRAM																								
BD35395FJ-M	2.7 to 5.5	1.0 to 5.5	1.0 to 2.75	0.5 to 1.375	±13.5	±1.0	—	✓	✓	✓	✓	✓	Recovery	✓	✓	✓	—	✓	✓	—	—	—	SOP-J8

Switching Regulators



Switching Regulators

Part No.	Input Voltage Maximum Rating (V)	Supply Voltage (V)	Output Current (A)	Output Voltage (V)	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Operating Frequency (kHz)	Frequency Accuracy (%)	Oscillation Circuit	Control Mode	Package
Switching Regulators (Integrated Switch) Single Output 1A Output (AEC-Q100)											
New **BD90610EFJ-C**	42	3.5 to 36.0	1.25 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±10	Self-oscillation/ External synchronization	PWM	HTSOP-J8
BD90201FV-M	36	7.0 to 33.0	1.75 (Isw)	Variable (1.145 to Vcc×0.643)	±2.0	−40 to +105	500 to 2300	±10	Self-oscillation	PWM	SSOP-B20W

Switching Regulators

Switching Regulators (Integrated Switch) Single Output 2A Output (AEC-Q100)

Part No.	Input Voltage Maximum Rating (V)	Supply Voltage (V)	Output Current (A)	Output Voltage (V)	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Operating Frequency (kHz)	Frequency Accuracy (%)	Oscillation Circuit	Control Mode	Package
New BD90620EFJ-C	42	3.5 to 36.0	2.5 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±10	Self-oscillation/ External synchronization	PWM	HTSOP-J8
New BD90620HFP-C	42	3.5 to 36.0	2.5 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±10	Self-oscillation/ External synchronization	PWM	HRP7
BD9060HFP-C	36	5.0 to 35.0	2.0 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±5	Self-oscillation/ External synchronization	PWM	HRP7
BD9060F-C	36	5.0 to 35.0	2.0 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±5	Self-oscillation/ External synchronization	PWM	SOP8

Switching Regulators (Integrated Switch) Single Output 4A Output (AEC-Q100)

Part No.	Input Voltage Maximum Rating (V)	Supply Voltage (V)	Output Current (A)	Output Voltage (V)	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Operating Frequency (kHz)	Frequency Accuracy (%)	Oscillation Circuit	Control Mode	Package
New BD90640EFJ-C	42	3.5 to 36.0	4 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±10	Self-oscillation/ External synchronization	PWM	HTSOP-J8
New BD90640HFP-C	42	3.5 to 36.0	4 (Isw)	Variable (0.8 to V_{IN})	±2.0	−40 to +125	50 to 600	±10	Self-oscillation/ External synchronization	PWM	HRP7

Switching Regulators (Integrated Switch) Ultra Low Quiescent Current / Synchronous Rectification (AEC-Q100)

Part No.	Input Voltage Maximum Rating (V)	Supply Voltage (V)	Output Current (A)	Output Voltage (V)	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Operating Frequency (kHz)	Frequency Accuracy (%)	Oscillation Circuit	Control Mode	Package
BD99010EFV-M	42	3.6 to 35.0	2 (Isw)	3.3	±2.0	−40 to +105	200 to 500	±20	Self-oscillation	Light load mode/PWM	HTSSOP-B24
BD99011EFV-M	42	3.6 to 35.0	2 (Isw)	5	±2.0	−40 to +105	200 to 500	±20	Self-oscillation	Light load mode/PWM	HTSSOP-B24

Switching Controllers (External Switch) Single Output Isolated / Boost Converters (AEC-Q100)

Part No.	Input Voltage Maximum Rating (V)	Power Supply Voltage (V)	Output Type	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Overvoltage Protection is Detected	Package
BD9031FV-C	35	4.5 to 30.0	Push Pull	±1.5	−40 to +125	20 to 600	SSOP-B16
BD9032FV-C	40	3.5 to 35.0	Push Pull	±1.5	−40 to +125	20 to 600	SSOP-B16

Switching Controllers (External Switch) Dual Output Buck / Boost Converters (AEC-Q100)

Part No.	Input Voltage Maximum Rating (V)	Power Supply Voltage (V)	Output Type	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Operating Frequency (kHz)	Overvoltage Protection is Detected	Package
BD9015KV-M	35	3.9 to 30.0	Push Pull	±1.5 (−40 to +105°C)	−40 to +105	250 to 550	L-side FET OFF	VQFP48C
BD9016KV-M	35	3.9 to 30.0	Push Pull	±1.5 (−40 to +105°C)	−40 to +105	250 to 550	L-side FET OFF	VQFP48C

Switching Controllers (External Switch) Single Output Buck / Boost (AEC-Q100)

Part No.	Input Voltage Maximum Rating (V)	Power Supply Voltage (V)	Output Type	Reference Voltage Accuracy (%)	Operating Temperature (°C)	Operating Frequency (kHz)	Overvoltage Protection is Detected	Package
BD9035AEFV-C	35	3.8 to 30	Push Pull	±1.5(−40 to +125°C)	−40 to +125	100 to 600	Automatic switchover	HTSSOP-B24

Switching Regulators (Power Management IC for System)

Power Management ICs for Automotive Camera Modules

for CMOS Sensor (AEC-Q100)

Part No.	Supply Voltage (V)	Functions			Output Voltage (V)	Output Current Capacity (A)	Reset Voltage (V)	Operating Frequency (kHz)	Standby Current (μA) (Typ.)	Package
BD8682MUV-M	5.9 to 18.0	High Voltage Step-down DC/DC	ch1	—	Variable	0.5	—	500	0	VQFN32SV5050
		LDO	ch2	Sensor	2.8V/3.3V	0.13	V_O2×0.86	—		
		LDO	ch3		1.8V/OFF	0.06	—	—		
		Step-down DC/DC	ch4	DSP	1.2V/1.5V/1.8V	0.25	—	1000		

System Power Supply IC for Audio

Power Supply IC for Car Audio Systems (AEC-Q100)

Part No.	Supply Voltage (V)	Functions		Reference Voltage (V)	Output Current (A)	Protection Circuit		Input Interface	Package
						Over Current	Temperature		
BD49101AEFS-M	5.5 to 25.0	Buck DCDC1	Controller	0.8	—	Current Limit with Short Current Protection Circuit	✓	I^2C	HTSSOP-A44
		Buck DCDC2	Low Power Standby REG	0.8	1				
		REG1	Secondly	0.6	0.5	Foldback			
		REG2	—	0.8	0.1				
		REG3	Secondly	0.8	0.3				
		REG4	Secondly, Voltage Calibration	0.8	1.5 (Variable)				
		REG5	—	0.8	0.1				
		High Side Switch	—	—	0.5				
		+B Detection Circuit	Over/Under Current Detection	—	—	—			

System Power Supply ICs

3ch System Power Supply IC (AEC-Q100)

Part No.	Power Supply Voltage	Operating Frequency	Operating Temperature	Sequence	Initial Accuracy	OUTPUT		Function					Package
						Channel	Vout/Max Iout	Over Current Protection	TSD	Under/Over Voltage Detectio	Reset	WDT	
BD39001EKV-C	4V to 30V (Rating 40V)	200kHz to 550kHz	−40°C to +125°C	✓	±2%	CH1 (DCDC)	Buck-Boost DC/DC Controller (Vout/Iout variable)	✓	✓	✓	—	WINDOW WDT	HTQFP48V
						CH2 (DCDC)	Synchronous BuckDC/DC Converter (3.3V,0.9A)				✓		
						CH3 (LDO)	LDO (5V,0.6A)						

2ch System Power Supply ICs (AEC-Q100)

Part No.	Power Supply Voltage	Operating Frequency	Operating Temperature	Sequence	Initial Accuracy	OUTPUT		Function					Package
						Channel	Vout/Max Iout	Over Current Protection	TSD	Under/Over Voltage Detectio	Reset	WDT	
BD39002EFV-C	4V to 30V (Rating 40V)	200kHz to 550kHz	−40°C to +125°C	✓	±2%	CH1 (DCDC)	Buck-Boost DC/DC Controller (Vout/Iout variable)	✓	✓	✓	—	WINDOW WDT	HTSSOP-B30
						CH2 (LDO)	LDO (5V,0.6A)				✓		
BD39012EFV-C	4V to 36V (Rating 45V)	200kHz to 600kHz	−40°C to +125°C	External Control EN1:DCDC EN2:LDO	±2%	CH1 (DCDC)	Synchronous Buck DC/DC Converter(Vout variable,1A)	✓	✓	✓	—	WINDOW WDT	HTSSOP-B24
						CH2 (LDO)	LDO (5V,0.4A)				✓		

Isolated / No Isolated Power Supply

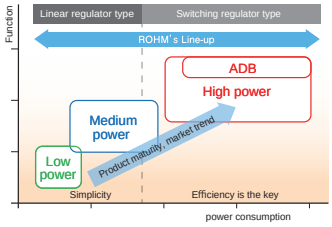
DC/DC Controller

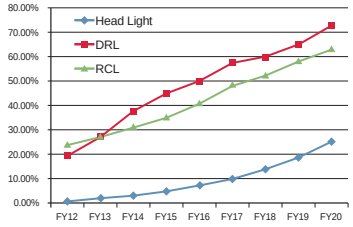
Part No.	Topology	Primary/Secondary	Supply Voltage (V)	Switching Frequency (kHz)	Frequency Synchronization	I/F	Package
BD8325FVT-M	Active Clamp Forward	Primary IC	9 to 18	50 to 500	✓	—	TSSOP-B30

LED Drivers

LED Drivers

Exterior

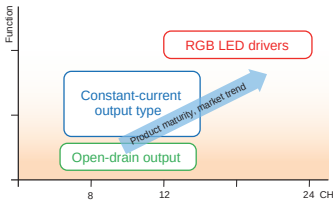




Automotive LED driver market is picking up with DRL, CHMSL, leading the way and very mature. Owing to the design flexibility of LEDs, RCL, turn Indicator Lamps are also starting to go LED way. Heat-dissipation is the key issue preventing Low/ High beam implementation, but with the advent of ADB (Adaptive Driving Beam), LED will be the key.

ROHM's Line-up	Linear type		Switching type	
	2W	4W	2W	4W
Fog/ Position/ Daytime Running Light	✓ BD8374/BD8372 BD83732/BD83733	✓	—	✓ BD8381
Front/ Side/ Rear turn Indicator	✓ BD8374/BD8372 BD83732/BD83733	✓	—	
Rear Combination Lamp (RCL)	✓ BD8374/BD8372 BD83732/BD83733	✓	—	
Center High Mounted Stop Light (CHMSL)	—	✓ BD8374/BD8372 BD83732/ BD83733	—	
Head Light (Low Beam)	✓ BD8374/BD8372 BD83732/BD83733	—	✓ BD8381	✓
Head Light (High Beam)	—		✓ BD8381	—

Interior



Dashboard lights, Ambient lighting, Dome and Map lighting, Center stack lighting, and others make-up the Automotive interior lighting. Heads-up display also uses LEDs lights, as shown in the block diagram in Page 9. In interior lighting, the number of channels, control interface, and to some extent the output type (open-drain, constant-current, etc.) is the key.

	Open-drain	Const current	RGB LED driver
Dashboard backlight	✓ BD8378/BD8379	✓ BD18377	✓ BD2808
Ambient lighting	✓ BD8378/BD8379	✓ BD18377	✓ BD2808
Dome and map lighting	—	✓ BD18377	—
Mood lighting	—	—	✓ BD2808
LCD backlighting	✓ BD8378/BD8379	✓ BD18377	✓ BD2808

Buck-Boost LED Drivers

White LED Drivers

Part No.	Power Supply (V)	Boost FET	Number of Channel (ch)	Output Voltage (V)	Output Current (mA)	Switching Frequency (MHz)	Brightness Control	Operating Temperature (°C)	Package
☆BD81A44EFV-M*	4.5 to 35.0	External	4	35Max.	120Max./ch	0.2 to 2.2	PWM	−40 to +125	HTSSOP-B28
☆BD81A44MUV-M*	4.5 to 35.0	External	4	35Max.	120Max./ch	0.2 to 2.2	PWM	−40 to +125	VQFN28SV5050
BD8119FM-M	5.0 to 30.0	External	4	30Max.	120Max./ch	0.25 to 0.55	PWM	−40 to +95	HSOP-M28

White LED Drivers for Head Light (AEC-Q100)

Part No.	Power Supply (V)	Application	Number of Channel (ch)	Maximum Input Voltage (V)	Drive Current	Dimmer Mode	DC/DC	Operation Temperature (°C)	Package
BD8381AEFV-M	5.0 to 30.0	Head Lamp/DRL	1	50	Depend on Extra parts	PWM/DC	Buck-Boost, Boost, Buck	−40 to +125	HTSSOP-B28

* : AEC-Q100 Qualified ☆ : Under Development

Constant Current / Serial-in Parallel-out LED Drivers

Parallel-out LED Drivers (AEC-Q100)

Part No.	Supply Voltage (V)	Output Voltage (V)	No. of Output (ch)	Output Method	Max. LED Current	Each Output Format	Other	Control Method	Max. Clock Frequency	Package
BD8378FV-M	3.0 to 5.5	35	8	Open Drain	50mA/ch	ON/OFF	—	Shift Resister Latch	1.25MHz	SSOP-B16
BD8379FV-M	3.0 to 5.5	35	12	Open Drain	50mA/ch	ON/OFF	—	Shift Resister Latch	1.25MHz	SSOP-B20
BD18377EFV-M	3.0 to 5.5	10	12	Constant Current	50mA/ch	Built-in 64-step current DAC	PWM control for all channel	SPI	1.25MHz	HTSSOP-B20
New BD2808MUV-M	3.0 to 5.5	20	RGB×8 (24ch)	Constant Current	50mA/ch	Built-in 64-step current DAC for RGB	Built-in 256-step PWM control for all channel	2-Wire Serial	1.0MHz	VQFN48MCV070

LED Source Drivers (AEC-Q100)

Part No.	Power Supply (V)	Application	Number of Channel (ch)	Maximum Input Voltage (V)	Maximum Current (mA)	Dimmer Mode	Accuracy of Current	Operating Temperature (°C)	Package
BD8372EFJ-M	5.5 to 40.0	DRL/Turn/Rear	1	50	200	High Current/ Low Current	±3% (Ta=25°C)	−40 to +125	HTSOP-J8
BD8372HFP-M	5.5 to 40.0	DRL/Turn/Rear	1	50	200	High Current/ Low Current	±3% (Ta=25°C)	−40 to +125	HRP7
BD8374EFJ-M	4.5 to 42.0	DRL/Turn/Rear	1	50	500	PWM	±3% (Ta=25°C)	−40 to +125	HTSOP-J8
BD8374HFP-M	4.5 to 42.0	DRL/Turn/Rear	1	50	500	PWM	±3% (Ta=25°C)	−40 to +125	HRP7
New BD83732HFP-M	4.5 to 42.0	DRL/Turn/Rear	1	50	500	PWM/DC	±3% (Ta=25°C)	−40 to +125	HRP7
New BD83733HFP-M	4.5 to 42.0	DRL/Turn/Rear	1	50	500	PWM/DC	±3% (Ta=25°C)	−40 to +125	HRP7

CR Control-Type Timer IC (AEC-Q100)

Part No.	Supply Voltage (V)	Number of Channel (ch)	Maximum Input Voltage (V)	CR Timer Frequency (Hz)	Frequency Setting	Application	Operating Temperature (°C)	Package
BD9555FVM-C	4.5 to 42.0	1	50	1 to 10,000	External Parts	I.e. LED/injector drive circuits	−40 to +125	MSOP8

Motor Drivers

3-Phase Brushless Motor Drivers

3-Phase Brushless Motor Pre-Driver (AEC-Q100)

Part No.	Max. Voltage (V)	Supply Voltage (V)	Operating Temperature (°C)	Circuit Current (mA)	Input Threshold Voltage		External FET Drive Voltage		PWM Frequency (kHz)	Package
					H Level (V)	L Level (V)	Upper (V)	Lower (V)		
BD16805FV-M	60	8 to 18	–40 to +110	15.2	3.0	1.0	2×V_{CC}–0.5	11.5	25	SSOP-B40

H-Bridge Motor Driver

6ch Half H-Bridge Motor Driver (AEC-Q100)

Part No.	Maximum Voltage (V)	Supply Voltage (V)	Output Current (A)	Number of Channel	Output ON Resistance (upper + lower)(Ω Typ.)	Output Modes	Operating Temperature Renge(°C)	Package
BD16922EFV-M	60	8.0 to 36.0	1	2	2.25	Forward / Reverse / Standby / Brake	–40 to +110	HTSSOP-B24
BD16936EFV-M	60	8.0 to 36.0	1	3	2.1	Forward / Reverse / Standby / Brake	–40 to +110	HTSSOP-B28

Driver for ODD

4ch System Motor Driver IC (AEC-Q100)

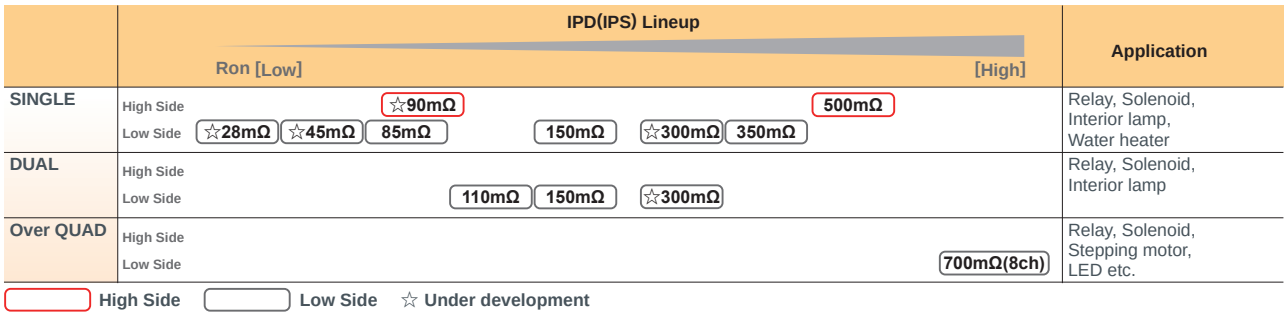
Part No.	Power Supply (V)	I/F	FOCUS TILT	TRACKING	SLED	LOADING	SPINDLE	Short Circuit Protection for Loading	Protect for Pickup	Regulator	Reset	Package
BD8266EFV-M	4.5 to 10.0	Analog & PWM	1ch	1ch	DC Select input		DC	–	Self off	–	–	HTSSOP-B24

6ch to 9ch System Motor Driver ICs (AEC-Q100)

Part No.	Power Supply (V)	I/F	FOCUS TILT	TRACKING	SLED	LOADING	SPINDLE	LVDS for SA	Short Circuit Protection for Loading	Protect for Pickup	Package
BD8255MUV-M	4.5 to 5.5	SPI	1ch	1ch	2ch STTEPING	DC	3-Phase Brushless	–	✓	–	VQFN48SV7070
BD8256EFV-M	4.5 to 10.5	SPI	2ch	1ch	2ch STTEPING	DC	3-Phase Brushless	2ch	✓	Self off	HTSSOP-B54

IPD(IPS)

High Side/Low Side Switch



High Side/Low Side Switch (AEC-Q100)

Part No.	Power Supply (V)	V_{DS} (Max.) (V)	Hi/Lo	CH (ch)	Iocp(min) (A)	ON Resistance [mΩ/Typ.]	Package
☆BV1LB028FPJ-C	3.0 to 5.5	42.0	Lo	1	30.0	28	TO252-J3
☆BV1LB045FPJ-C	3.0 to 5.5	42.0	Lo	1	18.0	45	TO252-J3
New BV1LB085FJ-C	3.0 to 5.5	42.0	Lo	1	13.0	85	SOP-J8
New BV1LB150FJ-C	3.0 to 5.5	42.0	Lo	1	6.5	150	SOP-J8
☆BV1LB300FJ-C	3.0 to 5.5	42.0	Lo	1	2.0	300	SOP-J8
BD1LB500EFJ/FVM-C	3.5 to 5.5	42.0	Lo	1	0.8	350	HTSOP-J8/MSOP8
New BM2LB110FJ-C	3.0 to 5.5	42.0	Lo	2	2.5	120	SOP-J8
New BM2LB150FJ-C	3.0 to 5.5	42.0	Lo	2	6.5	150	SOP-J8
☆BM2LB300FJ-C	3.0 to 5.5	42.0	Lo	2	2.0	300	SOP-J8
New BD8LA700EFV-C	3.0 to 5.5 (Digital) 4.0 to 5.5 (Analog)	45.0	Lo	8	0.5	700	HTSSOP-B24
BD1HC500EFJ/FVM/HFN-C	4.0 to 18.0	44.5	Hi	1	0.8	500	HTSOP-J8/MSOP-8/HSON-8
BD1HD500EFJ/FVM/HFN-C	4.0 to 18.0	44.5	Hi	1	0.8	500	HTSOP-J8/MSOP-8/HSON-8
☆BV1HD090FJ-C	4.5 to 18.0	42.0	Hi	1	2.5	90	SOP-J8

☆ : Under Development

Power Management Switch

1 Channel Compact High Side Switch ICs (AEC-Q100)

Part No.	Power supply (V)	ON Resistance (mΩ)	Control Input logic	Output Current (A)	Over Current Detection (A) Min. / Typ. / Max.	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package
BD2262G-M	2.7 to 5.5	120	H Active	0.2	0.2/0.3/0.4	1.0	Recovery	Recovery	15	60	SSOP5
BD2264G-M	2.7 to 5.5	120	H Active	0.5	0.63/0.765/0.9	1.0	Recovery	Recovery	15	60	SSOP5
BD2265G-M	2.7 to 5.5	120	L Active	0.5	0.63/0.765/0.9	1.0	Recovery	Recovery	15	60	SSOP5
BD2266G-M	2.7 to 5.5	120	H Active	0.75	0.82/0.97/1.12	1.0	Recovery	Recovery	15	60	SSOP5
BD2267G-M	2.7 to 5.5	120	L Active	0.75	0.82/0.97/1.12	1.0	Recovery	Recovery	15	60	SSOP5
BD2268G-M	2.7 to 5.5	110	H Active	1.0	1.15/1.275/1.4	1.0	Recovery	Recovery	15	60	SSOP5
BD2269G-M	2.7 to 5.5	110	L Active	1.0	1.15/1.275/1.4	1.0	Recovery	Recovery	15	60	SSOP5
BD2244G-M*	2.8 to 5.5	100	H Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery	7	60	SSOP6
BD2245G-M*	2.8 to 5.5	100	L Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery	7	60	SSOP6
New BD82004FVJ-M	2.7 to 5.5	70	H Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery	15	—	TSSOP-B8J
New BD82005FVJ-M	2.7 to 5.5	70	L Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery	15	—	TSSOP-B8J
New BD82006FVJ-M	2.7 to 5.5	70	H Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	TSSOP-B8J
New BD82007FVJ-M	2.7 to 5.5	70	L Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	TSSOP-B8J

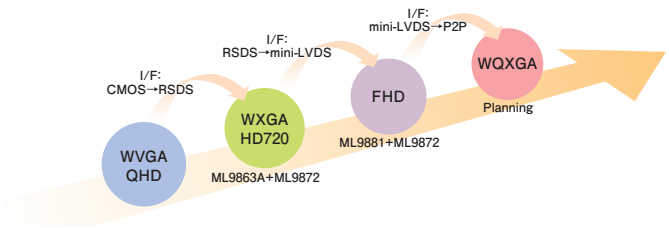
2 Channel High Side Switch ICs (AEC-Q100)

Part No.	Power supply (V)	ON Resistance (mΩ)	Control Input logic	Output Current (A)	Over Current Detection (A) Min. / Typ. / Max.	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package
New BD2068FJ-M	2.7 to 5.5	80	H Active	1	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	SOP-J8
New BD2069FJ-M	2.7 to 5.5	80	L Active	1	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	SOP-J8

* UL approved File No. E243261

Display Drivers

TFT Driver Series



Panel resolution (Color TFT panel)		Number of chips		
		Source		Gate
		ML9863A (960ch)	ML9881 (1440ch)	ML9872 (540ch)
WVGA	800RGB×480	3	2	1
QHD	960RGB×540	3	2	1
WXGA	1280RGB×800	4	3	2
—	1280RGB×480	4	3	1
—	1440RGB×540	5	3	1
FHD	1920RGB×1080	6	4	2

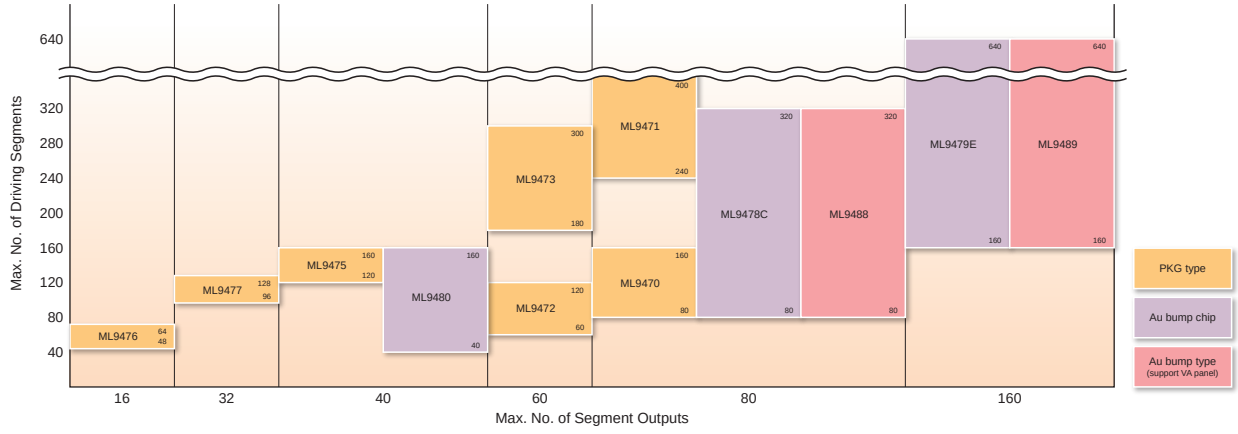
Drivers for Small to Medium LCD Panels

(LAPIS Semiconductor products)

TFT-LCD Driver

Part No.	Type	Logic Supply Voltage(V)	LCD Voltage(V)	Number of Driver Outputs	I/F	Operating Temperature(°C)	Package
ML9860B	Source	2.1 to 3.6	10.0 to 14.6	480	RSDS	–40 to +95	Au bump chip
ML9863A	Source	2.4 to 3.6	8.0 to 14.6	960/804/792/768	CMOS/RSDS	–40 to +95	Au bump chip
ML9881	Source	2.7 to 3.6	8.0 to 14.6	1440/1284/1278/1260/1200/1080/1026/1020	RSDS/mini-LVDS	–40 to +95	Au bump chip
ML9872	Gate	2.7 to 3.6	to 40	540/480/400/384/360/300/240	CMOS	–40 to +95	Au bump chip

TN/STN LCD Driver Series



Controller Driver for Graphic LCD

(LAPIS Semiconductor products)

LCD Controller Driver

Part No.	Max. No. of Segment Outputs	Max. Driving Display size	Logic Supply Voltage(V)	Driver Supply Voltage(V)	Operating Temperature(°C)	Feature	Package
ML9058E	132	132×65 dot	3.7 to 5.5	6 to 18	–40 to +85	Integrated RAM/Boost circuit	Au bump chip
ML9059E	132	132×49 dot	3.7 to 5.5	6 to 18	–40 to +85	Integrated RAM/Boost circuit	Au bump chip
ML9445	180	180×65 dot	2.7 to 5.5	6 to 18.5	–40 to +105	Integrated RAM/Boost circuit	Au bump chip
ML9092-01	56	56×10 dot	4.5 to 5.5	4.5 to 16.5	–40 to +85	Integrated RAM/Boost circuit/PWM	TQFP100
ML9092-02	60	60×10 dot	4.5 to 5.5	4.5 to 16.5	–40 to +85	Integrated RAM/Boost circuit	TQFP100
ML9092-03						Integrated RAM	
ML9092-04						Integrated RAM/PWM	

TN / STN LCD Driver Series

Controller Driver for Low Duty LCD

(LAPIS Semiconductor products)

LCD Controller Driver (Package product)

Part No.	Max. No. of Segment Outputs	Max. No. of Driving Segments					Internal Oscillation Frame Frequency(Hz)	Logic Supply Voltage(V)	Driver Supply Voltage(V)	Operating Temperature(°C)	Feature	Package
		static	1/2	1/3	1/4	1/5						
ML9470-12	80	80	160	–	–	–	–	3.0 to 5.5 (single)		–40 to +105	Supports external clock input	QFP100
ML9471	80	–	–	240	320	400	–	3.0 to 5.5 (single)		–40 to +105	Supports external clock input	TQFP100
ML9472	60	60	120	–	–	–	–	3.0 to 5.5 (single)		–40 to +105	Supports external clock input	P-TQFP80-1212-0.50
ML9473	60	–	–	180	240	300	–	3.0 to 5.5 (single)		–40 to +105	Supports external clock input	P-TQFP80-1212-0.50
ML9475	40	–	–	120	160	–	–	3V±10%/ 5V±10%	3.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in	QFP56
ML9476	16	–	–	48	64	–	–	3V±10%/ 5V±10%	3.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in	TQFP48
ML9477	32	–	–	96	128	–	–	3V±10%/ 5V±10%	3.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in	TQFP48
ML9484	50	50	100	150	200	–	–	2.7 to 5.5	4.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in	TQFP64

LCD Controller Driver (Gold Bump Product)

Part No.	Max. No. of Segment Outputs	Max. No. of Driving Segments					Internal Oscillation Frame Frequency(Hz)	Logic Supply Voltage(V)	Driver Supply Voltage(V)	Operating Temperature(°C)	Feature	Package
		static	1/2	1/3	1/4	1/5						
ML9480	40	40	80	120	160	–	65/75/85/95/ 130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Au bump chip
ML9478C	80	80	160	240	320	–	65/75/85/95 command switching	2.7 to 5.5	4.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Au bump chip
ML9479E	160	160	320	480	640	–	65/75/85/95 command switching	2.7 to 5.5	4.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Au bump chip
ML9488	80	80	160	240	320	–	130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in	Au bump chip
ML9489	160	160	320	480	640	–	130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	–40 to +105	Supports external clock input/ Bias generator built in	Au bump chip

LCD Segment Drivers

Low Duty LCD Segment Drivers (AEC-Q100)

Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	Interface	EVR	GPO	Independent Blink	LED Dr	PWM Gen.	Keyscan	Package
		SEG	COM	I/F Power Supply (V_{DD})	LCD Power Supply (VLCD)											
New BU9797FUV-M	144	36	4	2.5 to 5.5		–40 to +85	1/4	1/2,1/3	2wire serial	–	–	–	–	–	–	TSSOP-C48V
BU97510CKV-M	216	54	4	2.7 to 6.0		–40 to +85	1/4,1/3	1/2,1/3	3wire serial	–	6port (6ch PWM)	–	–	6ch 6bit	–	VQFP64
BU97520AKV-M	276	69	4	2.7 to 6.0		–40 to +85	1/4,1/3	1/2,1/3	4wire serial	–	6port (6ch PWM)	–	–	6ch 8bit	5×6 Max. 30Key	VQFP80
BU97530KVT-M	445	89	5	2.7 to 6.0		–40 to +85	1/5,1/4,1/3 Static	1/2,1/3 Static	4wire serial	✓	9port (9ch PWM)	–	–	9ch 8bit	5×6 Max. 30Key	TQFP100V
New BU97540KV-M	335	67	5	2.7 to 6.0		–40 to +85	1/5,1/4,1/3 Static	1/2,1/3,1/4 Static	4wire serial	✓	9port (9ch PWM)	–	–	9ch 9bit	5×6 Max. 30Key	VQFP80
New BU97550KV-M	528	66	8	2.7 to 6.0		–40 to +85	1/8,1/7,1/5 1/4,1/3,Static	1/2,1/3,1/4 Static	4wire serial	✓	9port (9ch PWM)	–	–	9ch 9bit	5×6 Max. 30Key	VQFP80
New BU91600FV-M	116	29	4	2.7 to 6.0		–40 to +105	1/4,1/3,1/2 Static	1/2,1/3 Static	4wire serial	✓	16port (16ch PWM)	–	–	6ch 9bit	4×5 Max. 20Key	SSOP-B40
New BU91600FUV-M	148	37	4	2.7 to 6.0		–40 to +105	1/4,1/3,1/2 Static	1/2,1/3 Static	4wire serial	✓	16port (16ch PWM)	–	–	6ch 9bit	4×5 Max. 20Key	TSSOP-C48V
New BU91501KV-M	204	51	4	2.7 to 6.0	4.5 to 6.0	–40 to +105	1/4,1/3	1/2,1/3	4wire serial	–	4port	–	–	–	5×6 Max. 30Key	VQFP64
New BU91510KV-M	216	54	4	2.7 to 6.0		–40 to +105	1/4,1/3	1/2,1/3	3wire serial	–	6port (6ch PWM)	–	–	6ch 6bit	–	VQFP64
New BU91530KVT-M	445	89	5	2.7 to 6.0		–40 to +105	1/5,1/4,1/3 Static	1/2,1/3 Static	4wire serial	✓	9port (9ch PWM)	–	–	9ch 8bit	5×6 Max. 30Key	TQFP100V

Car Clock Drivers

(LAPIS Semiconductor products)

Car Clock

Part No.	Display Duty	VFD Driving Voltage(V)	Logic Supply Voltage(V)	Operating Temperature(°C)	Supply Current (Max.)	No. of Digit	Package
ML9298	1/2	4.0 to 18	No need	–40 to +85	0.6mA	4digits×1line and col.	SSOP32
ML9098B	Static, 1/2	3.0 to 5.5	3.0 to 5.5	–40 to +105	0.6mA	4digits×1line and col., AM, PM	TQFP48

Touch Screen Controller

Resistive type (AEC-Q100)

Part No.	Supply Voltage (V)	MCU	Resolution	Touch Detection	Stand-by Current (μA)	Active current (mA)	Host I/F	Operating temperature(°C)	Package
BU21024FV-M	2.7 to 3.6	8bit	1024×1024	2 point/Single	60	4.0	I²C/SPI	–40 to +85	SSOP-B28

Car communication LSI

Transceiver

LIN Transceiver (AEC-Q100)

Part No.	Supply Voltage (V)	Absolute Maximum Input (V)	Baud Rates (kbps)	Type	Low Slope Mode	Dominant Time-out	Sleep Mode	Package
BD41020FJ-C	5.0 to 27.0	–27.0 to +40.0	20	LIN 2.1	✓	✓	✓	SOPJ-8
New BD41030FJ-C	5.0 to 27.0	–27.0 to +40.0	20	LIN 2.2A	–	✓	✓	SOPJ-8

LVDS Interface ICs

LVDS Series							
Part No.	Type	Parallel Data	Serial Lane	Clock Frequency (MHz)	Supply Voltage (V)	Operating Temperature (°C)	Package
BU16001AKVT	Transmitter	35bit	Data : 5ch CLK : 1ch	8 to 90	3.0 to 3.6	–40 to ±85	TQFP64V 10mm□
BU16002KVT	Receiver						
Clockless-Link							
BU17101AKV	Transmitter	24bit	1lane	30 to 50	3.0 to 3.6	–40 to +85	VQFP48 7mm□
BU17102AKV	Receiver						

Car Access

Antenna Drivers							
Part No.	Power Supply(V)		Channel(ch)		Output Current(A)	Operating Temperature Range (°C)	Package
	Vcc	VS1,VS2	Full Bridge	Half Bridge			
BD6933FM-M	4.5 to 5.5	4.5 to 8.0	3	2	1.5	–40 to+85	HSOP-M28

Car Communication LSI

FM Data Broadcast Reception LSI

(LAPIS Semiconductor products)

FM data reception tuner					
Part No.	Feature	Supply Voltage (V)	Supply Current (Max.)	Operating Temperature(°C)	Package
☆ML7174	FM VICS®/DARC® tuner,FM multiplexing demodulate LSI for VICS®(DARC®), Built-in BPF, frame memory, and VICS® descrambler, Frames A,B,C,SPI slave	3.0 to 3.6	TBD	–40 to +85	WQFN64
☆ML7183	FM VICS®/DARC® tuner & Filter LSI,BPF, I²C slave	3.0 to 3.6	TBD	–40 to +85	WQFN64
FM multiplexing demodulate for VICS®					
ML7154	VICS®(DARC®) compliant FM multiplexing demodulate LSI for VICS®(DARC®), Built-in BPF, frame memory, and VICS® descrambler, Frames A,B,C,SPI slave	3.0 to 3.6	28mA	–40 to +85	WQFN64
MSM9565	FM multiplexing demodulate LSI for VICS®(DARC®),BPF&frame memory built-in VICS® descrambler,Frames A,B,C,8bit bus interface	3.0 to 3.6	28mA	–40 to +85	QFP44
ML9574	FM multiplexing demodulate LSI for VICS®(DARC®),BPF&frame memory built-in VICS® descrambler,Frames A,B,C,16bit bus interface	3.0 to 3.6	35mA	–40 to +85	TQFP64
FM multiplexing demodulate for DARC®					
MSM9563	FM multiplexing demodulate LSI for DARC®,BPF&frame memory built-in, Frames A,B,C,8bit bus interface	3.0 to 3.6	28mA	–40 to +85	QFP44

[J]: This LSI is limited to the market in Japan. VICS® is a registered trademark of Vehicle Information and Communication System Center. DARC® is a registered trademark of NHK System, Inc. ☆: Under Development

Digital Terrestrial Broadcasting Reception LSI

Japanese System (ISDB-T)

(LAPIS Semiconductor products)

RF tuner + OFDM demodulator for 1 segment digital terrestrial broadcasting						
Part No.	Transmission Standard	Feature	Supply Voltage (V)	Power Consumption	Operating Temperature (°C)	Package
ML7147	ISDB-T	Compliant to One-Seg broadcasting of ISDB-T (ARIB STD-B31) digital terrestrial television broadcasting. RF tuner, OFDM demodulate, error correction function. Serial, parallel TS output.	2.7 to 3.0 1.5 to 3.6 1.1 to 1.3	70mW (at 1seg reception, include RF)	–40 to +90	WQFN80
4 diversity/Full segment OFDM demodulation digital terrestrial broadcasting						
ML7138	ISDB-T	Compliant to Full-Seg and One-Seg broadcasting of ISDB-T (ARIB STD-B31) digital terrestrial television broadcasting. 4 diversity x 1CH or 2 diversity x 2CH reception. OFDM demodulate, error correction function. Serial, parallel TS output.	3.0 to 3.6 2.7 to 3.6 1.1 to 1.3	234mW (4 diversity full segment reception)	–40 to +85	TFBGA144

Chinese System (DTMB)

(LAPIS Semiconductor products)

RF tuner + OFDM demodulator for 1 segment digital terrestrial broadcasting						
Part No.	Transmission Standard	Feature	Supply Voltage (V)	Power Consumption	Operating Temperature (°C)	Package
ML7109S	GB20600-2006	China's national digital terrestrial broadcasting standard GB20600-2006 (DTMB) compliant demodulation. Built-in SDRAM for de-interleave. MPEG-2 serial/parallel TS output.	3.0 to 3.6 1.1 to 1.3	270mW (at reception)	–20 to +85	WQFN64

Monitoring ICs

Multiple Input Switch Monitor LSI

Multiple Input Switch Monitor LSI (AEC-Q100)									
Part No.	Power supply (V)	Switch Input	Switch Input Voltage Range (V)	Wetting Current(mA)	Analog Output	Control I/F	Max. Operating Frequency(kHz)	Operating Temperature (°C)	Package
BD3350MUV-M	8.0 to 26(VPWR) 3.1 to 5.25(VDD)	22	–14 to +40	2/7/15 (Pull up/Pull down)	✓	SPI	6	–40 to +125	VQFN48MCV070
New **BD3370MUV-M**	8.0 to 26(VPUA/VPUB) 3.1 to 5.25(VDD)	22	–14 to +40	1/3/5/10/15 (Pull up/Pull down)	–	SPI	4.4	–40 to +125	VQFN48MCV070

Audio & Video

Speech synthesis LSI for Automotive

(LAPIS Semiconductor products)

Part No.	Operating Voltage (V)	Operating Frequency	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time (sec)	CPU I/F	SP Amp Output (W) /Class	Number of Mixing (Internal)	DAC	Others	Package
Support for 105°C / 4ch simultaneous playback / ML22594 Built-in Mask ROM + serial external memory												
ML22594	4.5 to 5.5	4.096MHz	−40 to +105	Mask 6M *4 External maximum 128M	1024 *5 (Built-in 512, External 512)	Built-in 303sec *1 External 109min *3	Clock synchronization Serial	1.0/ AB-class	4ch	16bit	Speaker terminal short circuit detection function	SSOP30
Support for 105°C / 4ch simultaneous playback / built-in Mask ROM												
ML22572	2.7 to 5.5	4.096MHz	−40 to +105	Mask 2M	1024	98 *1	Clock synchronization Serial	1.0/ AB-class	4ch	16bit	Fail safe	SSOP30
Support for 105°C / 4ch simultaneous playback/built-in Flash/Mask ROM												
ML22573/ ML22Q573	2.7 to 5.5	4.096MHz	−40 to +105	Mask/Flash 4M	1024	201 *1	Clock synchronization Serial	1.0/ AB-class	4ch	16bit	Fail safe	SSOP30
Support for 105°C / 4ch simultaneous playback/built-in Flash / Mask ROM												
ML22Q553	4.5 to 5.5	4.096MHz	−40 to +105	Flash 4M	1024	201 *1	Clock synchronization Serial	1.0/ AB-class	4ch	16bit	Speaker terminal short circuit detection function	SSOP30
Support for 85°C built-in Flash / Mask ROM												
ML22331/ ML22Q331	2.3 to 5.5	4.096MHz	−40 to +85	Mask/Flash 896K	30	43 *1	Clock synchronization Serial	1.0/ AB-class	1ch	16bit	Disconnection detection/ Temperature protection circuit	SSOP30
ML22321/ ML22Q321	2.3 to 5.5	4.096MHz	−40 to +85	Mask/Flash 896K	62	43 *1	Clock synchronization Serial	1.0/ AB-class	1ch	16bit	Disconnection detection/ Temperature protection circuit/ Analog volume control	SSOP30
ML22341/ ML22Q341	2.3 to 5.5	4.096MHz	−40 to +85	Mask/Flash 896K	30	43 *1	Stand alone	1.0/ AB-class	1ch	16bit	Disconnection detection/Temperature protection circuit	SSOP30
Support for 85°C built-in Flash / Mask ROM												
ML22Q374	2.0 to 5.5	4.096MHz (Built-in)	−40 to +85	Flash 692K	30	27 *2	Clock synchronization Serial	1.0/D-class	1ch	–	Disconnection/ Short circuit detection Built-in oscillator	SSOP16
ML22Q394	2.0 to 5.5	4.096MHz (Built-in)	−40 to +85	Flash 692K	30	27 *2	I²C	1.0/D-class	1ch	–	Disconnection/ Short circuit detection Built-in oscillator	SSOP16

*1 : Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM. *2 : Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.
*3 : With an external memory module (Max. 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.
*4 : Mask's built-in ROM is 6Mbit and an external memory module (Max. 128Mbit) can be connected.
*5 : Total of mask's internal 512 phrases and external memory's 512 phrases.

Audio Processors

Analog Audio Processors

Part No.	Supply voltage (V)	Current consumption (mA)	INPUT Selector		Input Gain (dB)	Volume (dB)	Fader (Rear)		Parametric EQ	Loudness	LPF/HPF for SUB WOOFER	MIXING		LEVEL METER	OPTION	Serial interface	Output Noise (μVrms)	Distortion (%)	Package
			Single	ISO			(dB)	Outputs					ATT						
Sound Processors with Built-in 3-band Equalizer																			
BD37033FV	7 to 9.5	31	3/5	2/1	0 to +16	+15 to −79 −∞	+15 to −79 −∞	6	✓	✓	LPF	✓	✓	✓	–	I²C	5.5	0.002	SSOP-B28
BD37034FV	7 to 9.5 VCCL to 13	36	3/5	2/1	0 to +16	+15 to −79 −∞	+15 to −79 −∞	6	✓	✓	LPF + HPF	✓	✓	✓	High Voltage output	I²C	6	0.002	SSOP-B28

Part No.	Supply Voltage(V)	Current Consumption(mA)	Input Selector		Input Gain (dB)	Fader Volume (dB)	Outputs	Mixing	Post Filter	Option	Serial Control	Output Noise Voltage(μVrms)	Distortion (%)	Package
			Single	Diff.										
General-Purpose Electronic Volume with Built-in Advanced Switch														
BD37067FV	7.0 to 9.5	37	2/3/4/5	4/3/2/1	+23 to −15 (1dB/Step)	+23 to −79,−∞ (1dB/Step)	6	1ch	✓	–	I²C-bus	8	0.003	SSOP-B40
BD37068FV	7.0 to 9.5 VCCL to 17.8	30 7	2/3/4/5	4/3/2/1	+23 to −15 (1dB/Step)	+23 to −79,−∞ (1dB/Step)	6	1ch	✓	High-Voltage Output	I²C-bus	23 (High-Voltage Mode)	0.003	SSOP-B40

Part No.	Supply Voltage (V)	Current Consumption(mA)	Input selector		Input Gain (dB)	5.1ch Volume (dB)	Monaural Volume(dB)	Output Gain (dB)	Mix Car Navi. Cell Phones	Output for Spectrum Analyzer	Serial Interface	Output Noise Voltage(μVrms)	Distortion (%)	Package
			Single Input	Monaural DifferentialAmplifier Input										
6ch Electronic Volume for 5.1ch Car Theater System														
BD3433K	±7.0 to ±9.5	12	5.1ch ×2	1	0,6,12 (Each F,R)	+23 to −79,−∞ (1dB/Step)	+15 to −63,−∞ (1dB/Step)	0,+2.5(A) 0,−4.5(B)	✓	✓	3 Wire	3	0.001	QFP44

Sound Processors with Built-in 3-band Equalizer : EXT : Set by external components

Audio Amplifiers

Speaker Amplifiers

Part No.	Supply Voltage (V)	Power Dissipation (mW)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power (R_L=8Ω, THD=10%)		Distortion (%)	Output Noise Voltage (dBV)	Package
						V_{CC}=3.6V	V_{CC}=5.0V			
Portable Amplifiers 1.1W to 1.5W Monaural Speaker Amplifiers										
BH7824FVM	2.4 to 5.5	470	3.5	0	0 to 20	0.60W	1.1W	0.07	−94	MSOP8

Video Amplifiers

Part No.	Supply Voltage (V)	Circuits	Circuit Current (mA)	Input Type	Voltage Gain (dB)	CMRR (dB)	Common-mode input Voltage Range (V) V_{CC}=5V	Max. Output Level (V_{PP})	Freq.chara (dB)	Input Register (KΩ)	Package
Isolation Amplifier											
BH7673G	4.5 to 5.5	1	4.8	Bias	0.0	60	5.2	3.8	0.0 (f=10MHz)	150	SSOP5

Image Correction

Image Correction ICs for Panel

Part No.	Power Supply Voltage (V)			Image Data Size	Control Interface	Input/Output Digital Interface	Image Adjustment	PWM Output	LVDS Transmitter	Package
	V_{DD} Core	V_{DD} I/O	V_{DD} LVDS							
BU1573KV	1.40 to 1.60	2.7 to 3.6	—	Supports up to WVGA + (864×480)	I^2C BUS	18bitRGB Interface BUS Interface	–	✓	—	VQFP64
BU1523KV	1.65 to 1.95	3.0 to 3.6	3.0 to 3.6	Supports up to WVGA + (864×480)	I^2C BUS	24bitRGB Interface 8bit YUV=4 : 2 : 2 ITU-R BT.656	✓	—	✓	VQFP100

Video Encoders built-in Image Correction

Part No.	Power Supply Voltage (V)			Image Data size	Control Interface	Input/Output Digital Interface	Fog Reduction	Video Encoder	Package
	V_{DD} Core	V_{DD} I/O	AV_{DD}						
BU6521KV	1.40 to 1.60	2.7 to 3.6	2.7 to 3.6	ITU-R BT.656	I^2C BUS Serial EEPROM interface	8bit YUV=4 : 2 : 2 ITU-R BT.656	✓	✓	VQFP48C

Video LSIs

Video Decoder Series

(LAPIS Semiconductor products)

CVBS / S-video

Part No.	Supply Voltage (V)	Input (Analog)		Output (LVTTL)	Pixel Frequency	Sampling Frequency	Crystal Oscillator Supported	Feature	Operating Temperature (°C)	Package
		Terminal	Type							
ML86101A	3.3/1.5	CVBS×4 or CVBS×2 + S-video×1 or S-video×2	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8bit	13.5MHz, 12.272727MHz, 14.75MHz, 14.318182MHz	27MHz, 24.545454MHz, 29.5MHz, 28.6363MHz	✓	Simple, small	–40 to +85	TQFP48
ML86V7668A	3.3/2.5	CVBS×4 or CVBS×1 + S-video×3	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8/16bit RGB 18bit	13.5MHz, 12.272727MHz	27MHz, 24.545454MHz	—	CVBS4 input S-video3 input	–40 to +85	TQFP100

CVBS/S-video/Component/RGB

Part No.	Supply Voltage (V)	Input (Analog)		Output (LVTTL)	Pixel Frequency	Sampling Frequency	Crystal Oscillator Supported	Feature	Operating Temperature (°C)	Package
ML86V7675	3.3/1.5	CVBS×4 +(Comp or S-video)×1 +Comp×1	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8bit	7.99300MHz to 33.333MHz	7.99300MHz to 33.333MHz	✓	WVGA, EGA analog RGB supported	–40 to +85	TQFP64

Video Encoder Series

(LAPIS Semiconductor products)

CVBS

Part No.	Supply Voltage (V)	Input (LVTTL)	Output (Analog)		Pixel Frequency	Sampling Frequency	Crystal Oscillator Supported	Feature	Operating Temperature (°C)	Package
			Terminal	Type						
ML86V76580	3.3/1.8	ITU-R.BT.656 YCbCr 8bit	CVBS	NTSC PAL	13.5MHz, 12.272727MHz, 14.75MHz, 14.318182MHz	54MHz, 49.090908MHz, 59MHz, 57.272728MHz	—	No need of LPF	–40 to +85	TQFP48 WCSP25

CVBS/S-video/Component/RGB

Part No.	Supply Voltage (V)	Input (LVTTL)	Output (Analog)		Pixel Frequency	Sampling Frequency	Crystal Oscillator Supported	Feature	Operating Temperature (°C)	Package
ML86V7655	3.3/2.5	ITU-R. BT. 656 YCbCr 8/16/24bit RGB 24bit	CVBS S-video Component	NTSC PAL	13.5MHz, 12.272727MHz, 14.75MHz, 14.318182MHz, 18MHz	27MHz, 24.545454MHz, 29.5MHz, 28.6363MHz, 36MHz	—	I/P, P/I conversion	–40 to +85	TQFP100

Video LSIs

Display Controller Series for Small to Medium-Sized TFT LCD

(LAPIS Semiconductor products)

T-CON, Video decoder included

Part No.	Supply Voltage (V)	Input (Analog)		Input (LVTTL/LVDS)	Output (LVTTL/LVDS)	Resolution	OSD	MCU	Feature	Operating Temperature(°C)	Package
		Terminal	Type								
ML86V8201	3.3/1.5	CVBS×2 or S-video×1	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit	ITU-R BT.656 YCbCr 8bit RGB 18/24bit	QVGA to WVGA	Line	—	Rear camera function Image quality adjustment	–40 to +85	TQFP100
ML86203	3.3/1.5	CVBS×1	NTSC PAL	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit	ITU-R BT.656 YCbCr 8bit LVDS 4ch (RGB 18/24bit)	VGA to WXGA	—	—	Rear camera function WXGA panel support Image quality adjustment	–40 to +85	TQFP80
☆**ML86206**	3.3/1.5	CVBS×2	NTSC PAL	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit LVDS 4ch (RGB 18/24bit)	ITU-R BT.656 YCbCr 8bit RGB 18/24bit LVDS 4ch (RGB 18/24bit)	VGA to WXGA	Text Line	—	LVTTL/LVDS I/F WXGA panel support Rear camera function Image quality adjustment OSD function	–40 to +85	TQFP100
☆**ML86286**	3.3/1.5	CVBS×2	NTSC PAL	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit LVDS 4ch (RGB 18/24bit)	ITU-R BT.656 YCbCr 8bit RGB 18/24bit LVDS 4ch (RGB 18/24bit)	VGA to WXGA	Text Line	—	LVTTL/LVDS I/F WXGA panel Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function	–40 to +85	TQFP128
☆**ML86207**	3.3/1.5	CVBS×2	NTSC PAL	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit + LVDS 4ch (RGB 18/24bit)	ITU-R BT.656 YCbCr 8bit RGB 18/24bit LVDS 4ch (RGB 18/24bit)	VGA to WXGA	Text Line	—	LVTTL/LVDS I/F Digital video input ×2 WXGA panel support Rear camera function Image quarity adjustment OSD function	–40 to +85	TQFP100
☆**ML86287**	3.3/1.5	CVBS×2	NTSC PAL	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit + LVDS 4ch (RGB 18/24bit)	ITU-R BT.656 YCbCr 8bit RGB 18/24bit LVDS 4ch (RGB 18/24bit)	VGA to WXGA	Text Line	—	LVTTL/LVDS I/F Digital video input ×2 WXGA panel support Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function	–40 to +85	TQFP128
ML86V8202C	3.3/1.8	CVBS×2 +(Comp or S-video)×1 +Comp×1	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit	ITU-R BT.656 style YCbCr 8/16/24bit RGB 18/24bit	QVGA to WVGA	—	—	Component video support Image quality adjustment	–40 to +85	TQFP100
ML86V8207	3.3/2.5	CVBS×4 or CVBS×3 +(Comp or S-video)×1 or CVBS×2+S-video×1 +(Comp or S-video)×1	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8/16bit RGB 18/24bit	RGB 18/24bit	QVGA to WVGA	Text Line	—	OSD function	–40 to +85	LQFP144
New **ML86240**	3.3/1.5	CVBS×4 or CVBS×2 +(Comp or S-video)×1 +Comp×1	NTSC PAL SECAM	ITU-R BT.656 YCbCr 8/16/24bit RGB 18/24bit 2ch	ITU-R BT.656 YCbCr 8bit RGB 18/24bit	QVGA to WVGA	Text Line	—	Component video support Digital video input ×2 Rear camera function Image quality adjustment OSD function	–40 to +85	BGA144

TCON, Image adjustment functions included

Part No.	Supply Voltage (V)	Input (Analog)		Input (LVTTL)	Output (LVTTL)	Resolution	OSD	MCU	Feature	Operating Temperature (°C)	Package
		Terminal	Type								
ML86V8101	3.3	—	—	RGB 18bit	RGB 18bit	QVGA to QHD	—	—	Built-in image quality adjustment function	–40 to +85	TQFP64
ML86V8102	3.3	—	—	RGB 18/24bit	RGB 18/24bit	QVGA to QHD	—	—	RGB 24 bits supported image quality adjustment function	–40 to +85	TQFP80

☆ : Under Development

EV/HEV

Gate Drivers

Isolated Gate Drivers

Isolated Gate Drivers (AEC-Q100)

Part No.	Input-side Supply Voltage (V)	Output-side Positive Supply Voltage (V)	Output-side Negative Supply Voltage (V)	Isolation Voltage (Vrms)	I/O Delay Time (ns)	Minimum Input Pulse Width (ns)	Maximum Output Current (A)	Operating Temperature range (°C)	Function	Package
BM6101FV-C	4.5 to 5.5	14 to 24	–12 to 0	2,500	350	180	3.0	–40 to +125	Miller Clamp / Fail Output / Built-in under voltage lock out circuit/Thermal protection/ Short current protection /DESAT/ Soft turn-off function for short current protection	SSOP-B20W
BM6102FV-C	4.5 to 5.5	14 to 20	—	2,500	200	100	3.0	–40 to +125	Miller Clamp / Fail Output / Built-in under voltage lock out circuit/ Thermal protection/ Short current protection /DESAT/Soft turn-off function for short current protection	SSOP-B20W
BM6104FV-C	4.5 to 5.5	10 to 24	–12 to 0	2,500	150	90	3.0	–40 to +125	Miller Clamp / Fail Output / Built-in under voltage lock out circuit/Short current protection /DESAT/Soft turn-off function for short current protection	SSOP-B20W
BM60014FV-C	4.5 to 5.5	10 to 24	—	2,500	120	70	3.0	–40 to +125	Miller Clamp / Fail Output / Built-in under voltage lock out circuit	SSOP-B20W

Isolated Gate Drivers with Flyback Controller (AEC-Q100)

BM60051FV-C	4.5 to 24 4.5 to 5.5	9 to 24	—	2.500	260	180	5.0	–40 to +125	Miller Clamp / Fail Output /Built-in under voltage lock out circuit/Temperature Monitor/ Short current protection/Soft turn-off function for short current protection	SSOP-B28W

High Voltage Monitor

Isolated High Voltage Monitor (AEC-Q100)

Part No.	Supply Voltage 1 (V)	Supply Voltage 2 (V)	Isolation Voltage (Vrms)	Circuit Vurrent 1 (mA)	Circuit Vurrent 2 (mA)	Output Duty Accuracy (%)	Operating Temperature (°C)	Package
BM67290FV-C	8.0 to 24.0	3.0 to 5.5	2,500	4.6	0.2	±3.5	−40 to +125	SSOP-B20W

Temperature Monitor

Isolated Temperature Monitor (AEC-Q100)

Part No.	Supply Voltage 1 (V)	Supply Voltage 2 (V)	Isolation Voltage (Vrms)	Circuit Current 1 (mA)	Circuit Current 2 (mA)	Input Voltage Range (V)	Output Current Accuracy (%)	Output Duty Accuracy (%)	Operating Temperature (°C)	Package
BM66002FV-C	9.0 to 24.0	3.0 to 5.5	2,500	3.75	0.2	1.4 to 4.0	±2.0	±2.0	−40 to +125	SSOP-B20W

Isolators

2.5kVrms Isolators (AEC-Q100)

Part No.	Supply Voltage (V)	$V_{CC}1$ Supply Current 1@DC (mA)	$V_{CC}2$ Supply Current 2@DC (mA)	Channel Number (ch)	Max. Propagation Delay (ns)	Isolation Voltage (Vrms)	Operating Temperature Range (°C)	Package
BM67220FV-C	4.5 to 5.5	0.21	0.21	2	45	2.5k	−40 to +125	SSOP-B20W
BM67221FV-C	4.5 to 5.5	0.21	0.21	2	45	2.5k	−40 to +125	SSOP-B20W

Standards

DRAM

Legacy DRAM FP/EDO for Automotive

(LAPIS Semiconductor products)

Automotive

Part No.	Supply Voltage (V)	Density (bit)	Number of Data bits	Configuration (word×bit)	Circuit Function	Access Time (ns)	Refresh Cycle (cycles/ms)	Operating Temperature Ta (°C)	Package
MSM514400DP	5.0±0.5	4M	×4	1M×4	Fast Page Mode	60/70	1024/16	−40 to +85	TSOP(II)26/24Cu
MSM514400EP									
MSM514260EP			×16	256K×16		60/70	512/8		TSOP(II)44/40
MSM5118160FP		16M		1M×16		60	1024/16		TSOP(II)50/44
MSM5118165FP					EDO				
MSM51V4400EP	3.3±0.3	4M	×4	1M×4	Fast Page Mode	70/100	1024/16		TSOP(II)26/24Cu
MSM54V16258BP			×16	256K×16	EDO	40/45/50	512/64		TSOP(II)44/40
MSM51V4265EP						60/70	512/8		
MSM51V17400FP		16M	×4	4M×4	Fast Page Mode	60	2048/32		TSOP(II)26/24Cu
MSM51V18165FP			×16	1M×16	EDO	60	1024/16		

Legacy DRAM SDRAM for Automotive

(LAPIS Semiconductor products)

Automotive

Part No.	Data Rate Type	Supply Voltage (V)	Density (bit)	Number of Data Bits	Configuration (bank×word×bit)	Max.Operating Frequency (MHz)	Refresh Cycle (cycles/ms)	Cycle Time (ns)	Features	Operating Temperature Ta (°C)	Package
MSM56V16160FP	SDR	3.3±0.3	16M	×16	2×512K×16	100	4096/64	10	—	−40 to +85	TSOP(II)50
MSM56V16160KP						125		8/10	Drivability control		TSOP(II)50Cu
New **MSM56V16161NP**						166		6/7/7.5/10			
MD56V62160E-10TAP			64M		4×1M×16	100	4096/64	10	—		TSOP(II)54
MD56V62160M-xxTAP						143		7/7.5/10	Drivability control		TSOP(II)54Cu
New **MD56V62161M-xxTALQ1L**						143	4096/16	7/7.5/10		−40 to +105	
MD56V72160C-xxTAP			128M		4×2M×16	166	4096/64	6/7/7.5/10		−40 to +85	
New **MD56V72161C-xxTALQ1L**						166	4096/16	6/7/7.5/10		−40 to +105	
MD56V82160A-xxTAP			256M		4×4M×16	166	8192/64	6/7/7.5/10		−40 to +85	
New **MD56V82160A-xxTALQ3L**						166	8192/16	6/7/7.5/10		−40 to +105	

SDR : Single Data Rate Synchronous DRAM

Video Memory for Automotive

(LAPIS Semiconductor products)

Automotive

Part No.	Supply Voltage (V)	Density (bit)	Configuration (word×bit)×port	Number of Data Bits	Max.Operating Frequency (MHz)	Access Time (ns)	Cycle Time (ns)	Power Consumption (mW)		Operating Temperature Ta (°C)	Package	Notes
								Operating	Standby			
MS81V04160AP	3.3±0.3	4M	(262,214×8)×2	×16	50	18/23	20/25	288	10.8	−40 to +85	QFP100	Asynchronous serial read/write, Write mask function, Output data control, Cascade, Two-port, 2 common WCLK ports.
MS81V26000-25TPZP3		26M	1,114,112 ×24	×24	40	12	25	576	18		TQFP100Cu	Asynchronous serial read/write, Write mask function, Output data control, Cascade, The top address can be specified.

Serial EEPROM

Automotive EEPROM

105°C Operation I2C BUS EEPROM (2-Wire) BR24Axxxxxx-WM Series (AEC-Q100)

Part No.	Package and Suffix			Density (bit)	Bit Format (word×bit)	Supply Voltage Range(V)	Current Consumption(Max.)		Write Cycle Time (Max.)(ms)	Operating Temperature Range(°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	MSOP8				Operating(mA)	Standby(μA)				
BR24A01A	F-WM	FJ-WM	—	1K	128×8	2.5 to 5.5	2	2	5	–40 to +105	10^6	40
BR24A02	F-WM	FJ-WM	FVM-WM	2K	256×8	2.5 to 5.5	2	2	5			
BR24A04	F-WM	FJ-WM	—	4K	512×8	2.5 to 5.5	2	2	5			
BR24A08	F-WM	FJ-WM	—	8K	1K×8	2.5 to 5.5	2	2	5			
BR24A16	F-WM	FJ-WM	—	16K	2K×8	2.5 to 5.5	2	2	5			
BR24A32	F-WM	—	—	32K	4K×8	2.5 to 5.5	3	2	5			
BR24A64	F-WM	—	—	64K	8K×8	2.5 to 5.5	3	2	5			

125°C Operation Microwire BUS EEPROM (3-Wire) BR93Hxxxxxx-2C Series (AEC-Q100)

Part No.	Package and Suffix				Density (bit)	Bit Format (word×bit)	Supply Voltage Range(V)	Current Consumption(Max.)		Write Cycle Time (Max.)(ms)	Operating Temperature Range(°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating(mA)	Standby(μA)				
BR93H46	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	1K	64×16	2.5 to 5.5	3	10	4	–40 to +125	10^6	100
BR93H56	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	2K	128×16	2.5 to 5.5	3	10	4			
BR93H66	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	4K	256×16	2.5 to 5.5	3	10	4			
BR93H76	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	8K	512×16	2.5 to 5.5	3	10	4			
BR93H86	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	16K	1K×16	2.5 to 5.5	3	10	4			

105°C Operation Microwire BUS EEPROM (3-Wire) BR93Axxxxxx-WM Series (AEC-Q100)

BR93A46	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	1K	64×16	2.5 to 5.5	3	2	5	–40 to +105	10^6	40
BR93A56	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	2K	128×16	2.5 to 5.5	3	2	5			
BR93A66	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	4K	256×16	2.5 to 5.5	3	2	5			
BR93A76	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	8K	512×16	2.5 to 5.5	3	2	5			
BR93A86	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	16K	1K×16	2.5 to 5.5	3	2	5			

125°C Operation SPI BUS EEPROM BR25Hxxxxxx-2C Series (AEC-Q100)

BR25H010	F-2C	FJ-2C	FVT-2C	FVM-2C	1K	128×8	2.5 to 5.5	4	10	4	–40 to +125	10^6	100
BR25H020	F-2C	FJ-2C	FVT-2C	FVM-2C	2K	256×8	2.5 to 5.5	4	10	4			
BR25H040	F-2C	FJ-2C	FVT-2C	FVM-2C	4K	512×8	2.5 to 5.5	4	10	4			
BR25H080	F-2C	FJ-2C	FVT-2C	FVM-2C	8K	1K×8	2.5 to 5.5	4	10	4			
BR25H160	F-2C	FJ-2C	FVT-2C	FVM-2C	16K	2K×8	2.5 to 5.5	4	10	4			
BR25H320	F-2C	FJ-2C	FVT-2C	FVM-2C	32K	4K×8	2.5 to 5.5	4	10	4			
BR25H640	F-2C	FJ-2C	FVT-2C	—	64K	8K×8	2.5 to 5.5	5.5	10	4			
BR25H128	F-2C	FJ-2C	—	—	128K	16K×8	2.5 to 5.5	5.5	10	4			

125°C Operation SPI BUS EEPROM BR35Hxxxxxx-WC Series (AEC-Q100)

BR35H160	F-WC	FJ-WC	FVT-WC	FVM-WC	16K	2K×8	2.5 to 5.5	3	10	5	–40 to +125	10^6	40
BR35H320	F-WC	FJ-WC	FVT-WC	FVM-WC	32K	4K×8	2.5 to 5.5	3	10	5			
BR35H640	F-WC	FJ-WC	FVT-WC	—	64K	8K×8	2.5 to 5.5	5.5	10	5			
BR35H128	F-WC	FJ-WC	—	—	128K	16K×8	2.5 to 5.5	5.5	10	5			

105°C Operation SPI BUS EEPROM BR25Axxxxxx-3M Series (AEC-Q100)

New BR25A256	F-3M	FJ-3M	FVT-3M	—	256K	32K×8	2.5 to 5.5	4	10	5	–40 to +105	10^6	100
New BR25A512	F-3M	FJ-3M	FVT-3M	—	512K	512K×8	2.5 to 5.5	4	10	5			
New BR25A1M	F-3M	FJ-3M	—	—	1M	128K×8	2.5 to 5.5	4	10	5			

FeRAM

Ferroelectric Memory

(LAPIS Semiconductor products)

Parallel BUS FeRAM MR48Vxxxx Series

Part No.	Memory Density (bit)	Configuration (word×bit)	Supply Voltage (V)	Operating Speed	Read/Write Endurance	Data Retention	Operating Temperature Ta (°C)	Package
MR48V256C	256K	32K×8	2.7 to 3.6	t_{RC}=150ns	10^{12} Times	10 years	–40 to +85	TSOP(I)28

I^2C BUS FeRAM MR44Vxxxx Series

MR44V064A	64K	8K×8	2.5 to 3.6	f_{clk}=3.4MHz	10^{12} Times	10 years	–40 to +85	SOP8
New MR44V064B	64K	8K×8	2.0 to 3.6	f_{clk}=3.4MHz				
☆MR44V100A	1M	128K×8	2.0 to 3.6	f_{clk}=3.4MHz				

SPI BUS FeRAM MR45Vxxxx Series

MR45V032A	32K	4K×8	2.7 to 3.6	f_{clk}=15MHz	10^{12} Times	10 years	–40 to +85	SOP8
New MR45V064B	64K	8K×8	2.0 to 3.6	f_{clk}=40MHz				
MR45V256A	256K	32K×8	3.0 to 3.6	f_{clk}=15MHz				
☆MR45V100A	1M	128K×8	2.0 to 3.6	f_{clk}=34MHz				SOP8/DIP8
MR45V200A	2M	256K×8	2.7 to 3.6	f_{clk}=34MHz				DIP8

☆ : Under Development

Operational Amplifiers

Standard

Ground Sense Operational Amplifiers (AEC-Q100)

Part No.	CH	Supply Voltage (V)	Circuit Current (mA)	Input Offset voltage (mV)	Input Bias current (nA)	Output Current (mA)	Input Voltage Range(V)	Output Voltage Range (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/µs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package
BA2904YF-C	2	3 to 36	0.5	2.0	20	30	VEE to VCC–1.5	VEE to VCC–1.5	100	80	100	0.2	0.5	–40 to +125	SOP8
BA2904YFV-C															SSOP-B8
BA2904YFVM-C															MSOP8
BA2902YF-C	4	3 to 36	0.7	2.0	20	30	VEE to VCC–1.5	VEE to VCC–1.5	100	80	100	0.2	0.5	–40 to +125	SOP14
BA2902YFV-C															SSOP-B14
BA2904YF-M	2	3 to 36	0.5	2.0	20	30	VEE to VCC–1.5	VEE to VCC–1.5	100	80	100	0.2	0.5	–40 to +125	SOP8
BA2904YFV-M															SSOP-B8
BA2904YFVM-M															MSOP8
BA2902YF-M	4	3 to 36	0.7	2.0	20	30	VEE to VCC–1.5	VEE to VCC–1.5	100	80	100	0.2	0.5	–40 to +125	SOP14
BA2902YFV-M															SSOP-B14

High Speed

Ground Sense Operational Amplifiers (AEC-Q100)

Part No.	CH	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage Range (V)	Output Voltage Range (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/µs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package
BA3472YF-C	2	3 to 36	4.0	1.0	100	30	VEE to VCC–2.0	VEE+0.3 to VCC–1.0	100	97	97	10	4.0	–40 to +125	SOP8
BA3472YFV-C															SSOP-B8
BA3472YFVM-C															MSOP8
BA3474YFV-C	4	3 to 36	8.0	1.0	100	30	VEE to VCC–2.0	VEE+0.3 to VCC–1.0	100	97	97	10	4.0	–40 to +125	SSOP-B14
BA3472WFV-C	2	3 to 36	4.0	1.0	100	30	VEE to VCC–2.0	VEE+0.3 to VCC–1.0	100	97	97	10	4.0	–40 to +125	SSOP-B8
BA3474WFV-C	4	3 to 36	8.0	1.0	100	30	VEE to VCC–2.0	VEE+0.3 to VCC–1.0	100	97	97	10	4.0	–40 to +125	SSOP-B14

Low Power Consumption

Input-Output Full Swing Operational Amplifiers (AEC-Q100)

Part No.	CH	Supply Voltage (V)	Circuit Current (µA)	Input Offset Voltage(mV)	Input Bias Current(nA)	Output Current (mA)	Input Voltage Range (V)	Output Voltage Range(V)	Voltage Gain (dB)	CMRR (dB)	Slew Rate (V/µs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package
New BU7241YG-C	1	1.8 to 5.5	70	1.0	0.001	10	Vss to VDD	Vss+0.05 to VDD–0.05	100	70	0.4	1.0	–40 to +125	SSOP5

Low Noise

Operational Amplifier (AEC-Q100)

Part No.	CH	Supply Voltage (V)	Circuit Current (mA)	Input Offset voltage (mV)	Input Bias Current(nA)	Input Referred Noise Voltage (µVrms)	Input Voltage Range (V)	Output Voltage Range (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/µs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package
BA4558YF-M	2	±4 to ±15	3.0	0.5	60	1.8	VEE+1.0 to VCC–1.0	VEE+1.0 to VCC–1.0	100	90	90	1.0	2.0	–40 to +105	SOP8
BA4558YFV-M															SSOP-B8
BA4558YFVM-M															MSOP8
BA4560YF-M	2	±4 to ±15	3.0	0.5	50	1	VEE+1.0 to VCC–1.0	VEE+1.0 to VCC–1.0	100	90	90	4.0	4.0	–40 to +105	SOP8
BA4560YFV-M															SSOP-B8
BA4560YFVM-M															MSOP8
BA4580YF-M	2	±2 to ±16	6.0	0.3	100	0.8	VEE+1.5 to VCC–1.5	VEE+1.5 to VCC–1.5	110	110	110	5.0	10.0	–40 to +105	SOP8
BA4580YFVM-M															MSOP8
BA4584YFV-M	4	±2 to ±16	11.0	0.3	100	0.8	VEE+1.5 to VCC–1.5	VEE+1.5 to VCC–1.5	110	110	110	5.0	10.0	–40 to +105	SSOP-B14

Comparators

Standard

Open-Collector Comparators (AEC-Q100)

Part No.	CH	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input VoltageRange (V)	Voltage Gain (dB)	Response Time (µs)	Operating Temperature (°C)	Package
BA2903YF-C	2	2 to 36	0.6	2	50	16	VEE to VCC–1.5	100	1.3	–40 to +125	SOP8
BA2903YFV-C											SSOP-B8
BA2903YFVM-C											MSOP8
BA2901YF-C	4	2 to 36	0.8	2	50	16	VEE to VCC–1.5	100	1.3	–40 to +125	SOP14
BA2901YFV-C											SSOP-B14
BA2903YF-M	2	2 to 36	0.6	2	50	16	VEE to VCC–1.5	100	1.3	–40 to +125	SOP8
BA2903YFV-M											SSOP-B8
BA2903YFVM-M											MSOP8
BA2901YF-M	4	2 to 36	0.8	2	50	16	VEE to VCC–1.5	100	1.3	–40 to +125	SOP14
BA2901YFV-M											SSOP-B14

Low Power Consumption

Open-Drain Comparators (AEC-Q100)

Part No.	CH	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage Range (V)	Voltage Gain (dB)	Response Time (µs)	Operating Temperature (°C)	Package
New BU7233YF-C	2	1.8 to 5.5	10	1.0	0.001	7	Vss to VDD	100	1.8	–40 to +125	SSOP8

Voltage Detectors (Reset ICs)

Standard Voltage Detectors

Voltage Detectors (AEC-Q100)

Part No.	Types	Voltage Detection Precision (%)	Voltage Detection(V)	RESET Active Voltage Range(V)	Detection Step(V)	Output Type	Circuit Current(μA) ON	Circuit Current(μA) OFF	Hysteresis Voltage(V)	"L"Output Current(mA) V_{DD}=1.2V	"L"Output Current(mA) V_{DD}=2.4V	RESET Active Timeout Period(ms)	Delay Circuit Resistance(MΩ)	Package
BD48ExxG-M series	0.1V step 38 type	±1	2.3 to 6.0	0.95 to 10.0	0.1	Open drain	0.60 (Vs=4.8V)	0.85 (Vs=4.8V)	Vs×0.05	1.0	4	—	—	SSOP5
BD49ExxG-M series	0.1V step 38 type	±1	2.3 to 6.0	0.95 to 10.0	0.1	CMOS						—	—	SSOP5
BD52ExxG-M series	0.1V step 38 type	±1	2.3 to 6.0	0.95 to 10.0	0.1	Open drain	0.90 (V_{DET}=4.8V)	0.85 (V_{DET}=4.8V)	V_{DET}×0.05	1.2	5	Variable	9	SSOP5
BD53ExxG-M series	0.1V step 38 type	±1	2.3 to 6.0	0.95 to 10.0	0.1	CMOS						Variable	9	SSOP5
BD45Exx5G-M series	0.1V step 26 type	±1	2.3 to 4.8	0.95 to 10.0	0.1	Open drain	0.80 (V_{DET}=4.8V)	0.85 (V_{DET}=4.8V)	V_{DET}×0.05	1.2	5	50	—	SSOP5
BD45Exx1G-M series	0.1V step 26 type	±1	2.3 to 4.8	0.95 to 10.0	0.1							100	—	SSOP5
BD45Exx2G-M series	0.1V step 26 type	±1	2.3 to 4.8	0.95 to 10.0	0.1							200	—	SSOP5
BD46Exx5G-M series	0.1V step 26 type	±1	2.3 to 4.8	0.95 to 10.0	0.1	CMOS						50	—	SSOP5
BD46Exx1G-M series	0.1V step 26 type	±1	2.3 to 4.8	0.95 to 10.0	0.1							100	—	SSOP5
BD46Exx2G-M series	0.1V step 26 type	±1	2.3 to 4.8	0.95 to 10.0	0.1							200	—	SSOP5

*Detection voltage is applied in the "xx" of part No.. Ex. : In case of 2.3V detection voltage in BD48ExxG-M series, Part No. is BD48E23G-M.

Voltage Detectors with Watchdog Timer

Voltage Detectors with Watchdog Timer

Part No.	Voltage Detection Precision(%)	Voltage Detection (V)	RESET Active Voltage Range (V)	Output Type	Circuit Current(μA) ON	Hysteresis Voltage (V)	"L"Output Current(mA) V_{DD}=1.2V	"L"Output Current(mA) V_{DS}=0.5V	RESET Active Timeout Period(ms)	Delay Circuit Resistance (MΩ)	WDT Active Voltage Range (V)	INH Mode (Active)	Package
BD37A19FVM	±1.5	1.9	1.0 to 10.0	Open Drain	5	V_{DET}×0.13	0.7		Variable	10	2.5 to 10.0	H	MSOP8
BD37A41FVM	±1.5	4.1	1.0 to 10.0	Open Drain	5	V_{DET}×0.035	0.7		Variable	10	2.5 to 10.0	H	MSOP8
BD87A28FVM	±1.5	2.8	1.0 to 10.0	Open Drain	5	V_{DET}×0.045	0.7		Variable	10	2.5 to 10.0	L	MSOP8
BD87A29FVM	±1.5	2.9	1.0 to 10.0	Open Drain	5	V_{DET}×0.05	0.7		Variable	10	2.5 to 10.0	L	MSOP8
BD87A34FVM	±1.5	3.4	1.0 to 10.0	Open Drain	5	V_{DET}×0.05	0.7		Variable	10	2.5 to 10.0	L	MSOP8
BD87A41FVM	±1.5	4.1	1.0 to 10.0	Open Drain	5	V_{DET}×0.035	0.7		Variable	10	2.5 to 10.0	L	MSOP8
BD99A41F	±1.5	4.1	1.0 to 10.0	Open Drain	5	V_{DET}×0.035	0.7		Variable	10	2.5 to 10.0	H	SOP8

Ex : In case of 2.3V detection voltage in BD45xx5G series, part No. is BD45235G.

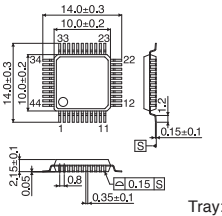
Please refer package from pae P40, for LAPIS Semiconductor products

QFP Packages

(Unit: mm)

QFP<Pin Pitch:0.8mm>

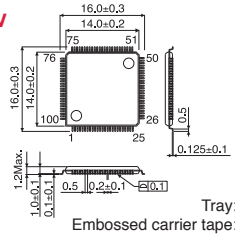
QFP44



Tray:1,000pcs
Embossed carrier tape:1,000pcs

TQFPV<Pin Pitch:0.5mm>

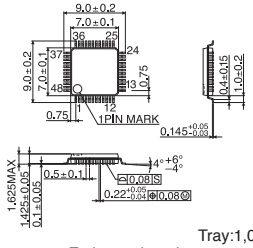
TQFP100V



Tray:500pcs
Embossed carrier tape:500pcs

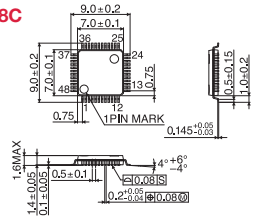
VQFP<Pin Pitch:0.5mm>

VQFP48



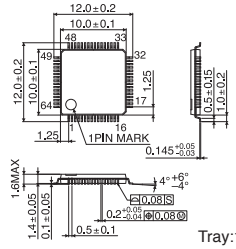
Tray:1,000pcs
Embossed carrier tape:1,500pcs

VQFP48C



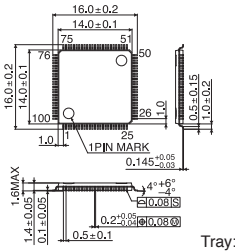
Tray:1,000pcs
Embossed carrier tape:1,500pcs

VQFP64



Tray:1,000pcs
Embossed carrier tape:1,000pcs

VQFP100



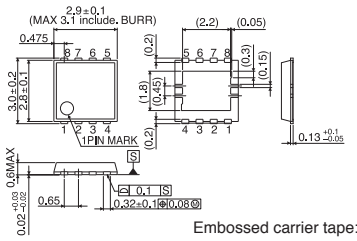
Tray:500pcs
Embossed carrier tape:500pcs

SON/QFN Packages

(Unit: mm)

HSON-8<Pin Pitch:0.65mm>

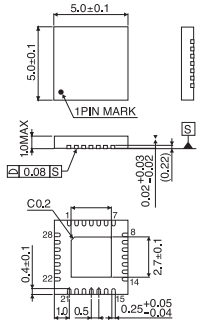
HSON-8



Embossed carrier tape:3,000pcs

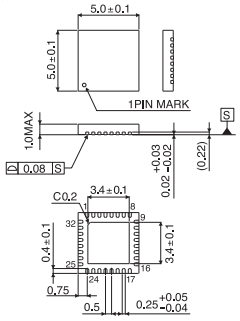
VQFN-SV<Pin Pitch:0.5mm>

VQFN28SV5050



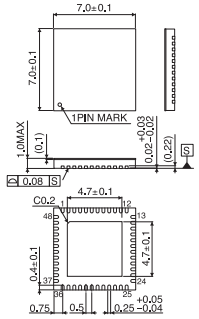
Embossed carrier tape:2,500pcs

VQFN32SV5050



Embossed carrier tape:2,500pcs

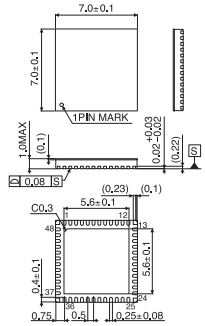
VQFN48SV7070



Embossed carrier tape:1,500pcs

VQFN-MCV<Pin Pitch:0.5mm>

VQFN48MCV070



Embossed carrier tape:1,500pcs

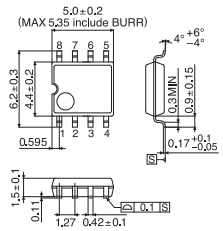
Please refer package from pae P40, for LAPIS Semiconductor products

SOP Packages

(Unit: mm)

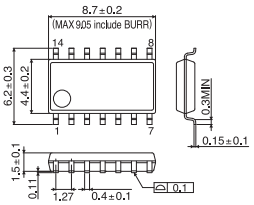
SOP<Pin Pitch:1.27mm>

SOP8



Embossed carrier tape:2,500pcs

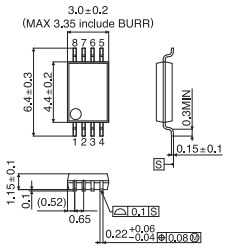
SOP14



Embossed carrier tape:2,500pcs

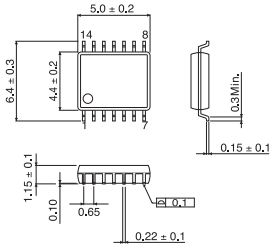
SSOP-B<Pin Pitch:0.65mm>

SSOP-B8



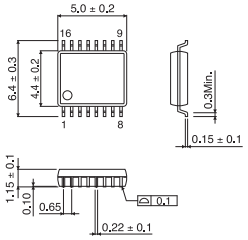
Embossed carrier tape:2,500pcs

SSOP-B14



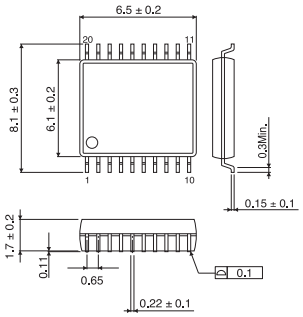
Embossed carrier tape:2,500pcs

SSOP-B16



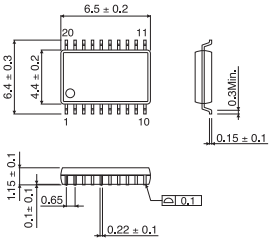
Embossed carrier tape:2,500pcs

SSOP-B20W



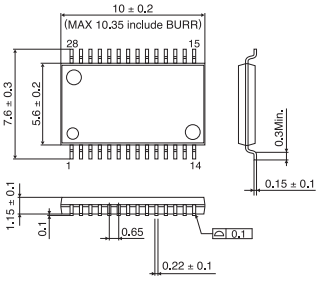
Embossed carrier tape:2,000pcs

SSOP-B20



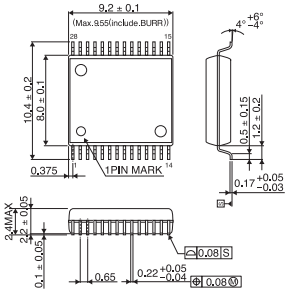
Embossed carrier tape:2,500pcs

SSOP-B28



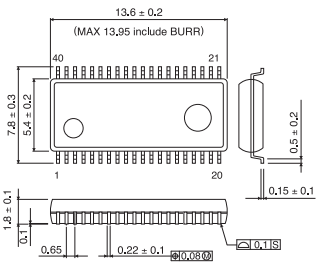
Embossed carrier tape:2,000pcs

SSOP-B28W



Embossed carrier tape:1,500pcs

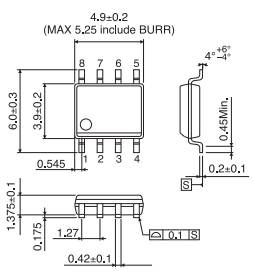
SSOP-B40



Embossed carrier tape:2,000pcs

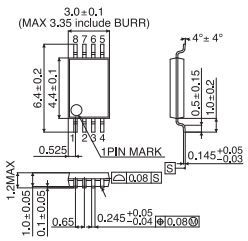
JEDEC<Pin Pitch:1.27mm/0.65mm/0.5mm>

SOP-J8



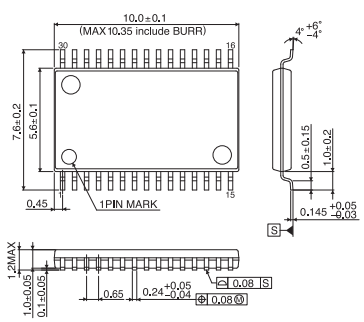
Embossed carrier tape:2,500pcs

TSSOP-B8



Embossed carrier tape:3,000pcs

TSSOP-B30



Embossed carrier tape:2,000pcs

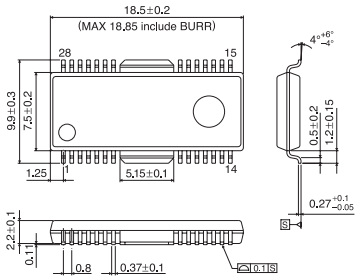
Please refer package from pae P40, for LAPIS Semiconductor products

HSOP Packages

(Unit: mm)

HSOP<Pin Pitch:0.8mm>

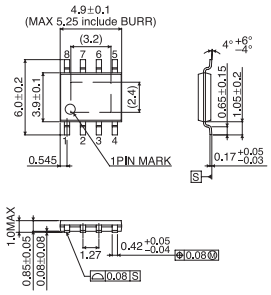
HSOP-M28



Embossed carrier tape:1,500pcs

HTSOP-J<Pin Pitch:1.27mm>

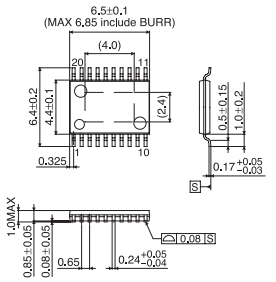
HTSOP-J8



Embossed carrier tape:2,500pcs

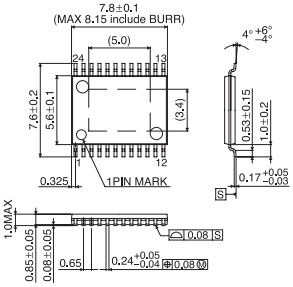
HTSSOP-B<Pin Pitch:0.65mm>

HTSSOP-B20



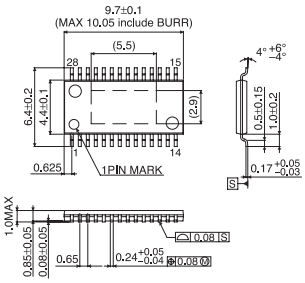
Embossed carrier tape:2,500pcs

HTSSOP-B24



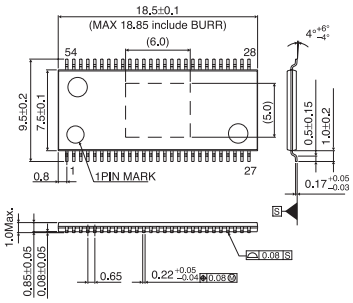
Embossed carrier tape:2,000pcs

HTSSOP-B28



Embossed carrier tape:2,500pcs

HTSSOP-B54



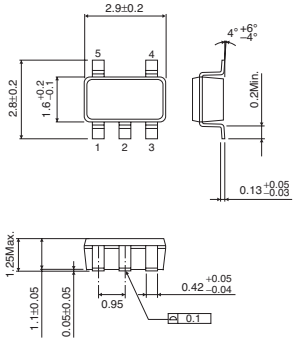
Embossed carrier tape:1,500pcs

Small Packages

(Unit: mm)

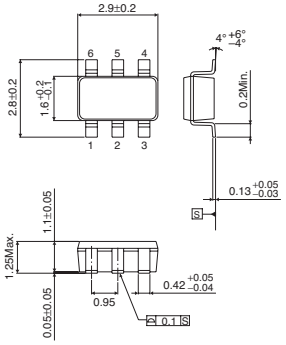
SOP Type

SSOP5



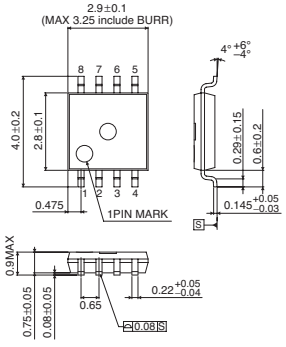
Embossed carrier tape:3,000pcs

SSOP6



Embossed carrier tape:3,000pcs

MSOP8



Embossed carrier tape:3,000pcs

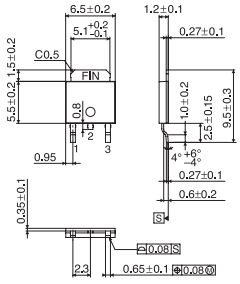
Please refer package from pae P40, for LAPIS Semiconductor products

Power Packages

(Unit: mm)

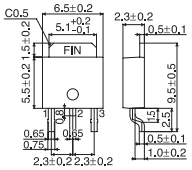
POWER-3PIN

TO252S-3



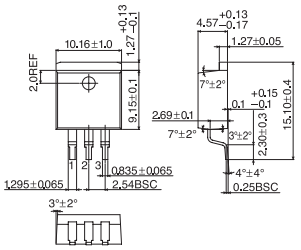
Embossed carrier tape:2,000pcs

TO252-3



Embossed carrier tape:2,000pcs

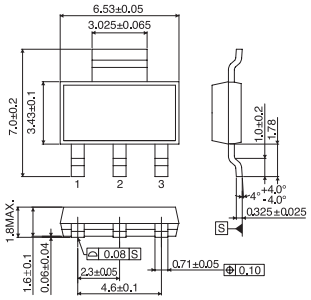
TO263-3



Embossed carrier tape:500pcs

POWER-4PIN

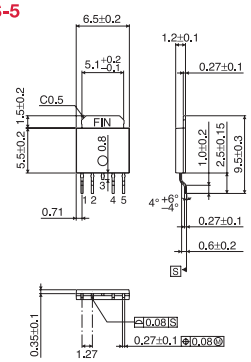
SOT223-4



Embossed carrier tape:2,000pcs

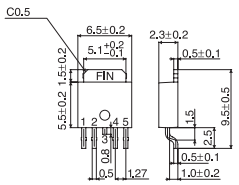
POWER-5PIN

TO252S-5



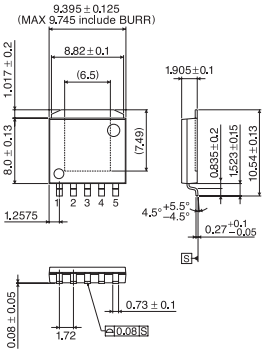
Embossed carrier tape:2,000pcs

TO252-5



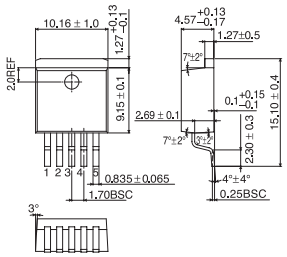
Embossed carrier tape:2,000pcs

HRP5



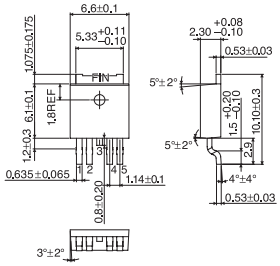
Embossed carrier tape:2,600pcs

TO263-5



Embossed carrier tape:500pcs

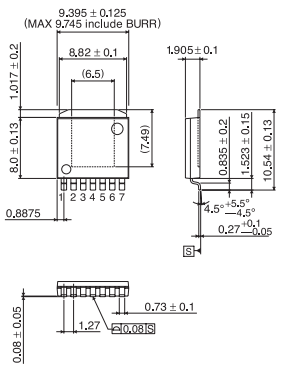
TO252-J5



Embossed carrier tape:2,000pcs

POWER-7PIN

HRP7



Embossed carrier tape:2,000pcs

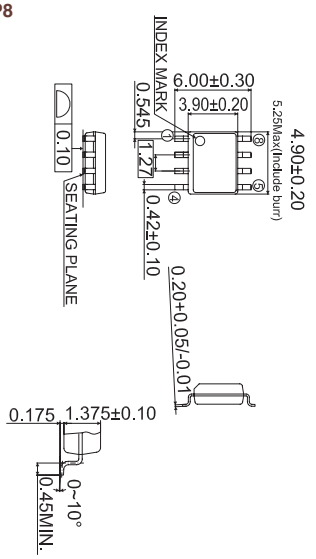
These package size are an example. For details, please inquire to the sales.

SOP Packages

(Unit: mm)

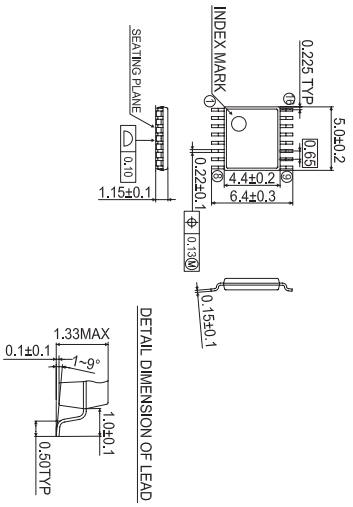
SOP

SOP8

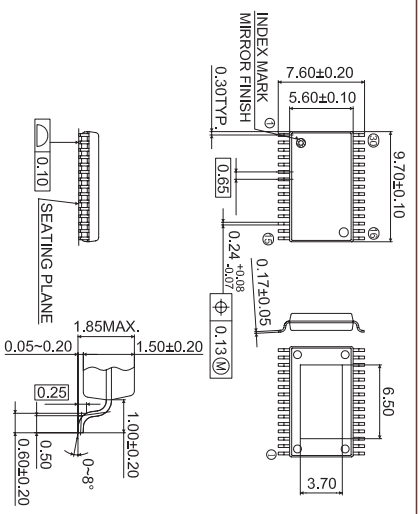


SSOP

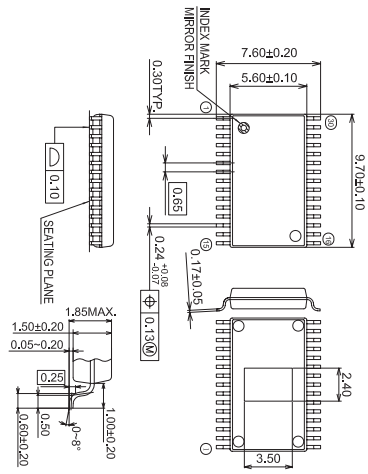
SSOP16



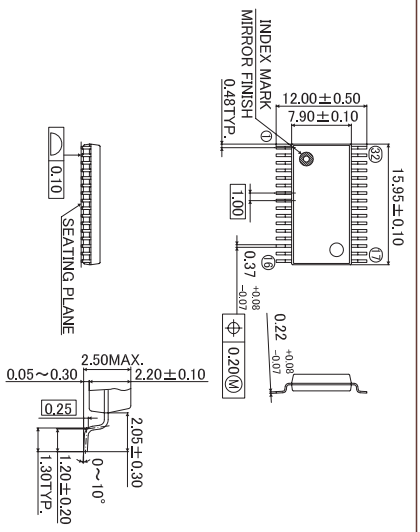
P-SSOP30-56-0.65-Z6K



P-SSOP30-56-0.65-Z6K9-MC

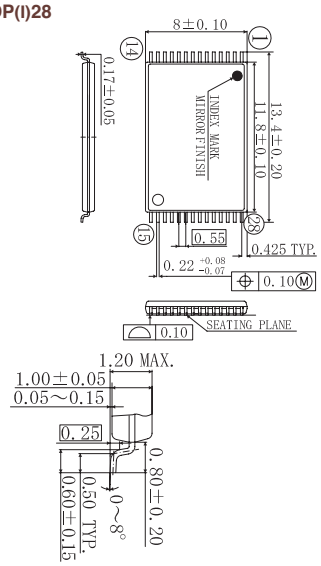


SSOP32



TSOP(Type I)

TSOP(I)28



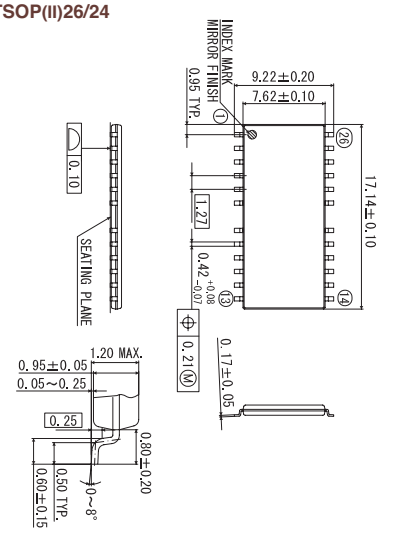
These package size are an example. For details, please inquire to the sales.

SOP Packages

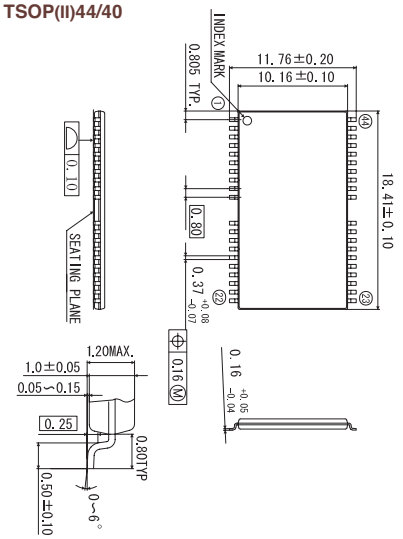
(Unit: mm)

TSOP(Type II)

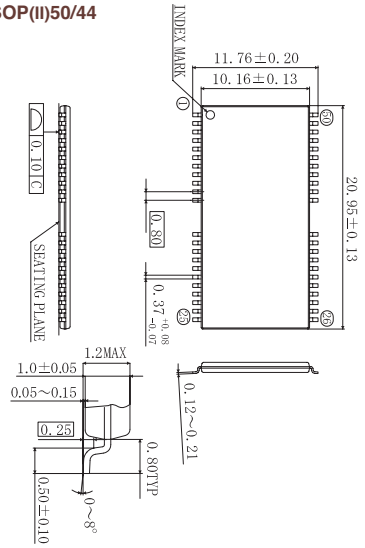
TSOP(II)26/24



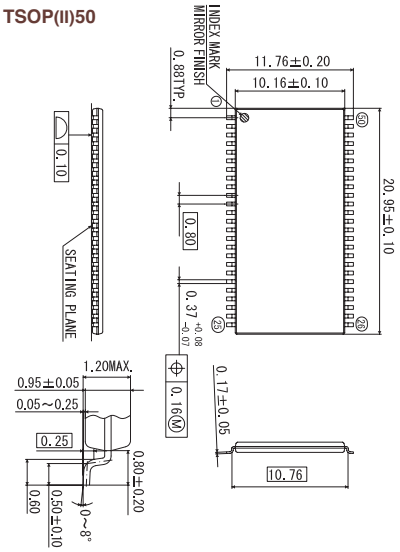
TSOP(II)44/40



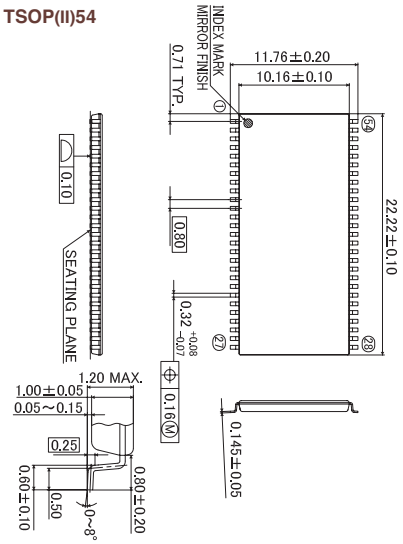
TSOP(II)50/44



TSOP(II)50



TSOP(II)54

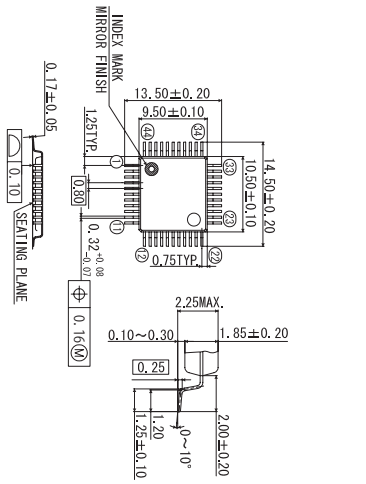


QFP Packages

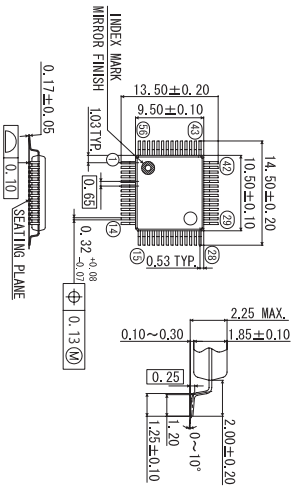
(Unit: mm)

QFP

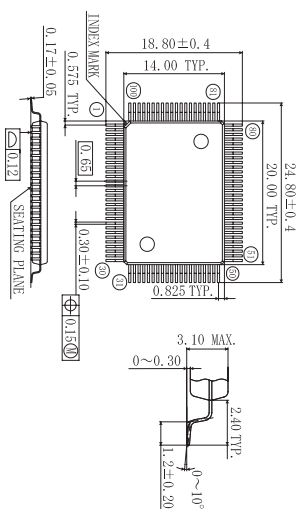
QFP44



QFP56



P-QFP100-1420-0.65-TK



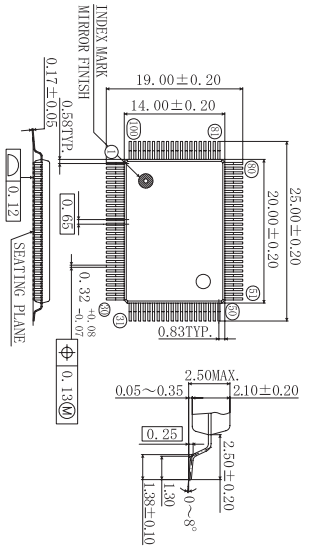
These package size are an example. For details, please inquire to the sales.

QFP Packages

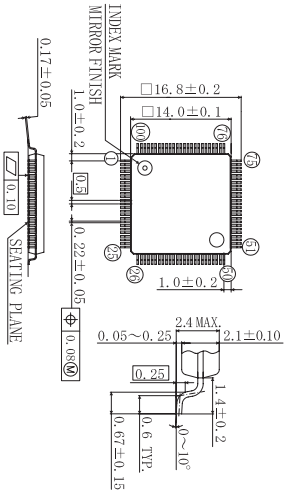
(Unit: mm)

QFP

QFP100-P-1420-0.65-BK

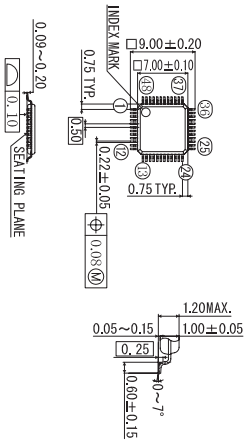


P-QFP100-1414-0.50-K

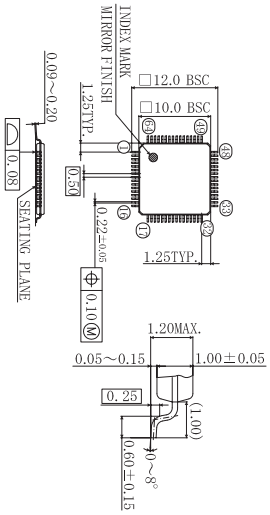


TQFP

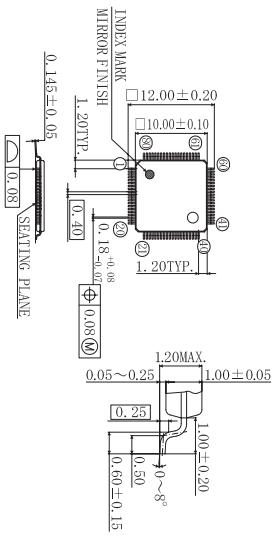
TQFP48



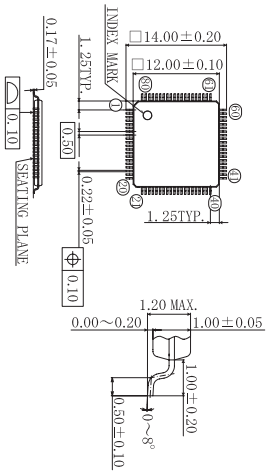
TQFP64



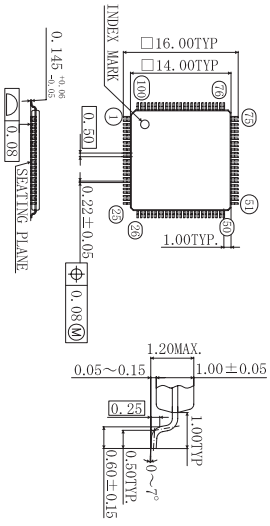
P-TQFP80-1010-0.40



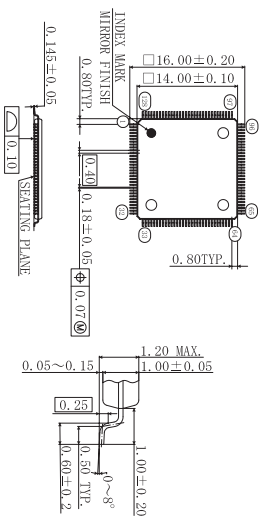
P-TQFP80-1212-0.50



TQFP100



TQFP128



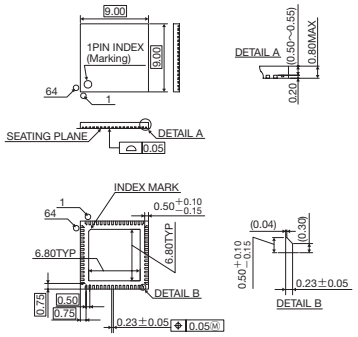
These package size are an example. For details, please inquire to the sales.

QFN Packages

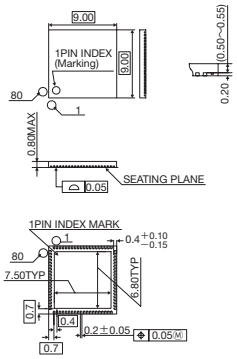
(Unit: mm)

WQFN

WQFN64



WQFN80

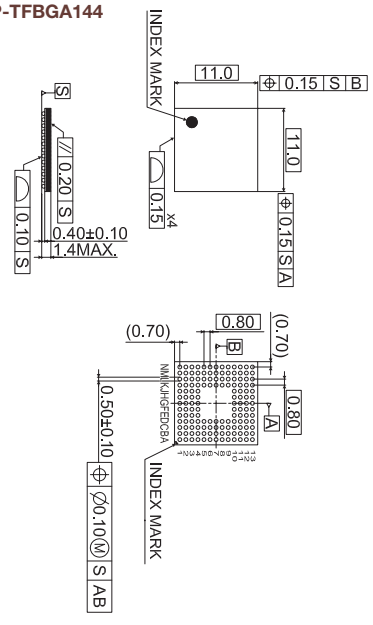


BGA Packages

(Unit: mm)

TFBGA

P-TFBGA144



SiC IGBT Tr Di R

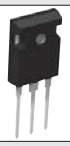
Automotive

【Power Device / Discrete Semiconductors / Passive Devices / Opto Devices】

CONTENTS

SiC Schottky Barrier Diodes

●Quick Reference for SiC-Schottky Barrier Diodes

V_{RM} (V)	I_F (A)	Leaded Type				Surface Mounted Type	
							
		TO-220AC		TO-247		TO-263AB(LPTL)	
650	6	SCS206AGHR	7			New SCS206AJHR	1
	8	SCS208AGHR	8			New SCS208AJHR	2
	10	SCS210AGHR	9			New SCS210AJHR	3
	12	SCS212AGHR	10			New SCS212AJHR	4
	15	SCS215AGHR	11			New SCS215AJHR	5
	20	SCS220AGHR	12	SCS220AE2HR	13	New SCS220AJHR	6
	30			SCS230AE2HR	14		
	40			SCS240AE2HR	15		
1,200	5	SCS205KGHR	16				
	10	SCS210KGHR	17	SCS210KE2HR	20		
	15	SCS215KGHR	18				
	20	SCS220KGHR	19	SCS220KE2HR	21		
	30			☆SCS230KE2AHR	22		
	40			☆SCS240KE2AHR	23		

☆ : Under Development

SiC Schottky Barrier Diodes (AEC-Q101)

Quick Reference No.	Part No.	Absolute Maximum Ratings(Ta=25°C) V_{RM} (V)	V_R (V)	I_F (A)	I_{FSM} (A) 60Hz.1	Electrical Characteristics(Ta=25°C) V_F(V) Typ.	I_F(A)	I_R(μA) Max.	V_R(V)	Package	Equivalent Circuit Diagram
1	New SCS206AJHR	650	650	6	24	1.35	6	120	600	TO-263AB(LPTL)	
2	New SCS208AJHR	650	650	8	31	1.35	8	160	600		
3	New SCS210AJHR	650	650	10	40	1.35	10	200	600		
4	New SCS212AJHR	650	650	12	45	1.35	12	240	600		
5	New SCS215AJHR	650	650	15	55	1.35	15	300	600		
6	New SCS220AJHR	650	650	20	71	1.35	20	400	600		
7	SCS206AGHR	650	650	6	24	1.35	6	120	600	TO-220AC	
8	SCS208AGHR	650	650	8	31	1.35	8	160	600		
9	SCS210AGHR	650	650	10	40	1.35	10	200	600		
10	SCS212AGHR	650	650	12	45	1.35	12	240	600		
11	SCS215AGHR	650	650	15	55	1.35	15	300	600		
12	SCS220AGHR	650	650	20	71	1.35	20	400	600		
13	SCS220AE2HR	650	650	10/20*	40/80*	1.35	10	200	600	TO-247	
14	SCS230AE2HR	650	650	15/30*	55/110*	1.35	15	300	600		
15	SCS240AE2HR	650	650	20/40*	71/140*	1.35	20	400	600		
16	SCS205KGHR	1,200	1,200	5	23	1.4	5	100	1,200	TO-220AC	
17	SCS210KGHR	1,200	1,200	10	45	1.4	10	200	1,200		
18	SCS215KGHR	1,200	1,200	15	65	1.4	15	300	1,200		
19	SCS220KGHR	1,200	1,200	20	82	1.4	20	400	1,200		
20	SCS210KE2HR	1,200	1,200	5/10*	23/46*	1.4	5	100	1,200	TO-247	
21	SCS220KE2HR	1,200	1,200	10/20*	44/88*	1.4	10	200	1,200		
22	☆SCS230KE2AHR	1,200	1,200	15/30*	65/130*	1.4	15	300	1,200		
23	☆SCS240KE2AHR	1,200	1,200	20/40*	83/160*	1.4	20	400	1,200		

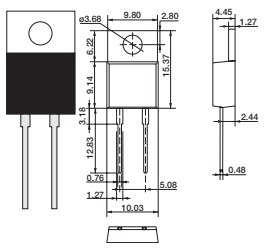
( ):ROHM PKG

☆:Under Development *(Per Leg / Device)

●Dimensions (Unit : mm)

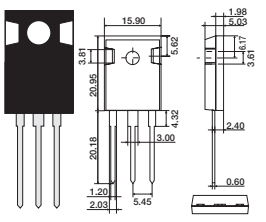
Leaded Type

TO-220AC(2pin)



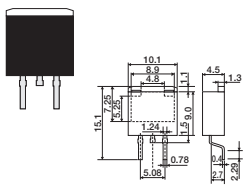
Each lead has same dimensions

TO-247(3pin)



Each lead has same dimensions

TO-263AB(LPTL)



Each lead has same dimensions

●Part No. Explanation

•Schottky Barrier Diode Part No.Explanation

S	C	S	2	0	6	A	G	H	R
		①	②	③	④	⑤	⑥		⑦

① SiC
② SBD
③ Generation
④ Current〔A〕
Example 05 → 5A
10 → 10A
⑤ Voltage
Example A → 650V
K → 1200V
⑥ Package
Example E → TO-247〔3pin〕
E2 → TO-247〔3pin〕(Dual chip)
G → TO-220AC〔2pin〕
J → LPT(L)〔4pin〕
⑦ Automotive-grade

●Packaging type

Package	Code	Packaging style	Basic ordering unit (pcs)
TO-263AB(LPTL)	TLL	Embossed Tape	1,000
TO-220AC	C	Tube	50
TO-247	C	Tube	30

( ):ROHM PKG

SiC MOSFET

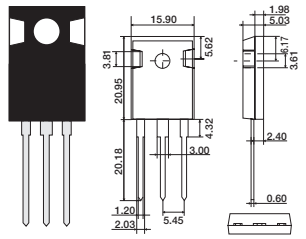
SiC MOSFET (AEC-Q101)

Part No.	Polarity (ch)	V_{DSS}(V)	I_D(A)	P_D(W) (Tc=25°C)	R_{DS}(on) Typ.(mΩ)	Qg Typ.(nC)		Package
					V_{GS}=18V	V_{GS}=18V	Drive Voltage (V)	
☆**SCT2080KEAHR**	N	1,200	40	262	80	106	18	TO-247
☆**SCT2160KEAHR**	N	1,200	22	165	160	62	18	
☆**SCT2280KEAHR**	N	1,200	14	108	280	35	18	
☆**SCT2450KEAHR**	N	1,200	10	85	450	27	18	

☆ : Under Development

●Dimensions (Unit : mm)

TO-247



Each lead has same dimensions

●Packaging type

Package	Code	Packaging Style	Basic Ordering Unit (pcs)
TO-247	C	Tube	30

●Part No. Explanation

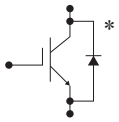
•MOSFET Part No.Explanation

S	C	T	2	0	8	0	K	E	A	H	R
		②	③	④	⑤	⑥	⑦	⑧		⑨	

① SiC
② T → MOSFET
③ Generation
④
⑤ ON-resistance〔mΩ〕
⑥
⑦ Voltage K → 1,200V
⑧ Package E → TO-247
⑨ Automotive-grade

Field Stop Trench IGBT

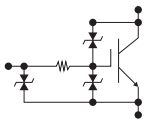
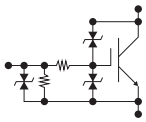
Field Stop Trench IGBT (AEC-Q101)

Part No.	V_{CES} (V)	I_C(A) Tc=25°C	I_C(A) Tc=100°C	P_D (W)	$V_{CE(sat)}$ Typ.(V)	I_c(A)	tsc Min. (µsec)	$I_{F(Diode)}$(A) Tc=25°C	$I_{F(Diode)}$(A) Tc=100°C	$V_{F(Diode)}$ Typ. (V)	I_F(A)	Package	Equivalent Circuit Diagram
☆RGS60TS65DFHG	650	56	30	223	1.65	30	8	56	30	1.45	30	TO-247N	
☆RGS80TS65DFHG	650	73	40	272	1.65	40	8	56	30	1.45	30		
☆RGS00TS65DFHG	650	88	50	326	1.65	50	8	56	30	1.45	30		

☆ : Under Development ＊Built in FRD

Ignition IGBT

Ignition IGBT (AEC-Q101)

Part No.	V_{CES} (V)	V_{GE} (V)	Ic (A)	P_D (W)	Eas (mJ)	V_{CE}(sat) Typ. (V)	Package	Equivalent Circuit Diagram
New RGPZ10BM40FH	430±30	±10	20	107	250	1.6	TO-252	
New RGPR10BM40FH	430±30	±10	20	107	250	1.6		

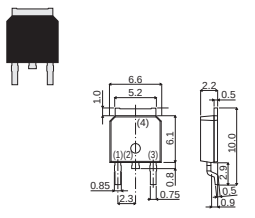
●Part No. Explanation

R	G	S	6	0	T	S	6	5	D	F	H	G
①		②	③		④		⑤		⑥	⑦		⑧

① IGBT
② Series Name
③ I_C
ex. 60 → 60A(T_C=25°C) 10 → 10A(T_C=100°C)
④ Package
ex. TS → TO-247N BM → TO-252
⑤ V_{CES}
ex. 65 → 650V 40 → 430±30V
⑥ Built-in FRD (Yes/No)
⑦ Automotive-grade
⑧ Halogen Free

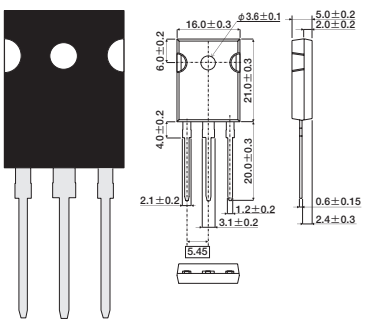
●Dimensions (Unit : mm)

TO-252



Each lead has same dimensions

TO-247N



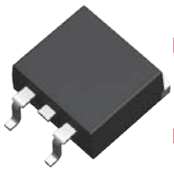
Each lead has same dimensions

●Packaging type

Package	Code	Packaging Style	Basic Ordering Unit (pcs)
TO-252	TL	Embossed tape	2,500
TO-247N	C11	Tube	30

MOSFETs

MOSFETs (AEC-Q101)

Package	Part No.			Polarity (ch)	V_{DS} (V)	I_D (A)	V_{GS} (V)	$R_{DS}(on)$(mΩ)				Qg Typ.	C_{iss} Typ.
								V_{GS}= 10V		V_{GS}= 4.5V		V_{GS}=10V (nC)	V_{DS}=10V (pF)
								Typ.	Max.	Typ.	Max.		
 SOT-428 (CPT3 D-PAK) [SC-63]	**RSD200N05**	FRA	TL	N	45	20	±20	20	28	25	35	12 *1	950
	RSD221N06	FRA	TL	N	60	22	±20	18	26	21	30	30	1500
	RSD150N06	FRA	TL	N	60	15	±20	28	40	33	47	18	930
	RSD080N06	FRA	TL	N	60	8	±20	57	80	70	98	9.4	380
	RSD050N06	FRA	TL	N	60	5	±20	78	109	94	131	8	290
	RSD201N10	FRA	TL	N	100	20	±20	33	46	36	50	55	2100 *2
	RSD175N10	FRA	TL	N	100	17.5	±20	75	105	80	112	24	950 *2
	RSD100N10	FRA	TL	N	100	10	±20	95	133	100	140	18	700 *2
	RSD050N10	FRA	TL	N	100	5	±20	135	190	142	200	14	530 *2
	☆**R5207PND**	FRA	TL	N	525	7	±30	780	1000	—	—	13	500 *2
	New **R5205PND**	FRA	TL	N	525	5	±25	1300	1600	—	—	10.8	320 *2
	New **R6006PND**	FRA	TL	N	600	6	±30	900	1200	—	—	15	460 *2
	New **R6004PND**	FRA	TL	N	600	4	±25	1400	1800	—	—	11	280 *2
	RSD160P05	FRA	TL	P	−45	−16	±20	35	50	45	63	16 *1	2000
	RSD080P05	FRA	TL	P	−45	−8	±20	65	91	95	133	9 *1	1000
	RSD046P05	FRA	TL	P	−45	−4.5	±20	110	155	160	225	12	550
	RSD140P06	FRA	TL	P	−60	−14	±20	60	84	73	103	27	1900
	RSD131P10	FRA	TL	P	−100	−13	±20	135	200	150	220	40	2400 *2
 TO-263 (LPT)	**RSJ451N04**	FRA	TL	N	40	45	±20	9.5	13.5	—	—	43	2400 *2
	RSJ800N06	FRA	TL	N	60	80	±20	4.5	6.3	5.0	7.0	130	6000
	RSJ400N06	FRA	TL	N	60	40	±20	11	16	—	—	52	2400
	RSJ650N10	FRA	TL	N	100	65	±20	6.5	9.1	7 *3	9.8 *3	260	10780 *2
	RSJ550N10	FRA	TL	N	100	55	±20	12	16.8	13.5 *3	18.9 *3	143	6150 *2
	RSJ400N10	FRA	TL	N	100	40	±20	19	27	21 *3	30 *3	90	3600 *2
	New **RSJ301N10**	FRA	TL	N	100	30	±20	33	46	36 *3	50 *3	60	2100 *2
	☆**RJ1T700AA**	FRG	TL	N	200	70	±30	30.5	42.7	—	—	125	6900 *2
	☆**RJ1U510AA**	FRG	TL	N	250	51	±30	48	65	—	—	120	7000 *2
	New **RJ1U330AA**	FRG	TL	N	250	33	±30	77	105	—	—	80	4500 *2
	☆**RJ1U120AA**	FRG	TL	N	250	22	±30	180	235	—	—	35	1800 *2
	New **R6020PNJ**	FRG	TL	N	600	20	±30	190	250	—	—	65	2040 *2
	☆**R6015PNJ**	FRG	TL	N	600	15	±30	230	300	—	—	50	1700 *2
	☆**R6012PNJ**	FRG	TL	N	600	12	±30	320	420	—	—	35	1300 *2
	☆**R6010PNJ**	FRG	TL	N	600	10	±30	430	560	—	—	27	980 *2
	☆**R6008PNJ**	FRG	TL	N	600	8	±30	600	800	—	—	21	680 *2
	RSJ250P10	FRA	TL	P	−100	−25	±20	45	63	48	67	60 *1	8000 *2

*1 V_{GS}=10V *2 V_{GS}=4.5V *3 V_{DS}=25V ( ):ROHM PKG , [ ]:JEITA Code ☆ : Under Development

MOSFETs

MOSFETs (AEC-Q101) 1

Package	Part No.			Polarity	V_{DSS} (V)	I_D (A)	V_{GS} (V)	R_{DS}(on)(mΩ)								Qg Typ. (nC)	Ciss Typ. (pF)
								V_{GS}=10V		V_{GS}=4.5V		V_{GS}=2.5V		V_{GS}=1.5V		V_{GS}=5V	V_{DS}=10V
								Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.		
SOT-323 (UMT3) [SC-70] 2021 Size	**RJU003N03**	FRA	T106	N	30	0.3	±12	—	—	800	1100	1400	1900	—	—	—	24
	RHU003N03	FRA	T106		30	0.3	±20	800	1200	1200	1900	—	—	—	—	—	20
	RHU002N06	FRA	T106		60	0.25	±20	1700	2400	—	—	2800	4000	—	—	2.2*1	15
	RJU002N06	FRA	T106		60	0.2	±12	—	—	1600	2300	2200	3100	—	—	—	18
SOT-363 (UMT6) [SC-88] 2021 Size	**UM6K31N**	FHA	TCN	N+N	60	0.25	±20	1700	2400	2100	3000	3000	12000	—	—	—	15*3
SOT-346 (SMT3) [SC-59] 2928 Size	**RJK005N03**	FRA	T146	N	30	0.5	±12	—	—	400	580	650	940	—	—	2*2	60
	RHK005N03	FRA	T146		30	0.5	±20	350	550	510	720	—	—	—	—	—	45
	RHK003N06	FRA	T146		60	0.3	±20	700	1000	—	—	—	—	—	—	3*1	33
SOT-23 (SST3) 2924 Size	**RK7002A**	FRA	T116	N	60	0.3	±20	700	1000	1100	1400	—	—	—	—	3*1	33
	New **RK7002BM**	FRA	T116		60	0.25	±20	1700	2400	2100	3000	3000	12000	—	—	—	15
SOT-323T (TUMT3) [SC-113A] 2021 Size	**RUF025N02**	FRA	TL	N	20	2.5	±10	—	—	39	54	49	68	80	160	5*2	370
	RTF025N03	FRA	TL		30	2.5	±12	—	—	48	67	70	98	—	—	3.7*2	270
	RTF016N05	FRA	TL		45	1.6	±12	—	—	140	190	200	280	—	—	2.3*2	150
	RSF015N06	FRA	TL		60	1.5	±20	210	290	240	330	—	—	—	—	2	110
SOT-363T (TUMT6) [SC-113DA] 2021 Size	**RUL035N02**	FRA	TR	N	20	3.5	±10	—	—	31	43	38	53	66	93	5.7*2	460
	RTL035N03	FRA	TR		30	3.5	±12	—	—	40	56	56	79	—	—	4.6*2	350
	RTL020P02	FRA	TR	P	−20	−2	±12	—	—	100	135	180	250	—	—	4.9*2	430
	New **RRL025P03**	FRA	TR		−30	−2.5	±20	55	75	85	115	—	—	—	—	5.2	480
	RSL020P03	FRA	TR		−30	−2	±20	80	120	125	190	—	—	—	—	3.9	350
	RRL035P03	FRA	TR		−30	−3.5	±20	36	50	52	72	—	—	—	—	8	800
SOT–346T (TSMT3) [SC–96] 2928 Size	**RUR040N02**	FRA	TL	N	20	4	±10	—	—	25	35	33	46	55	110	8*2	680
	RTR040N03	FRA	TL		30	4	±12	—	—	34	48	47	66	—	—	5.9*2	475
	RTR025N03	FRA	TL		30	2.5	±12	—	—	66	92	95	133	—	—	3.3*2	220
	RSR025N03	FRA	TL		30	2.5	±20	50	70	74	105	—	—	—	—	2.9	165
	RTR030N05	FRA	TL		45	3	±12	—	—	48	67	68	95	—	—	6.2*2	510
	RTR025N05	FRA	TL		45	2.5	±12	—	—	95	130	125	175	—	—	3.2*2	250
	RSR025N05	FRA	TL		45	2.5	±20	70	100	95	150	—	—	—	—	3.6	260
	RTR020N05	FRA	TL		45	2	±12	—	—	130	180	180	250	—	—	2.9*2	200
	RSR030N06	FRA	TL		60	3	±20	60	85	70	100	—	—	—	—	5	380
	RSR020N06	FRA	TL		60	2	±20	120	170	140	195	—	—	—	—	2.7	180
	RSR010N10	FHA	TL		100	1	±20	370	520	400	560	—	—	—	—	3.5	140
	RTR030P02	FHA	TL	P	−20	−3	±12	—	—	55	75	90	125	—	—	9.3*2	840
	RTR025P02	FRA	TL		−20	−2.5	±12	—	—	70	95	115	160	—	—	7*2	630
	RTR020P02	FRA	TL		−20	−2	±12	—	—	100	135	180	250	—	—	4.9*2	430
	RRR040P03	FRA	TL		−30	−4	±20	32	45	45	63	—	—	—	—	10.5	1000
	RRR030P03	FRA	TL		−30	−3	±20	55	75	85	115	—	—	—	—	5.2	480
	RSR025P03	FRA	TL		−30	−2.5	±20	70	98	100	140	—	—	—	—	5.4	460
	RSR020P05	FRA	TL		−45	−2	±20	130	190	180	260	—	—	—	—	9.5*1	500
	RSR015P06	FRA	TL		−60	−1.5	±20	200	280	240	340	—	—	—	—	10*1	500
SOT-457T (TSMT6) [SC-95] 2928 Size	**RUQ050N02**	FRA	TR	N	20	5	±10	—	—	22	30	27	38	40	80	12*2	900
	RTQ045N03	FRA	TR		30	4.5	±12	—	—	30	43	42	60	—	—	7.6*2	540
	RSQ045N03	FRA	TR		30	4.5	±20	27	38	36	51	—	—	—	—	6.8	520
	RTQ035N03	FRA	TR		30	3.5	±12	—	—	38	54	55	77	—	—	4.6*2	285
	RSQ035N03	FRA	TR		30	3.5	±20	44	62	60	84	—	—	—	—	5.3	290
	RSQ020N03	FRA	TR		30	2	±20	96	134	148	207	—	—	—	—	2.2	110
	RVQ040N05	FRA	TR		45	4	±21	38	53	47	66	—	—	—	—	6.3	530
	RTQ020N05	FRA	TR		45	2	±12	—	—	140	190	200	280	—	—	2.3*2	150
	RSQ035N06	FRA	TR		60	3.5	±20	50	70	58	82	—	—	—	—	6.5	430
	RSQ015N06	FRA	TR		60	1.5	±20	210	290	240	330	—	—	—	—	2	110
	QS6K1	FRA	TR	N+N	30	1	±12	—	—	170	238	260	364	—	—	1.7*2	77
	QS6K21	FRA	TR		45	1	±12	—	—	300	420	415	585	—	—	1.5*2	95
	RTQ035P02	FHA	TR	P	−20	−3.5	±12	—	—	50	65	80	100	—	—	10.5*2	1200
	RTQ025P02	FRA	TR		−20	−2.5	±12	—	—	72	100	140	190	—	—	6.4*2	580
	RRQ045P03	FRA	TR		−30	−4.5	±20	25	35	34	48	—	—	—	—	14	1350
	RSQ035P03	FRA	TR		−30	−3.5	±20	45	65	65	90	—	—	—	—	9.2	780
	RRQ030P03	FRA	TR		−30	−3	±20	55	75	85	115	—	—	—	—	5.2	480
	RSQ025P03	FRA	TR		−30	−2.5	±20	80	110	120	165	—	—	—	—	4.4	320
	RSQ015P10	FRA	TR		−100	−1.5	±20	350	470	380	510	—	—	—	—	17	950
(TSMT8) 3028 Size	**RQ1C075UN**	FRA	TR	N	20	7.5	±10	—	—	11	16	14	20	20	40	18*2	1400
	QS8K2	FRA	TR	N+N	30	3.5	±12	—	—	38	53	55	75	—	—	4.6*2	285
	RQ1A070ZP	FRA	TR	P	−12	−7	±10	—	—	8	12	11	16	19	38	58*2	7400*4
	RQ1E070RP	FRA	TR		−30	−7	±20	12	17	17	24	—	—	—	—	26	2700
	RQ1E050RP	FRA	TR		−30	−5	±20	22	31	32	45	—	—	—	—	13	1300
	QS8J4	FRA	TR	P+P	−30	−4	±20	40	56	55	77	—	—	—	—	8.4	800
	QS8M51	FRA	TR	N+P	100	2	±20	240	325	250	340	—	—	—	—	4.7	290*3
					−100	−1.5	±20	350	470	380	510	—	—	—	—	17	950*3

*1 V_{GS}=10V *2 V_{GS}=4.5V *3 V_{DS}=25V *4 V_{DS}=6V *5 V_{GS}=4V ( ):ROHM PKG , [ ]:JEITA Code

MOSFETs

MOSFETs (AEC-Q101) 2

Package	Part No.			Polarity	V_{DSS} (V)	I_D (A)	V_{GS} (V)	R_{DS}(on)(mΩ)						Qg Typ. (nC)	Ciss Typ. (pF)
								V_{GS}=10V		V_{GS}=4.5V		V_{GS}=2.5V		V_{GS}=5V	V_{DS}=10V
								Typ.	Max.	Typ.	Max.	Typ.	Max.		
 SOT−89 (MPT3) [SC−62] 4540 Size	**RHP030N03**	FRA	T100	N	30	3	±20	90	120	160*4	210*4	—	—	6.5*1	160
	RJP020N06	FRA	T100		60	2	±12	—	—	165	240	210	300	5*2	160
	RHP020N06	FRA	T100		60	2	±20	150	200	200	280	—	—	7*1	140
 (SOP8) 5060 Size	**RSS130N03**	FRA	TB	N	30	13	±20	5.9	8.3	7.4	10.4	—	—	25	2000
	RSS100N03	FRA	TB		30	10	±20	9.5	13.3	12.5	17.5	—	—	14	1070
	RSS090N03	FRA	TB		30	9	±20	11	16	15	22	—	—	11	810
	RSS095N05	FRA	TB		45	9.5	±20	11	16	14	20	—	—	18.9	1830
	RSS085N05	FRA	TB		45	8.5	±20	13	18	16	23	—	—	15.3	1500
	RSS070N05	FRA	TB		45	7	±20	18	25	23	32	—	—	12	1000
	RSS065N06	FRA	TB		60	6.5	±20	24	37	28	44	—	—	11	900
	SP8K3	FRA	TB	N+N	30	7	±20	17	24	23	33	—	—	8.4	600
	SP8K2	FRA	TB		30	6	±20	21	30	30	42	—	—	7.2	520
	SP8K1	FRA	TB		30	5	±20	36	51	52	73	—	—	3.9	230
	SP8K5	FRA	TB		30	3.5	±20	59	83	93	130	—	—	2.5	140
	SP8K24	FRA	TB		45	6	±20	18	25	24	34	—	—	15.4	1400
	SP8K23	FRA	TB		45	5	±20	26	36	33	46	—	—	8.6	700
	SP8K22	FRA	TB		45	4.5	±20	33	46	41	57	—	—	6.8	550
	SP8K33	FRA	TB		60	5	±20	34	48	38	54	—	—	8	620
	SP8K32	FRA	TB		60	4.5	±20	46	65	52	73	—	—	7	500
	SP8K31	FRA	TB		60	3.5	±20	85	120	100	140	—	—	3.7	250
	SP8K52	FRA	TB		100	3	±20	120	170	130	180	—	—	8.5	610*3
	RRS140P03	FRA	TB	P	−30	−14	±20	5	7	6.7	9.4	—	—	80	8000
	RRS100P03	FRA	TB		−30	−10	±20	9	12.6	12.5	17.5	—	—	39	3600
	RRS090P03	FRA	TB		−30	−9	±20	11	15.4	15	21	—	—	30	3000
	RRS075P03	FRA	TB		−30	−7.5	±20	15	21	22	31	—	—	21	1900
	RRS050P03	FRA	TB		−30	−5	±20	36	50	52	72	—	—	9.2	850
	RRS040P03	FRA	TB		−30	−4	±20	55	75	85	115	—	—	5.2	480
	RSS070P05	FRA	TB		−45	−7	±20	19	27	25	35	—	—	34	4100
	RSS060P05	FRA	TB		−45	−6	±20	26	36	35	49	—	—	23	2700
	SP8J66	FRA	TB	P+P	−30	−9	±20	13.5	18.5	17.5	23.6	—	—	35	3000
	SP8J5	FRA	TB		−30	−7	±20	20	28	25	35	—	—	25	2600
	SP8M3	FRA	TB	N+P	30	5	±20	36	51	52	73	—	—	3.9	230
					−30	−4.5	±20	40	56	57	80	—	—	8.5	850
	SP8M4	FRA	TB		30	9	±20	12	18	16	24	—	—	15	1190
					−30	−7	±20	20	28	25	35	—	—	25	2600
	SP8M5	FRA	TB		30	6	±20	21	30	30	42	—	—	7.2	520
					−30	−7	±20	20	28	25	35	—	—	25	2600
	SP8M6	FRA	TB		30	5	±20	36	51	52	73	—	—	3.9	230
					−30	−3.5	±20	65	90	100	140	—	—	5.5	490
	SP8M8	FRA	TB		30	6	±20	21	30	30	42	—	—	7.2	520
					−30	−4.5	±20	40	56	57	80	—	—	8.5	850
	SP8M10	FRA	TB		30	7	±20	17	25	23	35	—	—	8.4	600
					−30	−4.5	±20	40	56	57	80	—	—	8.5	850
	SP8M21	FRA	TB		45	6	±20	18	25	24	34	—	—	15.4	1400
					−45	−4	±20	33	46	43	60	—	—	20	2400
	SP8M24	FRA	TB		45	4.5	±20	33	46	41	57	—	—	6.8	550
					−45	−3.5	±20	45	63	60	84	—	—	13	1700
	SP8M41	FRA	TB		80	3.4	±20	90	130	110	150	—	—	6.6	600
					−80	−2.6	±20	165	240	220	300	—	—	8.2	1000
	SP8M51	FRA	TB		100	3	±20	120	170	130	180	—	—	8.5	610
					−100	−2.5	±20	210	290	230	320	—	—	12.5	1550

*1 V_{GS}=10V *2 V_{GS}=4.0V *3 V_{DS}=25V ( ):ROHM PKG , [ ]:JEITA Code

Bipolar Transistors (Surface mount type)

General Purpose Amplification Bipolar Transistors(Flat Type) (AEC-Q101)

Package / Polarity / Application	SOT-723 (VMT3) [SC-105AA] 1212 Size *1 P_D=0.15W		SOT-416FL (EMT3F) [SC-89] 1616 Size *1 P_D=0.15W		SOT-323FL (UMT3F) [SC-85] 2021 Size *1 P_D=0.2W		V_{CEO} (V)	I_C (A)	h_{FE}*2
	PNP	NPN	PNP	NPN	PNP	NPN			
General Purpose Amplification	2SA2029FHAT2L	2SC5658FHAT2L	2SA1774EBHZGTL	2SC4617EBHZGTL	2SA1576UBHZGTL	2SC4081UBHZGTL	50	0.15	120 to 560

*1 With reference land installed *2 For h_{FE}, please see the technical specifications.
PNP (-)symbol omitted. ( ):ROHM PKG , [ ]:JEITA Code

General Purpose Amplification Bipolar Transistors (Gull Type) (AEC-Q101)

Package / Polarity / Application	SOT-416 (EMT3) [SC-75A] 1616 Size *1 P_D=0.15W		SOT-323 (UMT3) [SC-70] 2021 Size *1 P_D=0.2W		SOT-346 (SMT3) [SC-59] 2928 Size *1 P_D=0.2W		V_{CEO} (V)	I_C (A)	h_{FE}*2
	PNP	NPN	PNP	NPN	PNP	NPN			
General Purpose Amplification	2SA1774FRATL	2SC4617FRATL	2SA1576AFRAT106	2SC4081FRAT106	2SA1037AKFRAT146	2SC2412KFRAT146	50	0.15	120 to 560
Low V_{CE}(sat)	—	—	2SB1694FRAT106	2SD2656FRAT106	—	—	30	1	270 to 680
Driver	—	—	—	—	2SA1036KFRAT146	2SC2411KFRAT146	32	0.5	120 to 390
	—	—	—	—	2SB1197KFRAT146	2SD1781KFRAT146	32	0.8	120 to 390
	—	—	—	—	—	2SD1484KFRAT146	50	0.5	120 to 390
	—	—	—	—	2SB1198KFRAT146	2SD1782KFRAT146	80	0.5	120 to 390
High Speed SW	—	—	2SA2088FRAT106	2SC5876FRAT106	—	—	60	0.5	120 to 270 120 to 390
High Voltage	—	—	2SA1579FRAT106	2SC4102FRAT106	2SA1514KFRAT146	2SC3906KFRAT146	120	0.05	180 to 560

*1 With reference land installed *2 For h_{FE}, please see the technical specifications.
PNP (-)symbol omitted. ( ):ROHM PKG , [ ]:JEITA Code

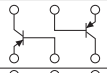
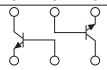
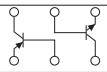
Middle Power Bipolar Transistors (AEC-Q101)

Package / Polarity / Application	SOT-89 (MPT3) [SC-62] 4540 Size *1 P_D=0.5W		SOT-428 (CPT3 DPAK) [SC-63] *1 P_D=1W		V_{CEO} (V)	I_C (A)	h_{FE}*2
	PNP	NPN	PNP	NPN			
Driver	2SAR293PFRAT100	2SCR293PFRAT100	—	—	30	1	270 to 680
	2SAR512PFRAT100	2SCR512PFRAT100	—	—	30	2	200 to 500
	2SAR552PFRAT100	2SCR552PFRAT100	—	—	30	3	200 to 500
	2SAR542PFRAT100	2SCR542PFRAT100			30	5	200 to 500
	—	—	2SAR572DFHGTL	2SCR572DFHGTL	30	5	200 to 500
	2SAR513PFRAT100	2SCR513PFRAT100	—	—	50	1	180 to 450
	2SAR553PFRAT100	2SCR553PFRAT100	—	—	50	2	180 to 450
	2SAR533PFRAT100	2SCR533PFRAT100	—	—	50	3	180 to 450
	—	—	2SAR573DFHGTL	2SCR573DFHGTL	50	3	180 to 450
	2SAR514PFRAT100	2SCR514PFRAT100	—	—	80	0.7	120 to 390
	2SAR554PFRAT100	2SCR554PFRAT100	—	—	80	1.5	120 to 390
	—	—	2SAR574DFHGTL	2SCR574DFHGTL	80	2	120 to 390
	2SAR544PFRAT100	2SCR544PFRAT100	—	—	80	2.5	120 to 390
	—	2SCR372PFRAT100	—	—	120	0.7	120 to 390
	—	2SCR375PFRAT100	—	—	120	1.5	120 to 390

*1 With reference land installed *2 For h_{FE}, please see the technical specifications.
PNP (-) symbol omitted. ( ):ROHM PKG , [ ]:JEITA Code

Complex Bipolar Transistors

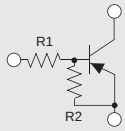
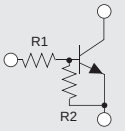
General Purpose Amplification Bipolar Transistors (AEC-Q101)

Configuration	Package / Item / Application	Equivalent Circuit Diagram(TOP View)	SOT-553/SOT-563 (EMT5/EMT6) [SC-107BB/SC-107C] 1616 Size	SOT-353/SOT-363 (UMT5/UMT6) [SC-88A/SC-88] 2021 Size	Equivalent Element Transistors	V_{CEO} (V)	I_C (A)	h_{FE}*1
			Part No.					
PNP×2	Pre Amp.		**EMT1FHAT2L**	**UMT1NFHATN**	2SA1037AK×2	−50	−0.15	120 to 560
NPN×2	Pre Amp.		**EMX1FHAT2L**	**UMX1NFHATN**	2SC2412K×2	50	0.15	120 to 560
PNP + NPN	Pre Amp.		**EMZ1FHAT2L**	**UMZ1NFHATR**	2SA1037AK 2SC2412K	−50 50	−0.15 0.15	120 to 560 120 to 560

*1 For h_{FE}, please see the technical specifications.
For No.1 Pin location, please see the technical specifications. ( ):ROHM PKG , [ ]:JEITA Code

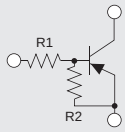
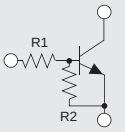
Digital Transistors

100mA Digital Transistors (AEC-Q101)

Item / Specifications	Part No. PNP 	Part No. NPN 	R1 (kΩ)	R2 (kΩ)	Package: SOT-723 (VMT3) [SC-105AA] 1212 Size 	SOT-416FL (EMT3F) [SC-89] 1616 Size 	SOT-416 (EMT3) [SC-75A] 1616 Size 	SOT-323FL (UMT3F) [SC-85] 2021 Size 	SOT-323 (UMT3) [SC-70] 2021 Size 	SOT-346 (SMT3) [SC-59] 2928 Size 	V_{CC} (V_{CEO}) (V)	I_O (I_C) (A)	GI (h_{FE}*1)
					P_D=150mW			P_D=200mW					
R1=R2 Potential Divider Type	**DTA123ExA** ✻	**DTC123ExA** ✻	2.2	2.2	✓	☆✓	✓	☆✓	✓	✓	50	0.1	20 or more
	DTA143ExA ✻	**DTC143ExA** ✻	4.7	4.7	✓	✓	✓	✓	✓	✓		0.1	30 or more
	DTA114ExA ✻	**DTC114ExA** ✻	10	10	✓	✓	✓	✓	✓	✓		0.05	30 or more
	DTA124ExA ✻	**DTC124ExA** ✻	22	22	✓	✓	✓	✓	✓	✓		0.03	56 or more
	DTA144ExA ✻	**DTC144ExA** ✻	47	47	✓	✓	✓	✓	✓	✓		0.03	68 or more
	DTA115ExA ✻	**DTC115ExA** ✻	100	100	✓	✓	✓	✓	✓	✓		0.02	82 or more
R1≠R2 Leak Absorption Type	**DTA113ZxA** ✻	**DTC113ZxA** ✻	1	10	✓	☆✓	✓	☆✓	✓	✓		0.1	33 or more
	DTA123YxA ✻	**DTC123YxA** ✻	2.2	10	✓	✓	✓	☆✓	✓	✓		0.1	33 or more
	DTA123JxA ✻	**DTC123JxA** ✻	2.2	47	✓	✓	✓	✓	✓	✓		0.1	80 or more
	DTA143XxA ✻	**DTC143XxA** ✻	4.7	10	✓	✓	✓	✓	✓	✓		0.1	30 or more
	DTA143ZxA ✻	**DTC143ZxA** ✻	4.7	47	✓	✓	✓	✓	✓	✓		0.1	80 or more
	DTA114YxA ✻	**DTC114YxA** ✻	10	47	✓	✓	✓	✓	✓	✓		0.07	68 or more
	DTA124XxA ✻	**DTC124XxA** ✻	22	47	✓	☆✓	✓	☆✓	✓	✓		0.05	68 or more
Type using R1 alone as input Resistor	**DTA143TxA** ✻	**DTC143TxA** ✻	4.7	—	✓	✓	✓	✓	✓	✓		0.1	100 to 600
	DTA114TxA ✻	**DTC114TxA** ✻	10	—	✓	✓	✓	✓	✓	✓		0.1	100 to 600
x：Packaging designation symbol					M	EB	E	UB	U	K			
✻：Specification + Packaging Symbol					FHAT2L	HZGTL	FRATL	HZGTL	FRAT106	FRAT146			

*1 For h_{FE}, please see the technical specifications.
VMT3, EMT3F,EMT3 and UMT3F without suffix A. PNP (-) symbol omitted. ( ):ROHM PKG , [ ]:JEITA Code
☆：Under Development

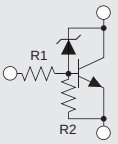
500mA Digital Transistors (AEC-Q101)

Item / Specifications	Part No. PNP 	Part No. NPN 	R1 (kΩ)	R2 (kΩ)	Package: SOT-323 (UMT3) [SC-70] 2021 Size 	SOT-346 (SMT3) [SC-59] 2928 Size 	V_{CC} (V_{CEO}) (V)	I_O (I_C) (A)	GI (h_{FE}*1)
					P_D=200mW				
R1=R2 Potential Divider Type	**DTB113Ex** ✻	**DTD113Ex** ✻	1	1	☆✓	✓	50	0.5	33 or more
	DTB123Ex ✻	**DTD123Ex** ✻	2.2	2.2	☆✓	✓			39 or more
	DTB143Ex ✻	**DTD143Ex** ✻	4.7	4.7	☆✓	✓			47 or more
	DTB114Ex ✻	**DTD114Ex** ✻	10	10	☆✓	✓			56 or more
R1≠R2 Leak Absorption Type	**DTB113Zx** ✻	**DTD113Zx** ✻	1	10	☆✓	✓			56 or more
	DTB123Yx ✻	**DTD123Yx** ✻	2.2	10	☆✓	✓			56 or more
Type using R2 alone as Bleeder Resistor	**DTB114Gx** ✻	**DTD114Gx** ✻	—	10	☆✓	✓			56 or more
Type using R1 alone as input Resistor	**DTB123Tx** ✻	**DTD123Tx** ✻	2.2	—	☆✓	✓	40		100 to 600
x：Packaging designation symbol					U	K			
✻：Specification + Packaging Symbol					FRAT106	FRAT146			

*1 For h_{FE}, please see the technical specifications.
PNP (-) symbol omitted. ( ):ROHM PKG , [ ]:JEITA Code
☆：Under Development

Digital Transistors

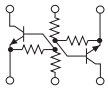
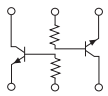
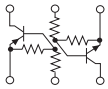
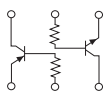
Middle Power Digital Transistors (AEC-Q101)

Item / Specifications	Part No. PNP	Part No. NPN	R1 (kΩ)	R2 (kΩ)	Package: SOT-89 (MPT3) [SC-62] 4540 Size	V_{CC} (V_{CEO}) (V)	I_O (I_C) (A)	GI (h_{FE}*1)
	—							
					P_D=500mW			
Driver	—	**DTDG23YPFRAT100**	2.2	10	✓	60±10	1	300 or more
	—	**DTDG14GPFRAT100**	—	10	✓			300 or more

*1 For h_{FE}, please see the technical specifications.
∗For internal circuit, please see the technical specifications. ( ):ROHM PKG , [ ]:JEITA Code

Complex Digital Transistors

100mA Complex Digital Transistors (AEC-Q101)

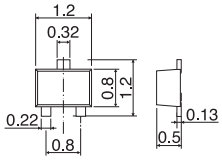
Configuration	Equivalent Circuit Diagram (TOP View)	SOT-563 (EMT6) [SC-107C] 1616 Size	SOT-363 (UMT6) [SC-88] 2021 Size	Equivalent Element Transistors	R1 (kΩ)	R2 (kΩ)	V_{CC} (V_{CEO}) (V)	I_O (I_C) (A)
								
		Part No.						
PNP ×2		**EMB10FHAT2R**	**UMB10NFHATN**	DTA123J×2	2.2	47	50	0.1
		EMB11FHAT2R	**UMB11NFHATN**	DTA114E×2	10	10		0.05
		EMB2FHAT2R	**UMB2NFHATN**	DTA144E×2	47	47		0.03
		**EMB3FHAT2R**	**UMB3NFHATN**	DTA143T×2	4.7	—		0.1
		EMB4FHAT2R	**UMB4NFHATN**	DTA114T×2	10	—		0.1
NPN ×2		**EMH10FHAT2R**	**UMH10NFHATN**	DTC123J×2	2.2	47		0.1
		EMH25FHAT2R	☆**UMH25NFHATN**	DTC143Z×2	4.7	47		0.1
		EMH11FHAT2R	**UMH11NFHATN**	DTC114E×2	10	10		0.05
		EMH9FHAT2R	**UMH9NFHATN**	DTC114Y×2	10	47		0.07
		EMH1FHAT2R	**UMH1NFHATN**	DTC124E×2	22	22		0.03
		EMH2FHAT2R	**UMH2NFHATN**	DTC144E×2	47	47		0.03
		**EMH3FHAT2R**	**UMH3NFHATN**	DTC143T×2	4.7	—		0.1
		EMH4FHAT2R	**UMH4NFHATN**	DTC114T×2	10	—		0.1
		EMH15FHAT2R	—	DTC144T×2	47	—		0.1
PNP+NPN complimentary		**EMD22FHAT2R**	**UMD22NFHATR**	DTA143Z DTC143Z	4.7 4.7	47 47		0.1
		EMD3FHAT2R	**UMD3NFHATR**	DTA114E DTC114E	10 10	10 10		0.05
		EMD9FHAT2R	**UMD9NFHATR**	DTA114Y DTC114Y	10 10	47 47		0.07
		EMD2FHAT2R	**UMD2NFHATR**	DTA124E DTC124E	22 22	22 22		0.03
		EMD12FHAT2R	**UMD12NFHATR**	DTA144E DTC144E	47 47	47 47		0.03
		**EMD6FHAT2R**	**UMD6NFHATR**	DTA143T DTC143T	4.7 4.7	— —		0.1

For No.1 Pin location, please see the technical specifications.
( ):ROHM PKG , [ ]:JEITA Code
☆ : Under Development

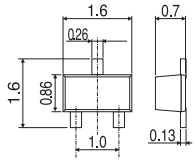
Packages

●Dimensions (Unit : mm)

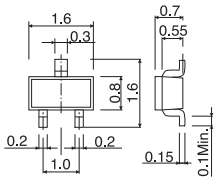
SOT-723
(VMT3)
[SC-105AA]



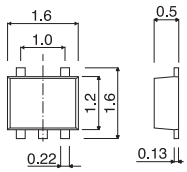
SOT-416FL
(EMT3F)
[SC-89]



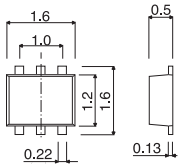
SOT-416
(EMT3)
[SC-75A]



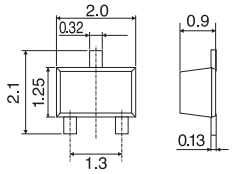
SOT-553
(EMT5)
[SC-107BB]



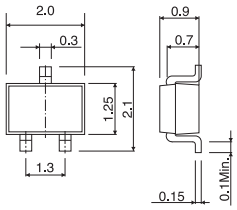
SOT-563
(EMT6)
[SC-107C]



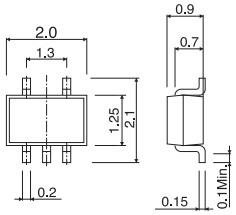
SOT-323FL
(UMT3F)
[SC-85]



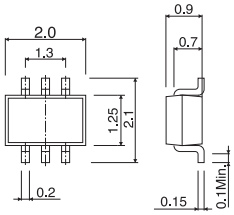
SOT-323
(UMT3)
[SC-70]



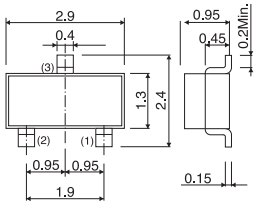
SOT-353
(UMT5)
[SC-88A]



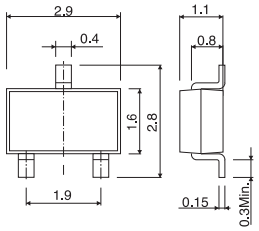
SOT-363
(UMT6)
[SC-88]



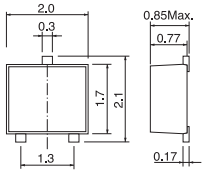
SOT-23
(SST3)



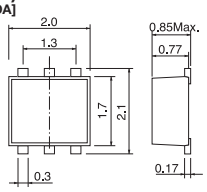
SOT-346
(SMT3)
[SC-59]



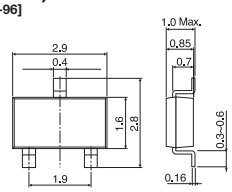
SOT-323T
(TUMT3)
[SC-113A]



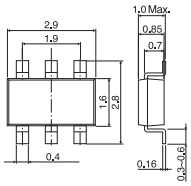
SOT-363T
(TUMT6)
[SC-113DA]



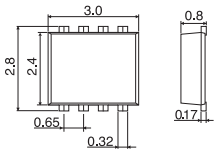
SOT-346T
(TSMT3)
[SC-96]



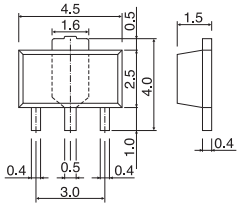
SOT-457T
(TSMT6)
[SC-95]



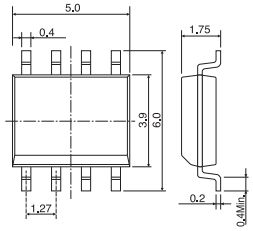
(TSMT8)



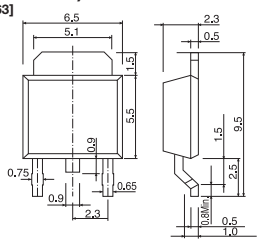
SOT-89
(MPT3)
[SC-62]



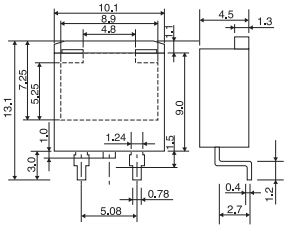
(SOP8)



SOT-428
(CPT3 DPAK)
[SC-63]



TO-263
(LPT)



For details of dimensions, please refer to the technical specifications. ( ):ROHM PKG , [ ]:JEITA Code

Schottky Barrier Diodes

●Quick Reference for Power Schottky Barrier Diodes

V_R (V)	I_O (A)	Package							
									
		TO-252 (DPAK)		TO-263S (D2PAK)		TO-220FN (3pin)		TO-220FN (2pin)	
30	5	RB078BM30S	112						
	6	RB095BM-30 New RB098BM-30	1 2						
	10	RB085BM-30 New RBR10BM30A New RB088BM-30	3 4 5	New RBR10NS30A New RB088NS-30	31 34	New RBR10T30A New RB088T-30	65 66		
	15	New RBR15BM30A	6						
	20	New RBR20BM30A	7	New RBR20NS30A New RB218NS-30	32 35	New RBR20T30A New RB218T-30	67 68		
	30			New RBR30NS30A New RB228NS-30	33 36	New RBR30T30A New RB228T-30	69 70		
	40			New RB238NS-30	37	New RB238T-30	71		
40/45	5	RB075BM40S	113						
	6	RB095BM-40 New RB098BM-40	8 9			RB095T-40	72		
	10	RB085BM-40 RBQ10BM45A New RBR10BM40A New RB088BM-40	10 15 11 12	RBQ10NS45A New RB088NS-40 New RBR10NS40A	46 38 39	RB085T-40 RBQ10T45A New RBR10T40A New RB088T-40	73 84 74 75		
	15	RBQ15BM45A New RBR15BM40A	16 13			RB205T-40	76		
	20	RBQ20BM45A New RBR20BM40A	17 14	RBQ20NS45A New RBR20NS40A New RB218NS-40	47 40 41	RB215T-40 RBQ20T45A New RBR20T40A New RB218T-40	77 85 78 79		
	30			RB225NS-40 RBQ30NS45A RBQ30NS45B New RBR30NS40A New RB228NS-40	42 48 114 43 44	RB225T-40 RBQ30T45A New RBR30T40A New RB228T-40	80 86 81 82	RBQ30TB45B	115
	40			New RB238NS-40	45	New RB238T-40	83		
60/65	6	RB095BM-60 New RB098BM-60	18 19			RB095T-60	87		
	10	RBQ10BM65A New RB088BM-60 New RB085BM-60	22 21 20	RBQ10NS65A New RB088NS-60	53 49	RB085T-60 RBQ10T65A New RB088T-60	88 96 89		
	15	RBQ15BM65A	23			RB205T-60	90		
	20	RBQ20BM65A	24	RBQ20NS65A New RB218NS-60	54 50	RB215T-60 RBQ20T65A New RB218T-60	92 97 91		
	30			RBQ30NS65A New RB228NS-60	55 51	RB225T-60 RBQ30T65A New RB228T-60	94 98 93		
	40			New RB238NS-60	52	New RB238T-60	95		
90	6	RB095BM-90	25			RB095T-90	99		
	10	RB085BM-90	26			RB085T-90	100		
	15					RB205T-90	101		
	20					RB215T-90	102		
100	6	New RB098BM100	27						
	10	RB088BM100	28	New RB088NS100	56	New RB088T100	103		
	20			New RB218NS100	57	New RB218T100	104		
	30			RB228NS100 New RB298NS100	58 59	RB228T100 New RB298T100	105 106		
	40			RB238NS100	60	New RB238T100	107		
150	6	New RB098BM150	29						
	10	RB088BM150	30	RB088NS150	61	RB088T150	108		
	20			New RB218NS150	62	New RB218T150	109		
	30			New RB228NS150	63	New RB228T150	110		
	40			RB238NS150	64	New RB238T150	111		

Power Schottky Barrier Diodes (AEC-Q101) 1

Quick Reference No.	Product No. Part No.			Absolute Maximum Ratings (T_C=25°C) V_{RM} (V)	V_R (V)	I_O*1 (A)	I_{FSM}(A)*2 60Hz.1cyc	Electrical Characteristics (T_j=25°C)*2 V_F(V) Max.	I_F(A)	I_R(mA) Max.	V_R(V)	Package	Equivalent Circuit Diagram
1	RB095BM-30	FH	TL	35	30	6	50	0.425	3	0.2	30	TO-252 (DPAK)	
2	New RB098BM-30	FH	TL	35	30	6	50	0.72	3	0.0015	30		
3	RB085BM-30	FH	TL	35	30	10	50	0.48	4	0.3	30		
4	New RBR10BM30A	FH	TL	30	30	10	50	0.55	5	0.1	30		
5	New RB088BM-30	FH	TL	35	30	10	50	0.72	5	0.003	30		
6	New RBR15BM30A	FH	TL	30	30	15	100	0.51	7.5	0.2	30		
7	New RBR20BM30A	FH	TL	30	30	20	100	0.51	10	0.3	30		
8	RB095BM-40	FH	TL	45	40	6	50	0.55	3	0.1	40		
9	New RB098BM-40	FH	TL	45	40	6	50	0.77	3	0.0015	40		
10	RB085BM-40	FH	TL	45	40	10	50	0.55	5	0.2	40		
11	New RBR10BM40A	FH	TL	40	40	10	50	0.62	5	0.12	40		
12	New RB088BM-40	FH	TL	45	40	10	50	0.77	5	0.003	40		
13	New RBR15BM40A	FH	TL	40	40	15	100	0.58	7.5	0.24	40		
14	New RBR20BM40A	FH	TL	40	40	20	100	0.58	10	0.36	40		
15	RBQ10BM45A	FH	TL	45	45	10	50	0.65	5	0.15	45		
16	RBQ15BM45A	FH	TL	45	45	15	100	0.59	7.5	0.3	45		
17	RBQ20BM45A	FH	TL	45	45	20	100	0.59	10	0.45	45		
18	RB095BM-60	FH	TL	60	60	6	50	0.58	3	0.3	60		
19	New RB098BM-60	FH	TL	60	60	6	50	0.83	3	0.0015	60		
20	New RB085BM-60	FH	TL	60	60	10	50	0.58	5	0.3	60		
21	New RB088BM-60	FH	TL	60	60	10	50	0.83	5	0.003	60		
22	RBQ10BM65A	FH	TL	65	65	10	50	0.69	5	0.15	65		
23	RBQ15BM65A	FH	TL	65	65	15	100	0.63	7.5	0.3	65		
24	RBQ20BM65A	FH	TL	65	65	20	100	0.63	10	0.45	65		
25	RB095BM-90	FH	TL	90	90	6	50	0.75	3	0.15	90		
26	RB085BM-90	FH	TL	90	90	10	50	0.83	5	0.15	90		
27	New RB098BM100	FH	TL	110	100	6	50	0.79	3	0.003	100		
28	RB088BM100	FH	TL	100	100	10	50	0.87	5	0.005	100		
29	New RB098BM150	FH	TL	150	150	6	50	0.88	3	0.007	150		
30	RB088BM150	FH	TL	150	150	10	50	0.88	5	0.015	150		
31	New RBR10NS30A	FH	TL	30	30	10	50	0.55	5	0.1	30	TO-263S (D2PAK)	
32	New RBR20NS30A	FH	TL	30	30	20	100	0.55	10	0.2	30		
33	New RBR30NS30A	FH	TL	30	30	30	100	0.55	15	0.3	30		
34	New RB088NS-30	FH	TL	35	30	10	50	0.72	5	0.003	30		
35	New RB218NS-30	FH	TL	35	30	20	100	0.72	10	0.005	30		
36	New RB228NS-30	FH	TL	35	30	30	100	0.72	15	0.01	30		
37	New RB238NS-30	FH	TL	35	30	40	100	0.75	20	0.012	30		
38	New RB088NS-40	FH	TL	45	40	10	50	0.77	5	0.003	40		
39	New RBR10NS40A	FH	TL	40	40	10	50	0.62	5	0.12	40		
40	New RBR20NS40A	FH	TL	40	40	20	100	0.62	10	0.24	40		
41	New RB218NS-40	FH	TL	45	40	20	100	0.77	10	0.005	40		
42	RB225NS-40	FH	TL	40	40	30	50	0.55	15	0.5	40		
43	New RBR30NS40A	FH	TL	40	40	30	100	0.62	15	0.36	40		
44	New RB228NS-40	FH	TL	45	40	30	100	0.77	15	0.01	40		
45	New RB238NS-40	FH	TL	45	40	40	100	0.8	20	0.012	40		
46	RBQ10NS45A	FH	TL	45	45	10	100	0.65	5	0.15	45		
47	RBQ20NS45A	FH	TL	45	45	20	100	0.65	10	0.3	45		
48	RBQ30NS45A	FH	TL	45	45	30	100	0.65	15	0.45	45		
49	New RB088NS-60	FH	TL	60	60	10	50	0.83	5	0.003	60		
50	New RB218NS-60	FH	TL	60	60	20	100	0.83	10	0.005	60		
51	New RB228NS-60	FH	TL	60	60	30	100	0.83	15	0.01	60		
52	New RB238NS-60	FH	TL	60	60	40	100	0.86	20	0.012	60		
53	RBQ10NS65A	FH	TL	65	65	10	100	0.69	5	0.15	65		
54	RBQ20NS65A	FH	TL	65	65	20	100	0.69	10	0.3	65		
55	RBQ30NS65A	FH	TL	65	65	30	100	0.69	15	0.45	65		
56	New RB088NS100	FH	TL	110	100	10	100	0.87	5	0.005	100		
57	New RB218NS100	FH	TL	110	100	20	100	0.87	10	0.007	100		
58	RB228NS100	FH	TL	110	100	30	100	0.87	5	0.005	100		
59	New RB298NS100	FH	TL	110	100	30	100	0.87	15	0.01	100		
60	RB238NS100	FH	TL	110	100	40	100	0.86	20	0.02	100		
61	RB088NS150	FH	TL	150	150	10	50	0.88	5	0.015	150		

*1 I_O:Average rectified output current per die. In case of 2 dies , I_O indicates average output current of 2 dies. *2 Value / Die
( ):ROHM PKG

Schottky Barrier Diodes

Power Schottky Barrier Diodes (AEC-Q101) 2

Quick Reference No.	Product No. Part No.			Absolute Maximum Ratings(T_C=25°C) V_{RM} (V)	V_R (V)	I_O*1 (A)	I_{FSM}(A)*2 60Hz.1cyc	Electrical Characteristics(T_j=25°C)*2 V_F(V) Max.	I_F(A)	I_R(mA) Max.	V_R(V)	Package	Equivalent Circuit Diagram
62	New RB218NS150	FH	TL	150	150	20	100	0.88	10	0.02	150	TO-263S (D2PAK)	
63	New RB228NS150	FH	TL	150	150	30	100	0.88	15	0.025	150		
64	RB238NS150	FH	TL	150	150	40	100	0.87	20	0.03	150		
65	New RBR10T30A	HZ	C9	30	30	10	50	0.55	5	0.1	30	TO-220FN (3pin)	
66	New RB088T-30	HZ	C9	35	30	10	50	0.72	5	0.003	30		
67	New RBR20T30A	HZ	C9	30	30	20	100	0.55	10	0.2	30		
68	New RB218T-30	HZ	C9	35	30	20	100	0.72	10	0.005	30		
69	New RBR30T30A	HZ	C9	30	30	30	100	0.55	15	0.3	30		
70	New RB228T-30	HZ	C9	35	30	30	100	0.72	15	0.01	30		
71	New RB238T-30	HZ	C9	35	30	40	100	0.75	20	0.012	30		
72	RB095T-40	HZ	C9	45	40	6	100	0.55	3	0.1	40		
73	RB085T-40	HZ	C9	45	40	10	100	0.55	5	0.2	40		
74	New RBR10T40A	HZ	C9	40	40	10	50	0.62	5	0.12	40		
75	New RB088T-40	HZ	C9	45	40	10	50	0.77	5	0.003	40		
76	RB205T-40	HZ	C9	45	40	15	100	0.55	7.5	0.3	40		
77	RB215T-40	HZ	C9	45	40	20	100	0.55	10	0.5	40		
78	New RBR20T40A	HZ	C9	40	40	20	100	0.62	10	0.24	40		
79	New RB218T-40	HZ	C9	45	40	20	100	0.77	10	0.005	40		
80	RB225T-40	HZ	C9	40	40	30	100	0.63	15	0.5	40		
81	New RBR30T40A	HZ	C9	40	40	30	100	0.62	15	0.36	40		
82	New RB228T-40	HZ	C9	45	40	30	100	0.77	15	0.01	40		
83	New RB238T-40	HZ	C9	45	40	40	100	0.8	20	0.012	40		
84	RBQ10T45A	HZ	C9	45	45	10	100	0.65	5	0.15	45		
85	RBQ20T45A	HZ	C9	45	45	20	100	0.65	10	0.3	45		
86	RBQ30T45A	HZ	C9	45	45	30	100	0.65	15	0.45	45		
87	RB095T-60	HZ	C9	60	60	6	100	0.58	3	0.1	60		
88	RB085T-60	HZ	C9	60	60	10	100	0.58	5	0.3	60		
89	New RB088T-60	HZ	C9	60	60	10	50	0.83	5	0.003	60		
90	RB205T-60	HZ	C9	60	60	15	100	0.58	7.5	0.6	60		
91	New RB218T-60	HZ	C9	60	60	20	100	0.83	10	0.005	60		
92	RB215T-60	HZ	C9	60	60	20	100	0.58	10	0.6	60		
93	New RB228T-60	HZ	C9	60	60	30	100	0.83	15	0.01	60		
94	RB225T-60	HZ	C9	60	60	30	100	0.63	15	0.6	60		
95	New RB238T-60	HZ	C9	60	60	40	100	0.86	20	0.012	60		
96	RBQ10T65A	HZ	C9	65	65	10	100	0.69	5	0.15	65		
97	RBQ20T65A	HZ	C9	65	65	20	100	0.69	10	0.3	65		
98	RBQ30T65A	HZ	C9	65	65	30	100	0.69	15	0.45	65		
99	RB095T-90	HZ	C9	90	90	6	100	0.75	3	0.15	90		
100	RB085T-90	HZ	C9	90	90	10	100	0.83	5	0.15	90		
101	RB205T-90	HZ	C9	90	90	15	100	0.78	7.5	0.3	90		
102	RB215T-90	HZ	C9	90	90	20	100	0.75	10	0.4	90		
103	New RB088T100	HZ	C9	110	100	10	100	0.87	5	0.005	100		
104	New RB218T100	HZ	C9	110	100	20	100	0.87	10	0.007	100		
105	RB228T100	HZ	C9	110	100	30	100	0.87	5	0.005	100		
106	New RB298T100	HZ	C9	110	100	30	100	0.87	15	0.01	100		
107	New RB238T100	HZ	C9	110	100	40	100	0.86	20	0.02	100		
108	RB088T150	HZ	C9	150	150	10	50	0.88	5	0.015	150		
109	New RB218T150	HZ	C9	150	150	20	100	0.88	10	0.02	150		
110	New RB228T150	HZ	C9	150	150	30	100	0.88	15	0.025	150		
111	New RB238T150	HZ	C9	150	150	40	100	0.87	20	0.03	150		
112	RB078BM30S	FH	TL	35	30	5	50	0.72	5	0.005	30	TO-252 (DPAK)	
113	RB075BM40S	FH	TL	40	40	5	50	0.75	5	0.005	40		
114	RBQ30NS45B	FH	TL	45	45	30	100	0.59	30	0.7	45	TO-263S (D2PAK)	
115	RBQ30TB45B	HZ	C9	45	45	30	100	0.59	30	0.7	45	TO-220FN (2pin)	

*1 I_O:Average rectified output current per die. In case of 2 dies , I_O indicates average output current of 2 dies. *2 Value / Die ( ):ROHM PKG

●Quick Reference for Middle Power Schottky Barrier Diodes

V_R (V)	I_O (A)	Package: 2512 Size SOD-323FL (UMD2)		2514 Size (TUMD2M)		3516 Size SOD-123FL (PMDU)		4725 Size SOD-128 (PMDTM)		5026 Size DO-214AC(SMA) (PMDS)	
20	0.5										
30	0.1										
	0.5	New RB550VM-30	1	New RSX051VYM30	3						
	1			New RB550VYM-30 New RSX101VYM30 New RB168VYM-30	4 5 6	RB162MM-30 RB160MM-30 RSX101MM-30 New RBR1MM30A New RB168MM-30	17 18 19 20 21	New RBR1LAM30A New RB168LAM-30	53 54	New RBR1L30A New RB168L-30	87 88
	1.4										
	1.5			New RSX201VYM30	7	RB070MM-30	22				
	2					RB060MM-30 New RBR2MM30A New RBR2MM30B New RB068MM-30	23 24 25 27	New RBR2LAM30A New RB068LAM-30	55 56	RSX205L-30 RSX201L-30 New RBR2L30A New RB068L-30	89 90 91 92
	3					New RBR3MM30A	26	New RBR3LAM30A New RBR3LAM30B New RB058LAM-30	57 58 59	RSX301L-30 RB055L-30 New RBR3L30A New RBR3L30B New RB058L-30	93 94 95 96 97
	5							New RB080LAM-30 New RBR5LAM30A New RBR5LAM30B	60 61 62	RB080L-30 New RBR5L30A New RBR5L30B	98 99 100
40	0.5	New RB560VM-40	2	New RB400VYM-50	8						
	1			New RB160VYM-40 New RB168VYM-40	9 10	RB162MM-40 RB160MM-40 New RB168MM-40 New RBR1MM40A	28 29 30 31	New RBR1LAM40A New RB168LAM-40	63 64	RB162L-40 New RBR1L40A New RB168L-40	101 102 103
	2					RB060MM-40 New RBR2MM40A New RBR2MM40B New RBR2MM40C New RB068MM-40	32 33 34 35 36	New RBR2LAM40A New RB068LAM-40	65 66	RB060L-40 New RBR2L40A RB068L-40	104 105 106
	3					New RBR3MM40A New RBR3MM40B	37 38	New RBR3LAM40A New RBR3LAM40B New RBR3LAM40C New RB058LAM-40	67 68 69 70	RB056L-40 RB055L-40 RB050L-40 New RBR3L40A New RBR3L40B New RBR3L40C RB058L-40	107 108 109 110 111 112 113
	5							New RBR5LAM40A	71	New RBR5L40A	114
60	1			New RB160VYM-60 New RB168VYM-60	11 12	RB162MM-60 RB160MM-60 New RBR1MM60A New RB168MM-60	39 40 41 42	New RBR1LAM60A New RB168LAM-60	72 73	RB162L-60 New RBR1L60A New RB168L-60	115 116 117
	2					RB060MM-60 New RBR2MM60A New RBR2MM60B New RBR2MM60C New RB068MM-60	43 44 45 46 47	New RBR2LAM60A New RBR2LAM60B New RB068LAM-60	74 75 76	New RBR2L60A New RBR2L60B RB068L-60	118 119 120
	3					New RBR3MM60A New RBR3MM60B	48 49	New RBR3LAM60A New RBR3LAM60B New RB058LAM-60	77 78 79	RB055L-60 RB050L-60 New RBR3L60A New RBR3L60B RB058L-60	121 122 123 124 125
	5							New RBR5LAM60A	80	New RBR5L60A	126
90	1					RB160MM-90	50			RB160L-90	127
100	0.7			New RB578VYM100	13						
	1			New RB168VYM100	14	New RB168MM100	51	New RB168LAM100	81	New RB168L100	128
	2							New RB068LAM100	82	RB068L100	129
	3							New RB058LAM100	83		
150	0.5			New RB558VYM150	15						
	1			New RB168VYM150	16	New RB168MM150	52	New RB168LAM150	84	New RB168L150	130
	2							New RB068LAM150	85	New RB068L150	131
	3							New RB058LAM150	86	New RB058L150	132

Middle Power Schottky Barrier Diodes (AEC-Q101) 1

Quick Reference No.	Part No.			Absolute Maximum Ratings(T_C=25°C) V_{RM} (V)	V_R (V)	I_O*1 (A)	I_{FSM}(A) 60Hz.1cyc	Electrical Characteristics(T_j=25°C) V_F(V) Max.	I_F(A)	I_R(mA) Max.	V_R(V)	Package	Equivalent Circuit Diagram
1	New RB550VM-30	FH	TE-17	30	30	0.5	1	0.59	0.5	0.03	30	SOD-323FL (UMD2)	
2	New RB560VM-40	FH	TE-17	40	40	0.5	2	0.64	0.5	0.04	40		
3	New RSX051VYM30	FH	TR	30	30	0.5	5	0.39	0.5	0.2	30		
4	New RB550VYM-30	FH	TR	30	30	1	3	0.52	1	0.03	10		
5	New RSX101VYM30	FH	TR	30	30	1	5	0.47	1	0.2	30		
6	New RB168VYM-30	FH	TR	30	30	1	5	0.73	1	0.0003	30		
7	New RSX201VYM30	FH	TR	30	30	1.5	8	0.46	1.5	0.3	30		
8	New RB400VYM-50	FH	TR	50	40	0.5	3	0.55	0.5	0.05	30		
9	New RB160VYM-40	FH	TR	40	40	1	5	0.55	0.7	0.05	40		
10	New RB168VYM-40	FH	TR	40	40	1	5	0.79	1	0.0005	40	(TUMD2M)	
11	New RB160VYM-60	FH	TR	60	60	1	3	0.67	1	0.4	60		
12	New RB168VYM-60	FH	TR	60	60	1	5	0.82	1	0.001	60		
13	New RB578VYM100	FH	TR	100	100	0.7	5	0.85	0.7	0.0002	100		
14	New RB168VYM100	FH	TR	100	100	1	5	0.84	1	0.0003	100		
15	New RB558VYM150	FH	TR	150	150	0.5	3	0.95	0.5	0.0005	150		
16	New RB168VYM150	FH	TR	150	150	1	5	0.89	1	0.001	150		
17	RB162MM-30	TF	TR	30	30	1	30	0.52	1	0.1	30		
18	RB160MM-30	TF	TR	30	30	1	30	0.48	1	0.05	30		
19	RSX101MM-30	TF	TR	30	30	1	45	0.39	1	0.2	30		
20	New RBR1MM30A	TF	TR	30	30	1	30	0.48	1	0.05	30		
21	New RB168MM-30	TF	TR	30	30	1	20	0.69	1	0.0006	30		
22	RB070MM-30	TF	TR	30	30	1.5	30	0.49	1.5	0.05	30		
23	RB060MM-30	TF	TR	30	30	2	55	0.49	2	0.05	30		
24	New RBR2MM30A	TF	TR	30	30	2	30	0.53	2	0.05	30	SOD-123FL (PMDU)	
25	New RBR2MM30B	TF	TR	30	30	2	30	0.49	2	0.08	30		
26	New RBR3MM30A	TF	TR	30	30	3	30	0.51	3	0.1	30		
27	New RB068MM-30	TF	TR	30	30	2	30	0.7	2	0.0008	30		
28	RB162MM-40	TF	TR	40	40	1	30	0.55	1	0.1	40		
29	RB160MM-40	TF	TR	40	40	1	30	0.51	1	0.03	40		
30	New RB168MM-40	TF	TR	40	40	1	30	0.65	1	0.00055	40		

*1 I_O:Average output current per chip. In case of 2 chip diodes. I_O indicates average output current of 2 chips. ( ):ROHM PKG

Schottky Barrier Diodes

Middle Power Schottky Barrier Diodes (AEC-Q101) 2

Quick Reference No.	Part No.			Absolute Maximum Ratings(T_C=25°C) V_{RM} (V)	V_R (V)	I_O*1 (A)	I_{FSM}(A) 60Hz.1cyc	Electrical Characteristics(T_j=25°C) V_F(V) Max.	I_F(A)	I_R(mA) Max.	V_R(V)	Package	Equivalent Circuit Diagram
31	New RBR1MM40A	TF	TR	40	40	1	20	0.52	1	0.05	40	SOD-123FL (PMDU)	
32	RB060MM-40	TF	TR	40	40	2	30	0.56	2	0.5	40		
33	New RBR2MM40A	TF	TR	40	40	2	20	0.62	2	0.05	40		
34	New RBR2MM40B	TF	TR	40	40	2	30	0.56	2	0.08	40		
35	New RBR2MM40C	TF	TR	40	40	2	30	0.54	2	0.10	40		
36	New RB068MM-40	TF	TR	40	40	2	30	0.725	2	0.00055	40		
37	New RBR3MM40A	TF	TR	40	40	3	30	0.62	3	0.08	40		
38	New RBR3MM40B	TF	TR	40	40	3	30	0.58	3	0.10	40		
39	RB162MM-60	TF	TR	60	60	1	20	0.65	1	0.1	60		
40	RB160MM-60	TF	TR	60	60	1	30	0.55	1	0.05	60		
41	New RBR1MM60A	TF	TR	60	60	1	20	0.53	1	0.075	60		
42	New RB168MM-60	TF	TR	60	60	1	30	0.68	1	0.0015	60		
43	RB060MM-60	TF	TR	60	60	2	30	0.61	2	0.05	60		
44	New RBR2MM60A	TF	TR	60	60	2	20	0.65	2	0.075	60		
45	New RBR2MM60B	TF	TR	60	60	2	30	0.58	2	0.1	60		
46	New RBR2MM60C	TF	TR	60	60	2	30	0.55	2	0.12	60		
47	New RB068MM-60	TF	TR	60	60	2	30	0.765	2	0.0015	60		
48	New RBR3MM60A	TF	TR	60	60	3	30	0.66	3	0.1	60		
49	New RBR3MM60B	TF	TR	60	60	3	30	0.61	3	0.12	60		
50	RB160MM-90	TF	TR	90	90	1	30	0.73	1	0.1	90		
51	New RB168MM100	TF	TR	100	100	1	30	0.81	1	0.0006	100		
52	New RB168MM150	TF	TR	150	150	1	30	0.84	1	0.004	150		
53	New RBR1LAM30A	TF	TR	30	30	1	30	0.48	1	0.05	30	SOD-128 (PMDTM)	
54	New RB168LAM-30	TF	TR	30	30	1	20	0.69	1	0.0006	30		
55	New RBR2LAM30A	TF	TR	30	30	2	40	0.49	2	0.08	30		
56	New RB068LAM-30	TF	TR	30	30	2	40	0.7	2	0.0008	30		
57	New RBR3LAM30A	TF	TR	30	30	3	30	0.58	3	0.05	30		
58	New RBR3LAM30B	TF	TR	30	30	3	40	0.53	3	0.08	30		
59	New RB058LAM-30	TF	TR	30	30	3	40	0.68	3	0.0025	30		
60	New RB080LAM-30	TF	TR	30	30	5	70	0.51	5	0.15	30		
61	New RBR5LAM30A	TF	TR	30	30	5	50	0.54	5	0.1	30		
62	New RBR5LAM30B	TF	TR	30	30	5	50	0.49	5	0.15	30		
63	New RBR1LAM40A	TF	TR	40	40	1	30	0.52	1	0.05	40		
64	New RB168LAM-40	TF	TR	40	40	1	30	0.69	1	0.0005	40		
65	New RBR2LAM40A	TF	TR	40	40	2	40	0.55	2	0.08	40		
66	New RB068LAM-40	TF	TR	40	40	2	40	0.69	2	0.001	40		
67	New RBR3LAM40A	TF	TR	40	40	3	30	0.69	3	0.05	40		
68	New RBR3LAM40B	TF	TR	40	40	3	40	0.62	3	0.08	40		
69	New RBR3LAM40C	TF	TR	40	40	3	50	0.55	3	0.1	40		
70	New RB058LAM-40	TF	TR	40	40	3	70	0.7	3	0.005	40		
71	New RBR5LAM40A	TF	TR	40	40	5	50	0.53	5	0.2	40		
72	New RBR1LAM60A	TF	TR	60	60	1	30	0.53	1	0.075	60		
73	New RB168LAM-60	TF	TR	60	60	1	30	0.68	1	0.0015	60		
74	New RBR2LAM60A	TF	TR	60	60	2	30	0.65	2	0.075	60		
75	New RBR2LAM60B	TF	TR	60	60	2	50	0.52	2	0.15	60		
76	New RB068LAM-60	TF	TR	60	60	2	40	0.68	2	0.002	60		
77	New RBR3LAM60A	TF	TR	60	60	3	40	0.66	3	0.1	60		
78	New RBR3LAM60B	TF	TR	60	60	3	50	0.56	3	0.15	60		
79	New RB058LAM-60	TF	TR	60	60	3	70	0.64	3	0.004	60		
80	New RBR5LAM60A	TF	TR	60	60	5	50	0.55	5	0.25	60		
81	New RB168LAM100	TF	TR	100	100	1	30	0.81	1	0.0006	100		
82	New RB068LAM100	TF	TR	100	100	2	50	0.84	2	0.015	100		
83	New RB058LAM100	TF	TR	100	100	3	60	0.81	3	0.003	100		
84	New RB168LAM150	TF	TR	150	150	1	30	0.81	1	0.004	150		
85	New RB068LAM150	TF	TR	150	150	2	50	0.81	2	0.003	150		
86	New RB058LAM150	TF	TR	150	150	3	70	0.83	3	0.007	150		
87	New RBR1L30A	DD	TE25	30	30	1	30	0.48	1	0.05	30	DO-214AC (SMA) (PMDS)	
88	New RB168L-30	TF	TE25	30	30	1	20	0.69	1	0.0006	30		
89	RSX205L-30	TF	TE25	30	30	2	60	0.49	2	0.2	30		
90	RSX201L-30	DD	TE25	30	30	2	60	0.44	2	0.15	30		
91	New RBR2L30A	DD	TE25	30	30	2	40	0.49	2	0.08	30		
92	New RB068L-30	DD	TE25	30	30	2	40	0.7	2	0.0008	30		
93	RSX301L-30	DD	TE25	30	30	3	70	0.42	3	0.2	30		
94	RB055L-30	DD	TE25	30	30	3	55	0.55	3	0.05	30		
95	New RBR3L30A	DD	TE25	30	30	3	30	0.58	3	0.05	30		
96	New RBR3L30B	DD	TE25	30	30	3	40	0.53	3	0.08	30		
97	New RB058L-30	DD	TE25	30	30	3	40	0.68	3	0.0025	30		
98	RB080L-30	DD	TE25	30	30	5	70	0.51	5	0.15	30		
99	New RBR5L30A	DD	TE25	30	30	5	50	0.54	5	0.1	30		
100	New RBR5L30B	DD	TE25	30	30	5	50	0.49	5	0.15	30		
101	RB162L-40	TF	TE25	40	40	1	20	0.55	1	0.5	40		
102	New RBR1L40A	DD	TE25	40	40	1	30	0.52	1	0.05	40		
103	New RB168L-40	TF	TE25	40	40	1	30	0.65	1	0.00055	40		
104	RB060L-40	DD	TE25	40	40	2	70	0.5	2	1	40		
105	New RBR2L40A	DD	TE25	40	40	2	40	0.55	2	0.08	40		
106	RB068L-40	DD	TE25	40	40	2	40	0.69	2	0.001	40		
107	RB056L-40	TF	TE25	40	40	3	70	0.67	3	0.05	40		
108	RB055L-40	DD	TE25	40	40	3	40	0.65	3	0.5	40		
109	RB050L-40	DD	TE25	40	40	3	70	0.55	3	1	40		
110	New RBR3L40A	DD	TE25	40	40	3	30	0.69	3	0.05	40		
111	New RBR3L40B	DD	TE25	40	40	3	40	0.62	3	0.08	40		
112	New RBR3L40C	DD	TE25	40	40	3	50	0.55	3	0.1	40		
113	RB058L-40	DD	TE25	40	40	3	70	0.7	3	0.005	40		
114	New RBR5L40A	DD	TE25	40	40	5	50	0.53	5	0.2	40		
115	RB162L-60	TF	TE25	60	60	1	20	0.65	1	0.1	60		
116	New RBR1L60A	DD	TE25	60	60	1	30	0.53	1	0.075	60		
117	New RB168L-60	DD	TE25	60	60	1	30	0.68	1	0.0015	60		
118	New RBR2L60A	DD	TE25	60	60	2	30	0.65	2	0.075	60		
119	New RBR2L60B	DD	TE25	60	60	2	50	0.52	2	0.15	60		
120	RB068L-60	DD	TE25	60	60	2	40	0.7	2	0.002	60		
121	RB055L-60	DD	TE25	60	60	3	70	0.68	3	0.07	60		
122	RB050L-60	DD	TE25	60	60	3	70	0.52	2	0.1	60		
123	New RBR3L60A	DD	TE25	60	60	3	40	0.66	3	0.1	60		
124	New RBR3L60B	DD	TE25	60	60	3	50	0.56	3	0.15	60		
125	RB058L-60	DD	TE25	60	60	3	70	0.64	3	0.004	60		
126	New RBR5L60A	DD	TE25	60	60	5	50	0.55	5	0.25	60		
127	RB160L-90	TF	TE25	95	90	1	30	0.73	1	0.1	90		
128	New RB168L100	DD	TE25	100	100	1	30	0.81	1	0.0006	100		
129	RB068L100	DD	TE25	100	100	2	60	0.79	2	0.015	100		
130	New RB168L150	DD	TE25	150	150	1	30	0.84	1	0.004	150		
131	New RB068L150	DD	TE25	150	150	2	50	0.81	2	0.003	150		
132	New RB058L150	DD	TE25	150	150	3	50	0.85	3	0.003	150		

*1 I_O:Average output current per chip. In case of 2 chip diodes. I_O indicates average output current of 2 chips. ( ):ROHM PKG

●Quick Reference for Small Signal Type Schottky Barrier Diodes

V_R (V)	I_O (mA)	Package: 1006 Size SOD-923 (VMN2)		1406 Size SOD-723 (VMD2)		1608 Size SOD-523 (EMD2)	
30	30	RB751CS-40	3	RB751G-40	6	RB751SM-40	17
30	100	RB521CS-30 RB520CS-30	1 2	RB521G-30 RB520G-30	5 4	New RB510SM-30 New RB511SM-30 New RB500SM-30 New RB501SM-30	9 10 11 12
30	200					RB520SM-30 RB521SM-30 RB531SM-30 RB530SM-30	13 14 16 15
40	30						
40	100			New RB520G-40 New RB521G-40	7 8	New RB510SM-40 New RB511SM-40 New RB530SM-40 New RB531SM-40	18 19 20 21
40	200					New RB540SM-40 New RB541SM-40 RB521SM-40 RB520SM-40	22 23 25 24
60	100					New RB521SM-60	26

V_R (V)	I_O (mA)	Package: 2512 Size SOD-323FL (UMD2)		1212 Size SOT-723 (VMD3)		1616 Size SOT-416 (EMD3)		1616 Size SOT-416FL (EMD3F)		1616 Size SOT-543 (EMD4)		2120 Size SOT-323 (UMD3)		2120 Size SOT-323FL (UMD3F)	
30	30	RB751VM-40	35												
30	100	New RB511VM-30 New RB531VM-30 RB530VM-30 New RB510VM-30	28 30 29 27			RB557W RB558W RB548W	56 60 61	RB558WM	63	RB481Y RB480Y	76 77				
30	200	New RB520VM-30 New RB521VM-30 New RB540VM-30 New RB541VM-30	31 32 33 34												
40	30			RB715Z	48	RB715W RB706W-40	49 62								
40	100	New RB510VM-40 New RB511VM-40 RB530VM-40 RB531VM-40 RB500VM-40 RB501VM-40	36 37 38 39 40 41									RB715F RB717F RB706F-40	50 57 64	RB715UM	51
40	200	New RB540VM-40 New RB541VM-40 New RB520VM-40 New RB521VM-40 New RB550VM-40 New RB551VM-40	42 43 44 45 46 47							RB481Y-40 RB480Y-40	78 79	RB451F RB450F	68 69		
90	100									RB481Y-90 RB480Y-90	80 81				

V_R (V)	I_O (mA)	Package: 2120 Size SOT-343 (UMD4)		2120 Size SOT-363 (UMD6)		2924 Size SOT-23 (SSD3)		2928 Size SOT-346 (SMD3)		2928 Size SOT-25 (SMD5)		2928 Size SOT-25T (TSMD5)		2928 Size SOT-457 (SMD6)	
20	500							RB411D	74						
25	400							RB495D	53						
30	30													RB731U	91
30	100			RB531XN RB530XN RB541XN	87 88 89	New BAT54SHM New BAT54CHM New BAT54AHM New BAT54HM	65 52 58 70								
30	1,000											RB552EA	85		
30	1,400											RB550EA	86		
40	30	RB481K	82	RB731XN	90			RB705D RB706D-40	54 66						
40	100							RB425D RB421D RB420D	55 72 73	RB471E	84				
40	200	RB480K	83			New BAS40-06HM New BAS40-04HM New BAS40HM	59 67 71								
40	500							RB400D	75						

Schottky Barrier Diodes

Small Signal Type Schottky Barrier Diodes (AEC-Q101) 1

Quick Reference No.	Part No.			Absolute Maximum Ratings(T_C=25°C)				Electrical Characteristics(T_j=25°C)*2				Package	Equivalent Circuit Diagram
				V_{RM} (V)	V_R (V)	I_O*1 (mA)	I_{FSM}(A)*2 60Hz.1c	V_F(V) Max.	I_F(mA)	I_R(μA) Max.	V_R(V)		
1	RB521CS-30	FH	T2RA	—	30	100	0.5	0.35	10	10	10	SOD-923 (VMN2)	
2	RB520CS-30	FH	T2RA	—	30	100	0.5	0.45	10	0.5	10		
3	RB751CS-40	FH	T2RA	40	30	30	0.2	0.37	1	0.5	30		
4	RB520G-30	FH	T2R	—	30	100	0.5	0.45	10	0.5	10	SOD-723 (VMD2)	
5	RB521G-30	FH	T2R	—	30	100	0.5	0.35	10	10	10		
6	RB751G-40	FH	T2R	40	30	30	0.2	0.37	1	0.5	30		
7	New RB520G-40	FH	T2R	40	40	100	1	0.71	100	15	40		
8	New RB521G-40	FH	T2R	40	40	100	1	0.61	100	100	40		
9	New RB510SM-30	FH	T2R	30	30	100	0.5	0.46	10	0.3	10	SOD-523 (EMD2)	
10	New RB511SM-30	FH	T2R	30	30	100	0.5	0.37	10	7	10		
11	New RB500SM-30	FH	T2R	30	30	100	1	0.45	10	0.5	10		
12	New RB501SM-30	FH	T2R	30	30	100	1	0.35	10	10	10		
13	RB520SM-30	FH	T2R	—	30	200	1	0.58	200	1	10		
14	RB521SM-30	FH	T2R	—	30	200	1	0.47	200	30	10		
15	RB530SM-30	FH	T2R	30	30	200	1	0.45	10	0.5	10		
16	RB531SM-30	FH	T2R	30	30	200	1	0.35	10	10	10		
17	RB751SM-40	FH	T2R	40	30	30	0.2	0.37	1	0.5	30		
18	New RB510SM-40	FH	T2R	40	40	100	0.5	0.48	10	2	40		
19	New RB511SM-40	FH	T2R	40	40	100	0.5	0.41	10	25	40		
20	New RB530SM-40	FH	T2R	40	40	100	1	0.71	100	15	40		
21	New RB531SM-40	FH	T2R	40	40	100	1	0.61	100	100	40		
22	New RB540SM-40	FH	T2R	40	40	200	1	0.71	100	15	40		
23	New RB541SM-40	FH	T2R	40	40	200	1	0.61	100	100	40		
24	RB520SM-40	FH	T2R	40	40	200	1	0.55	100	10	40		
25	RB521SM-40	FH	T2R	45	40	200	1	0.45	100	90	40		
26	New RB521SM-60	FH	T2R	60	60	200	1	0.60	200	100	60		
27	New RB510VM-30	FH	TE-17	30	30	100	0.5	0.46	10	0.3	10	SOD-323FL (UMD2)	
28	New RB511VM-30	FH	TE-17	30	30	100	0.5	0.37	10	7	10		
29	RB530VM-30	FH	TE-17	30	30	100	0.5	0.45	10	0.5	10		
30	New RB531VM-30	FH	TE-17	30	30	100	1	0.35	10	10	10		
31	New RB520VM-30	FH	TE-17	30	30	200	1	0.58	200	1	10		
32	New RB521VM-30	FH	TE-17	30	30	200	1	0.47	200	30	10		
33	New RB540VM-30	FH	TE-17	30	30	200	1	0.45	10	0.5	10		
34	New RB541VM-30	FH	TE-17	30	30	200	1	0.35	10	30	10		
35	RB751VM-40	FH	TE-17	40	30	30	0.2	0.37	1	0.5	30		
36	New RB510VM-40	FH	TE-17	40	40	100	0.1	0.48	10	2	40		
37	New RB511VM-40	FH	TE-17	40	40	100	0.1	0.41	10	25	40		
38	RB530VM-40	FH	TE-17	40	40	100	1	0.71	100	15	40		
39	RB531VM-40	FH	TE-17	40	40	100	1	0.61	100	100	40		
40	RB500VM-40	FH	TE-17	45	40	100	1	0.45	10	1	10		
41	RB501VM-40	FH	TE-17	45	40	100	1	0.55	100	30	10		
42	New RB540VM-40	FH	TE-17	40	40	200	1	0.71	100	15	40		
43	New RB541VM-40	FH	TE-17	40	40	200	1	0.61	100	100	40		
44	New RB520VM-40	FH	TE-17	40	40	200	1	0.55	100	10	40		
45	New RB521VM-40	FH	TE-17	40	40	200	1	0.54	200	90	40		
46	New RB550VM-40	FH	TE-17	40	40	200	1	0.51	200	40	40		
47	New RB551VM-40	FH	TE-17	40	40	200	1	0.43	200	300	40		
48	RB715Z	FH	T2L	40	40	30	0.2	0.37	1	1	10	SOT-723 (VMD3)	
49	RB715W	FH	TL	40	40	30	0.2	0.37	1	1	10	SOT-416 (EMD3)	
50	RB715F	FH	T106	40	40	30	0.2	0.37	1	1	10	SOT-323 (UMD3)	
51	RB715UM	FH	TL	40	40	30	0.2	0.37	1	1	10	SOT-323FL (UMD3F)	
52	New BAT54CHM	FH	T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	
53	RB495D	FH	T146	40	25	400	2	0.5	200	70	25	SOT-346 (SMD3)	
54	RB705D	FH	T146	40	40	30	0.2	0.37	1	1	10		
55	RB425D	FH	T146	40	40	100	1	0.55	100	30	10		
56	RB557W	FH	TL	—	30	100*2	0.5	0.35	10	10	10	SOT-416 (EMD3)	
57	RB717F	FH	T106	40	40	30*2	0.2	0.37	1	1	10	SOT-323 (UMD3)	
58	New BAT54AHM	FH	T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	
59	New BAS40-06HM	FH	T116	40	40	200*2	0.6	0.38	0.001	0.001	30		
60	RB558W	FH	TL	—	30	100*2	0.5	0.35	10	10	10	SOT-416 (EMD3)	
61	RB548W	FH	TL	—	30	100*2	0.5	0.45	10	0.5	10		
62	RB706W-40	FH	TL	45	40	30	0.2	0.37	1	1	10		
63	RB558WM	FH	TL	—	30	100*2	0.5	0.49	100	10	10	SOT-416FL (EMD3F)	
64	RB706F-40	FH	T106	45	40	30*2	0.2	0.37	1	1	10	SOT-323 (UMD3)	
65	New BAT54SHM	FH	T116	30	30	200	0.6	0.8	100	2	25	SOT-23 (SSD3)	
66	RB706D-40	FH	T146	45	40	30	0.2	0.37	1	1	10	SOT-346 (SMD3)	
67	New BAS40-04HM	FH	T116	40	40	200*2	0.6	0.38	0.001	0.001	30	SOT-23 (SSD3)	
68	RB451F	FH	T106	40	40	100	1	0.55	100	30	10	SOT-323 (UMD3)	
69	RB450F	FH	T106	45	40	100	1	0.45	10	1	10		
70	New BAT54HM	FH	T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	
71	New BAS40HM	FH	T116	40	40	200*2	0.6	0.38	0.001	0.001	30		
72	RB421D	FH	T146	40	40	100	1	0.55	100	30	10	SOT-346 (SMD3)	
73	RB420D	FH	T146	40	40	100	1	0.45	10	1	10		
74	RB411D	FH	T146	40	20	500	3	0.5	500	30	10	SOT-346 (SMD3)	
75	RB400D	FH	T146	40	40	500	3	0.55	500	50	30		
76	RB481Y	FH	T2R	—	30	100*2	1	0.43	100	30	10	SOT-543 (EMD4)	
77	RB480Y	FH	T2R	—	30	100*2	1	0.53	100	1	10		
78	RB481Y-40	FH	T2R	40	40	200	1	0.45	100	90	40		
79	RB480Y-40	FH	T2R	40	40	200	1	0.55	100	10	40		
80	RB481Y-90	FH	T2R	90	90	100*2	1	0.61	100	100	90		
81	RB480Y-90	FH	T2R	90	90	100*2	1	0.69	100	5	90		
82	RB481K	FH	TL	30	30	200*2	1	0.5	200	30	10	SOT-343 (UMD4)	
83	RB480K	FH	TL	45	40	100*2	1	0.6	100	1	10		

*1 I_O: Average output current per chip. In case of 1, 2 or 3 chip diodes. I_O indicates average output current of 1, 2 or 3 chips. *2 Value / Chip ( ):ROHM PKG

Small Signal Type Schottky Barrier Diodes (AEC-Q101) 2

Quick Reference No.	Part No.			Absolute Maximum Ratings(Tc=25°C) VRM (V)	VR (V)	Io*1 (mA)	IFSM(A)*2 60Hz.1cyc	Electrical Characteristics(Tj=25°C)*2 VF(V) Max.	IF(mA)	IR(μA) Max.	VR(V)	Package	Equivalent Circuit Diagram
84	**RB471E**	FH	T148	40	40	100 *2	1	0.55	100	30	10	SOT-25 (SMD5)	
85	**RB552EA**	FH	TR	30	30	1000	7	0.59	500	8	15	SOT-25T (TSMD5)	
86	**RB550EA**	FH	TR	30	30	1400	15	0.49	700	50	30		
87	**RB531XN**	FH	TR	—	30	100 *2	1	0.43	100	30	10		
88	**RB530XN**	FH	TR	—	30	100 *2	1	0.53	100	1	10	SOT-363 (UMD6)	
89	**RB541XN**	FH	TR	—	30	100	0.5	0.35	10	10	10		
90	**RB731XN**	FH	TR	40	40	30	0.2	0.37	1	1	10		
91	**RB731U**	FH	T108	40	40	30	0.2	0.37	1	1	10	SOT-457 (SMD6)	

*1 Io: Average output current per chip. In case of 1, 2 or 3 chip diodes. Io indicates average output current of 1, 2 or 3 chips. *2 Value / Chip ( ):ROHM PKG

Rectifier Diodes

Power Rectifier Diodes

Power Rectifier Diodes (AEC-Q101)

Quick Reference No.	Product No. Part No.			Absolute Maximum Ratings(Tc=25°C) VRM (V)	VR (V)	Io (A)	IFSM(A) 60Hz.1cyc	Electrical Characteristics(Tj=25°C) VF(V) Max.	IF(A)	IR(μA) Max.	VR(V)	trr(ns) Max.	IF(mA)	IR(mA)	Package	Equivalent Circuit Diagram
—	New **RR601BM4S**	FH	TL	400	400	6	40	1.1	6	1	400	—	—	—	TO-252 (DPAK)	

( ):ROHM PKG

●Quick Reference for Rectifier Diodes

	VRM (V)	Io (A)	Package 2514 Size (TUMD2SM)		3516 Size SOD-123FL (PMDU)		5026 Size DO-214AC(SMA) (PMDS)		2928 Size SOT-25T (TSMD5)	
General Purpose Rectifier Diodes	400	0.2	**RRE02VTM4S**	1						
		0.4							**RRE04EA4D**	10
		0.5							**RR274EA-400**	11
		0.7	**RRE07VTM4S**	2	**RR264MM-400**	5				
		1					**1SR154-400**	6		
		2					**RR2L4S**	7		
	600	0.2	**RRE02VTM6S**	3						
		0.4							New **RRE04EA6D**	12
		0.7	**RRE07VTM6S**	4						
		1					**1SR154-600**	8		
		2					**RR2L6S**	9		
High-speed Rectifier Diodes	400	1					**1SR156-400**	13		

Rectifier Diodes

General Purpose Rectifier Diodes (AEC-Q101)

Quick Reference No.	Part No.			Absolute Maximum Ratings(Tc=25°C) VRM (V)	VR (V)	Io (A)	IFSM(A) 60Hz.1cyc	Electrical Characteristics(Tj=25°C)*2 VF(V) Max.	IF(A)	IR(μA) Max.	VR(V)	trr(ns) Max.	IF(mA)	IR(mA)	Package	Equivalent Circuit Diagram
1	**RRE02VTM4S**	FH	TR	400	400	0.2	1	1.1	0.2	1	400	—	—	—	(TUMD2SM)	
2	**RRE07VTM4S**	FH	TR	400	400	0.7	2	1.1	0.7	1	400	—	—	—		
3	**RRE02VTM6S**	FH	TR	600	600	0.2	1	1.1	0.2	1	600	—	—	—		
4	**RRE07VTM6S**	FH	TR	600	600	0.7	2	1.1	0.7	1	600	—	—	—		
5	**RR264MM-400**	TF	TR	400	400	0.7	25	1.1	0.7	10	400	—	—	—	SOD-123FL (PMDU)	
6	**1SR154-400**	TF	TE25	500	400	1	30	1.1	1	10	400	—	—	—	DO-214AC(SMA) (PMDS)	
7	**RR2L4S**	DD	TE25	400	400	2	50	1.1	2	10	400	—	—	—		
8	**1SR154-600**	TF	TE25	750	600	1	30	1.1	1	10	600	—	—	—		
9	**RR2L6S**	DD	TE25	600	600	2	50	1.1	2	10	600	—	—	—		
10	**RRE04EA4D**	FH	TR	400	400	0.4 *1	2	1.1	0.2	1	400	—	—	—	SOT-25T (TSMD5)	
11	**RR274EA-400**	FH	TR	400	400	1 *1	8	1.1	0.5	10	400	—	—	—		
12	New **RRE04EA6D**	FH	TR	600	600	0.4 *1	2	1.1	0.2	1	600	—	—	—		

High-speed Rectifier Diodes (AEC-Q101)

13	**1SR156-400**	TF	TE25	500	400	1	20	1.3	0.8	10	400	400	10	10	DO-214AC(SMA) (PMDS)	

*1 Io:Average output current per chip. In case of 2 chip diodes. Io indicates average output current of 2 chips. *2 Value / Chip *3 IFRM (guaranteed) charged waveform t=500us(1/2peak), 1pulse/4s, Rth<80°C /W
( ):ROHM PKG

Fast Recovery Diodes

●Quick Reference for Power Fast Recovery Diodes

V_R (V)	I_O (A)	Surface Mount Type				Leaded Type							
													
		TO-252 (DPAK)		TO-263S (D2PAK)		TO-220FN (2pin)		TO-220FN (3pin)		TO-220NFM (2pin)		TO-220NFM (3pin)	
200	3	**RF301BM2S** **RFN3BM2S**	17 18										
	5	**RF501BM2S** **RFN5BM2S**	19 20										
	6	**RF601BM2D** **RFN6BM2D**	1 2					**RF601T2D** **RFN6T2D**	8 9				
	10			**RF1001NS2D**	3			**RF1001T2D** **RFN10T2D**	10 11				
	16			**RF1601NS2D**	4			**RF1601T2D** **RFN16T2D**	12 13				
	20			**RF2001NS2D**	5			**RF2001T2D** **RFN20T2D**	14 15				
300	20			**RF2001NS3D** **RF1501NS3S**	6 29			**RF2001T3D**	16	**RF1501TF3S**	53		
350	5	**RFN5BM3S**	21										
	10	**RFN10BM3S**	27	**RFN10NS3S**	30								
	20			**RFN20NS3S** **RFUH20NS3S** **RFUH25NS3S**	31 32 33	**RFUH20TB3S** **RFUH25TB3S**	47 48						
430	10			**RFN10NS4S** **RFUH10NS4S**	34 35	**RFN10TB4S** **RFUH10TB4S**	49 50			**RFUS10TF4S**	54		
	20			**RFN20NS4S** **RFUS20NS4S** **RFUH20NS4S**	36 37 38	**RFN20TB4S** **RFUH20TB4S**	51 52	**RF2001T4S**	44			**RFUS20TM4S**	45
600	3	**RF305BM6S** **RFN3BM6S**	22 23										
	5	**RF505BM6S** **RFN5BM6S** **RFNL5BM6S**	24 25 26							**RF505TF6S** **RFN5TF6S** **RFUH5TF6S**	55 56 57		
	10	**RFN10BM6S**	28	**RFN10NS6S** **RFUH10NS6S**	39 40					**RF1005TF6S** **RFN10TF6S** **RFUH10TF6S**	58 59 60		
	20			**RFN20NS6S** **RFUH20NS6S** **RFUS20NS6S**	41 42 43					**RFN20TF6S** **RFUH20TF6S** **RFUS20TF6S**	61 62 63	**RFUS20TM6S**	46
800	5									**RFN5TF8S**	64		
	10			New **RFN10NS8D**	7								

Power Fast Recovery Diodes (AEC-Q101)

Quick Reference No.	Product No. Part No.			Absolute Maximum Ratings(T_C=25°C) V_{RM} (V)	V_R (V)	I_O (A)	I_{FSM}(A) 60Hz.1㌢	Electrical Characteristics(T_j=25°C)*2 V_F(V) Max.	I_F(A)	I_R(μA) Max.	V_R(V)	trr(ns) Max.	I_F(A)	I_R(A)	Package	Equivalent Circuit Diagram
1	RF601BM2D	FH	TL	200	200	6*1	60	0.93	3	10	200	25	0.5	1	TO-252 (DPAK)	
2	RFN6BM2D	FH	TL	200	200	6*1	40	0.98	3	10	200	25	0.5	1		
3	RF1001NS2D	FH	TL	200	200	10*1	80	0.93	5	10	200	25	0.5	1	TO-263S (D2PAK)	
4	RF1601NS2D	FH	TL	200	200	16*1	100	0.93	8	10	200	30	0.5	1		
5	RF2001NS2D	FH	TL	200	200	20*1	100	0.93	10	10	200	30	0.5	1		
6	RF2001NS3D	FH	TL	350	300	20*1	100	1.3	10	10	300	25	0.5	1		
7	New RFN10NS8D	FH	TL	800	800	10*1	60	2.1	5	10	800	40	0.5	1		
8	RF601T2D	HZ	C9	200	200	6*1	60	0.93	3	10	200	25	0.5	1	TO-220FN (3pin)	
9	RFN6T2D	HZ	C9	200	200	6*1	40	0.98	3	10	200	25	0.5	1		
10	RF1001T2D	HZ	C9	200	200	10*1	80	0.93	5	10	200	30	0.5	1		
11	RFN10T2D	HZ	C9	200	200	10*1	80	0.98	5	10	200	25	0.5	1		
12	RF1601T2D	HZ	C9	200	200	16*1	100	0.93	8	10	200	30	0.5	1		
13	RFN16T2D	HZ	C9	200	200	16*1	100	0.98	8	10	200	30	0.5	1		
14	RF2001T2D	HZ	C9	200	200	20*1	100	0.93	10	10	200	30	0.5	1		
15	RFN20T2D	HZ	C9	200	200	20*1	100	0.98	10	10	200	30	0.5	1		
16	RF2001T3D	HZ	C9	350	300	20*1	100	1.3	10	10	300	25	0.5	1		
17	RF301BM2S	FH	TL	200	200	3	40	0.93	3	10	200	25	0.5	1	TO-252 (DPAK)	
18	RFN3BM2S	FH	TL	200	200	3	40	0.98	3	10	200	25	0.5	1		
19	RF501BM2S	FH	TL	200	200	5	40	0.92	5	1	200	25	0.5	1		
20	RFN5BM2S	FH	TL	200	200	5	40	0.98	5	10	200	25	0.5	1		
21	RFN5BM3S	FH	TL	350	350	5	50	1.5	5	10	350	30	0.5	1		
22	RF305BM6S	FH	TL	600	600	3	50	1.7	3	10	600	30	0.5	1		
23	RFN3BM6S	FH	TL	600	600	3	20	1.55	3	10	600	30	0.5	1		
24	RF505BM6S	FH	TL	600	600	5	50	1.7	5	10	600	30	0.5	1		
25	RFN5BM6S	FH	TL	600	600	5	30	1.55	5	10	600	50	0.5	1		
26	RFNL5BM6S	FH	TL	600	600	5	50	1.3	5	10	600	60	0.5	1		
27	RFN10BM3S	FH	TL	350	350	10	80	1.5	10	10	350	30	0.5	1		
28	RFN10BM6S	FH	TL	600	600	10	100	1.55	10	10	600	50	0.5	1		
29	RF1501NS3S	FH	TL	350	300	20	100	1.5	20	10	300	30	0.5	1	TO-263S (D2PAK)	
30	RFN10NS3S	FH	TL	350	350	10	100	1.5	10	10	350	30	0.5	1		
31	RFN20NS3S	FH	TL	350	350	20	100	1.35	20	10	350	35	0.5	1		
32	RFUH20NS3S	FH	TL	350	350	20	100	1.5	20	10	350	25	0.5	1		
33	RFUH25NS3S	FH	TL	350	350	20	100	1.45	20	10	350	30	0.5	1		
34	RFN10NS4S	FH	TL	430	430	10	80	1.55	10	10	430	30	0.5	1		
35	RFUH10NS4S	FH	TL	430	430	10	80	1.7	10	10	430	25	0.5	1		
36	RFN20NS4S	FH	TL	430	430	20	100	1.55	20	10	430	30	0.5	1		
37	RFUS20NS4S	FH	TL	430	430	20	100	1.6	20	10	430	35	0.5	1		
38	RFUH20NS4S	FH	TL	430	430	20	100	1.7	20	10	430	25	0.5	1		
39	RFN10NS6S	FH	TL	600	600	10	100	1.55	10	10	600	50	0.5	1		
40	RFUH10NS6S	FH	TL	600	600	10	60	2.8	10	10	600	25	0.5	1		
41	RFN20NS6S	FH	TL	600	600	20	100	1.55	20	10	600	60	0.5	1		
42	RFUH20NS6S	FH	TL	600	600	20	100	2.8	20	10	600	35	0.5	1		
43	RFUS20NS6S	FH	TL	600	600	20	100	2.8	20	10	600	35	0.5	1		
44	RF2001T4S	HZ	C9	430	400	20	100	1.6	20	10	400	30	0.5	1	TO-220FN (3pin)	
45	RFUS20TM4S	FH	C9	430	430	20	100	1.6	20	10	430	35	0.5	1	TO-220NFM (3pin)	
46	RFUS20TM6S	FH	C9	600	600	20	100	2.8	20	10	600	35	0.5	1		
47	RFUH20TB3S	HZ	C9	350	350	20	100	1.5	20	10	350	25	0.5	1	TO-220FN (2pin)	
48	RFUH25TB3S	HZ	C9	350	350	20	100	1.45	20	10	350	30	0.5	1		
49	RFN10TB4S	HZ	C9	430	430	10	80	1.55	10	10	430	30	0.5	1		
50	RFUH10TB4S	HZ	C9	430	430	10	80	1.7	10	10	430	25	0.5	1		
51	RFN20TB4S	HZ	C9	430	430	20	100	1.55	20	10	430	30	0.5	1		
52	RFUH20TB4S	HZ	C9	430	430	20	100	1.7	20	10	430	25	0.5	1		
53	RF1501TF3S	FH	C9	350	300	20	100	1.5	20	10	300	30	0.5	1	TO-220NFM (2pin)	
54	RFUS10TF4S	FH	C9	430	430	10	80	1.7	10	10	430	30	0.5	1		
55	RF505TF6S	FH	C9	600	600	5	80	1.7	5	10	600	30	0.5	1		
56	RFN5TF6S	FH	C9	600	600	5	30	1.55	5	10	600	50	0.5	1		
57	RFUH5TF6S	FH	C9	600	600	5	30	2.8	5	10	600	25	0.5	1		
58	RF1005TF6S	FH	C9	600	600	10	100	1.7	10	10	600	40	0.5	1		
59	RFN10TF6S	FH	C9	600	600	10	100	1.55	10	10	600	50	0.5	1		
60	RFUH10TF6S	FH	C9	600	600	10	60	2.8	10	10	600	25	0.5	1		
61	RFN20TF6S	FH	C9	600	600	20	100	1.55	20	10	600	60	0.5	1		
62	RFUH20TF6S	FH	C9	600	600	20	100	2.8	20	10	600	35	0.5	1		
63	RFUS20TF6S	FH	C9	600	600	20	100	2.8	20	10	600	35	0.5	1		
64	RFN5TF8S	FH	C9	800	800	5	60	2.1	5	10	800	40	0.5	1		

*1 I_O:Average rectified output current die. In case of 2 dies , I_O indicates average output current of 2 chips. *2 Value / Chip
( ):ROHM PKG

Fast Recovery Diodes

●Quick Reference for Fast Recovery Diodes

V_{RM} (V)	Io (A)	Surface Mount Type													
		1608 Size SOD-523 (EMD2)		2512 Size SOD-323FL (UMD2)		2514 Size (TUMD2M)		3516 Size SOD-123FL (PMDU)		4725 Size SOD-128 (PMDTM)		5026 Size DO-214AC (PMDS)		2928 Size SOT-457T (TSMD6)	
100	0.5					RF05VYM1S	3								
200	0.1			RF01VM2S	2										
	0.4													RF04UA2D	19
	0.5					RF05VYM2S	4								
	0.7							RF071MM2S	5						
	0.8							RF081MM2S	6						
	1									New RF101LAM2S	7	RF101L2S RF081L2S	9 10		
	2									New RF201LAM2S	8	RF201L2S	11		
400	0.7											RF071L4S	12		
	1											RF101L4S	13		
	1.5											RF201L4S RFN2L4S	14 15		
450	0.1	RFU01SM4S	1												
600	0.8											RFN1L6S	16		
	1.5											RFN2L6S	17		
700	0.8											RFN1L7S	18		

Fast Recovery Diodes (AEC-Q101)

Quick Reference No.	Part No.			Absolute Maximum Ratings(T_C=25°C) V_{RM} (V)	V_R (V)	I_O (A)	I_{FSM}(A) 60Hz.1∾	Electrical Characteristics(T_j=25°C)*2 V_F(V) Max.	I_F(A)	I_R(μA) Max.	V_R(V)	trr(ns) Max.	I_F(A)	I_R(A)	Package	Equivalent Circuit Diagram
1	RFU01SM4S	FH	T2R	450	450	0.1	1	1.8	0.1	10	450	35	0.1	0.1	SOD-523 (EMD2)	
2	RF01VM2S	FH	TE-17	250	250	0.1	1	1.2	0.1	10	250	50	*		SOD-323FL (UMD2)	
3	RF05VYM1S	FH	TR	100	100	0.5	6	0.98	0.5	10	100	25	0.5	1	(TUMD2M)	
4	RF05VYM2S	FH	TR	200	200	0.5	6	0.98	0.5	10	200	25	0.5	1		
5	RF071MM2S	TF	TR	200	200	0.7	15	0.85	0.7	10	200	25	0.5	1	SOD-123FL (PMDU)	
6	RF081MM2S	TF	TR	200	200	0.8	20	0.95	0.8	10	200	25	0.5	1		
7	New RF101LAM2S	TF	TR	200	200	1	20	0.87	1	10	200	25	0.5	1	SOD-128 (PMDTM)	
8	New RF201LAM2S	TF	TR	200	200	2	20	0.87	2	10	200	25	0.5	1		
9	RF101L2S	TF	TE25	200	200	1	20	0.87	1	10	200	25	0.5	1	DO-214AC(SMA) (PMDS)	
10	RF081L2S	TF	TE25	200	200	1.1	25	0.98	1	10	200	25	0.5	1		
11	RF201L2S	TF	TE25	200	200	2	20	0.87	2	10	200	25	0.5	1		
12	RF071L4S	TF	TE25	400	400	1	15	1.25	0.7	10	400	25	0.5	1		
13	RF101L4S	TF	TE25	400	400	1	25	1.25	1	10	400	25	0.5	1		
14	RF201L4S	TF	TE25	400	400	1.5	50	1.2	1.5	1	400	30	0.5	1		
15	RFN2L4S	DD	TE25	400	400	1.5	50	1.2	1.5	1	400	30	0.5	1		
16	RFN1L6S	DD	TE25	600	600	0.8	15	1.45	0.8	1	600	35	0.5	1		
17	RFN2L6S	DD	TE25	600	600	1.5	40	1.55	1.5	1	600	35	0.5	1		
18	RFN1L7S	DD	TE25	700	700	0.8	15	1.5	0.8	1	700	80	0.5	1		
19	RF04UA2D	FH	TR	200	200	0.4*1	1	0.98	0.2	10	200	25	0.5	1	SOT-457T (TSMD6)	

*1 I_O:Average output current per chip. In case of 2 chip diodes. I_O indicates average output current of 2 chips. *2 Value / Chip
*V_R=6V, I_F=10mA, Irr=0.1I_R ( ):ROHM PKG

Zener Diodes (Including TVS)

2-Terminal (Single) 4-Terminal (Dual) Zener Diodes (AEC-Q101)

Package	Surface Mount Type											
	1006 Size SOD-923(VMN2)			1608 Size SOD-523(EMD2)			2512 Size SOD-323FL(UMD2)			2514 Size (TUMD2M)			2513 Size (TUMD2M)		
Equivalent Circuit Diagram															
Series Name	CDZ Series			EDZV Series			UDZV Series			New YFZV Series			New YDZV Series		
Power(mW)	100			150			200			500			500		
Special Part No.	FH			FH			FH			FH			FH		
Taping Code	T2RA			T2R			TE-17			TR			TR		
Electrical Characteristics (Ta=25°C)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)
Voltage	2.0B	2.02 to 2.20	5	2.0B	2.02 to 2.20	5	2.0B	2.02 to 2.20	5	2.0B	2.02 to 2.20	20	—	—	—
	2.2B	2.22 to 2.41	5	2.2B	2.22 to 2.41	5	2.2B	2.22 to 2.41	5	2.2B	2.22 to 2.41	20	—	—	—
	2.4B	2.43 to 2.63	5	2.4B	2.43 to 2.63	5	2.4B	2.43 to 2.63	5	2.4B	2.43 to 2.63	20	—	—	—
	2.7B	2.69 to 2.91	5	2.7B	2.69 to 2.91	5	2.7B	2.69 to 2.91	5	2.7B	2.69 to 2.91	20	—	—	—
	3.0B	3.01 to 3.22	5	3.0B	3.01 to 3.22	5	3.0B	3.01 to 3.22	5	3.0B	3.01 to 3.22	20	—	—	—
	3.3B	3.32 to 3.53	5	3.3B	3.32 to 3.53	5	3.3B	3.32 to 3.53	5	3.3B	3.32 to 3.53	20	—	—	—
	3.6B	3.600 to 3.845	5	3.6B	3.600 to 3.845	5	3.6B	3.600 to 3.845	5	3.6B	3.600 to 3.845	20	—	—	—
	3.9B	3.89 to 4.16	5	3.9B	3.89 to 4.16	5	3.9B	3.89 to 4.16	5	3.9B	3.89 to 4.16	20	—	—	—
	4.3B	4.17 to 4.43	5	4.3B	4.17 to 4.43	5	4.3B	4.17 to 4.43	5	4.3B	4.17 to 4.43	20	—	—	—
	4.7B	4.55 to 4.75	5	4.7B	4.55 to 4.75	5	4.7B	4.55 to 4.75	5	4.7B	4.55 to 4.80	20	—	—	—
	5.1B	4.98 to 5.20	5	5.1B	4.98 to 5.20	5	5.1B	4.98 to 5.20	5	5.1B	4.94 to 5.20	20	5.1	4.60 to 5.60	10
	5.6B	5.49 to 5.73	5	5.6B	5.49 to 5.73	5	5.6B	5.49 to 5.73	5	5.6B	5.45 to 5.73	20	5.6	5.10 to 6.10	10
	6.2B	6.06 to 6.33	5	6.2B	6.06 to 6.33	5	6.2B	6.06 to 6.33	5	6.2B	5.96 to 6.27	20	6.2	5.60 to 6.80	10
	6.8B	6.65 to 6.93	5	6.8B	6.65 to 6.93	5	6.8B	6.65 to 6.93	5	6.8B	6.49 to 6.83	20	6.8	6.20 to 7.40	10
	7.5B	7.28 to 7.60	5	7.5B	7.28 to 7.60	5	7.5B	7.28 to 7.60	5	7.5B	7.07 to 7.45	20	7.5	6.80 to 8.30	10
	8.2B	8.02 to 8.36	5	8.2B	8.02 to 8.36	5	8.2B	8.02 to 8.36	5	8.2B	7.78 to 8.19	20	8.2	7.40 to 9.00	10
	9.1B	8.85 to 9.23	5	9.1B	8.85 to 9.23	5	9.1B	8.85 to 9.23	5	9.1B	8.57 to 9.01	20	9.1	8.20 to 10.00	10
	10B	9.77 to 10.21	5	10B	9.77 to 10.21	5	10B	9.77 to 10.21	5	10B	9.41 to 9.90	20	10	9.00 to 11.00	10
	11B	10.76 to 11.22	5	11B	10.76 to 11.22	5	11B	10.76 to 11.22	5	11B	10.50 to 11.05	10	11	9.90 to 12.10	10
	12B	11.74 to 12.24	5	12B	11.74 to 12.24	5	12B	11.74 to 12.24	5	12B	11.44 to 12.03	10	12	10.80 to 13.20	10
	13B	12.91 to 13.49	5	13B	12.91 to 13.49	5	13B	12.91 to 13.49	5	13B	12.55 to 13.21	10	13	11.70 to 14.30	10
	15B	14.34 to 14.98	5	15B	14.34 to 14.98	5	15B	14.34 to 14.98	5	15B	13.89 to 14.62	10	15	13.50 to 16.50	10
	16B	15.85 to 16.51	5	16B	15.85 to 16.51	5	16B	15.85 to 16.51	5	16B	15.25 to 16.04	10	16	14.40 to 17.60	10
	18B	17.56 to 18.35	2	18B	17.56 to 18.35	5	18B	17.56 to 18.35	5	18B	16.82 to 17.70	10	18	16.20 to 19.80	10
	20B	19.52 to 20.39	2	20B	19.52 to 20.39	5	20B	19.52 to 20.39	5	20B	18.63 to 19.59	10	20	18.00 to 22.00	10
	22B	21.54 to 22.47	2	22B	21.54 to 22.47	5	22B	21.54 to 22.47	5	22B	20.64 to 21.71	5	22	19.80 to 24.20	10
	24B	23.72 to 24.78	2	24B	23.72 to 24.78	5	24B	23.72 to 24.78	5	24B	22.61 to 23.77	5	24	21.60 to 26.40	10
	27B	26.19 to 27.53	2	27B	26.19 to 27.53	2	27B	26.19 to 27.53	5	27B	24.97 to 26.26	5	27	24.30 to 29.70	10
	30B	29.19 to 30.69	2	30B	29.19 to 30.69	2	30B	29.19 to 30.69	5	30B	27.70 to 29.13	5	30	27.00 to 33.00	10
	33B	32.15 to 33.79	2	33B	32.15 to 33.79	2	33B	32.15 to 33.79	5	33B	30.32 to 31.88	5	—	—	—
	36B	35.07 to 36.87	2	36B	35.07 to 36.87	2	36B	35.07 to 36.87	5	36B	32.79 to 34.49	5	—	—	—
	—	—	—	—	—	—	39B	38.02 to 39.98	2	39B	35.36 to 37.19	5	—	—	—
	—	—	—	—	—	—	43	40.00 to 45.00	2	—	—	—	—	—	—
	—	—	—	—	—	—	47	44.00 to 49.00	2	—	—	—	—	—	—

Package	Surface Mount Type											
	3516 Size SOD-123FL(PMDU)			5026 Size DO-214AC(SMA)(PMDS)			2120 Size SOT-343(UMD4)			2512 Size SOD-323FL(UMD2)			3516 Size SOD-123FL(PMDU)		
Equivalent Circuit Diagram															
Series Name	New KDZV Series			PTZ Series			UMZK Series			New UDZLV Series			New KDZLV Series		
Power(mW)	1000			1000			200			200			1000		
Special Part No.	TF			TF			FH			FH			TF		
Taping Code	TR			TE25			TL			TE-17			TR		
Electrical Characteristics (Ta=25°C)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)		Vz (V)	Iz (mA)
Voltage	2.0B	2.00 to 2.24	40	2.0B	2.00 to 2.24	40	—	—	—	51	48 to 54	2	51	48 to 54	2
	2.2B	2.20 to 2.45	40	2.2B	2.20 to 2.45	40	—	—	—	56	53 to 60	2	56	53 to 60	2
	2.4B	2.40 to 2.70	40	2.4B	2.40 to 2.70	40	—	—	—	62	58 to 66	2	62	58 to 66	2
	2.7B	2.70 to 3.10	40	2.7B	2.70 to 3.10	40	—	—	—	68	64 to 72	2	68	64 to 72	2
	3.0B	3.00 to 3.40	40	3.0B	3.00 to 3.40	40	—	—	—	75	70 to 79	2	75	70 to 79	2
	3.3B	3.30 to 3.70	40	3.3B	3.30 to 3.70	40	—	—	—	82	77 to 87	2	82	77 to 87	2
	3.6B	3.60 to 4.00	40	3.6B	3.60 to 4.00	40	3.6K	3.600 to 3.845	5	91	85 to 96	1	91	85 to 96	2
	3.9B	3.90 to 4.40	40	3.9B	3.90 to 4.40	40	3.9K	3.89 to 4.16	5	100	94 to 106	1	100	94 to 106	2
	4.3B	4.30 to 4.80	40	4.3B	4.30 to 4.80	40	4.3K	4.17 to 4.43	5	110	104 to 116	1	110	104 to 116	2
	4.7B	4.70 to 5.20	40	4.7B	4.70 to 5.20	40	4.7K	4.55 to 4.75	5	120	114 to 126	1	120	114 to 126	2
	5.1B	5.10 to 5.70	40	5.1B	5.10 to 5.70	40	5.1K	4.98 to 5.20	5	130	122 to 138	1	130	122 to 138	2
	5.6B	5.60 to 6.30	40	5.6B	5.60 to 6.30	40	5.6K	5.49 to 5.73	5	150	140 to 160	1	150	140 to 160	2
	6.2B	6.20 to 7.00	40	6.2B	6.20 to 7.00	40	6.2K	6.06 to 6.33	5	—	—	—	—	—	—
	6.8B	6.80 to 7.70	40	6.8B	6.80 to 7.70	40	6.8K	6.65 to 6.93	5	—	—	—	—	—	—
	7.5B	7.50 to 8.40	40	7.5B	7.50 to 8.40	40	7.5K	7.28 to 7.60	5	—	—	—	—	—	—
	8.2B	8.20 to 9.30	40	8.2B	8.20 to 9.30	40	8.2K	8.02 to 8.36	5	—	—	—	—	—	—
	9.1B	9.10 to 10.20	40	9.1B	9.10 to 10.20	40	9.1K	8.85 to 9.23	5	—	—	—	—	—	—
	10B	10.00 to 11.20	40	10B	10.00 to 11.20	40	10K	9.77 to 10.21	5	—	—	—	—	—	—
	11B	11.00 to 12.30	20	11B	11.00 to 12.30	20	11K	10.76 to 11.22	5	—	—	—	—	—	—
	12B	12.00 to 13.50	20	12B	12.00 to 13.50	20	12K	11.74 to 12.24	5	—	—	—	—	—	—
	13B	13.30 to 15.00	20	13B	13.30 to 15.00	20	13K	12.91 to 13.49	5	—	—	—	—	—	—
	15B	14.70 to 16.50	20	15B	14.70 to 16.50	20	15K	14.34 to 14.98	5	—	—	—	—	—	—
	16B	16.20 to 18.30	20	16B	16.20 to 18.30	20	16K	15.85 to 16.51	5	—	—	—	—	—	—
	18B	18.00 to 20.30	20	18B	18.00 to 20.30	20	18K	17.56 to 18.35	5	—	—	—	—	—	—
	20B	20.00 to 22.40	20	20B	20.00 to 22.40	20	20K	19.52 to 20.39	5	—	—	—	—	—	—
	22B	22.00 to 24.50	10	22B	22.00 to 24.50	10	22K	21.54 to 22.47	5	—	—	—	—	—	—
	24B	24.00 to 27.60	10	24B	24.00 to 27.60	10	24K	23.72 to 24.78	5	—	—	—	—	—	—
	27B	27.00 to 30.80	10	27B	27.00 to 30.80	10	27K	26.19 to 27.53	5	—	—	—	—	—	—
	30B	30.00 to 34.00	10	30B	30.00 to 34.00	10	30K	29.19 to 30.69	5	—	—	—	—	—	—
	33B	33.00 to 37.00	10	33B	33.00 to 37.00	10	33K	32.15 to 33.79	5	—	—	—	—	—	—
	36B	36.00 to 40.00	10	36B	36.00 to 40.00	10	36K	35.07 to 36.87	5	—	—	—	—	—	—

This table shows available voltages. ( ):ROHM PKG

Zener Diodes (Including TVS)

●Quick Reference for Protection Devices (TVS) [2-4 Elements]

V_Z (V)	Package						
	1212 Size	1616 Size	1616 Size	2120 Size	2120 Size	2928 Size	2928 Size
							
	SOT-723 (VMD3)	SOT-416 (EMD3)	SOT-553 (EMD5)	SOT-323 (UMD3)	SOT-353 (UMD5)	SOT-346 (SMD3)	SOT-25 (SMD5)
4.3							**FTZ4.3E**
5.1				**UMZ5.1N**			
5.6						**STZ5.6N**	**FTZ5.6E**
6.2						**STZ6.2N**	
6.8	**VMZ6.8N**	**EMZ6.8N**	**EMZ6.8E**	**UMZ6.8N**	**UMZ6.8EN**	**STZ6.8T** **STZ6.8N**	**FTZ6.8E**
8.2				**UMZ8.2T** **UMZ8.2N**			
12				**UMZ12N**			
16				**UMZ16N**			
18				**UMZ18N**			
27				**UMZ27N**			
30				**UMZ30N**			**FTZ30E**
36				**UMZ36N**			

●Quick Reference for Low Capacitance Protection Devices (TVS)

V_Z (V)	Package									
	1006 Size	1212 Size	1608 Size	1616 Size	1616 Size	1616 Size	2512 Size	2120 Size	2928 Size	2928 Size
										
	SOD-923 (VMN2)	SOT-723 (VMD3)	SOD-523 (EMD2)	SOT-416 (EMD3)	SOT-553 (EMD5)	SOT-563 (EMD6)	SOD-323FL (UMD2)	SOT-323 (UMD3)	SOT-346 (SMD3)	SOT-25 (SMD5)
5.6							**UDZU5.6B**			
6.2							**UDZU6.2**			**FTZU6.2E**
6.8	**CDZC6.8B**	**VMZT6.8N**	**EDZCV6.8B**	**EMZC6.8N**	**EMZT6.8E**	**RSB6.8JS2**		**UMZC6.8N**	**STZC6.8N**	
12		**RSB12Z**		**RSB12W**		**RSB12JS2**				

●Quick Reference for ESD Protection Devices (TVS)

V_Z (V)	Package				
	1616 Size	2120 Size	3516 Size	2928 Size	5026 Size
					
	SOT-553 (EMD5)	SOT-353 (UMD5)	SOD-123FL (PMDU)	SOT-457 (SMD6)	DO-214AC(SMA) (PMDS)
6	**RSA6.1J4**	**RSA6.1EN**	**RSA5MM**	**RSA6.1U5**	**RSA5L**
12			**RSA12MM**		**RSA12L**
30					**RSA30L**

●Quick Reference for Bi-Directional Zener Diodes

V_Z (V)	Package							
	1006 Size	1406 Size	2512 Size	2513 Size	2120 Size			
								
	SOD-923 (VMN2)	SOD-723 (VMD2)	SOD-323FL (UMD2)	(TUMD2)	SOT-323 (UMD3)	SOT-323FL (UMD3F)	SOT-343 (UMD4)	SOT-363 (UMD6)
5.6								
6.8	**RSB6.8CS**	**RSB6.8G**			**RSB6.8F2**			
12			**RSB12V**					
16			**RSB16V**	**RSB16VA**	**RSB16F2**			**RSB16X3N**
18			**RSB18V**	**RSB18VA**	**RSB18F2**			
27			**RSB27V**	**RSB27VA**	**RSB27F2**	New **RSB27UM2**	**RSB27K2**	
29			**RSB33V**		**RSB33F2**			
32			**RSB36V**		**RSB36F2**			
35			**RSB39V**		**RSB39F2**			

●Quick Reference for Ultra Low Capacitance Bi-Directional Zener Diodes

V_Z (V)	Package
	1006 Size
	SOD-923 (VMN2)
6.8	**RSBC6.8CS**

Protection Devices (TVS) [2-4 Elements] (AEC-Q101)

Part No.			Part No. Absolute Maximum Ratings(Ta=25°C) P (mW)	Electrical Characteristics(Ta=25°C) V_Z (V)	I_Z(mA)	Remarks	Package	Equivalent Circuit Diagram
UMZ8.2T	FH	T106	200	7.76 to 8.64	5	IEC61000-4-2 150pF,330Ω Contact 8kV Air 15kV	SOT-323 (UMD3)	
STZ6.8T	FH	T146	200	6.47 to 7.14	5		SOT-346 (SMD3)	
VMZ6.8N	FH	T2L	150	6.47 to 7.14	5		SOT-723 (VMD3)	
EMZ6.8N	FH	TL	150	6.47 to 7.14	5		SOT-416 (EMD3)	
UMZ5.1N	FH	T106	200	4.84 to 5.37	5		SOT-323 (UMD3)	
UMZ6.8N	FH	T106	200	6.47 to 7.14	5			
UMZ8.2N	FH	T106	200	7.76 to 8.64	5			
UMZ12N	FH	T106	200	11.0 to 13.0	5			
UMZ16N	FH	T106	200	15.85 to 16.51	5			
UMZ18N	FH	T106	200	17.56 to 18.35	5			
UMZ27N	FH	T106	200	26.19 to 27.53	5			
UMZ30N	FH	T106	200	29.19 to 30.69	5			
UMZ36N	FH	T106	200	35.07 to 36.87	5			
STZ5.6N	FH	T146	200	5.31 to 5.92	5		SOT-346 (SMD3)	
STZ6.2N	FH	T146	200	5.81 to 6.40	5			
STZ6.8N	FH	T146	200	6.47 to 7.14	5			
EMZ6.8E	FH	T2R	150	6.47 to 7.14	5		SOT-553 (EMD5)	
UMZ6.8EN	FH	TR	200	6.47 to 7.14	5		SOT-353 (UMD5)	
FTZ4.3E	FH	T148	200	4.04 to 4.57	5		SOT-25 (SMD5)	
FTZ5.6E	FH	T148	200	5.31 to 5.92	5			
FTZ6.8E	FH	T148	200	6.47 to 7.14	5			
FTZ30E	FH	T148	200	29.19 to 30.09	5			

Low Capacitance Protection Devices (TVS) (AEC-Q101)

Part No.			Part No. Absolute Maximum Ratings(Ta=25°C) P (mW)	Electrical Characteristics(Ta=25°C) V_Z (V)	I_Z(mA)	C_t (pF)	f(MHz)	V_R(V)	Package	Equivalent Circuit Diagram
UMZU6.2N	FH	T106	200	5.9 to 6.5	5	8	1	0	SOT-323 (UMD3)	
FTZU6.2E	FH	T148	200	5.9 to 6.5	5	8	1	0	SOT-25 (SMD5)	
CDZC6.8B	FH	T2RA	100	6.65 to 6.93	5	3	1	0	SOD-923 (VMN2)	
EDZCV6.8B	FH	T2R	150	6.65 to 6.93	5	3	1	0	SOD-523 (EMD2)	
UDZU5.6B	FH	TE-17	200	5.49 to 5.73	5	8	1	0	SOD-323FL (UMD2)	
UDZU6.2	FH	TE-17	200	5.90 to 6.50	5	8	1	0		
EMZC6.8N	FH	TL	150	6.47 to 7.14	5	3	1	0	SOT-416 (EMD3)	
VMZT6.8N	FH	T2L	150	6.47 to 7.14	5	7	1	0	SOT-723 (VMD3)	
UMZC6.8N	FH	T106	200	6.47 to 7.14	5	3	1	0	SOT-323 (UMD3)	
STZC6.8N	FH	T146	200	6.47 to 7.14	5	3	1	0	SOT-346 (SMD3)	
RSB12Z	FH	T2L	100	9.6 to 14.4	5	1	1	0	SOT-723 (VMD3)	
RSB12W	FH	TL	150	9.6 to 14.4	5	1	1	0	SOT-416 (EMD3)	
EMZT6.8E	FH	T2R	150	6.47 to 7.14	5	7	1	0	SOT-553 (EMD5)	
RSB6.8JS2	FH	T2R	150	6.0 to 8.0	5	1	1	0	SOT-563 (EMD6)	
RSB12JS2	FH	T2R	150	9.6 to 14.4	5	1	1	0		

ESD Protection Devices (TVS) (AEC-Q101)

Part No.			Part No. Absolute Maximum Ratings(Ta=25°C) P (mW)	Electrical Characteristics(Ta=25°C) V_Z (V)	I_Z(mA)	Peak Pulse Power (W) (tp=10×1000μs)	Package	Equivalent Circuit Diagram
RSA6.1J4	FH	T2R	150	6.10 to 7.20	1	10	SOT-553(EMD5)	
RSA6.1EN	FH	TR	200	6.10 to 7.20	1	30	SOT-353(UMD5)	
RSA6.1U5	FH	T110	200	6.10 to 7.20	1	30	SOT-457(SMD6)	
RSA5MM	TF	TR	1,000	6.4 to 7.0	10	200	SOD123FL (PMDU)	
RSA12MM	TF	TR	1,000	13.3 to 14.7	1	200		
RSA5L	TF	TE25	1,000	6.45 to 7.14	10	600	DO-214AC(SMA) (PMDS)	
RSA12L	TF	TE25	1,000	13.3 to 14.7	1	600		
RSA30L	TF	TE25	1,000	28.5 to 31.5	1	600		

*:(3), (6) pin must be open when using. ( ):ROHM PKG

Zener Diodes (Including TVS)

Bi-Directional Zener Diodes (AEC-Q101)

Part No.			Part No. Absolute Maximum Ratings(Ta=25°C) P (mW)	Electrical Characteristics(Ta=25°C) V_Z (V)	I_Z(mA)	Remarks	Package	Equivalent Circuit Diagram
RSB6.8CS	FH	T2RA	100	5.78 to 7.82	1		SOD-923 (VMN2)	
RSB6.8G	FH	T2R	100	5.78 to 7.82	1		SOD-723 (VMD2)	
RSB12V	FH	TE-17	200	10.8 to 13.2	1		SOD-323FL (UMD2)	
RSB16V	FH	TE-17	200	14.4 to 17.6	1		SOD-323FL (UMD2)	
RSB18V	FH	TE-17	200	16.2 to 19.8	1		SOD-323FL (UMD2)	
RSB27V	FH	TE-17	200	26.2 to 32.0	1		SOD-323FL (UMD2)	
RSB33V	FH	TE-17	200	29.7 to 36.3	1		SOD-323FL (UMD2)	
RSB36V	FH	TE-17	200	32.4 to 39.6	1		SOD-323FL (UMD2)	
RSB39V	FH	TE-17	200	35.1 to 42.9	1		SOD-323FL (UMD2)	
RSB16VA	FH	TR	500	14.4 to 17.6	1	IEC61000-4-2 150pF,330Ω Contact 8kV Air 15kV	(TUMD2)	
RSB18VA	FH	TR	500	16.2 to 19.8	1		(TUMD2)	
RSB27VA	FH	TR	500	26.2 to 32.0	1		(TUMD2)	
RSB6.8F2	FH	T106	200	5.78 to 7.82	1		SOT-323 (UMD3)	
RSB16F2	FH	T106	200	14.4 to 17.6	1		SOT-323 (UMD3)	
RSB18F2	FH	T106	200	16.2 to 19.8	1		SOT-323 (UMD3)	
RSB27F2	FH	T106	200	26.2 to 32.0	1		SOT-323 (UMD3)	
RSB33F2	FH	T106	200	29.7 to 36.3	1		SOT-323 (UMD3)	
RSB36F2	FH	T106	200	32.4 to 39.6	1		SOT-323 (UMD3)	
RSB39F2	FH	T106	200	35.1 to 42.9	1		SOT-323 (UMD3)	
New **RSB27UM2**	FH	TL	200	26.2 to 32.0	1		SOT-323FL (UMD3F)	
RSB27K2	FH	TL	200	26.2 to 32.0	1		SOT-343(UMD4)	
RSB16X3N	FH	TR	200	14.4 to 17.6	1		SOT-363(UMD6)	

Ultra Low Capacitance Bi-Directional Zener Diodes (AEC-Q101)

Part No.			Part No. Absolute Maximum Ratings(Ta=25°C) P (mW)	Electrical Characteristics(Ta=25°C) V_Z (V)	I_Z(mA)	C_t (pF)	f(MHz)ß	V_R(V)	Package	Equivalent Circuit Diagram
RSBC6.8CS	FH	T2RA	100	6.62 to 7.24	5	1	1	0	SOD-923 (VMN2)	

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Switching Diodes

●Quick Reference for Switching Diodes

V_R (V)	Package					
	1006 Size	1406 Size	1212 Size	1608 Size	1616 Size	
	SOD-923 (VMN2)	SOD-723 (VMD2)	SOT-723 (VMD3)	SOD-523 (EMD2)	SOT-416 (EMD3)	SOT-416FL (EMD3F)
20			**DA221M**		**DA221**	
80 to 90	**1SS400CS**	**1SS400G**	**DAN222M** **DAP222M**	**1SS400SM**	**DAN222** **DAP222** **DAN217W** **DA228W**	**DAN222WM** **DAP222WM** **DAN217WM**

V_R (V)	Package							
	1616 Size		2512 Size	2120 Size				
	SOT-543 (EMD4)	SOT-563 (EMD6)	SOD-323FL (UMD2)	SOT-323 (UMD3)	SOT-323FL (UMD3F)	SOT-343 (UMD4)	SOT-353 (UMD5)	SOT-363 (UMD6)
20				**DA204U**				
40			☆**1SS380VM**					
80 to 90	**DA227Y**	**EMN11** **EMP11**	**1SS355VM**	**DA228U** **DAN202U** **DAN217U** **DAP202U** **DA380U**	**DAN202UM** **DAP202UM** **DAN217UM**	**DA227**	**UMN1N** **UMP1N**	**UMN10N** **UMN11N** **UMP11N** **UMR11N** **UMR12N** **UMN20N**

V_R (V)	Package			
	2928 Size	2928 Size		
	SOT-23 (SSD3)	SOT-346 (SMD3)	SOT-25 (SMD5)	SOT-457 (SMD6)
20	New **BAS16HM**	**DA228K**	**FMN1**	**IMN10**
40	New **BAV70HM**	**DAN202K**	**FMP1**	**IMN11**
80 to 90	New **BAW56HM** New **BAV99HM**	**DAN217** **DAP202K**		**IMP11**

☆ : Under Development

Switching Diodes

High-speed type (AEC-Q101)

Part No.			Absolute Maximum Ratings(Ta=25°C)*1					Electrical Characteristics(Ta=25°C)*1							Package	Equivalent Circuit Diagram
			V_{RM} (V)	V_R (V)	I_{FM} (mA)	I_O (mA)	Isurge (mA)	V_F(V) Max.	I_F(mA)	I_R(μA) Max.	V_R(V)	trr(ns) Max.	V_R(V)	I_F(mA)		
1SS400CS	FH	T2RA	90	80	—	100	500(1s)	1.2	100	0.1	80	4	6	10	SOD-923 (VMN2)	
1SS400G	FH	T2R	90	80	—	100	500(1s)	1.2	100	0.1	80	4	6	10	SOD-723 (VMD2)	
1SS400SM	FH	T2R	90	80	225	100	500(1s)	1.2	100	0.1	80	4	6	10	SOD-523 (EMD2)	
1SS355VM	FH	TE-17	90	80	225	100	500(1s)	1.2	100	0.1	80	4	6	10	SOD-323FL (UMD2)	
New BAS16HM	FH	T116	100	80	500	215 *3	4000(1μs)	1.25	150	0.1	80	4	10 *2	10	SOT-23 (SSD3)	
DAN222M	FH	T2L	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-723 (VMD3)	
DAN222	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-416 (EMD3)	
DAN222WM	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-416FL (EMD3F)	
DAN202U	FH	T106	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-323 (UMD3)	
DAN202UM	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-323FL (UMD3F)	
New BAV70HM	FH	T116	90	80	450	215 *3	4000(1μs)	1.25	150	0.1	80	4	10 *2	10	SOT-23 (SSD3)	
DAN202K	FH	T146	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-346 (SMD3)	
DAP222M	FH	T2L	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-723 (VMD3)	
DAP222	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-416 (EMD3)	
DAP222WM	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-416FL (EMD3F)	
DAP202U	FH	T106	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-323 (UMD3)	
DAP202UM	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-323FL (UMD3F)	
New BAW56HM	FH	T116	100	80	500	215 *3	4000(1μs)	1.25	150	0.1	80	4	10 *2	10	SOT-23 (SSD3)	
DAP202K	FH	T146	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-346 (SMD3)	
DA221M	FH	T2L	20	20	200	100	300(1μs)	1	10	0.1	15	—	—	—	SOT-723 (VMD3)	
DA221	FH	TL	20	20	200	100	300(1μs)	1	10	0.1	15	—	—	—	SOT-416 (EMD3)	
DAN217W	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5		
DA228W	FH	TL	80	80	200	100	300(1μs)	1.2	100	0.1	80	—	—	—		
DAN217WM	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-416FL (EMD3F)	
DA204U	FH	T106	20	20	200	100	300(1μs)	1	10	0.1	15	—	—	—	SOT-323 (UMD3)	
DAN217U	FH	T106	80	80	300	100	4000(1μs)	1.2	100	0.2	70	4	6	5		
DAN217UM	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.2	70	4	6	5	SOT-323FL (UMD3F)	
DA228U	FH	T106	80	80	200	100	300(1μs)	1.2	100	0.01	80	—	—	—	SOT-323 (UMD3)	
New BAV99HM	FH	T116	100	80	500	215 *3	4000(1μs)	1.25	150	0.1	80	4	10 *2	10	SOT-23 (SSD3)	
DAN217	FH	T146	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5		
DA228K	FH	T146	80	80	200	100	300(1μs)	1.2	100	0.01	80	—	—	—	SOT-346 (SMD3)	
DA204K	FH	T146	20	20	200	100	300(1μs)	1	10	0.1	15	—	—	—		
UMN1N	FH	TR	80	80	80	25	250(1μs)	0.9	5	0.1	70	4	6	5	SOT-353 (UMD5)	
FMN1	FH	T148	80	80	80	25	250(1μs)	0.9	5	0.1	70	4	6	5	SOT-25 (SMD5)	
UMP1N	FH	TR	80	80	80	25	250(1μs)	0.9	5	0.1	70	4	6	5	SOT-353 (UMD5)	
FMP1	FH	T148	80	80	80	25	250(1μs)	0.9	5	0.1	70	4	6	5	SOT-25 (SMD5)	
EMN11	FH	T2R	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-563 (EMD6)	
UMN11N	FH	TN	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-363 (UMD6)	
IMN11	FH	T110	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-457 (SMD6)	
EMP11	FH	T2R	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-563 (EMD6)	
UMP11N	FH	TN	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-363 (UMD6)	
IMP11	FH	T110	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-457 (SMD6)	
UMR11N	FH	TR	80	80	300	100	400(1μs)	1.2	100	0.1	70	4	6	5	SOT-363 (UMD6)	
UMR12N	FH	TN	80	80	200	100	300(1μs)	1.2	100	0.1	80	—	—	—	SOT-363 (UMD6)	
DA227Y	FH	T2R	80	80	300	100	400(1μs)	1.2	100	0.1	70	4	6	5	SOT-543 (EMD4)	
DA227	FH	TL	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-343 (UMD4)	
UMN10N	FH	TR	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-363 (UMD6)	
IMN10	FH	T108	80	80	300	100	4000(1μs)	1.2	100	0.1	70	4	6	5	SOT-457 (SMD6)	

Low Leak type (AEC-Q101)

Part No.			Absolute Maximum Ratings(Ta=25°C)					Electrical Characteristics(Ta=25°C)							Package	Equivalent Circuit Diagram
			V_{RM} (V)	V_R (V)	I_{FM} (mA)	I_O (mA)	Isurge (mA)	V_F(V) Max.	I_F(mA)	I_R(μA) Max.	V_R(V)	trr(ns) Max.	V_R(V)	I_F(mA)		
☆1SS380VM	FH	TE-17	40	35	225	100	400(1s)	1.2	100	0.01	20	—	—	—	SOD-323FL (UMD2)	
DA380U	FH	T106	80	80	225	100	400(1s)	1.2	100	0.01	20	—	—	—	SOT-323 (UMD3)	
UMN20N	FH	TR	80	80	225	100	400(1s)	1.2	100	0.01	20	—	—	—	SOT-363 (UMD6)	

*1 Value / Chip *2 Value of I_R (mA) value and NOT V_R (V) *3 Value of I_F
( ):ROHM PKG

☆ : Under Development

High Frequency Diodes

●Quick Reference for High Frequency Diodes

	V_R (V)	Package				
		1608 Size	1616 Size	2512 Size	2120 Size	2928 Size
						
		SOD-523 (EMD2)	SOT-416 (EMD3)	SOD-323FL (UMD2)	SOT-323 (UMD3)	SOT-346 (SMD3)
Band Switching Diodes	35	1SS390	DAN235E	1SS356	DAN235U DAP236U	
PIN Diodes	50			RN731V RN771V	RN739F RN779F	RN779D

Band Switching Diodes (AEC-Q101)

Part No.			Absolute Maximum Ratings(Ta=25°C)*			Electrical Characteristics(Ta=25°C)*						Package	Equivalent Circuit Diagram
			V_R (V)	Tj (°C)	Tstg (°C)	Ct(pF) Max.	V_R(V)	f(MHz)	rF(Ω) Max.	I_F(mA)	f(MHz)		
1SS390	FH	TE61	35	125	-55 to +125	1.2	6	1	0.9	2	100	SOD-523 (EMD2)	
1SS356	FH	TE-17	35	125	-55 to +125	1.2	6	1	0.9	2	100	SOD-323FL (UMD2)	
DAN235E	FH	TL	35	125	-55 to +125	1.2	6	1	0.9	2	100	SOT-416 (EMD3)	
DAN235U	FH	T106	35	125	-55 to +125	1.2	6	1	0.9	2	100	SOT-323 (UMD3)	
DAP236U	FH	T106	35	125	-55 to +125	1.2	6	1	0.9	2	100	SOT-323 (UMD3)	

PIN Diodes (AEC-Q101)

Part No.			Absolute Maximum Ratings(Ta=25°C)*				Electrical Characteristics(Ta=25°C)*						Package	Equivalent Circuit Diagram
			V_R (V)	I_F (mA)	Tj (°C)	Tstg (°C)	Ct(pF) Max.	V_R(V)	f(MHz)	rF(Ω) Max.	I_F(mA)	f(MHz)		
RN731V	FH	TE-17	50	50	125	-55 to +150	0.4	35	1	7	10	100	SOD-323FL (UMD2)	
RN771V	FH	TE-17	50	50	150	-55 to +150	0.9	35	1	7	10	100		
RN739F	FH	T106	50	50	125	-55 to +150	0.4	35	1	7	10	100	SOT-323 (UMD3)	
RN779F	FH	T106	50	50	150	-55 to +150	0.9	35	1	7	10	100		
RN779D	FH	T146	50	50	150	-55 to +150	0.9	35	1	7	10	100	SOT-346 (SMD3)	

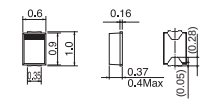
*:Value / Chip ( ):ROHM PKG

Packages

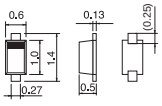
●Dimensions (Unit : mm)

Surface Mount Type

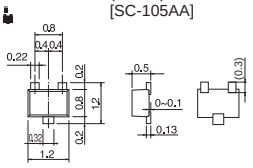
SOD-923(VMN2)



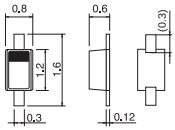
SOD-723(VMD2) [SC-104A]



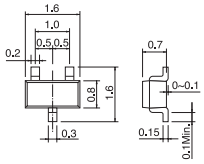
SOT-723(VMD3) [SC-105AA]



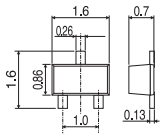
SOD-523(EMD2) [SC-79]



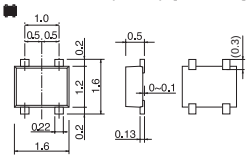
SOT-416(EMD3) [SC-75A]



SOT-416FL(EMD3F) [SC-89]

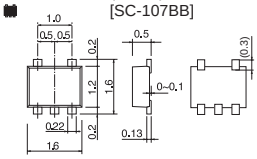


SOT-543(EMD4) [SC-107A]

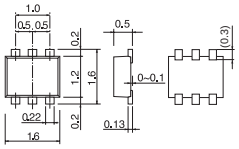


Each lead has same dimensions

SOT-553(EMD5) [SC-107BB]

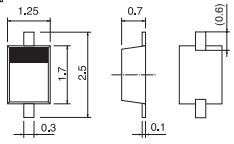


SOT-563(EMD6) [SC-107C]

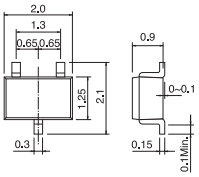


Each lead has same dimensions

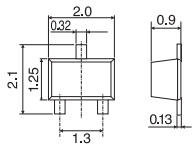
SOD-323FL(UMD2) [SC-90A]



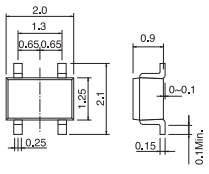
SOT-323(UMD3) [SC-70]



SOT-323FL(UMD3F) [SC-85]

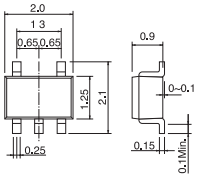


SOT-343(UMD4) [SC-82]

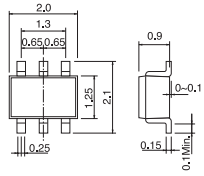


Each lead has same dimensions

SOT-353(UMD5) [SC-88A]

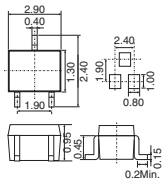


SOT-363(UMD6) [SC-88]

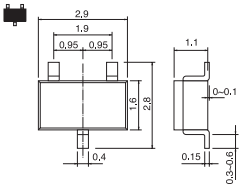


Each lead has same dimensions

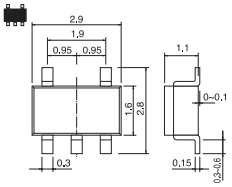
SOT-23(SSD3)



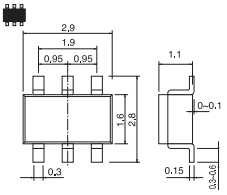
SOT-346(SMD3) [SC-59]



SOT-25(SMD5) [SC-74A]

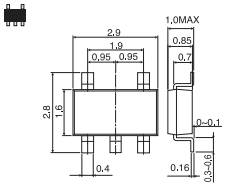


SOT-457(SMD6) [SC-74]

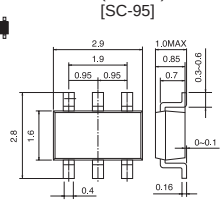


Each lead has same dimensions

SOT-25T(TSMD5) [SC-95]

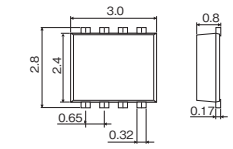


SOT-457T(TSMD6) [SC-95]



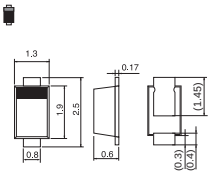
Each lead has same dimensions

(TSMD8)

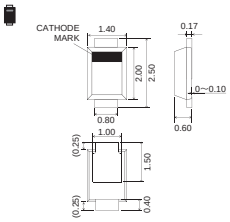


Each lead has same dimensions

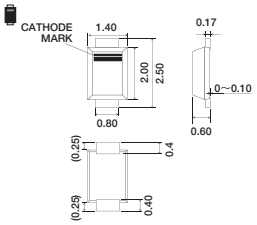
(TUMD2)



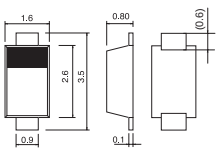
(TUMD2M) [SC-108B]



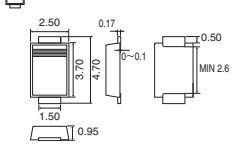
(TUMD2SM)



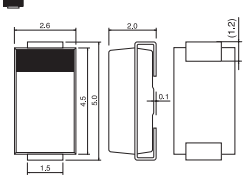
SOD-123FL(PMDU) [SC-109B]



SOD-128(PMDTM)



DO-214AC<SMA>(PMDS)



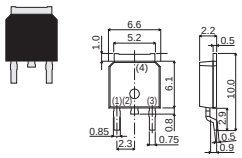
( ):ROHM PKG, [ ]:JEITA Code

Packages

●Dimensions (Unit : mm)

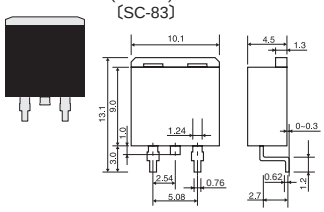
Surface Mount Type

TO-252(DPAK)



Each lead has same dimensions

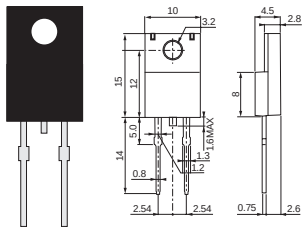
TO-263S(D2PAK)
〔SC-83〕



Each lead has same dimensions

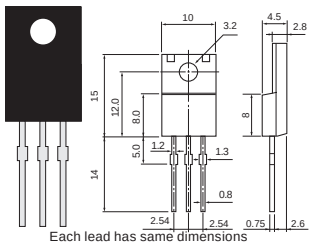
Leaded Type

TO-220FN(2pin)



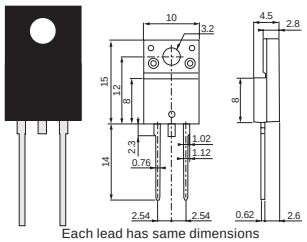
Each lead has same dimensions

TO-220FN(3pin)



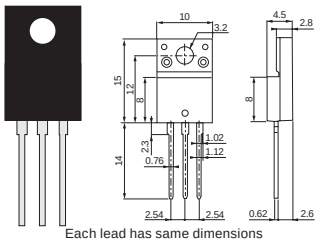
Each lead has same dimensions

TO-220NFM(2pin)



Each lead has same dimensions

TO-220NFM(3pin)



Each lead has same dimensions

〔〕: JEITA Code

Part No. Explanation

・When ordering, specify the part number.
・Check each code against the tables shown below.
・Fill in from the left, leaving any extra boxes empty on the right.

•Power Diodes

Example:

R	F	N	L	5	B	M	6	S	T	L
Part No.									Taping Code	

•Small Signal / Rectifier Diode

Example:

1	S	S	3	5	5	V	M	T	E	–	1	7
Part No.								Taping Code				

•Zener Diode

Example:

U	D	Z	V	T	E	–	1	7	5	.	1	B
Part No.				Taping Code					Zener Voltage			Sub Division

•Packaging Type

Package	Code	ROHM Package	Package Style	Direction	Basic Ordering Unit (pcs)
SOD-923	T2RA	VMN2	Embossed tape	Cathode on sprocket hole side	8,000
SOD-923	T2R	VMN2M	Embossed tape	Cathode on sprocket hole side	8,000
SOD-723	T2R	VMD2	Embossed tape	Cathode on sprocket hole side	8,000
SOT-723	T2L	VMD3	Embossed tape	One terminal on sprocket hole side	8,000
SOD-523	TE61	EMD2	Embossed tape	Cathode on sprocket hole side	3,000
	T2R		Embossed tape	Cathode on sprocket hole side	8,000
	T2N		Embossed tape	Cathode on sprocket hole side / Non-direction	8,000
SOT-416	TL	EMD3	Embossed tape	One terminal on sprocket hole side	3,000
SOT-416FL	TL	EMD3F	Embossed tape	One terminal on sprocket hole side	3,000
SOT-543 SOT-553 SOT-563	T2R	EMD4 EMD5 EMD6	Embossed tape	Cathode on sprocket hole side	8,000
SOD-323FL	TE-17	UMD2	Embossed tape	Cathode on sprocket hole side	3,000
	TW11*1				
SOT-323	T106	UMD3	Embossed tape	One terminal on sprocket hole side	3,000
SOT-323FL	TL	UMD3F	Embossed tape	One terminal on sprocket hole side	3,000
SOT-343	TL	UMD4	Embossed tape	Cathode on sprocket hole side (DA227)	3,000
SOT-353	TR	UMD5	Embossed tape	Three terminals on sprocket hole side	3,000
SOT-363	TN	UMD6	Embossed tape	Non-direction / Cathode on sprocket hole side	3,000
	TR*2				
SOT-23	T116	SST3	Embossed tape	One terminal on sprocket hole side	3,000
SOT-346	T146	SMD3	Embossed tape	One terminal on sprocket hole side	3,000
SOT-25	T148	SMD5	Embossed tape	Three terminals on sprocket hole side	3,000
SOT-457	T108*3	SMD6	Embossed tape	Anode on sprocket hole side / Non-direction	3,000
	T110				
SOT-25T	TR	TSMD5	Embossed tape	Terminal No.1 on sprocket hole side	3,000
SOT-457T	TR	TSMD6	Embossed tape	Terminal No.1 on sprocket hole side	3,000
–	TR	TSMD8	Embossed tape	Terminal No.1 on sprocket hole side	3,000
–	TR	TUMD2	Embossed tape	Cathode on sprocket hole side	3,000
–	TR	TUMD2S	Embossed tape	Cathode on sprocket hole side	3,000
–	TR	TUMD2M	Embossed tape	Cathode on sprocket hole side	3,000
–	TR	TUMD2SM	Embossed tape	Cathode on sprocket hole side	3,000
SOD-123FL	TR	PMDU	Embossed tape	Cathode on sprocket hole side	3,000
SOD-128	TR	PMDTM	Embossed tape	Cathode on sprocket hole side	3,000
DO-214AC(SMA)	TE25	PMDS	Embossed tape	Cathode on sprocket hole side	1,500
TO-252	TL	DPAK	Embossed tape	Cathode on sprocket hole side	2,500
TO-263S	TL	D2PAK	Embossed tape	Cathode on sprocket hole side	1,000
TO-220FN(3Pin)	C9	–	Stick	Box	1,000
TO-220FN(2Pin)	C9	–	Stick	Box	1,000
TO-220NFM	C9	–	Stick	Box	1,000

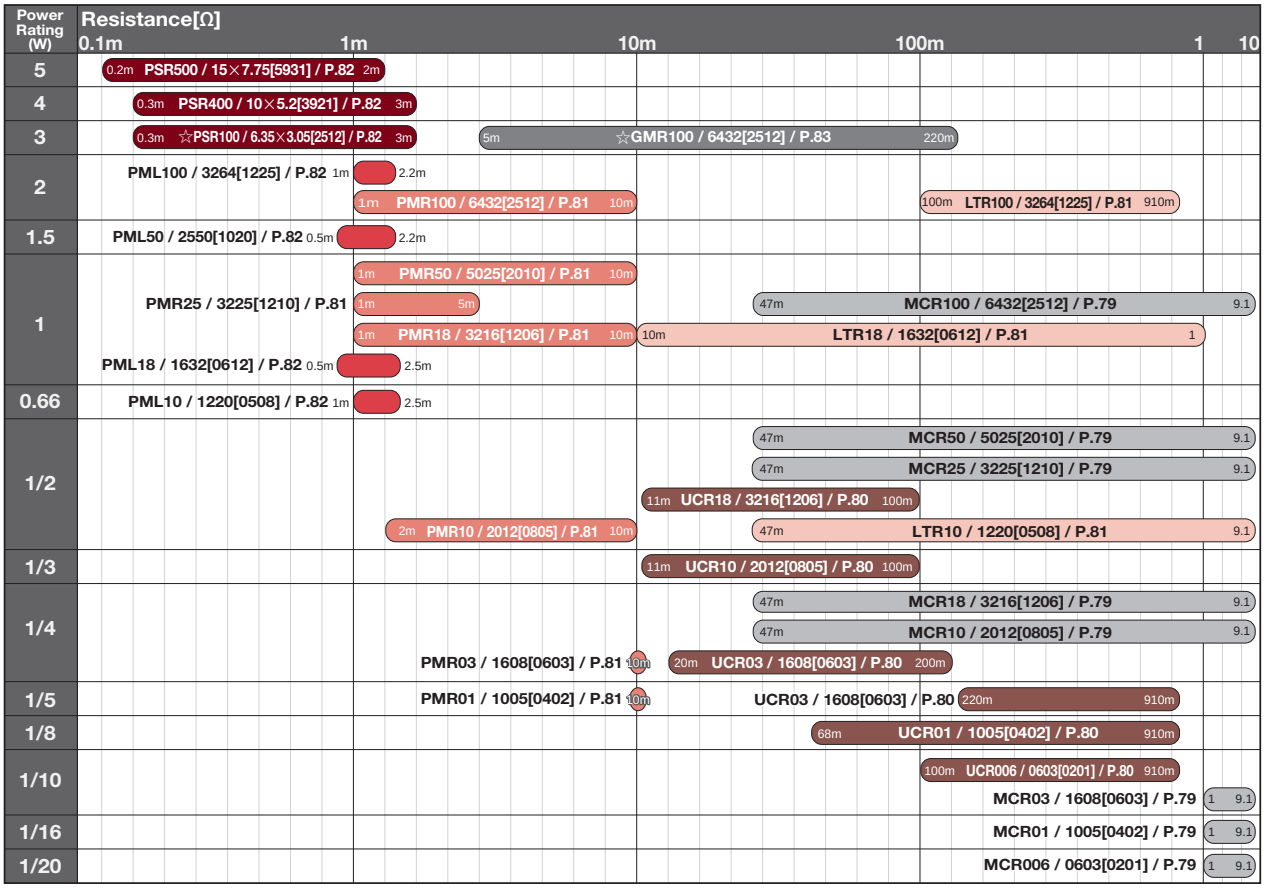
*1 Regarding the SOD-323FL(UMD2) package, only 1SS356 is available in TW11.
*2 Regarding the SOT-363(UMD6) package, only RB731XN and UMN10N are available in TR.
*3 Regarding the SOT-457FL(SMD6) package, only IMN10 and RB731U are available in T108.

Quick Reference of Resistance Range

Low Ohmic Resistor Lineup

Part No. / mm[inch] / Page

PSR GMR PML PMR Metal Strip　UCR LTR MCR Thick Film

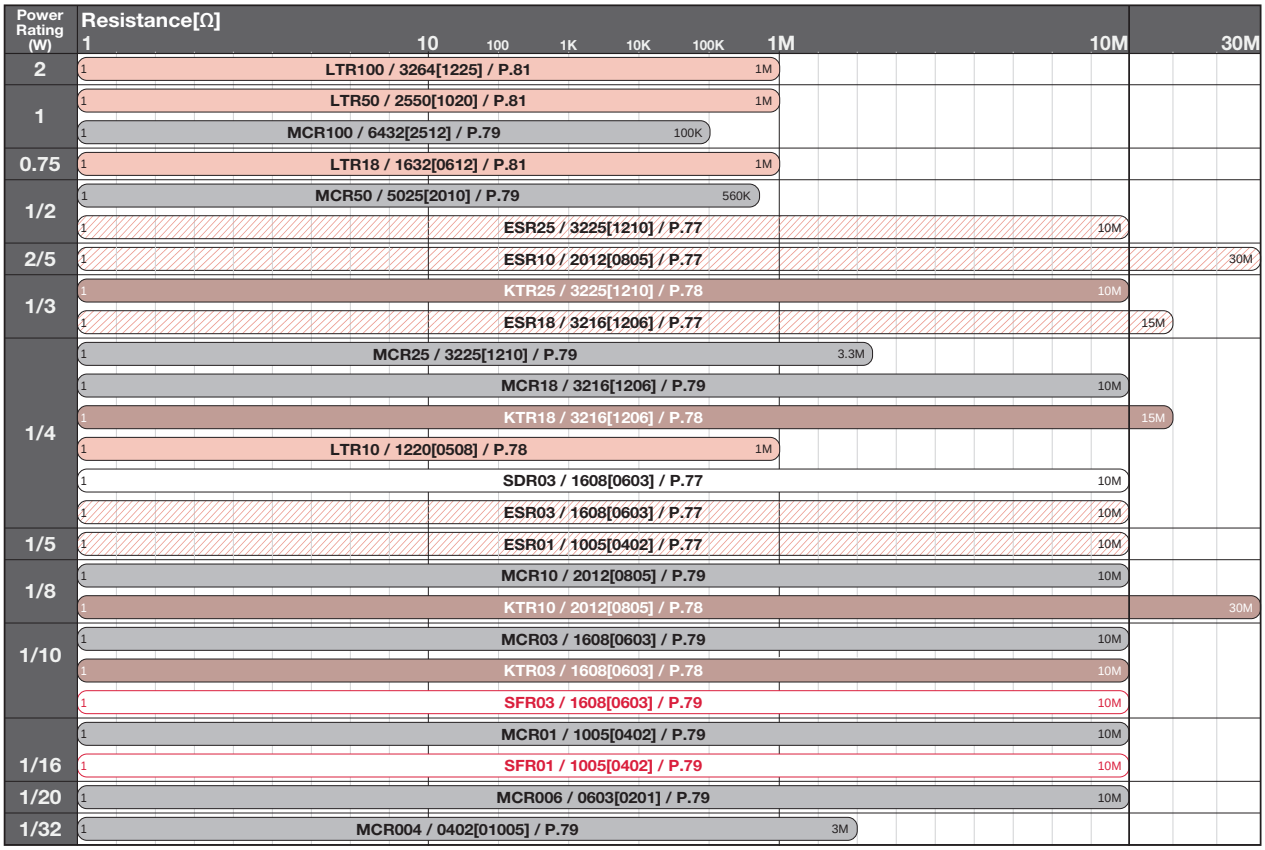


☆:Under Development

1 Ω or more Resistor Lineup

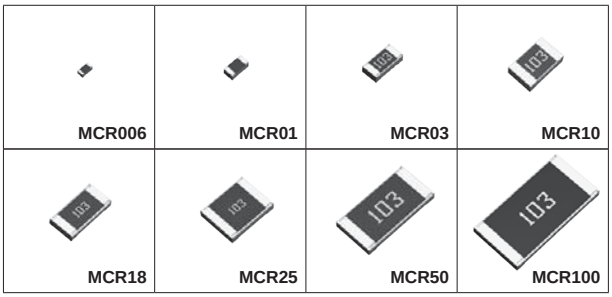
Part No. / mm[inch] / Page

ESR SDR KTR LTR MCR SFR Thick Film



Thick Film Chip Resistors (Standard Series)
Compact Chip Resistors (MCR Series <0201 to 2512>)

- High reliability chip resistors optimized for a variety of applications.
  - ·Nine package sizes, ranging from 0201 to 2512.
  - ·Market-proven reliability.



MCR series <0201 to 2512> (AEC-Q200)

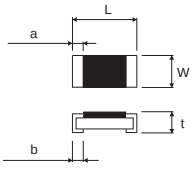
Part No.	Size Code mm(inch)	Rated Power (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient(ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
MCR006	0603 (0201)	0.05W (1/20W)	25	J(±5%)	+600/−200 ±250	1.0Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)	−55 to +155	Yes
				F(±1%)	±250	10Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±200 ±100	10Ω to 976Ω (E24,96 Series) 1kΩ to 1MΩ (E24,96 Series)		
MCR01	1005 (0402)	0.063W*1 (1/16W)	50	J(±5%)	+500/−250 ±200	1.0Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)		Yes
				F(±1%)	±100	10Ω to 2.2MΩ (E24,96 Series)		
		0.063W (1/16W)		D(±0.5%)	±100 ±50	10Ω to 97.6Ω (E24,96 Series) 100Ω to 1MΩ (E24,96 Series)		
MCR03	1608 (0603)	0.1W*1 (1/10W)	50	J(±5%)	±400 ±200	1.0Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)		Yes
				FX(±1%)	±100	10Ω to 10MΩ (E24,96 Series)		
		0.1W (1/10W)		D(±0.5%)	±100 ±50	10Ω to 97.6Ω (E24,96 Series) 100Ω to 1MΩ (E24,96 Series)		
MCR10	2012 (0805)	0.125W*1 (1/8W)	150	J(±5%)	±400 ±200	1.0Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)		Yes
				F(±1%)	±100	10Ω to 2.2MΩ (E24,96 Series)		
		0.1W (1/10W)		D(±0.5%)	±100 ±50	10Ω to 97.6Ω (E24,96 Series) 100Ω to 1MΩ (E24,96 Series)		
MCR18	3216 (1206)	0.25W (1/4W)	200	J (±5%)	±400 ±200	1.0Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)		Yes
				F (±1%)	±100	10Ω to 2.2MΩ (E24,96 Series)		
		0.125W (1/8W)		D (±0.5%)	±100 ± 50	10Ω to 97.6Ω (E24,96 Series) 100Ω to 1MΩ (E24,96 Series)		
MCR25	3225 (1210)	0.25W (1/4W)	200	J (±5%)	500±350 ±500 ±200	1.0Ω to 2.0Ω (E24 Series) 2.2Ω to 5.1Ω (E24 Series) 5.6Ω to 3.3MΩ (E24 Series)		Yes
				F (±1%)	±100	10Ω to 1.0MΩ (E24,96 Series)		
MCR50	5025 (2010)	0.5W (1/2W)	200	J (±5%)	500±350 ±500 ±200 ±350	1.0Ω to 2.0Ω (E24 Series) 2.2Ω to 9.1Ω (E24 Series) 10Ω to 330kΩ (E24 Series) 360kΩ to 560kΩ (E24 Series)		Yes
				F (±1%)	±100	10Ω to 180kΩ (E24,96 Series)		
MCR100	6432 (2512)	1W	200	J (±5%)	500±350 ±500 ±350 ±200	1.0Ω to 2.0Ω (E24 Series) 2.2Ω to 9.1Ω (E24 Series) 10Ω to 22Ω (E24 Series) 24Ω to 100kΩ (E24 Series)	−55 to +125	Yes
				F (±1%)	±100	10Ω to 82kΩ (E24,96 Series)		

*1 : Please contact us for the higher rated power.
*E24 : Standard products E96 : Custom products

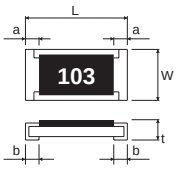
Jumper type

Part No.	Size Code mm(inch)	Rated Current	Resistance	Temperature Range (°C)	Automotive Grade Available
MCR006	0603 (0201)	0.5A	50mΩ Max.	−55 to +155	Yes
MCR01	1005 (0402)	1A			Yes
MCR03	1608 (0603)	1A			Yes
MCR10	2012 (0805)	2A			Yes
MCR18	3216 (1206)	2A			Yes
MCR25	3225 (1210)	2A			Yes
MCR50	5025 (2010)	3A			Yes
MCR100	6432 (2512)	4A		−55 to +125	Yes

●**MCR006/01**
●**MCR03** (Partially marked)



●**MCR10/18/25/50/100**

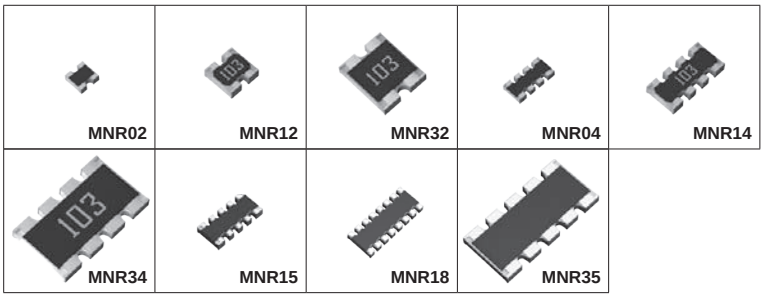


Dimensions (Unit : mm)

Part No.	Size code mm(inch)	L	W	t	a	b
MCR006	0603 (0201)	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
MCR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	$0.25^{+0.05}_{-0.10}$
MCR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
MCR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4±0.2
MCR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.5±0.25	0.5±0.25
MCR25	3225 (1210)	3.2±0.15	2.5±0.15	0.55±0.15	0.5±0.25	0.5±0.25
MCR50	5025 (2010)	5.0±0.15	2.5±0.15	0.55±0.15	0.6±0.25	0.6±0.25
MCR100	6432 (2512)	6.3±0.15	3.2±0.15	0.55±0.15	0.6±0.25	0.6±0.25

Thick Film Chip Resistors (Standard Series)
Compact Chip Resistor Networks (MNR series <0402×2 to 1206×5>)

- Reduces cost
  Use of chip networks reduces the number of components and saves mounting space.
- Easy fillet inspection
  Convex type electrodes facilitate visual inspection of fillets. Inspection can be performed with automatic inspection equipment.
- Suitable for pull-up resistor, damping resistor
- No direction to be mounted



MNR series <0402×2 to 1206×5> (AEC-Q200)

Part No.	Size Code mm (inch)	No. of Terminals	No. of Elements	Rated Power (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range(°C)	Automotive Grade Available
MNR02	1005 (0402) ×2	4	2	0.063W / Element	25	J(±5%)	±200	10Ω to 1MΩ(E24 Series)	−55 to +155	Yes
MNR04	1005 (0402) ×4	8	4	0.063W / Element	25	J(±5%)	+500/−250 ±200	1Ω to 9.1Ω(E24 Series) 10Ω to 1MΩ(E24 Series)		Yes
MNR12	1608 (0603) ×2	4	2	0.063W / Element	50	J(±5%)	±200	10Ω to 1MΩ(E24 Series)		Yes
						F(±1%)	±100			
MNR14	1608 (0603) ×4	8	4	0.063W / Element	50	J(±5%)	±500 ±200	2.2Ω to 6.8Ω(E6 Series) 10Ω to 1MΩ(E24 Series)		Yes
						F(±1%)	±100	10Ω to 1MΩ(E24 Series)		
MNR32	3216 (1206) ×2	4	2	0.125W / Element	200	J(±5%)	±200	10Ω to 1MΩ(E24 Series)	−55 to +125	Yes
MNR34	3216 (1206) ×4	8	4	0.125W / Element	200	J(±5%)	±200	10Ω to 1MΩ(E24 Series)		Yes
MNR15	1608 (0603) ×5	10	8	0.031W / Element	12.5	J(±5%)	±200	56Ω to100kΩ(E24 Series)		Yes
MNR18	1605 (0602) ×8	16	8	0.063W / Element	25	J(±5%)	±200	10Ω to 1MΩ(E24 Series)		Yes
MNR35	3216 (1206) ×5	10	8	0.063W / Element	50	J(±5%)	±200	56Ω to100kΩ(E12 Series)		Yes

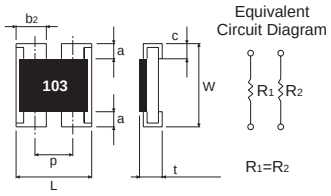
Jumper type

Part No.	Size Code mm (inch)	Rated Current	Resistance	Temperature Range	Automotive Grade Available
MNR02	1005 (0402) ×2	1A / Element	50mΩ Max.	−55 to +155°C	Yes
MNR04	1005 (0402) ×4	1A / Element			Yes
MNR12	1608 (0603) ×2	1A / Element			Yes
MNR14	1608 (0603) ×4	1A / Element			Yes
MNR32	3216 (1206) ×2	2A / Element		−55 to +125°C	Yes
MNR34	3216 (1206) ×4	2A / Element			Yes
MNR18	1605 (0602)×8	1A / Element			Yes

Dimensions (Unit : mm)

MNR02 / MNR12 / MNR32 (Marked except MNR02)

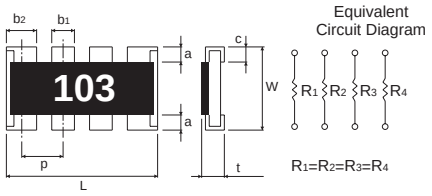
Different marking system may apply to each product type.



Part No.	L	W	t	a	b2	c	p
MNR02	1.0±0.1	1.0±0.1	0.35±0.1	0.2±0.1	$0.33^{+0.1}_{-0.05}$	0.25±0.1	0.68
MNR12	1.6±0.1	1.6±0.1	0.5±0.1	0.3±0.2	0.6±0.15	0.25±0.15	0.8
MNR32	2.6±0.2	3.1±0.2	0.55±0.1	0.5±0.3	1.0±0.2	0.5Max.	1.27

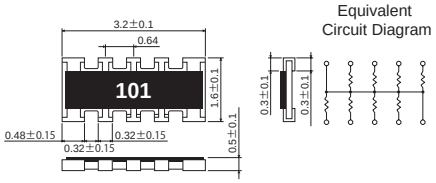
MNR04 / MNR14 / MNR34 (Marked except MNR04)

Different marking system may apply to each product type.

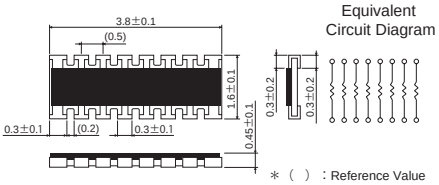


Part No.	L	W	t	a	b1	b2	c	p
MNR04	2.0±0.1	1.0±0.1	0.35±0.1	0.2±0.1	0.3±0.1	0.4±0.1	0.25±0.1	0.5
MNR14	3.2±0.1	1.6±0.1	0.5±0.1	0.3±0.2	0.4±0.15	0.6±0.15	0.25±0.15	0.8
MNR34	5.2±0.4	3.1±0.2	0.55±0.1	0.5±0.3	0.8±0.2	1.0±0.2	0.5Max.	1.27

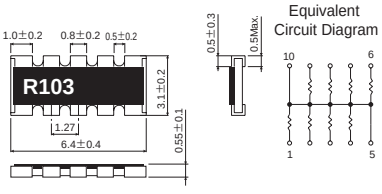
MNR15



MNR18

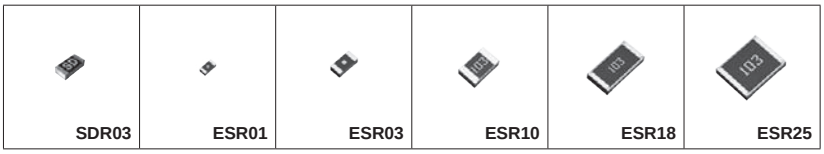


MNR35



Thick Film Chip Resistors (High reliability Series)
High Anti-surge Chip Resistors (SDR Series)
Anti-surge Chip Resistors (ESR Series)

- Exclusive resistive element pattern and laser trimming technology results in significantly improved surge resistance characteristics
- Superior power ratings



SDR series (AEC-Q200)

Part No.	Size Code mm (inch)	Rated Power (70°C)	Limiting Element Voltage(V)	Tolerance	Temperature Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
New SDR03	1608 (0603)	0.30W	150	J(±5%)	±200	1Ω to 10MΩ (E24 Series)	−55 to +155	Yes
				F(±1%)	±200 ±100	1Ω to 9.76Ω (E24,96 Series) 10Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		

ESR series (AEC-Q200)

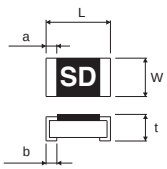
Part No.	Size Code mm (inch)	Rated Power (70°C)	Limiting Element Voltage(V)	Tolerance	Temperature Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
ESR01	1005 (0402)	0.2W (1/5W)	50	J(±5%)	+500/−250 ±200	1Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)	−55 to +155	Yes
				F(±1%)	±100	10Ω to 976kΩ (E24,96 Series) 1MΩ to 2.2MΩ (E24 Series)		
ESR03	1608 (0603)	0.25W (1/4W)	150	J(±5%)	±200	1Ω to 10MΩ (E24 Series)		Yes
				F(±1%)	±200 ±100	1Ω to 9.76Ω (E24,96 Series) 10Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
ESR10	2012 (0805)	0.4W (2/5W)	150	J(±5%)	±200	1Ω to 30MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
ESR18	3216 (1206)	0.33W (1/3W)	200	J(±5%)	±200	1Ω to 15MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
		☆0.5W (1/2W)	200	J(±5%)	±200	1Ω to 15MΩ (E24 Series)		
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
ESR25	3225 (1210)	0.5W (1/2W)	200	J(±5%)	±200	1Ω to 10MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
		☆0.66W (2/3W)	200	J(±5%)	±200	1Ω to 10MΩ (E24 Series)		
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		

*E24 : Standard products E96 : Custom products
☆ : Under Development

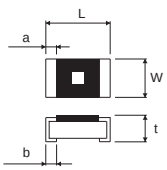
Dimensions (Unit : mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
SDR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.25±0.1	0.25±0.1
ESR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	$0.25^{+0.05}_{-0.1}$
ESR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
ESR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.3±0.2	0.4±0.2
ESR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.25	0.5±0.25
ESR25	3225 (1210)	3.2±0.15	2.5±0.15	0.55±0.1	0.3±0.25	0.5±0.25

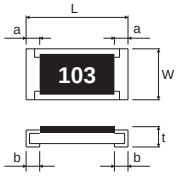
●SDR03



●ESR01/03

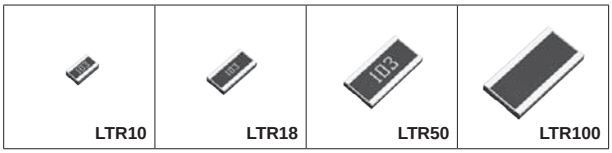


●ESR10/18/25



Thick Film Chip Resistors (High reliability Series)
High Power Chip Resistors <Wide Terminal type> (LTR Series)

- High joint reliability with long side terminations
- Highest power ratings in their class
- Guaranteed anti-surge characteristic in all series



LTR series (AEC-Q200)

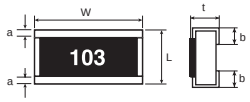
Part No.	Size Code mm (inch)	Rated Power (70°C)	Limiting Element Voltage(V)	Tolerance	Temperature Coefficient(ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
LTR10	1220 (0508)	0.25W (1/4W)	150	J(±5%)	±200	1Ω to 1MΩ (E24 Series)	−55 to +155	Yes
				F(±1%)	±100	1Ω to 1MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
LTR18	1632 (0612)	0.75W (3/4W)	200	J(±5%)	±200	1Ω to 1MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 1MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
LTR50	2550 (1020)	1W	200	J(±5%)	±200	1Ω to 1MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 1MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		
LTR100	3264 (1225)	2W	200	J(±5%)	±200	1Ω to 1MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 1MΩ (E24,96 Series)		
				D(±0.5%)	±100	10Ω to 1MΩ (E24,96 Series)		

*E24 : Standard products E96 : Custom products

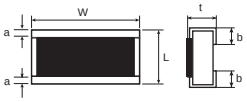
Dimensions (Unit : mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
LTR10	1220 (0508)	1.2±0.1	2.0±0.1	0.55±0.1	0.25±0.1	0.35±0.2
LTR18	1632 (0612)	1.6±0.15	3.2±0.15	0.55±0.1	0.3±0.2	0.5±0.2
LTR50	2550 (1020)	2.5±0.15	5.0±0.15	0.55±0.1	0.38±0.2	0.9±0.2
LTR100	3264 (1225)	3.2±0.15	6.4±0.15	0.55±0.15	0.4±0.25	1.13±0.25

●LTR10/18/50

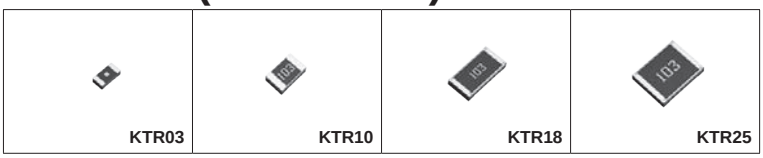


●LTR100



Thick Film Chip Resistors (High reliability Series)
High Voltage Resistance Chip Resistors (KTR Series)

- Twice the rated voltage of conventional products
- Perfect for use in Camera Flash circuit, etc



KTR series (AEC-Q200)

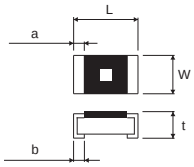
Part No.	Size Code mm (inch)	Rated Power (70°C)	Limiting Element Voltage(V)	Tolerance	Temperature Coefficient(ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
KTR03	1608 (0603)	0.1W (1/10W)	350	J(±5%)	±200	1Ω to 10MΩ (E24 Series)	−55 to +155	Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
KTR10	2012 (0805)	0.125W (1/8W)	400	J(±5%)	±200	1Ω to 30MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
KTR18	3216 (1206)	0.25W (1/4W)	500	J(±5%)	±200	1Ω to 15MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		
KTR25	3225 (1210)	0.33W (1/3W)	600	J(±5%)	±200	1Ω to 10MΩ (E24 Series)		Yes
				F(±1%)	±100	1Ω to 10MΩ (E24,96 Series)		

*E24 : Standard products E96 : Custom products

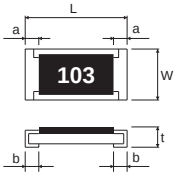
Dimensions (Unit : mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
KTR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
KTR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.3±0.2	0.4±0.2
KTR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.25	0.5±0.25
KTR25	3225 (1210)	3.2±0.15	2.5±0.15	0.55±0.1	0.3±0.25	0.5±0.25

●KTR03



●KTR10/18/25



Thick Film Chip Resistors (High reliability Series)
Tolerance for sulfurization chip resistor (SFR Series)

• Improved Anti-sulfur reliability by ROHM original structure

SFR series (AEC-Q200)

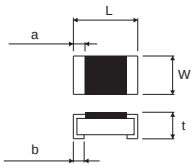
Part No.	Size Code mm (inch)	Rated Power (70°C)	Limiting Element Voltage(V)	Tolerance	Temperature Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
New SFR01	1005 (0402)	0.063W (1/16W)	50	J(±5%)	+500 / −250 ±200	1Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)	−55 to +155	Yes
				F(±1%)	±100	10Ω to 2.2MΩ (E24,96 Series)		
New SFR03	1608 (0603)	0.1W (1/10W)	50	J(±5%)	±400 ±200	1Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)		Yes
				F(±1%)	±100	10Ω to 10MΩ (E24,96 Series)		

※E24 : Standard products E96 : Custom products

Dimensions (Unit : mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
SFR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.33±0.08	0.25 +0.05 −0.10
SFR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.4±0.1	0.3±0.2

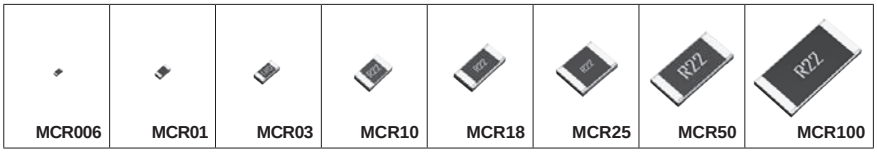
●SFR01/03



Chip Resistors for Current Detection (Thick Film type)
Chip Resistors (Low Ohmic MCR Series)

•Very-low ohmic resistance from 47m Ohm is in lineup by thick-film resistive element.

•High-reliability chip resistor employing metal glaze as resistive element.



Low Ohmic MCR series (AEC-Q200)

Part No.	Size Code mm (inch)	Rated Power (70°C)	Tolerance	Temperature Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range(°C)	Automotive Grade Available
☆MCR006	0603 (0201)	0.05W (1/20W)	F(±1%)	+600 / −200	1.0Ω to 9.1Ω (E24 Series)	−55 to +155	Yes
MCR01	1005 (0402)	0.063W (1/16W)	F(±1%)	±400	1.0Ω to 9.1Ω (E24 Series)		Yes
MCR03	1608 (0603)	0.1W (1/10W)	F(±1%)	±400	1.0Ω to 9.1Ω (E24 Series)		Yes
MCR10	2012 (0805)	0.25W (1/4W)	J(±5%)	*Table 1	0.047Ω to 0.91Ω (E24 Series)		Yes
			F(±1%)	*Table 1	0.047Ω to 9.1Ω (E24 Series)		
MCR18	3216 (1206)	0.25W (1/4W)	J(±5%)	*Table 1	0.047Ω to 0.91Ω (E24 Series)		Yes
			F(±1%)	*Table 1	0.047Ω to 9.1Ω (E24 Series)		
MCR25	3225 (1210)	0.5W (1/2W)	J(±5%)	300±300	0.047Ω to 0.091Ω (E24 Series)		Yes
				±200	0.1Ω to 0.91Ω (E24 Series)		
			F(±1%)	300±300	0.047Ω to 0.091Ω (E24 Series)		
				±200	0.1Ω to 9.1Ω (E24 Series)		
MCR50	5025 (2010)	0.5W (1/2W)	J(±5%)	*Table 1	0.047Ω to 0.91Ω (E24 Series)		Yes
			F(±1%)	*Table 1	0.047Ω to 9.1Ω (E24 Series)		
MCR100	6432 (2512)	1W	J(±5%)	*Table 1	0.047Ω to 0.91Ω (E24 Series)	−55 to +125	Yes
			F(±1%)	*Table 1	0.047Ω to 9.1Ω (E24 Series)		

☆ : Under Development

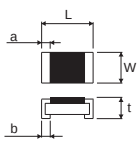
*Table 1

Tolerance	Temperature Coefficient(ppm/°C)	Resistance Range
J(±5%) F(±1%)	500±300	0.047Ω to 0.091Ω (E24 Series)
	400±200	0.1Ω to 0.13Ω (E24 Series)
	±250	0.15Ω to 9.1Ω (E24 Series)

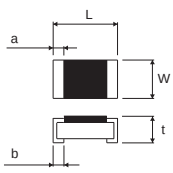
Dimensions (Unit : mm)

Part No.	Size Code mm(inch)	L	W	t	a	b
MCR006	0603 (0201)	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
MCR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 +0.05 −0.1
MCR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
MCR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4±0.2
MCR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.5±0.25	0.5±0.25
MCR25	3225 (1210)	3.2±0.15	2.5±0.15	0.55±0.15	0.5±0.25	0.5±0.25
MCR50	5025 (2010)	5.0±0.15	2.5±0.15	0.55±0.15	0.6±0.25	0.6±0.25
MCR100	6432 (2512)	6.3±0.15	3.2±0.15	0.55±0.15	0.6±0.25	0.6±0.25

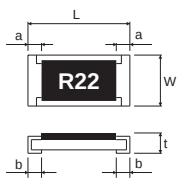
●MCR006/01



●MCR03

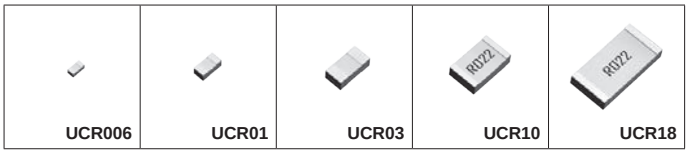


●MCR10/18/25/50/100



Chip Resistors for Current Detection (Thick Film type)
Low Ohmic Chip Resistors <Face down type> (UCR Series)

- Chip resistors for current detection. (11mΩ or more)
- Resistive element is located at bottom side, which reduces the resistance shift during mounting process
- ROHM's unique structure achieved improvement of heat



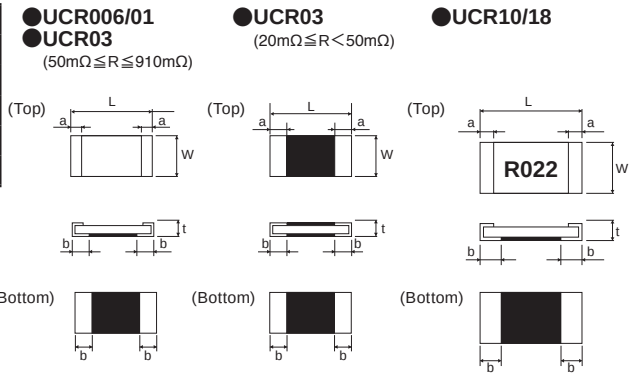
UCR series (AEC-Q200)

Part No.	Size Code mm (inch)	Rated Power (70°C)	Tolerance	Temperature Coefficient(ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
New UCR006	0603 (0201)	0.1W (1/10W)	J±5%)	0 to 300	100mΩ to 910mΩ (E24 Series)	−55 to +155	Yes
			F(±1%)				
UCR01	1005 (0402)	0.125W (1/8W)	J(±5%)	0 to 300	68mΩ to 91mΩ (E24 Series)		Yes
			F(±1%)	0 to 250 0 to 200	100mΩ to 200mΩ (E24 Series) 220mΩ to 910mΩ (E24 Series)		
UCR03	1608 (0603)	0.25W (1/4W)	J(±5%)	0 to 250	20mΩ to 47mΩ (E24 Series)		Yes*1
			F(±1%)	0 to 200 0 to 150	51mΩ to 91mΩ (E24 Series) 100mΩ to 200mΩ (E24 Series)		
		0.2W (1/5W)	J(±5%)	0 to 150	220mΩ to 910mΩ (E24 Series)		
			F(±1%)				
UCR10	2012 (0805)	0.33W (1/3W)	J(±5%)	250±200 0 to 250 0 to 150	11mΩ to 18mΩ (E24 Series) 20mΩ to 47mΩ (E24 Series) 51mΩ to 100mΩ (E24 Series)		Yes
			F(±1%)	0 to 250 0 to 150	11mΩ to 47mΩ (E24 Series) 51mΩ to 100mΩ (E24 Series)		
UCR18	3216 (1206)	0.5W (1/2W)	J(±5%)	0 to 350 0 to 200 0 to 150	11mΩ to 18mΩ (E24 Series) 20mΩ to 39mΩ (E24 Series) 43mΩ to 100mΩ (E24 Series)		Yes
			F(±1%)				
		☆1.0W	J(±5%)	0 to 350 0 to 200	11mΩ to 18mΩ (E24 Series) 20mΩ to 39mΩ (E24 Series)		Yes
			F(±1%)				

*1 Limited to 100mΩ and higher.
☆ : Under Development

Dimensions (Unit : mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
UCR006	0603 (0201)	0.64±0.05	0.34±0.05	0.28±0.05	0.16±0.1	0.22±0.1
UCR01	1005 (0402)	1.0±0.1	0.55±0.1	0.37±0.05	0.28±0.1	0.34±0.1
UCR03	1608 (0603)	1.6±0.1	0.87±0.1	0.5±0.1	0.45±0.2	0.45±0.2
UCR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.24±0.2	0.5±0.2
UCR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.2	0.9±0.25



Chip Resistors for Current Detection (Thick Film type)
High Power Chip Resistors <Wide Terminal type> (Low Ohmic LTR) Series)

- Chip resistors for current detection. (10mΩ or more)
- High joint reliability with long side terminations
- Improvement of rated power enables to displace smaller size of resistors, and it contributes space savings in your set

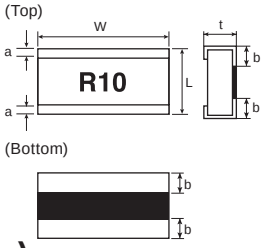
Low Ohmic LTR series (AEC-Q200)

Part No.	Size Code mm (inch)	Rated Power (70°C)	Tolerance	Temperature Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available
LTR10	1220 (0508)	0.5W (1/2W)	J(±5%)	±150	47mΩ to 9.1Ω(E24 Series)	−55 to +155	Yes
			F(±1%)				
LTR18	1632 (0612)	1W	J(±5%)	0 to 300 0 to 200 0 to 150	10mΩ to 18mΩ(E24 Series) 20mΩ to 47mΩ(E24 Series) 51mΩ to 470mΩ(E24 Series)		Yes
			F(±1%)	±100	510mΩ to 1Ω(E24 Series)		
LTR100	3264 (1225)	2W	J(±5%)	±200	100mΩ to 910mΩ(E24 Series)		Yes
			F(±1%)	0 to 150	100mΩ to 910mΩ(E24 Series)		

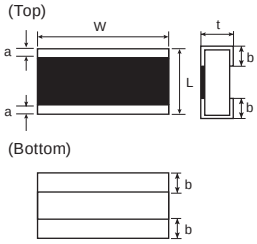
Dimensions (Unit : mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
LTR10	1220 (0508)	1.2±0.1	2.0±0.1	0.55±0.1	0.3±0.2	0.35±0.2
LTR18	1632 (0612)	1.6±0.1	3.2±0.1	0.58±0.1	0.5±0.2	0.5±0.2
LTR100	3264 (1225)	3.2±0.15	6.4±0.15	0.55±0.15	0.4±0.25	1.13±0.25

●LTR10

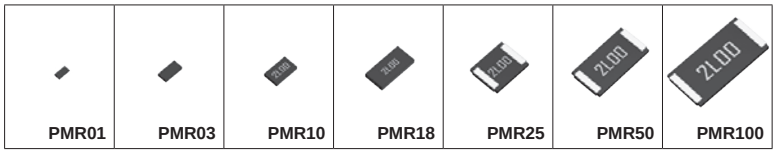


●LTR18/100 (No marking)



Chip Resistors for Current Detection (Metal plate type)
Ultra Low Ohmic Chip Shunt Resistors (PMR Series)

- Ultra low-ohmic resistance range (1mΩ-)
- Improved current detection accuracy by trimming-less structure
  Highly recommended for large current / High speed switching circuit.
- Special low resistance temperature coefficient (TCR) alloy utilized for the resistive element



PMR series (AEC-Q200)

Part No.	Size Code mm (inch)	Rated Power(70°C)	Tolerance	Temperature Coefficient(ppm / °C)	Resistance Value(mΩ)	Operating Temperature range(°C)	Automotive Grade Available
New PMR01	1005 (0402)	0.2W (1/5W)	J(±5%)	0 to 200	10	−55 to +155	Yes
PMR03	1608 (0603)	0.25W (1/4W)	J(±5%) F(±1%)	0 to 150	10(☆5)		Yes
PMR10	2012 (0805)	0.5W (1/2W)	J(±5%) F(±1%)	±150	2,3,4,5,6, 7,8,9,10		Yes
PMR18	3216 (1206)	1W	J(±5%) F(±1%)	±100	1,2,3,4,5,6, 7,8,9,10		Yes
PMR25	3225 (1210)	1W	J(±5%) F(±1%)	±100	1,2,3,4,5		Yes
PMR50	5025 (2010)	1W	J(±5%) F(±1%)	±100	1,2,3,4,5, 6,7,8,9,10		Yes
PMR100	6432 (2512)	2W	J(±5%)	±150	1,2		Yes
			F(±1%)	±100	3,4,5,6,7,8,9,10		
		☆3W	J(±5%) F(±1%)	±150	1,2		

☆ : Under Development

Large Current Jumper Type

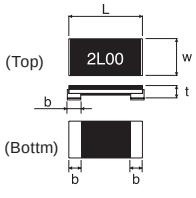
Part No.	Size Code mm (inch)	Rated Current	Resistance	Temperature Range (°C)	Automotive Grade Available
PMR01	1005 (0402)	20.0A	0.5mΩ Max.	−55 to +155	Yes
PMR03	1608 (0603)	22.4A			Yes
PMR10	2012 (0805)	31.6A			Yes
PMR18	3216 (1206)	38.7A			Yes
PMR25	3225 (1210)	44.7A			Yes
PMR50	5025 (2010)	50.0A			Yes
PMR100	6432 (2512)	63.2A			Yes

Dimensions (Unit : mm)

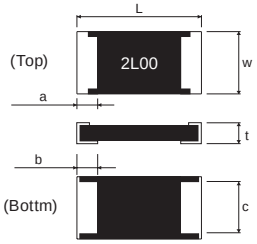
Part No.	Size Code mm(inch)	L	W	t	a	b	c
PMR01	1005 (0402)	1.0±0.05	0.5±0.05	0.25±0.1	—	0.30±0.10	—
PMR03	1608 (0603)	1.6±0.15	0.8±0.15	0.25±0.1	—	0.35±0.15	—
PMR10	2012 (0805)	2.0±0.15	1.2±0.15	0.42 to 0.28*±0.15	—	0.75 to 0.35*±0.25	—
PMR18	3216 (1206)	3.2±0.15	1.6±0.15	0.42 to 0.28*±0.15	—	1.20 to 0.5 *±0.25	—
PMR25	3225 (1210)	3.2±0.2	2.5±0.2	0.52 to 0.32*±0.15	0.5±0.2	1.00 to 0.8 *±0.2	1.95±0.2
PMR50	5025 (2010)	5.0±0.2	2.5±0.2	0.52 to 0.32*±0.15	0.5±0.2	1.85 to 0.9 *±0.2	1.95±0.2
PMR100	6432 (2512)	6.4±0.25	3.2±0.25	0.52 to 0.32*±0.15	0.5±0.25	2.3 to 1.1 *±0.25	2.65±0.25

* Each value range varies with the resistance. Please contact a ROHM sales representative for further details.

●PMR01/03 (No marking)
●PMR10/18

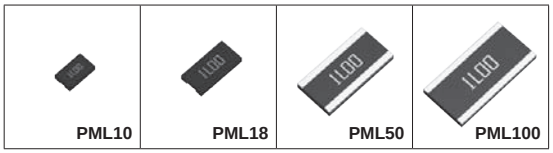


●PMR25/50/100



Chip Resistors for Current Detection (Metal plate type)
Ultra Low Ohmic Chip Shunt Resistors <Wide Terminal type> (PML Series)

- Ultra-low resistance range (0.5mΩ or more)
- Wide terminal configuration for high joint reliability
- Improved current detection accuracy by trimming-less structure



PML series (AEC-Q200)

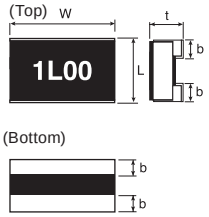
Part No.	Size Code mm (inch)	Rated Power (70°C)	Tolerance	Temperature Coefficient(ppm / °C)	Resistance Value (mΩ)	Operating Temperature range(°C)	Automotive Grade Available
PML10	1220 (0508)	0.66W	J(±5%) G(±2%)	±200	1.0, 1.5, 2.0, 2.5	−55 to +155	Yes
PML18	1632 (0612)	1W	J(±5%) G(±2%)	±150	0.5, 1.0, 1.5, 2.0, 2.5		Yes
New PML50	2550 (1020)	2W	J(±5%)	±200	0.5, 1.0, 1.5, 2.0, 2.2		Yes
PML100	3264 (1225)	2W (3W at 25°C)	J(±5%)	±100	1.0, 1.5, 2.0, 2.2		Yes
		2W		±150	0.5		

Dimensions (Unit : mm)

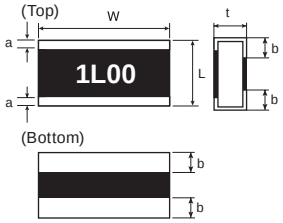
Part No.	Size Code mm(inch)	L	W	t	a	b
PML10	1220 (0508)	1.2±0.15	2.0±0.15	0.42±0.15	—	0.45 to 0.3* ±0.2
PML18	1632 (0612)	1.6±0.15	3.2±0.15	0.42 to 0.28* ±0.15	—	0.55 to 0.3* ±0.2
PML50	2550 (1020)	2.5±0.2	5.0±0.2	0.52 to 0.32* ±0.15	0.4±0.2	1.0 to 0.5* ±0.2
PML100	3264 (1225)	3.2±0.25	6.4±0.25	0.5 to 0.36* ±0.15	0.45±0.25	0.9 to 0.7* ±0.25

* Each value range varies with the resistance. Please contact a ROHM sales representative for further details.

●PML10/18

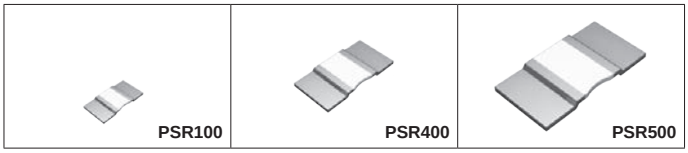


●PML50/100



Chip Resistors for Current Detection (Metal plate type)
High Power Ultra Low Ohmic Chip Shunt Resistors (PSR Series)

- High power 3W to 5W
- Ultra low resistance rage (0.2mΩ or more)
- Excellent TCR characterristics
- Convex structure



PSR series (AEC-Q200)

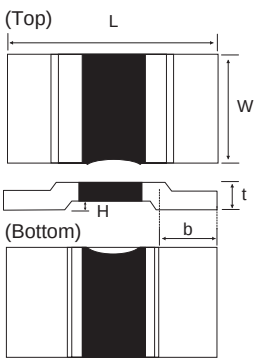
Part No.	Size Code mm(inch)	Rated Power (70°C)	Tolerance	Temperature Coefficient *1(ppm / °C)	Resistance Value (mΩ)	Operating Temperature Range(°C)	Automotive Grade Available
☆PSR100	6432 (2512)	3W	F(±1%)	±175	0.3, 0.5	−55 to +170	Preparing
				±100	1.0		
				±75	2.0, 3.0		
New PSR400	10×5.2 (3921)	4W	F(±1%)	±175	0.3, 0.5		Yes
				±75	1.0, 2.0, 3.0		
New PSR500	15×7.75 (5931)	5W	F(±1%)	±225	0.2		Yes
				±150	0.3, 0.4, 0.5		
				±75	1.0, 2.0		

*1(+20°C to +125°C)
☆ : Under Development

Dimensions (Unit : mm)

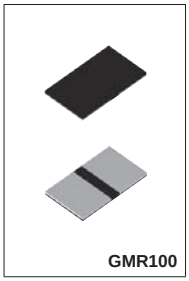
Part No.	Resistance	L	W	t	H	b
PSR100	0.3mΩ	6.35±0.15	3.05±0.25	1.30±0.15	0.35±0.15	1.12±0.3
	0.5mΩ			1.15±0.15		
	1.0mΩ			0.75±0.15		
	2.0mΩ			1.00±0.15		
	3.0mΩ			0.75±0.15		
PSR400	0.3mΩ	10±0.3	5.2±0.3	1.85±0.15	0.5±0.1	2.0±0.6
	0.5mΩ			1.3±0.15		
	1.0mΩ			0.9±0.15		
	2.0mΩ			1.1±0.15		
	3.0mΩ			0.9±0.15		
PSR500	0.2mΩ	15±0.3	7.75±0.3	1.85±0.15	0.5±0.1	4.0±0.6
	0.3mΩ			1.4±0.15		
	0.4mΩ			1.15±0.15		
	0.5mΩ			1.05±0.15		
	1.0mΩ			1.3±0.15		
	2.0mΩ			0.9±0.15		

●PSR400/500



Chip Resistors for Current Detection (Metal plate type)
High Power Low Ohmic Chip Shunt Resistors (GMR Series)

- High power (3W)
- High heat dissipation
- Excellent TCR characterristics
- Low ohmic (10mΩ to 220mΩ)


GMR100

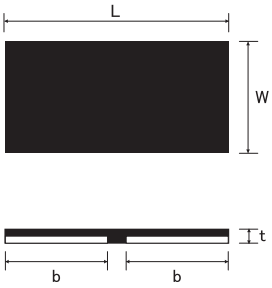
GMR series (AEC-Q200)							
Part No.	Size Code mm(inch)	Rated Power (70°C)	Tolerance	Temperature *1 Coefficient (ppm / °C)	Resistance Range	Operating Temperature Range(°C)	Automotive Grade Available
☆GMR100	6432 (2512)	3W	J(±5%) F(±1%)	±20	5mΩ to 220mΩ(E6 Series*2)	−55 to +170	Preparing

*1(+20°C to +60°C)
*2 Please contact us for another standard nominal resistance values.
☆ : Under Development (Development schedule will vary depending on resistance value. Please Contact us.)

Dimensions (Unit : mm)

Part No.	Size Code mm(inch)	L	W	t	b
GMR100	6432 (2512)	6.40±0.25	3.20±0.25	0.40±0.15	2.75±0.25

●GMR100



Standard Nominal Resistance Values

E3	10				22						47						
E6	10		15		22		33		47		68						
E12	10	12	15	18	22	27	33	39	47	56	68	82					
E24	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47
	51	56	62	68	75	82	91										
E96	100	102	105	107	110	113	115	118	121	124	127	130	133	137	140	143	147
	150	154	158	162	165	169	174	178	182	187	191	196	200	205	210	215	221
	226	232	237	243	249	255	261	267	274	280	287	294	301	309	316	324	332
	340	348	357	365	374	383	392	402	412	422	432	442	453	464	475	487	499
	511	523	536	549	562	576	590	604	619	634	649	665	681	698	715	732	750
	768	787	806	825	845	866	887	909	931	953	976						

Nominal Resistance

Resistors of a series fall into one of nominal resistance ranges shown in the table above. Nominal resistance is determined by the common ratio shown right.

Series	Common Ratio	Remarks
E6	$\sqrt[6]{10} \fallingdotseq 1.46$	Rounded off to a 2-digit figure.
E12	$\sqrt[12]{10} \fallingdotseq 1.21$	
E24	$\sqrt[24]{10} \fallingdotseq 1.10$	
E96	$\sqrt[96]{10} \fallingdotseq 1.02$	Rounded off to a 3-digit figure.

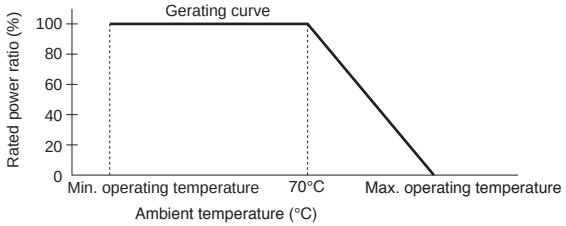
Resistance Coding

Nominal resistance is expressed in 3 digits when the resistance tolerance is ±5% and in 4 digits when ±1%. The leading 2 or 3 digits indicate significant figure while the last digit indicates the number of zeros. The letter R denotes the decimal point if necessary.

EX1 22Ω→22×100Ω→220 (the last digit indicates the number "0" of a multiplier)
EX2 47kΩ→47×103Ω→473 (the last digit indicates the number "3" of a multiplier)
EX3 1.2MΩ→12×105Ω→125 (the last digit indicates the number "5" of a multiplier)
EX4 2.7Ω→2R7 (the decimal point indicate the letter R / the letter R apply to the low Resistance less than 10Ω)
EX5 1130Ω→113×101Ω→1131 (the last digit indicates the number "1" of a multiplier / Resistance Tolerance 1% (F) products)
EX6 0.10Ω→R10
EX7 1mΩ→1L0

Supplement of rated power

・When the ambient temperature exceeds the rated ambient temperature, derate the load power based on the derating curve.



For basic guidelines on using resistors, see the technical reports issued by Japan Electronics and Information Technology Industries Association. JEITA RCR-2121A.

"Guideline of notabilia for fixed resistors for use in electronic equipment (Safety Application Guide for fixed resistors for use in electronic equipment)"

Supplementary to notes

* 1 : When resistor is to be exposed to a transient load (excessive large load, such as pulse), mount the resistor on your product and check the condition and evaluate the result. Constant application of a voltage above the rated voltage will degrade the performance and reliability of the resistor.
Do not apply a voltage exceeding the rated voltage across any ROHM resistors.

* 2 : Rated voltage (V) $=\sqrt{\text{rated power (W)} \times \text{nominal resistance } (\Omega)}$ or the limiting element voltage, whichever smaller, is the rated voltage.

SMD LEDs

Red(V,U) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2500	2500 to 3120
Mini-mold	1608	0.55	20										New SML-D15VW(C)								
													SML-D14VW(C)*								
												SML-D13VW(C)*									
											SML-D12V8W(C)										
													New SML-D15UW(C)								
													New SML-D15U2W(C)								
													SML-D14U2W(C)*								
												SML-D13UW(C)*									
											SML-D12U8W(C)										
	20125	0.8	20							SML-H12V8T(C)											
											SML-H12U8T(C)										
PLCC2	3528	1.9	20									SML-Z14VT(C)*									
														SML-Z14UT(C)*							
Reverse Mount	34125	1.1	10						SML-811VT(C)*												
									SML-811UT(C)*												
Lens	1608	1.24	20											☆CSL0901VT(C)							
														☆CSL0901UT(C)							

Orange(D) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2800
Mini-mold	1608	0.55	20											New SML-D15DW(C)						
														SML-D14DW(C)*						
													SML-D13DW(C)*							
												SML-D12D8W(C)								
	20125	0.8	20									SML-H12D8T(C)								
PLCC2	3528	1.9	20												SML-Z14DT(C)*					
Reverse Mount	34125	1.1	10							SML-811DT(C)*										
Lens	1608	1.24	20													☆CSL0901DT(C)				

Yellow(Y,W) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2800
Mini-mold	1608	0.55	2				SML-D12W8W(C)*													
			20												☆SML-D15WW(C)					
															New SML-D15YW(C)					
															SML-D14YW(C)*					
															SML-D14WW(C)*					
														SML-D13WW(C)*						
												SML-D12Y8W(C)								
	20125	0.8	20									SML-H12Y8T(C)								
PLCC2	3528	1.9	20												SML-Z14YT(C)*					
ReverseMount	34125	1.1	10							SML-811WT(C)*										
Lens	1608	1.24	20													☆CSL0901YT(C)				
																☆CSL0901WT(C)				

Green(M,P,F) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	0.63 to 1.0	1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1800	1800 to 2500
Mini-mold	1608	0.55	20										New SML-D15MW(C)								
											☆SML-D15PW(C)										
													SML-D14MW(C)*								
												SML-D13MW(C)*									
							SML-D12P8W(C)														
											SML-D12M8W(C)										
	20125	0.8	20								SML-H12M8T(C)										
							SML-H12P8T(C)														
PLCC2	3528	1.9	20											SML-Z14MT(C)*							
											SML-Z14PT(C)*										
												SML-Z14FT(C)*									
Lens	1608	1.24	20												☆CSL0901MT(C)						
											☆CSL0901PT(C)										

Bluish-Green (E) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	9.0 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	1400 to 2200	2200 to 3600	3600 to 5600
PLCC2	3528	1.9	20											SMLZ14EGT(C)*			

Blue(B) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	0.9 to 1.4	1.4 to 2.2	2.2 to 3.6	3.6 to 5.6	5.6 to 9.0	9 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400
Reflector	20125	0.8	5							SMLMN2BCT(C)									
PLCC2	3528	1.9	20												SMLZ14BGT(C)				

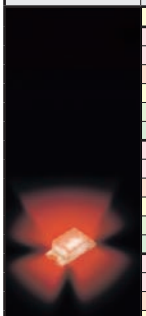
White(WB) Quick Reference of Brightness

Package Structure	Package Size	Height (mm)	Luminous Intensity (mcd) / I_F(mA)	9 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1100	1100 to 1400	1400 to 1800	1800 to 2200	2200 to 2800	2800 to 3600	3600 to 7000	7000 to 8500
Reflector	20125	0.8	5					SMLMN2WB1CW(C)													

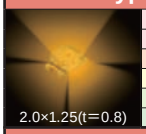
*:Please note that the brightness of some products may fall between ranks (half rank).
☆:Under Development
*:Brightness on specification sheet include tolerance of within ±10%.
Please be sure to refer the specifications about the rank.

SMD LEDs

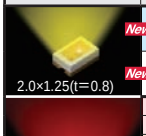
<Mold Type(1608)>(AEC-Q101)

Package size(mm)	Part No.	Emitting Color	Absolute Maximum Ratings(Ta=25°C) Power Dissipation PD (mW)	Forward Current IF (mA)	Peak Forward Current IFP (mA)	Reverse Voltage VR (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	Electrical and Optical Characteristics(Ta=25°C) Forward Voltage VF Typ. (V)	VF IF (mA)	Reverse Current IR Max. (μA)	IR VR (V)	Dominant Wavelength ID Typ.* (nm)	ID IF (mA)	Luminous Intensity Iv Min. (mcd)	Typ. (mcd)	Iv IF (mA)
	SML-D12W8W(C)	Yellow	52	20	100 *1	12	−40 to +100	−40 to +100	2.0	2	10	12	587.5	2	4.5	7.1	2
	SML-D12V8W (C)	Red	54	20	100 *1	5	−40 to +85	−40 to +100	2.2	20	10	5	630	20	16	40	20
	SML-D12U8W(C)	Red											625		25	63	
	SML-D12D8W (C)	Orange											605		40	100	
	SML-D12Y8W(C)	Yellow											590		25	63	
	SML-D12M8W (C)	Yellowish-Green											572		10	25	
	SML-D12P8W (C)	Green	67	25									560		2.5	6.3	
	SML-D13VW(C)	Red	72	30	100 *1	5	−40 to +100	−40 to +100	2.0	20	10	5	630	20	35.5	55	20
	SML-D13UW(C)	Red							(2.0)				620		56	85	
	SML-D13DW(C)	Orange											605		71	120	
	SML-D13WW(C)	Yellow	75						(2.1)				587			110	
	SML-D13MW(C)	Yellowish-Green							2.1				571		28	45	
	SML-D13FW (C)	Green	75										564		18	22	
	SML-D14VW(C)	Red	72	30	100 *1	5	−40 to +100	−40 to +100	2.0	20	10	5	630	20	71	100	20
	SML-D14U2W(C)	Red	75										615		90	160	
	SML-D14DW(C)	Orange											605		112	200	
	SML-D14YW(C)	Yellow							2.1				590		112	200	
	SML-D14WW(C)	Yellow											587		112	180	
	SML-D14MW(C)	Yellowish-Green							(2.1)				571		35.5	60	
	New SML-D15VW (C)	Red	84	35	100 *1	5	−40 to +100	−40 to +100	(2.0)	20	(10)	5	630	20	(71)	(90)	20
	New SML-D15UW (C)	Red											620		(90)	(112)	
	New SML-D15U2W (C)	Red											615		(112)	(140)	
	New SML-D15DW (C)	Orange											605				
	New SML-D15YW (C)	Yellow	87						2.1				590		(180)	(224)	
	☆SML-D15WW (C)	Yellow											587				
	New SML-D15MW(C)	Yellowish-Green							(2.1)				571		(56)	(71)	
1.6×0.8(t=0.55)	☆SML-D15PW (C)	Green											560		(18)	(22.4)	

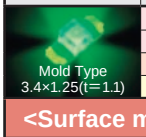
<Mold Type(20125)>(AEC-Q101)

Package size(mm)	Part No.	Emitting Color	Absolute Maximum Ratings(Ta=25°C) Power Dissipation PD (mW)	Forward Current IF (mA)	Peak Forward Current IFP (mA)	Reverse Voltage VR (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	Electrical and Optical Characteristics(Ta=25°C) Forward Voltage VF Typ. (V)	VF IF (mA)	Reverse Current IR Max. (μA)	IR VR (V)	Dominant Wavelength ID Typ.* (nm)	ID IF (mA)	Luminous Intensity Iv Min. (mcd)	Typ. (mcd)	Iv IF (mA)
	SML-H12V8T (C)	Red	54	20	100 *1	5	−40 to +85	−40 to +100	2.2	20	10	5	630	20	16	25	20
	SML-H12U8T (C)	Red											620		25	40	
	SML-H12D8T (C)	Orange											605		40	63	
	SML-H12Y8T (C)	Yellow											590				
	SML-H12M8T (C)	Yellowish-Green											572		10	25	
2.0×1.25(t=0.8)	SML-H12P8T (C)	Green											560		2.5	4.0	

<Reflector Type>(AEC-Q101)

Package size(mm)	Part No.	Emitting Color	Absolute Maximum Ratings(Ta=25°C) Power Dissipation PD (mW)	Forward Current IF (mA)	Peak Forward Current IFP (mA)	Reverse Voltage VR (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	Electrical and Optical Characteristics(Ta=25°C) Forward Voltage VF Typ. (V)	VF IF (mA)	Reverse Current IR Max. (μA)	IR VR (V)	Dominant Wavelength ID Typ.* (nm)	ID IF (mA)	Luminous Intensity Iv Min. (mcd)	Typ. (mcd)	Iv IF (mA)
	New SMLMN2BCT(C)	Blue	68	20	100 *1	12	−40 to +100	−40 to +100	2.9	5	10	5	470	5	14	36	5
2.0×1.25(t=0.8)	New SMLMN2WB1CW(C)	White											(x,y)(0.30,0.28)		56	140	
	SML-Z14VT(C)	Red	168	70	200 *1	12	−40 to +100	−40 to +100	1.9	20	10	12	630	20	56	112	20
	SML-Z14UT(C)	Red											620		112	224	
	SML-Z14DT(C)	Orange											605		140	280	
	SML-Z14YT(C)	Yellow	175						2.0				589		140	280	
	SML-Z14MT(C)	Yellowish-Green											571		45	90	
	SML-Z14FT(C)	Green											564		22.4	45	
	SML-Z14PT(C)	Green											560		11.2	22.4	
PLCC2 3.5×2.8(t=1.9)	SMLZ14EGT(C)	Yellowish-Green	120	30	100 *1	5			3.4			5	528		710	1,100	
	SMLZ14BGT(C)	Blue	114						3.3				470		140	280	

<Reverse mount available>(AEC-Q101)

Package size(mm)	Part No.	Emitting Color	Absolute Maximum Ratings(Ta=25°C) Power Dissipation PD (mW)	Forward Current IF (mA)	Peak Forward Current IFP (mA)	Reverse Voltage VR (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	Electrical and Optical Characteristics(Ta=25°C) Forward Voltage VF Typ. (V)	VF IF (mA)	Reverse Current IR Max. (μA)	IR VR (V)	Dominant Wavelength ID Typ.* (nm)	ID IF (mA)	Luminous Intensity Iv Min. (mcd)	Typ. (mcd)	Iv IF (mA)
	SML-811VT(C)	Red	62	25	100 *1	5	−40 to +85	−40 to +100	1.95	10	100	5	630	10	11.2	22.4	10
	SML-811UT(C)												620				
Mold Type 3.4×1.25(t=1.1)	SML-811DT(C)	Orange											605				
	SML-811WT(C)	Yellow											590		14	28	

<Surface mount Circular Type>(AEC-Q101)

Package size(mm)	Part No.	Emitting Color	Absolute Maximum Ratings(Ta=25°C) Power Dissipation PD (mW)	Forward Current IF (mA)	Peak Forward Current IFP (mA)	Reverse Voltage VR (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	Electrical and Optical Characteristics(Ta=25°C) Forward Voltage VF Typ. (V)	VF IF (mA)	Reverse Current IR Max. (μA)	IR VR (V)	Dominant Wavelength ID Typ.* (nm)	ID IF (mA)	Luminous Intensity Iv Min. (mcd)	Typ. (mcd)	Iv IF (mA)
	☆CSL0901VT (C)	Red	50	20	100 *1	12	−40 to +100	−40 to +100	2	20	10	12	630	20	(112)	174	20
	☆CSL0901UT (C)	Red											620		(112)	185	
	☆CSL0901DT (C)	Orange											605		(224)	405	
	☆CSL0901YT (C)	Yellow											590		(180)	320	
	☆CSL0901WT (C)	Yellow											587		(180)	290	
	☆CSL0901MT (C)	Yellowish-Green											572		(71)	140	
1.6×0.8(t=1.24)	☆CSL0901PT (C)	Green											560		(18)	34.0	

*1:Duty1/10, 1kHz
*:Brightness for white color is noted with chromaticity coordinate (x, y).
AEC-Q101 qualified products or products scheduled to receive certification.

( ):Reference ☆:Under Development

High quality and stable supply enabled through a vertically integrated production system

High quality raw materials

Manufacturing wafers through silicon ingot pulling

Raw silicon

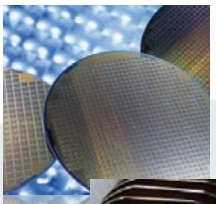
In-house photomask

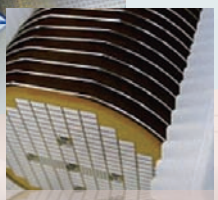
Pursuing high quality through integrated quality control, from IC chip design layout to photomask production

Silicon Ingot

CAD

Photo Mask





Wafer Process

Si Silicon

SiC Silicon carbide

Wafer

SiCrystal AG is a German SiC single-crystal wafer manufacturer that joined the ROHM Group in 2009.

High Quality

Achieving high quality in all processes

ROHM considers ‘quality first’ as its company objective and unwaveringly pursues this goal. All processes, from production, from development, design and wafer manufacturing to sales and service, are carried out within the group using a vertically integrated production system, and activities are implemented in each process to improve quality. This also results in excellent traceability and establishes a system that ensures worry-free use of our products.

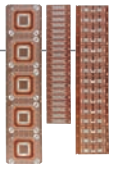
Stable Supply

Fulfilling our commitment to ensure stable supply through the collective strength of the ROHM Group

ROHM supplies products that meet market demands by utilizing a vertically integrated, completely in-house production process to ensure superior quality and stable supply - unlike fabless and and foundry manufacturers that are susceptible to external influences.

In-house dies and lead frames

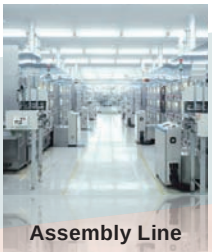
To ensure quality manufacturing, all lead frame dies for lead frame punching and molding are created in-house



State-of-the-art packages

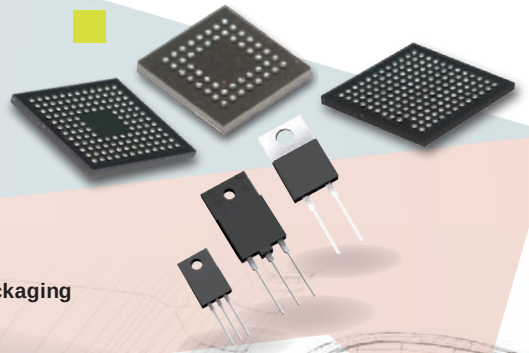
Utilizing the latest assembly technology for CSP, BGA, COC, COF and stacked packages

Frame & Dies



Assembly Line

Packaging



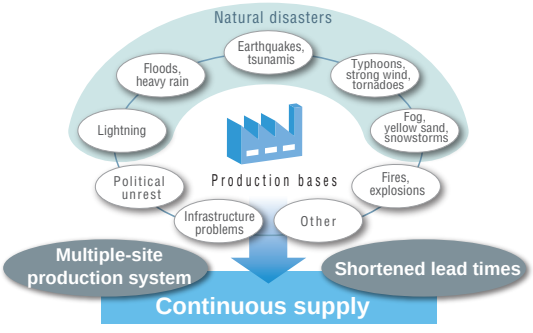
In-house Production System

ROHM's production system is developed in-house to enable flexible, precise response to customer needs.

All production equipment are developed in-house

BCM System

ROHM continues to strengthen its BCM system based on risk evaluations conducted at all production bases.



ROHM Initiatives for Automotive-Grade Products

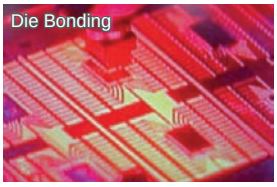
ROHM has set a corporate objective of ‘Quality First’ and pursues high quality, innovative manufac- turing while providing greater security and peace of mind through stable, guaranteed delivery.
In addition, ROHM takes on supply responsibility by utilizing a vertically integrated production system and implements a variety of initiatives to ensure superior reliability.

Sample Initiatives

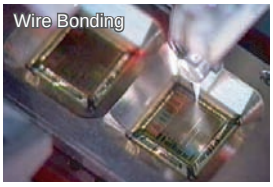
Real-Time Quality Checks

Screening methods are implemented at each process, from silicon ingot pulling and wafer production to testing, assembly, and shipment inspection in order to verify quality and workmanship.

Real-time verification in all processes



Workmanship verified during die bonding operation

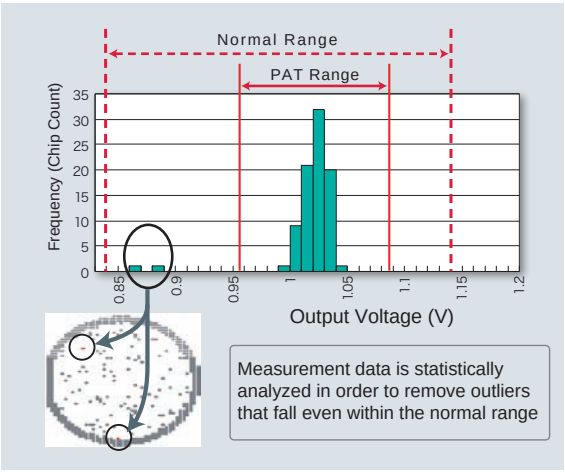


Quality check during the wire bonding process

PAT System Implementation (AEC Compliance)

The PAT system is designed to remove outliers - even within the normal range - through statistical analysis of measurement data. As a result, even some products deemed to be good during testing and fall within the normal range but lie outside the lot distribution are removed due to potential characteristics that may cause them to fail prematurely in the future.
This provides an additional measure to prevent defective products from escaping.

PAT System (PAT: Part Average Testing)



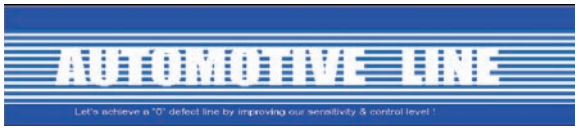
Measurement data is statistically analyzed in order to remove outliers that fall even within the normal range

Dedicated Automotive Lines

All automotive products are produced and processed on dedicated lines by certified operators that have undergone extensive training and testing. Focusing on machine and man makes it possible to establish a high-reliability, automotive- grade production environment.

Line Differentiation and 4M

ROHM manufactures automotive products on designated HR (High Reliability) lines, separate from standard lines used for general-purpose products



Certification Armband

Overview

Model Design	Model Testing Design	Model Certification Standards
Robust design/multiple protection circuits/ improved resistance to destruction/easier testability/threshold characteristics evaluation	High/ambient/low temperature measurement (all chips) • 100% HV stress testing/ PAT system implementation	JEITA-based • JEDEC-/AEC-Q100-/AEC-Q101-compliant • Long-term reliability testing • Lifetime est. based on WLR data • ESD testing

Wafer Process Management	Assembly Process Management	Traceability, Kept Samples, In-Process Failure Analysis, etc.
SPC management/real-time monitoring/ 100% chip defect inspection	Main processing point real-time work and check/workmanship guarantee (i.e. internal X-ray inspection, reflow screening)/4M consolidation	Kept samples from all lots stored for 10 years (for important security applications)/ in-process failure analysis of all lots, etc.

ROHM Group Locations (Japan)

Main Sales Offices

Kyoto	Nagoya	Matsumoto	Sendai
Tokyo	Fukuoka	Mito	Takasaki
Yokohama		Nishi-Tokyo	Utsunomiya

Manufacturing Facilities

ROHM Hamamatsu Co., Ltd.	LAPIS Semiconductor Miyagi Co., Ltd.
ROHM Wako Co., Ltd.	LAPIS Semiconductor Miyazaki Co., Ltd.
ROHM Apollo Co., Ltd.	
ROHM Mechatech Co., Ltd.	

Design Centers

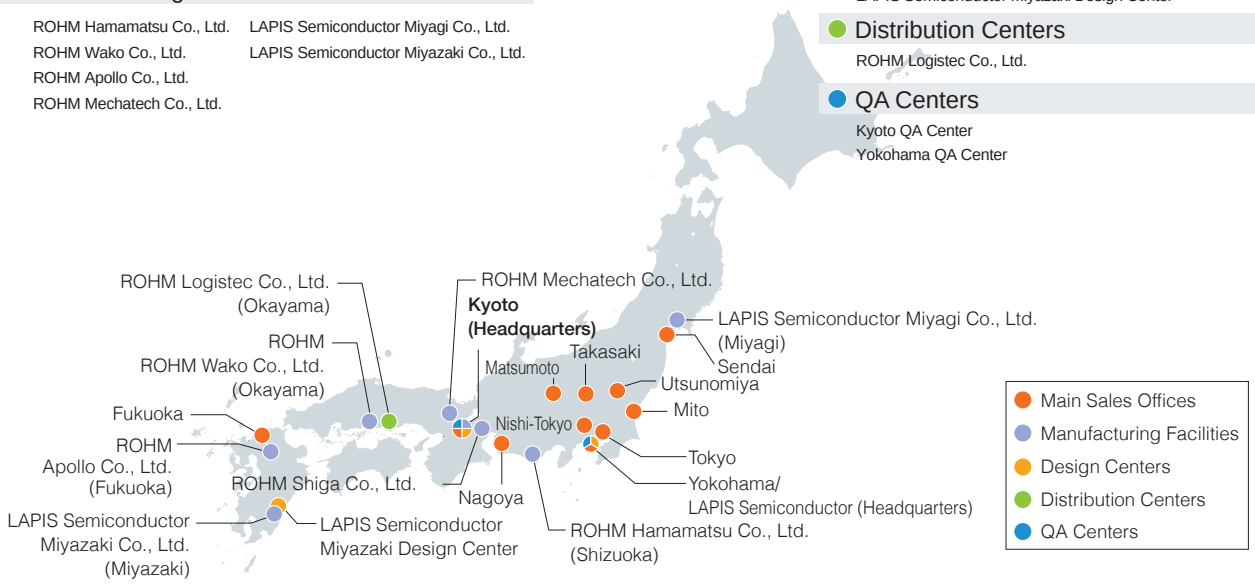
Kyoto Technology Center (Head Office)
Kyoto Technology Center (Kyoto Ekimae)
Yokohama Technology Center
LAPIS Semiconductor Co., Ltd.(Shin-Yokohama)
LAPIS Semiconductor Miyazaki Design Center

Distribution Centers

ROHM Logistec Co., Ltd.

QA Centers

Kyoto QA Center
Yokohama QA Center



ROHM Group Locations (Global)

Main Sales Offices

ASIA	ROHM Semiconductor Korea Corporation
	ROHM Semiconductor Trading (Dalian) Co., Ltd.
	ROHM Semiconductor (Shanghai) Co., Ltd.
	ROHM Semiconductor (Shenzhen) Co., Ltd.
	ROHM Semiconductor Hong Kong Co., Ltd.
	ROHM Semiconductor Taiwan Co., Ltd.
	ROHM Semiconductor Singapore Pte. Ltd.
	ROHM Semiconductor Philippines Corporation
	ROHM Semiconductor (Thailand) Co., Ltd.
	ROHM Semiconductor Malaysia Sdn. Bhd.
	ROHM Semiconductor India Pvt. Ltd.
AMERICA	ROHM Semiconductor U.S.A., LLC
	ROHM Semiconductor do Brasil Ltda.
EUROPE	ROHM Semiconductor GmbH

Manufacturing Facilities

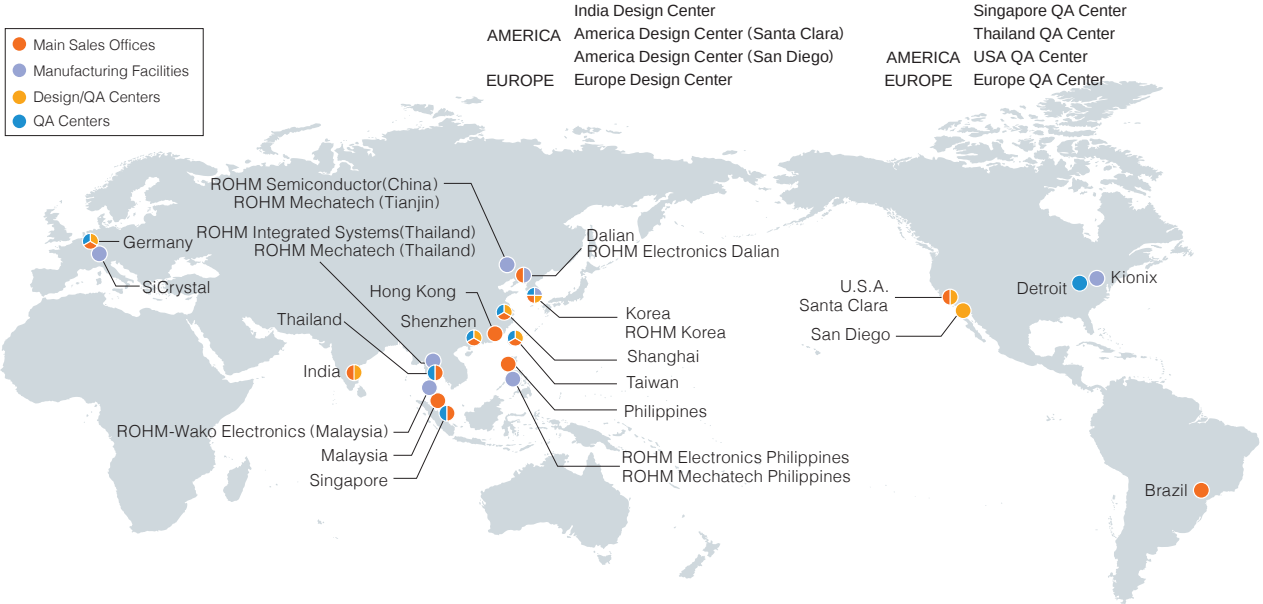
ASIA	ROHM Korea Corporation	AMERICA	Kionix, Inc.
	ROHM Electronics Philippines, Inc.	EUROPE	SiCrystal AG
	ROHM Integrated Systems (Thailand) Co., Ltd.		
	ROHM Semiconductor(China) Co., Ltd.		
	ROHM Electronics Dalian Co., Ltd.		
	ROHM-Wako Electronics (Malaysia) Sdn. Bhd.		
	ROHM Mechatech Philippines, Inc.		
	ROHM Mechatech (Thailand) Co., Ltd.		
	ROHM Mechatech (Tianjin) Co., Ltd.		

Design Centers

ASIA	Korea Design Center
	Shanghai Design Center
	Shenzhen Design Center
	Taiwan Design Center
	India Design Center
AMERICA	America Design Center (Santa Clara)
	America Design Center (San Diego)
EUROPE	Europe Design Center

QA Centers

ASIA	Korea QA Center
	Shanghai QA Center
	Shenzhen QA Center
	Taiwan QA Center
	Singapore QA Center
	Thailand QA Center
AMERICA	USA QA Center
EUROPE	Europe QA Center



Part No. List

Part No. List

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3) Although "ROHM group" (It is said here in after refers to ROHM) is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
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7) The Products specified in this document are not designed to be radiation tolerant.
8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative: transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
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ROHM Co.,Ltd.

21 Saiin Mizosaki-cho, Ukyo-ku,
Kyoto 615-8585 Japan
TEL : +81-75-311-2121 FAX : +81-75-315-0172

www.rohm.com

ROHM SEMICONDUCTOR