Semiconductors

In-Vehicle Power

PHILIPS

Powering your in-vehicle applications

Philips Semiconductors offers you a highly flexible approach to in-vehicle power design covering virtually every imaginable power application in the car.

An in-depth understanding of automotive systems guarantees we deliver a wide choice of standard products or tailored solutions to fit your needs. From driving a simple lamp to the sophisticated needs of power control in engine, body or chassis applications, power semiconductors are now the common answer to many system solutions.

Our automotive power portfolio draws on a clear technology focus and Philips is committed to developing this technology in direct alignment with the needs of leading automotive systems suppliers worldwide.

Dedicated automotive design, development, technical support and marketing teams for power semiconductors mean you receive the highest level of service required for major power design programmes.

By providing a complete technology, device and service capability Philips helps you meet the diverse and rigorous technical demands of today's automotive power switching and control applications, driving the development of tomorrow's cars and keeping you ahead of the rest.

Simply, Philips gives you the **power** to meet the challenges of individual system designs, every step of the way.
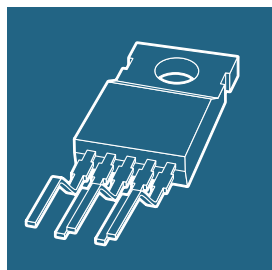
Leading the way in power silicon for automotive solutions

Making the right products for automotive power switching and control systems is only possible through having the right technology platforms in place.

- An advocate of TrenchMOS technology from the beginning, Philips brings one of the widest ranges of Trench devices to the automotive marketplace
- TrenchMOS scalability ensures performance keeps pace with application demands
- Philips SMART power TOPFET technology enables monolithic integration of hundreds of extra components on a MOSFET
- Combining TrenchMOS with intelligent controller ICs makes true integrated power control systems possible

Addressing automotive power packaging needs

Just as important as the silicon, package construction is crucial to ensure your designs meet necessary physical and operational criteria. Philips' expertise in packaging constantly pushes back the boundaries in power handling, creating innovative solutions for today and tomorrow's automotive applications.

- Standard discrete packages capable of meeting the demanding performance and quality standards required by the automotive environment
- To meet the growing demand for power silicon in convenient bare die form, Philips has set up a dedicated manufacturing process
- Development of special versions of discrete packaging for emerging applications such as EPAS requiring MOSFETs with high current handling capability
- Super-low on-resistance requirements are being addressed through advanced work on solderable and copper top metals, ribbon bonding and copper strap technology
- Standard IC and specialized high power, high pin-count packages provide ideal solutions for SMART power devices and advanced multi-channel intelligent power solutions

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3

Central module

Philips' fully protected high-side and low-side drivers are at the heart of many central module units, driving a variety of lamps and other loads, while their extensive protection features shield them against system faults.

Petrol and diesel engine management

With extensive experience in developing drivers for engine management systems, Philips is a true industry leader offering amongst others 100 V MOSFET solutions for common-rail diesel injection systems.

Catalytic Converter Heater

Low on-resistance TrenchMOS devices help reduce pollution by switching high power electric heaters to ensure the catalytic converter is at working temperature as soon as possible after starting.

Power train motors

Philips' Trench and TrenchPLUS devices provide optimum solutions for driving larger electric motors in water pump, oil pump and cooling fan applications.

Integrated Starter Alternator

Philips is becoming a leading supplier of very low on-resistance Power MOSFETs in naked die form, designed to cope with the huge current requirements of future ISA systems.

## ABS (Antilock Braking System)

Well recognized as a major player in this market area, Philips' TrenchMOS and TrenchPLUS technologies offer optimized performance for the specific operational requirements of ABS, reducing overall systems costs. Power as-sisted braking systems are also becoming an important application area for protected PowerMOS devices and as electronic braking and brake-by-wire systems become prevalent, control will migrate to the individual wheels.

E(H)PAS (Electronic (Hydraulic) Power Assisted Steering)

E(H)PAS systems are an increasingly common feature in new vehicles. Whilst EPAS systems themselves are more costly to manufacture than conventional hydraulic systems, major overall cost-savings result as they are simpler to fit. Philips is leading the way in helping reduce the cost of this MOSFET-intensive application, with its TrenchMOS technology and upcoming naked die capability.

Fuel pump

In line with Philips' strategy to provide optimum driving solutions for electric motors, TrenchMOS and TrenchPLUS technologies are often found in fuel pump applications.

42V PowerNet
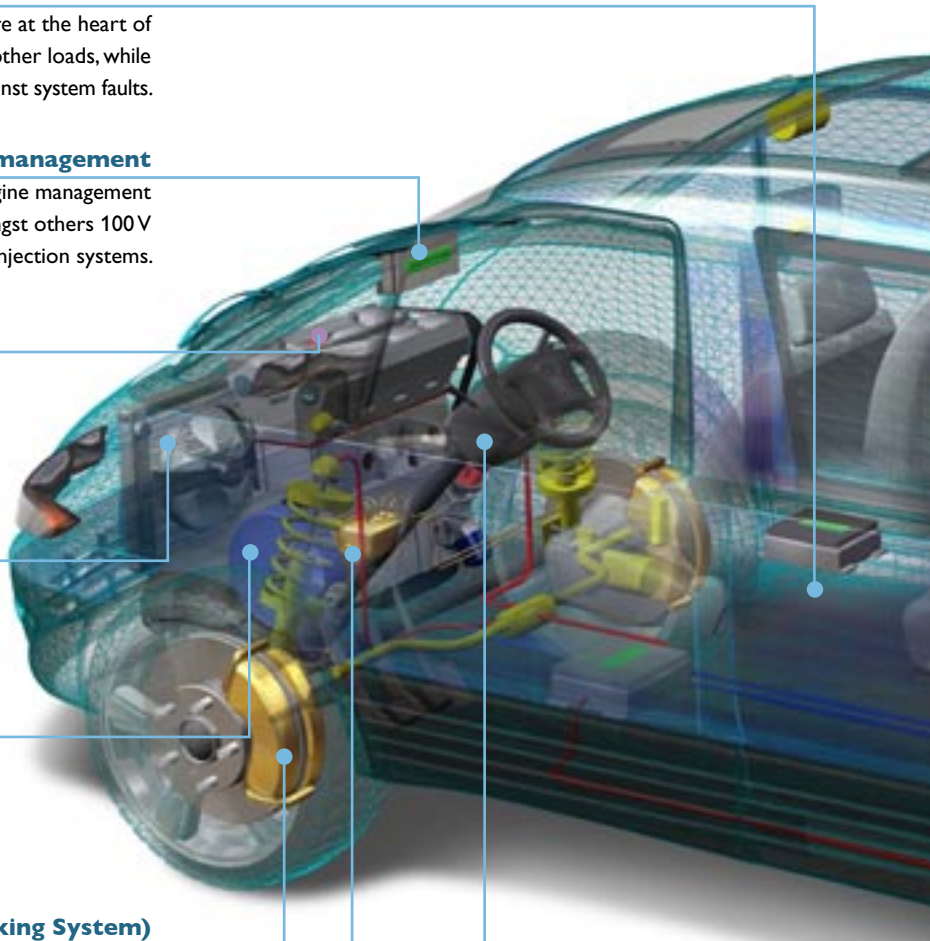
The move towards higher voltage electrical systems in vehicles is inevitable as ever more electronics increase demands on the power systems. Philips has a growing range of 75 V MOSFET devices and is developing 60 V SMART power solutions capable of supporting the needs of 42 V systems.
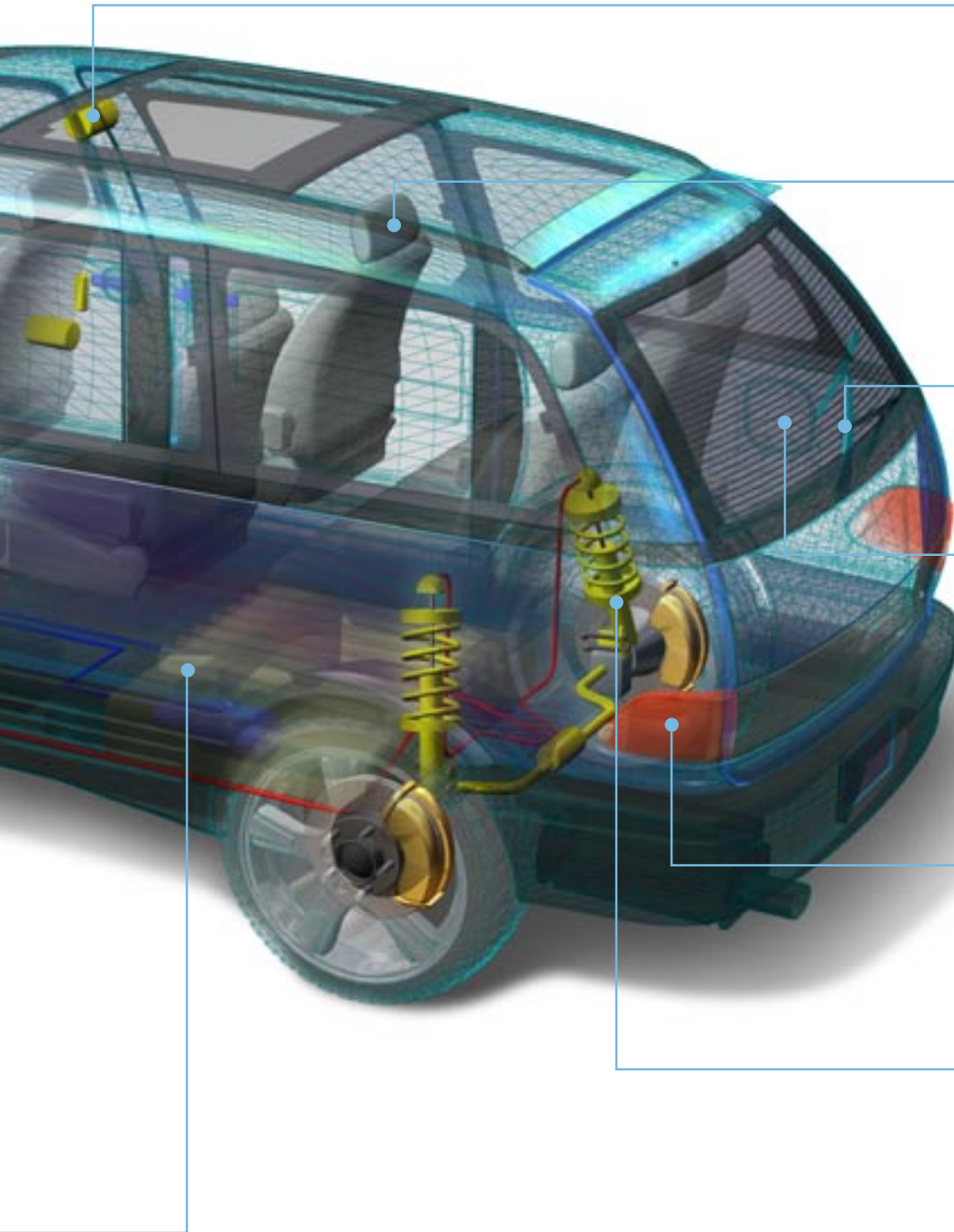
Roof and door modules
Philips' MOSFET devices may be used for driving motors in powered roof, mirror and window applications as well as door locks.

Seat module
Seat position motors and seat belt pre-tensioning can all benefit from Philips' automotive standard PowerMOS and future Intelligent Power Control solutions.

Wipers
TrenchMOS technology offers a wide range of $R_{DS(ON)}$ choices for driving general motors such as those used in wipers.

HVAC (Heating, Ventilation and Air Conditioning)
Standard PowerMOS devices can be found all over the car but most obviously in heating and air conditioning systems including pump drivers, blower fan, automatic vent positioning and within rear windscreen heating elements.

Lighting
TOPFET smart power solutions enable fully protected driving of front and rear lamps and offer feedback of fault conditions to the main controller.

Active suspension and stability control
TOPFETs and TrenchMOS may be used to switch the solenoids that control the shock absorber and braking characteristics critical in achieving good handling and ride comfort.
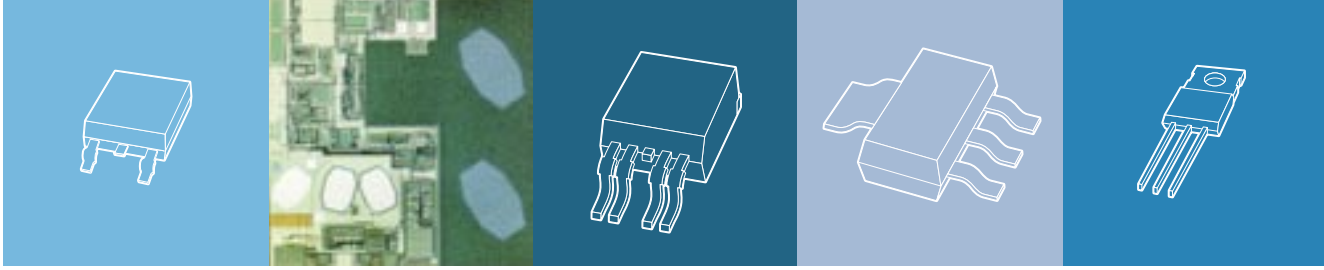
In-Vehicle Power product families

GPA (General Purpose Automotive) TrenchMOS

Forming one of the basic, reliable building blocks of our MOSFET portfolio, the GPA TrenchMOS family offers a truly wide range of competitive products for most general automotive load-driving applications.

HPA (High Performance Automotive) TrenchMOS

Delivering the ultimate in MOSFET performance levels, Philips HPA TrenchMOS family combines extremely low on-resistance with device ruggedness to provide the ideal solution for demanding high power applications within the automotive environment.

TrenchPLUS

By integrating a number of additional features on board a standard MOSFET power stage, our TrenchPLUS family offers a very versatile solution. On-board temperature sensing, current sensing, and additional resistors and diodes enable you to create designs capable of measuring system activity during operation for improved safety, design convenience and optimization.

TOPFET

Philips TOPFET family brings extremely high integration to the world of power MOSFETs. Combining a wide range of sophisticated control and protection measures with a power MOSFET driver into a single chip, TOPFETs offer a variety of high- and low-side switches and a number of configurations for advanced engine and body control applications.

The road to tomorrow…

The future of power switching and control within automotive applications is gearing up for some major changes in the type of devices used. As a leading innovator, Philips is already developing a range of cutting-edge solutions aimed at making power design much easier and more flexible. A few key areas being addressed include:

• Multiple channel power switches controlled directly via the system bus
• Programmable features, switchable for individual types of electrical load
• Sophisticated status feedback and system monitoring functions
• Cost-optimized solutions for major applications
• New and innovative MOSFET protection strategies
• Flexible architectures designed to reduce system design effort.

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
TOPFET Automotive Bridges

FEATURE SET

- TrenchMOS output stage
- Current limiting
- Overload protection
- Overtemperature protection
- Protected latched reset by input
- 5V logic compatible input level
- Control of output stage & supply of overload protection circuits derived from input
- Low operating input current permits drive by microcontroller
- ESD protection on all pins
- Overvoltage clamping for turn off of inductive loads
- CMOS logic compatible
- Very low quiescent current
- Load current limiting
- Latched overload and short circuit protection
- Overvoltage and undervoltage shutdown with hysterisis
- Off state open circuit load detection
- Reverse battery, overvoltage and transient protection

TOPFET Automotive Bridges

By Package

SO28				
Path resistance (mΩ)	Single low side $R_{DS(ON)}$(mΩ)	Single high side $R_{DS(ON)}$(mΩ)	$V_{(DS)}$ (V)	Part number
68	28	40	50	BUK3G68-50SBDA
90	50	40	50	BUK3G90-50SBDA
108	28	80	50	BUK3G108-50SBDA
130	50	80	50	BUK3G130-50SBDA
140	100	40	50	BUK3G140-50SBDA
180	100	80	50	BUK3G180-50SBDA
280	200	80	50	BUK3G280-50SBDA

Types in RED are currently in development

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TOPFET Automotive Bridges

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General Purpose Automotive Family (GPA) TrenchMOS

Listed by Voltage Grade

30 V - GPA TrenchMOS

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Package				
			Surface Mount			Leaded	
			SOT223	D²PAK (SOT404)	DPAK (SOT428)	TO220AB (SOT78)	SOT226
5	5	75		BUK9605-30A		BUK9505-30A	
5	10	75		BUK7605-30A		BUK7505-30A	
13	5	55			BUK9213-30A		
14	5	55			BUK9214-30A		

40 V - GPA TrenchMOS

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Package				
			Surface Mount			Leaded	
			SOT223	D²PAK (SOT404)	DPAK (SOT428)	TO220AB (SOT78)	SOT226
4	5	75		BUK9604-40A		BUK9504-40A	BUK9E04-40A
4	10	75		BUK7604-40A		BUK7504-40A	BUK7E04-40A

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General Purpose Automotive Family (GPA) TrenchMOS

Listed by Voltage Grade

| 55 V - GPA TrenchMOS							
			Package				
Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Surface Mount			Leaded	
			SOT223	D²PAK (SOT404)	DPAK (SOT428)	TO220AB (SOT78)	SOT226
6.3	5	75		BUK9606-55A		BUK9506-55A	BUK9E06-55A
6.3	10	75		BUK7606-55A		BUK7506-55A	
8	5	75		BUK9608-55A		BUK9508-55A	
8	10	75		BUK7608-55A		BUK7508-55A	
9	5	75		BUK9609-55A		BUK9509-55A	
10	5	75		BUK9610-55A		BUK9510-55A	
11	5	75		BUK9611-55A		BUK9511-55A	
11	10	75		BUK7611-55A		BUK7511-55A	
14	5	75		BUK9614-55A		BUK9514-55A	
14	10	75		BUK7614-55A		BUK7514-55A	
15	5	55			BUK9215-55A		
15	10	55			BUK7215-55A		
16	5	64		BUK9616-55A		BUK9516-55A	
16	10	64		BUK7616-55A		BUK7516-55A	
18	5	58		BUK9618-55A		BUK9518-55A	
19	5	54			BUK9219-55A		
19	10	54			BUK7219-55A		
20	5	53		BUK9620-55A		BUK9520-55A	
20	10	53		BUK7620-55A		BUK7520-55A	
22	5	48			BUK9222-55A		
22	10	48			BUK7222-55A		
24	5	44		BUK9624-55A		BUK9524-55A	
24	10	44		BUK7624-55A		BUK7524-55A	
25	5	43			BUK9225-55A		
25	10	39			BUK7225-55A		
28	5	40		BUK9628-55A		BUK9528-55A	
28	10	40		BUK7628-55A		BUK7528-55A	
30	5	38			BUK9230-55A		
30	10	38			BUK7230-55A		
32	5	12	BUK9832-55A				

Listed by Voltage Grade

55 V - GPA TrenchMOS							
			Package				
Max R$_{DS(ON)}$ (mΩ)	@ V$_{GS}$ (V)	I$_D$ (max) @ 25° C (A)	Surface Mount			Leaded	
			SOT223	D²PAK (SOT404)	DPAK (SOT428)	TO220AB (SOT78)	SOT226
35	5	34		BUK9635-55A		BUK9535-55A	
35	10	34		BUK7635-55A		BUK7535-55A	
37	5	32			BUK9237-55A		
37	10	32			BUK7237-55A		
45	5	28			BUK9245-55A		
75	5	22		BUK9675-55A		BUK9575-55A	
75	10	22		BUK7675-55A		BUK7575-55A	
77	5	18			BUK9277-55A		
77	10	18			BUK7277-55A		
80	5	7	BUK9880-55A				
150	5	5	BUK98150-55A				
150	5	11		BUK96150-55A	BUK92150-55A	BUK95150-55A	
150	10	11	BUK78150-55A	BUK76150-55A	BUK72150-55A	BUK75150-55A	

75 V - GPA TrenchMOS							
			Package				
Max R$_{DS(ON)}$ (mΩ)	@ V$_{GS}$ (V)	I$_D$ (max) @ 25° C (A)	Surface Mount			Leaded	
			SOT223	D²PAK (SOT404)	DPAK (SOT428)	TO220AB (SOT78)	SOT226
9	5	75		BUK9609-75A		BUK9509-75A	
9	10	75		BUK7609-75A		BUK7509-75A	
23	5	53		BUK9623-75A		BUK9523-75A	
23	10	53		BUK7623-75A		BUK7523-75A	
26	5	45			BUK9226-75A		
26	10	45			BUK7226-75A		

General Purpose Automotive Family (GPA) TrenchMOS

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Listed by Voltage Grade

100 V - GPA TrenchMOS			Package				
			Surface Mount			Leaded	
Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	SOT223	D²PAK (SOT404)	DPAK (SOT428)	TO220AB (SOT78)	SOT226
15	5	75		BUK9615-100A		BUK9515-100A	
15	10	75		BUK7615-100A		BUK7515-100A	
20	5	63		BUK9620-100A		BUK9520-100A	
20	10	63		BUK7620-100A		BUK7520-100A	
28	5	49		BUK9628-100A		BUK9528-100A	
28	10	49		BUK7628-100A		BUK7528-100A	
35	5	41		BUK9635-100A		BUK9535-100A	
35	10	41		BUK7635-100A		BUK7535-100A	
40	5	37		BUK9640-100A		BUK9540-100A	
40	10	37		BUK7640-100A		BUK7540-100A	
40	5	34			BUK9240-100A		
40	10	34			BUK7240-100A		
60	5	26		BUK9660-100A		BUK9560-100A	
60	10	26		BUK7660-100A		BUK7560-100A	
65	5	7	BUK9875-100A				
75	5	23		BUK9675-100A	BUK9275-100A	BUK9575-100A	
75	10	23		BUK7675-100A	BUK7275-100A	BUK7575-100A	
180	5	5	BUK98180-100A				
180	10	11		BUK96180-100A		BUK95180-100A	

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Published in The Netherlands

TOPFET Automotive High Side Drivers

Semiconductors

FEATURE SET

HS device standard features are the same as for LS 3-pin devices
(excluding High value RIG for easy drive) plus:

- Additional clamps for Battery-Ground
- Reverse Battery-Ground capability with integral ground resistor
- Separate inductive load ring-off clamping
- Voltage based latched S/C protection with turn on delay
    * single channel only
- ON-state low load current detection with hysterisis
    * option for multi-channel
- Very low OFF-state quiescent current Battery-Ground
- Very low noise charge pumping
- Open Ground protection - output remains OFF
- OFF-state open load detection
    * multi-channel only
- Diagnostic reporting via Flag / Status

Optional features for both 3 and 5-pin LS devices:

- Latched over-temperature protection
- Auto re-start over-temperature protection with 10°C hysterisis
    * mutli-channel only
- Thermal based S/C protection with auto restart
    * single channel only
- Voltage based S/C reporting with delay - Status indication only

TOPFET Automotive Single Channel High Side Devices

By Package

LEADED packages

SOT263B-01 (5-pin TO220)

				Feature set (• indicates feature is available)				
$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Over-temperature protection	Low current detect*	Short circuit detect	I_{lim} (A)	Open load detection in OFF-state
14	50	25	BUK212-50Y	•	•	°	47-100	
20	50	18	BUK211-50Y	•	•	°	42-88	
20	50	18	BUK211-50YT	•	•	°	42-88	
30	50	12	BUK223-50Y	•	•	°	38-72	
38	50	9	BUK210-50Y	•	•	°	20-40	
38	50	9	BUK210-50YT	•	•	°	20-40	
60	50	6	BUK209-50Y	•	•	°	34-64	
100	50	4	BUK208-50Y	•	•	°	12-24	
180	50	2	BUK219-50Y	•	•	°	6-12	

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TOPFET Automotive High Side Drivers

TOPFET Automotive Single Channel High Side Devices -
By Package
SURFACE MOUNT packages

SOT426 (5-pin D²PAK)

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Over-temperature protection	Low current detect*	Short circuit detect	I_{lim} (A)	Open load detection in OFF-state
				Feature set (• indicates feature is available)				
8	50	60	BUK2108-50SYAA	•	•	°	47-100	
8	50	30	BUK2108-50SYBA	•	•	°	47-100	
8	50	20	BUK2108-50SYCA	•	•	°	47-100	
14	50	25	BUK217-50Y	•	•	°	47-100	
14	50	10^	BUK217-50YT	-		~	10-21	
20	50	18	BUK216-50Y	•	•	°	42-88	
20	50	18	BUK216-50YT	-		~	10-21	
30	50	12	BUK224-50Y	•	•	°	38-72	
38	50	9	BUK215-50Y	•	•	°	34-64	
38	50	9	BUK2138-50SYAA	•	•	°	34-64	
38	50	9	BUK215-50YT	-		°	34-64	
60	50	6	BUK214-50Y	•	•	°	20-40	
100	50	4	BUK213-50Y	•	•	°	12-24	
180	50	2	BUK220-50Y	•	•	°	6-12	

SOT427 (7-pin D²PAK)

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Over-temperature protection	Low current detect*	Short circuit detect	I_{lim} (A)	Open load detection in OFF-state
				Feature set (• indicates feature is available)				
30	50	12	BUK222-50MX	•	•	°	35-65	

TOPFET Automotive Dual Channel High Side Devices

By Package

SOT427 (7-pin D²PAK)

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Over-temperature protection	Low current detect*	Short circuit detect	I_{lim} (A)	Open load detection in OFF-state
				Feature set (• indicates feature is available)				
40	50	8	BUK218-50DY	•	•	÷	18-42	•
40	50	8	BUK218-50DC	•			18-42	•
80	50	3	BUK221-50DY	•	•	°	8-16	

SO20

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Over-temperature protection	Low current detect*	Short circuit detect	I_{lim} (A)	Open load detection in OFF-state
				Feature set (• indicates feature is available)				
30	50	12	BUK2M30-50SYEB	•	•	°	16-32	
30	50	12	BUK2M30-50SMXB	•	•	°	16-32	
30	50	12	BUK2M30-50SMYB	•	•	°	16-32	
38	50	9	BUK2M38-50SYEB	•	•	°	16-32	
60	50	6	BUK2M60-50SYEB	•	•	°	16-32	

TOPFET Automotive Four Channel High Side Devices

SO20

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Over-temperature protection	Low current detect*	Short circuit detect	I_{lim} (A)	Open load detection in OFF-state
				Feature set (• indicates feature is available)				
80	50	3	BUK2M80-50SYDD	•	•	°	8-16	

Note: ^ indicates current capability set by I_{lim} parameter
Note: - indicates that device latches off when subject to over-temperature
Note: * indicated on status pin

The following notes are for the short circuit detect column only:
Note: ° indicates short circuit on status but does not latch (by voltage detection)
Note: ~ indicates short circuit on status and latches off (by voltage detection)
Note: ÷ indicates short circuit on status and latches off (by power detection)

Types in RED are currently in development

TOPFET Automotive High Side Drivers

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TOPFET Automotive Low Side Drivers

Semiconductors

FEATURE SET

3-pin LS device standard features:

- Over-voltage clamping
- Drain-Source (Battery-Load) clamps for output device
- Over-temperature protection
- Allows full operation to at least 150°C
- Latched over-temperature protection
- Current limiting
- Active current limit with low temperature coefficient
- Short circuit protection
- Thermal based S/C latched protection
- ESD protection
- 2kV HBM capability on all pins
- ESD clamp diodes rated for continuous clamping
- CMOS logic compatibility
- High value RIG for easy drive
- Low OFF-state currents
- Low OFF state leakage current in output device
- Vertical Power TrenchMOS
- N channel, logic level

5-pin LS devices have above features plus the following as standard:

- Fast switching with very low RIG
- Diagnostic reporting via Flag / Status
- OFF-state open load detection
- OFF-state open load detection has integral current source

Optional features for both 3 and 5-pin LS devices:

- Low value current limit
- High value latched current trip

Optional feature for 3-pin LS devices only:

- Lower value RIG for faster switching

TOPFET Automotive Single Channel Low Side Devices

By Package

LEADED Packages

SOT226 (I²PAK)

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
20	50	t.b.a.	BUK151-50DL	•
28	50	12	BUK150-50DL	
50	50	7	BUK149-50DL	
100	50	3.5	BUK148-50DL	

SOT263B-01 (5-pin TO220)

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
20	50	16	BUK125-50L	•
28	50	12	BUK124-50L	•

SOT78B (TO220AB)

$R_{DS(ON)}$ (mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
10	50	t.b.a.	BUK1510-50SDLA	•
20	50	t.b.a.	BUK120-50DL	
28	50	12	BUK119-50DL	
50	50	7	BUK118-50DL	
100	50	3.5	BUK117-50DL	

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TOPFET Automotive Low Side Drivers

TOPFET Automotive Single Channel Low Side Devices
By Package
SURFACE MOUNT Packages

SOT404 (D²PAK)

$R_{DS(ON)}$(mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
10	50	t.b.a.	BUK1610-50SDLA	•
20	50	t.b.a.	BUK131-50DL	
28	50	12	BUK130-50DL	
50	50	7	BUK129-50DL	
100	50	3.5	BUK128-50DL	

SOT426 (5-pin D²PAK)

$R_{DS(ON)}$(mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
10	50	t.b.a.	BUK1110-50LLAA	
10	50	7	BUK1910-50LLAA	
20	50	16	BUK136-50L	•
28	50	12	BUK135-50L	•

SOT428 (DPAK)

$R_{DS(ON)}$(mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
50	50	7	BUK139-50DL	
100	50	3.5	BUK138-50DL	

SOT223

$R_{DS(ON)}$(mΩ)	$V_{(DS)}$ (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
200	50	0.7^	BUK127-50DL	
200	50	0.7^	BUK127-50GT*	

TOPFET Automotive Four Channel Low Side Devices
By Package

SO20

$R_{DS(ON)}$(mΩ)	V_{DS} (V)	$I_{(ISO)}$ (max) (A)	Part number	Status reporting
200	50	0.7^	BUK1M200-50SDLD	
200	50	0.7^	BUK1M200-50SGTD*	

Note: * indicates this device has current trip and low input resistance
Note: • indicates status feature is available
Note: ^ indicates current capability set by I_{lim} parameter

Types in RED are currently in development

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High Performance Automotive Family (HPA) TrenchMOS

Listed by Voltage Grade

30 V - HPA TrenchMOS

Max R$_{DS(ON)}$ (mΩ)	@ V$_{GS}$ (V)	I$_D$ (max) @ 25° C (A)	Surface Mount SOT223	D²PAK (SOT404B)	DPAK (SOT428)	Leaded TO220AB (SOT78B)	SOT226
2.8	5	75		BUK962R8-30B		BUK952R8-30B	
2.7	10	75		BUK762R7-30B		BUK752R7-30B	
7	5	55			BUK9207-30B		
7	10	55			BUK7207-30B		
7	5	75		BUK9607-30B		BUK9507-30B	
7	10	75		BUK7607-30B		BUK7607-30B	

40 V - HPA TrenchMOS

Max R$_{DS(ON)}$ (mΩ)	@ V$_{GS}$ (V)	I$_D$ (max) @ 25° C (A)	Surface Mount SOT223	D²PAK (SOT404B)	DPAK (SOT428)	Leaded TO220AB (SOT78B)	SOT226
3.2	5	75		BUK963R2-40B		BUK953R2-40B	
3.1	10	75		BUK763R1-40B		BUK753R1-40B	
3.9	10	75		BUK763R9-40B		BUK753R9-40B	
4.2	5	75		BUK964R2-40B		BUK954R2-40B	
5.2	10	75		BUK765R2-40B		BUK755R2-40B	
5.7	5	75		BUK965R7-40B		BUK955R7-40B	
8	10	75		BUK7608-40B		BUK7508-47B	
8	10	55			BUK7208-40B		
9	5	75		BUK9609-40B		BUK9509-40B	
9	5	55			BUK9209-40B		

55 V - HPA TrenchMOS

Max R$_{DS(ON)}$ (mΩ)	@ V$_{GS}$ (V)	I$_D$ (max) @ 25° C (A)	Surface Mount SOT223	D²PAK (SOT404B)	DPAK (SOT428)	Leaded TO220AB (SOT78B)	SOT226
4.2	5	75		BUK964R2-55B		BUK954R2-55B	
4	10	75		BUK764R0-55B		BUK754R0-55B	
6	5	75		BUK9606-55B		BUK9506-55B	BUK9E06-55B
6	10	75		BUK7606-55B		BUK7506-55B	BUK7E06-55B
7	5	75		BUK9607-55B		BUK9507-55B	
7	10	75		BUK7607-55B		BUK7507-55B	
9	10	75		BUK7609-55B		BUK7509-55B	
9	10	55			BUK7209-55B		
10	5	75		BUK9610-55B		BUK9510-55B	
10	5	55			BUK9210-55B		

High Performance Automotive Family (HPA) TrenchMOS

Listed by Voltage Grade

75 V - HPA TrenchMOS

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Package				
			Surface Mount			Leaded	
			SOT223	D²PAK (SOT404B)	DPAK (SOT428)	TO220AB (SOT78B)	SOT226
6	5	75		BUK9606-75B		BUK9506-75B	
6	10	75		BUK7606-75B		BUK7506-75B	
13	10	55			BUK7213-75B		
14	5	55			BUK9214-75B		
13	10	60		BUK7613-75B		BUK7513-75B	
14	5	60		BUK9614-75B		BUK9514-75B	

100 V - HPA TrenchMOS

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Package				
			Surface Mount			Leaded	
			SOT223	D²PAK (SOT404B)	DPAK (SOT428)	TO220AB (SOT78B)	SOT226
10	5	75		BUK9610-100B		BUK9510-100B	
10	10	75		BUK7610-100B		BUK7510-100B	
24	10	40		BUK7624-100B	BUK7224-100B	BUK7524-100B	
25	5	40		BUK9625-100B	BUK9225-100B	BUK9525-100B	

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
Date of release: October 2002

Published in The Netherlands

# TrenchPLUS - Automotive MOSFETs with Protection Features
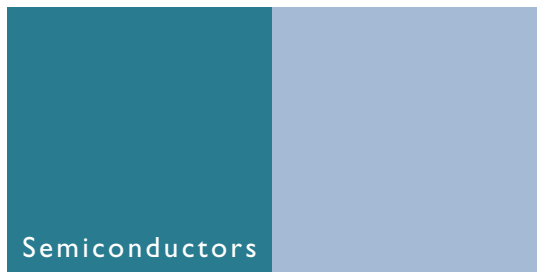
Listed by Voltage Grade

## 34 V - TrenchPLUS - Automotive MOSFETs with Protection Features

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Temp Sense	Gate Source Clamps	Gate Drain Clamps	Current Sensing	Gate Resistor	Package			
								Surface Mount		Leaded	
								SOT427 (7-pin D²PAK)	SOT426 (5-pin D²PAK)	SOT78C	SOT263B-01
6	10	75		•	•		•			BUK7L06-34ARC	
11	10	75		•	•		•			BUK7L11-34ARC	

40 V - TrenchPLUS - Automotive MOSFETs with Protection Features

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Temp Sense	Gate Source Clamps	Gate Drain Clamps	Current Sensing	Gate Resistor	Package			
								Surface Mount		Leaded	
								SOT427 (7-pin D²PAK)	SOT426 (5-pin D²PAK)	SOT78C	SOT263B-01
5	10	75		•		•			BUK7105-40AIE		BUK7905-40AIE
5	10	75	•	•					BUK7105-40ATE		BUK7905-40ATE
5	10	75	•	•		•		BUK7C06-40AITE			
7	5	75	•	•	•				BUK9107-40ATC		BUK9907-40ATC
7	10	75	•	•	•				BUK7107-40ATC		BUK7907-40ATC

55 V - TrenchPLUS - Automotive MOSFETs with Protection Features

Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Temp Sense	Gate Source Clamps	Gate Drain Clamps	Current Sensing	Gate Resistor	Package			
								Surface Mount		Leaded	
								SOT427 (7-pin D²PAK)	SOT426 (5-pin D²PAK)	SOT78C	SOT263B-01
7	5	75	•	•					BUK9107-55ATE		BUK9907-55ATE
7	10	75	•	•					BUK7107-55ATE		BUK7907-55ATE
7	10	75		•		•			BUK7107-55AIE		BUK7907-55AIE

PHILIPS

TrenchPLUS - Automotive MOSFETs with Protection Features

Listed by Voltage Grade

75 V - TrenchPLUS - Automotive MOSFETs with Protection Features								Package			
								Surface Mount		Leaded	
Max $R_{DS(ON)}$ (mΩ)	@ V_{GS} (V)	I_D (max) @ 25° C (A)	Temp Sense	Gate Source Clamps	Gate Drain Clamps	Current Sensing	Gate Resistor	SOT427 (7-pin D²PAK)	SOT426 (5-pin D²PAK)	SOT78C	SOT263B-01
7	10	75	•	•					BUK7109-75ATE		BUK7909-75ATE
9	10	75		•		•			BUK7109-75AIE		BUK7909-75AIE
10	10	75	•	•		•		BUK7C10-75AITE			

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