

Union Semiconductor Networking Application Product Overview

2016, July 24

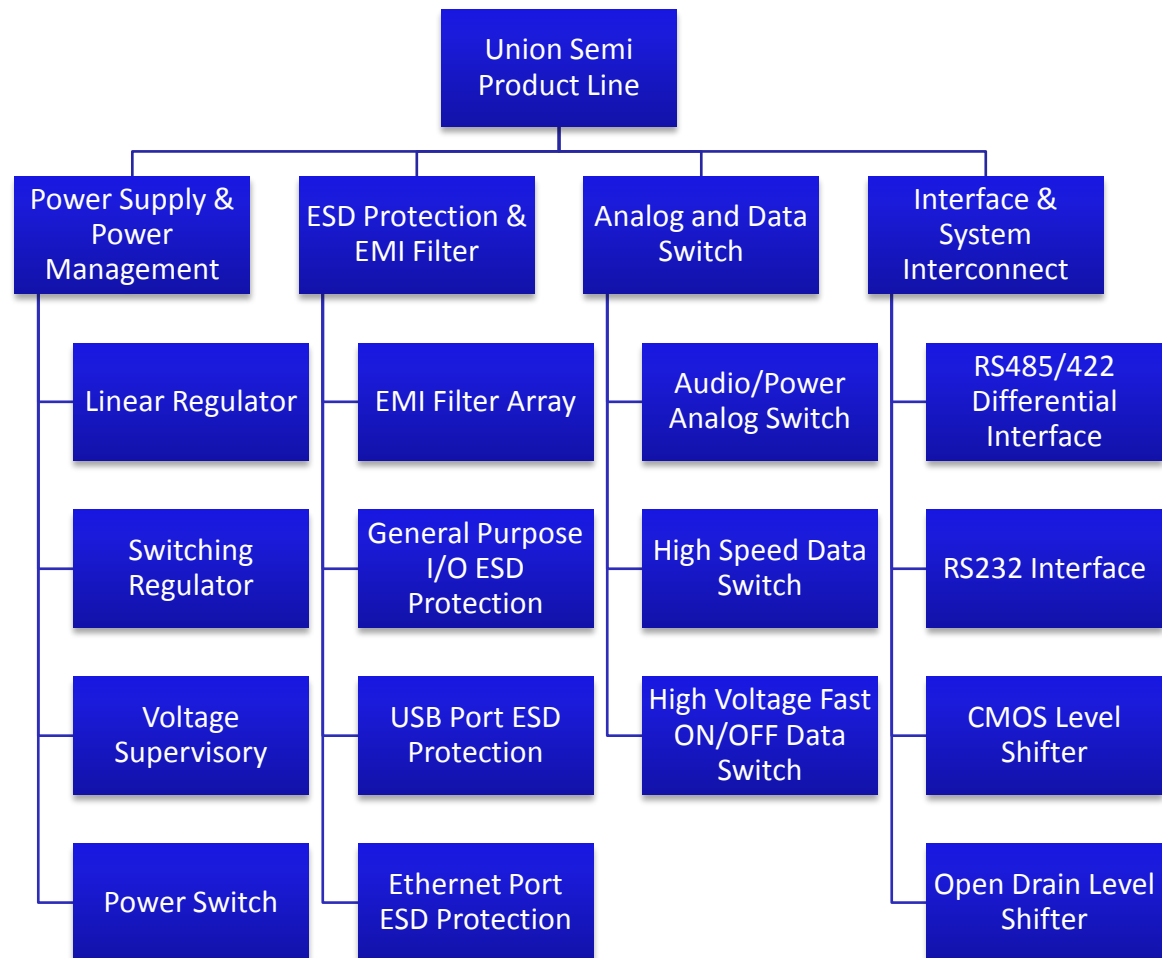


Innovative Mixed Signal Silicon Solutions Provider

Corporate Overview

- Founded Jan, 2001 in Santa Clara
 - Focused on Mixed Signal Integrated Circuit Chips Design, Manufacturing Management, Marketing & Sales
 - Strong R&D and Innovation
 - Four Product Line with more than 300 Part Number
 - ISO-9001:2008 Certified Semiconductor Company
 - Locations: Santa Clara, Shanghai & Hong Kong
 - Design Centre: Santa Clara, Shanghai
 - Revenue: US\$ 45.9M (FY2015)
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Union's Product Portfolios





Innovative Mixed Signal Silicon Solutions Provider

Contracted Manufacturing

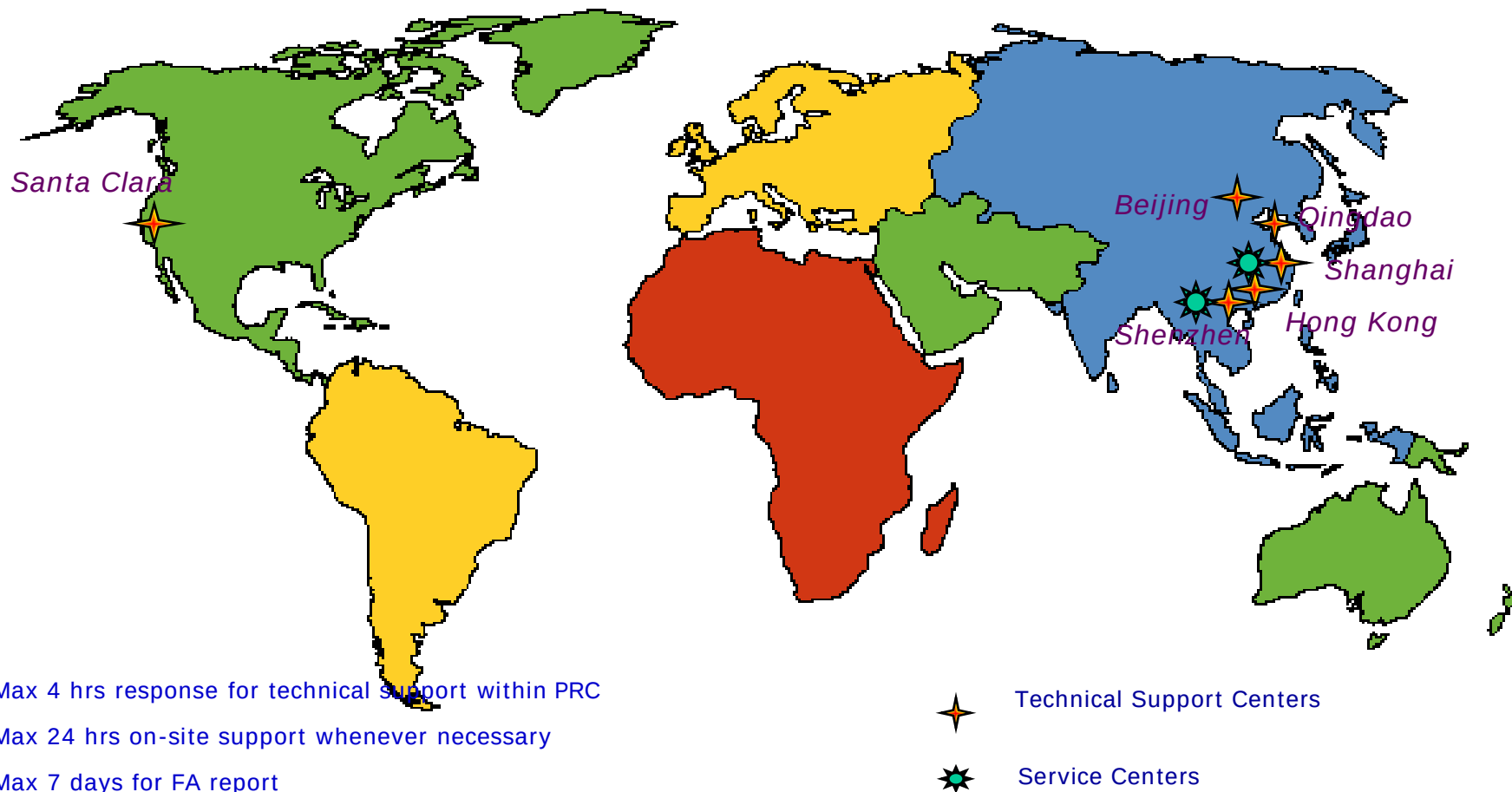


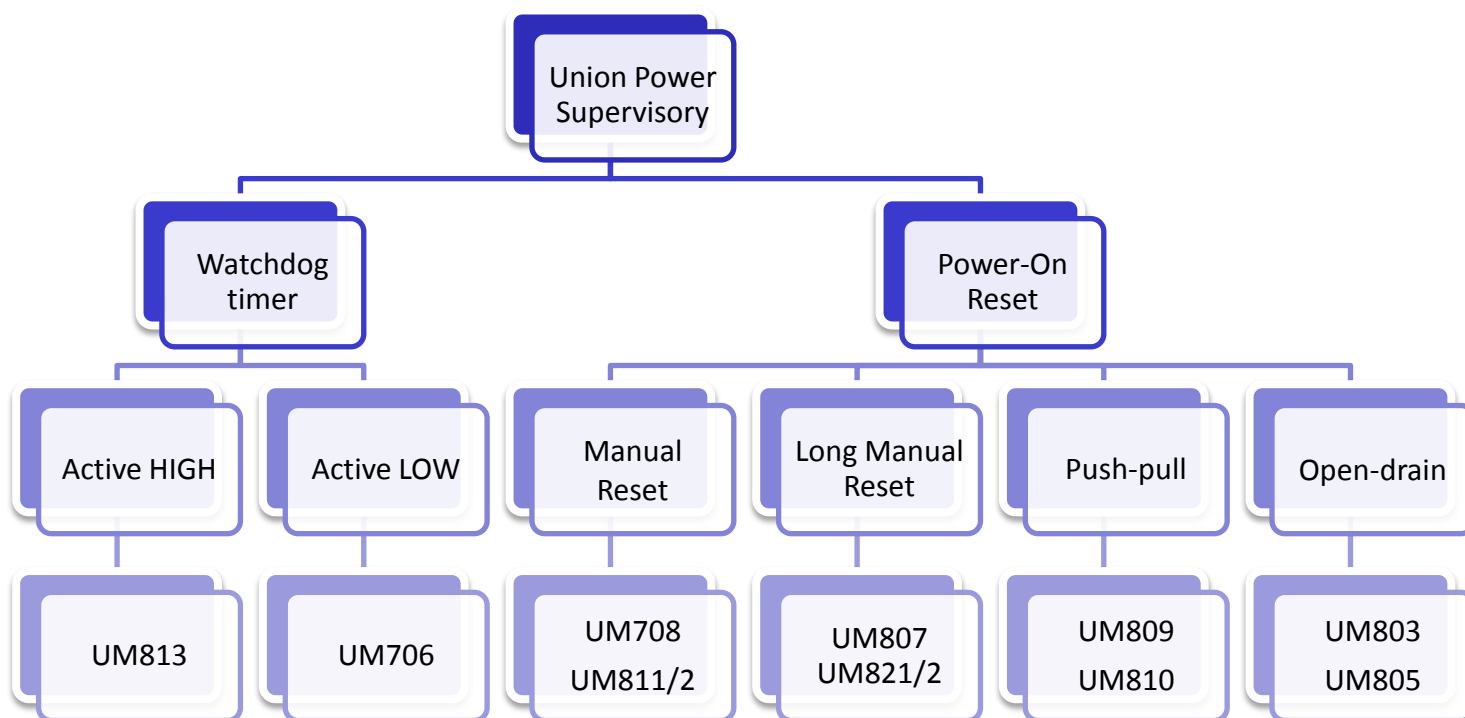
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DIODES
INCORPORATED





Power Supervisory

Part Number	Description	Reset Threshold (V)	Timeout Period (Min) (ms)	Watchdog Feature	Watchdog Timeout	I _{cc} (μA)	Output Type	Operating Temp (°C)	Package
UM803xx	Power On Reset	**	140	No	NA	2	Open-Drain, Active Low	-40~85	SOT23-3 SOT323
UM809xx	Power On Reset	***	140	No	NA	3	Push-Pull, Active Low	-40~85	SOT23-3 SOT323
UM810xx	Power On Reset	***	140	No	NA	3	Push-Pull, Active High	-40~85	SOT23-3 SOT323
UM805xE	Power On Reset with General Manual Reset	**	140	No	NA	2	Open-Drain, Active Low	-40~85	SOT143
UM811xE	Power On Reset with General Manual Reset	**	140	No	NA	2	Push-Pull, Active Low	-40~85	SOT143
UM812xE	Power On Reset with General Manual Reset	**	140	No	NA	2	Push-Pull, Active High	-40~85	SOT143
UM807xxE	Power On Reset with 1.68s/6.72s/10.08s Manual Reset Pulse Width	**	140	No	NA	2	Open-Drain, Active Low	-40~85	SOT143
UM821xxE	Power On Reset with 1.68s/6.72s/10.08s Manual Reset Pulse Width	**	140	No	NA	2	Push-Pull, Active Low	-40~85	SOT143
UM822xxE	Power On Reset with 1.68s/6.72s/10.08s Manual Reset Pulse Width	**	140	No	NA	2	Push-Pull, Active High	-40~85	SOT143
UM813xS	Power On Reset with Manual Reset and Watchdog	**	140	Yes	1.6s	80	Push-Pull, Active High	-40~85	SOP8
UM706xS	Power On Reset with Manual Reset and Watchdog	**	140	Yes	1.6s	80	Push-Pull, Active Low	-40~85	SOP8
UM708xS	Power On Reset with Manual Reset	**	140	No	NA	80	Active Low & High	-40~85	SOP8

UM706/UM708/UM813

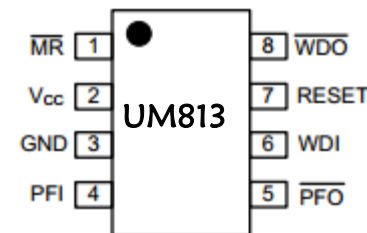
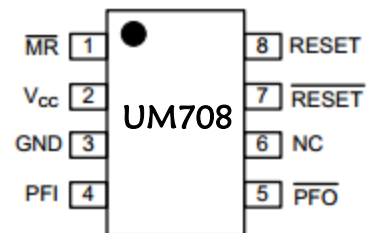
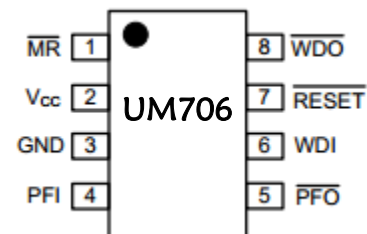
Product Description :

The UM706xS provides power-supply monitoring circuitry that generates a reset output during power-up, power-down, and brownout conditions. This is activated if the watchdog input has not been toggled within 1.6 seconds. The UM813xS is the same as the UM706xS, except an active-high reset . The UM708xS is the same as the UM706xS, except an active-high reset is substituted for the watchdog timer.

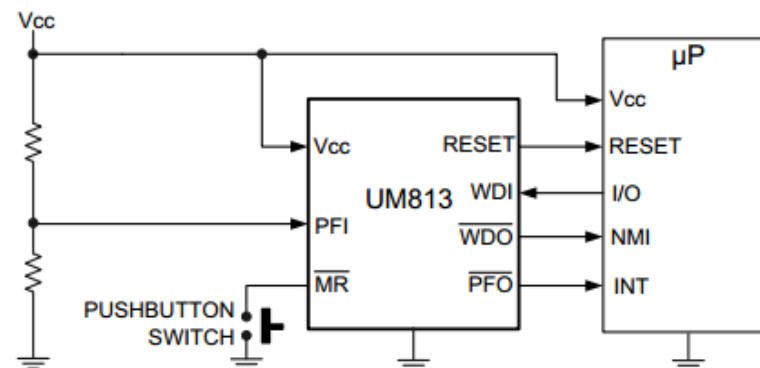
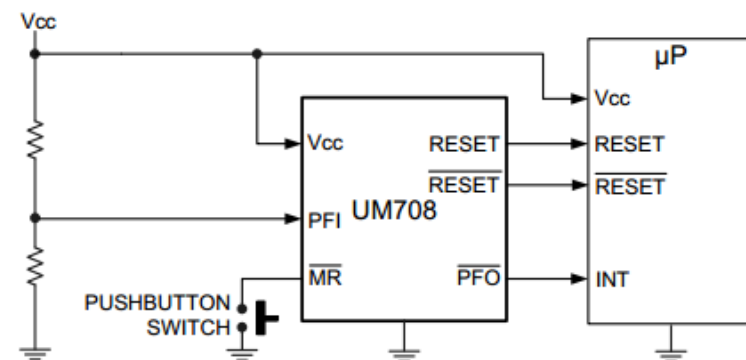
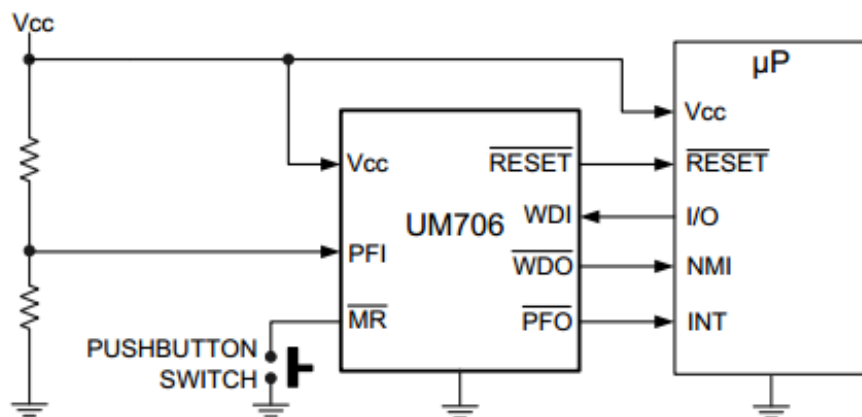
Key Features :

- Wide Operation Voltage Range of 1V to 5.5V
- Correct Logic Output Guaranteed to VCC=1.0V
- Precision Supply-Voltage Monitor: 2.63V, 2.93V, 3.08V, 4.38V, 4.63V
- 200ms Reset Pulse Width
- Independent Watchdog Timer-1.6s
- Timeout (UM706xS, UM813xS)
- Active-high Reset Output (UM708xS, UM813xS)
- Voltage Monitor for Power-Fail or Low-Battery Warning
- Temperature Range: -40° C to +85° C
- Supply Current of 80 μ A (Typ.)

Package : SOP8



UM706/UM708/UM813 Typical Application Circuit



3-Pin Microprocessor Reset Circuits

UM809/UM810/UM803

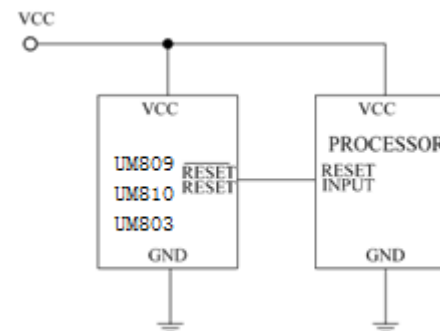
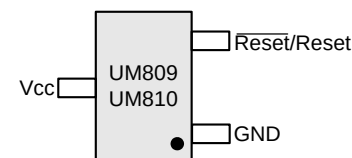
Product Description :

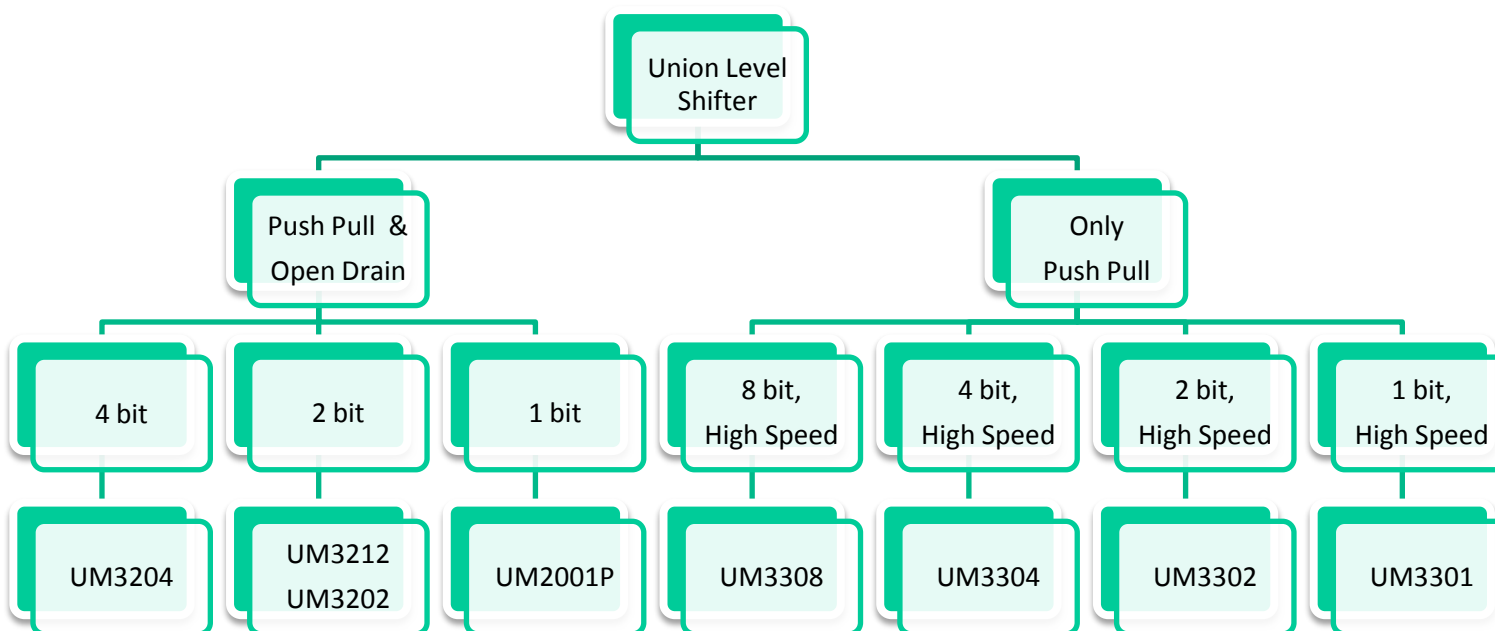
The UM809/810/803 series are low current, cost effective system supervisory circuits designed to monitor the power supplies in digital systems. They provide a reset signal to the host processor when necessary, offer excellent circuit reliability and adjustment when used with +5V, +3.3V, +3.0V or other voltage powered circuits. Reset is keeping active for a minimum of 140ms after system power supply has risen above the reset threshold.

Key Features :

- Wide operation voltage range of 1V to 10V
- Typical Quiescent current of 3 μ A
- No External components
- 3-Pin small SC70 and SOT23 packages
- VCC Transient immunity
- Correct logic output guaranteed to VCC=1.0V
- Precision VCC monitor for 2.5V, 3.0V, 3.3V, and 5.0V supplies
- Push-pull low active Reset output(UM809)
- Push-pull high active Reset output(UM810)
- Open-drain low active Reset output(UM803)
- Wide operation Temperature: -40 °C to 105 °C

Package : SOT23-3 SC70-3







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Union Semi Level Shifter Product Portfolio

Part Number	Description	V _{CCA} (V)	V _{CCB} (V)	Max Data Rate (Mbps) V _{CCA} =3.3V	ESD (kV) (B Port)	Package
UM3301	1-Bit Auto Direction Detect, CMOS Output	1.2~3.6	1.65~5.5	100	±15	SOT563 DFN6 1.45×1.0
UM3302H	2-Bit Auto Direction Detect, CMOS Output	1.2~3.6	1.65~5.5	100	±15	CSP8 1.9×0.9
UM3304	4-Bit Auto Direction Detect, CMOS Output	1.2~3.6	1.65~5.5	100	±4	CSP12 1.9×1.4 QFN14 3.5×3.5 QFN16 2.8×1.6
UM3308	8-Bit Auto Direction Detect, CMOS Output	1.2~3.6	1.65~5.5	100	±15	CSP20 2.7×2.4
UM3202	2-Bit Auto Direction Detect, for Push-Pull or Open-Drain Applications	1.65~3.6	2.3~5.5	24Mbps (Push-Pull) 2Mbps (Open-Drain)	±15	CSP8 1.9×0.9 DFN8 1.7×1.35 QFN10 1.8×1.4 VSSOP8
UM3204	4-Bit Auto Direction Detect, for Push-Pull or Open-Drain Applications	1.65~3.6	2.3~5.5	24Mbps (Push-Pull) 2Mbps (Open-Drain)	±5	CSP12 1.9×1.4 QFN14 3.5×3.5 TSSOP14
UM3212	2-Bit Auto Direction Detect, for Push-Pull or Open-Drain Applications	1.0~3.3	1.8~5.0	3.4Mbps (Max)	±4	MSOP8 DFN8 2.1×1.6
UM2002	2-Bit Auto Direction Detect, for Push-Pull or Open-Drain Applications	1.0~3.3	1.8~5.0	3.4Mbps (Max)	±4	TSSOP8 SOP8
UM2001P	1-Bit Auto Direction Detect, for Push-Pull or Open-Drain Applications	1.0~3.3	1.8~5.0	3.4Mbps (Max)	±4	SOT363

Bidirectional Voltage-Level Translator with Push Pull Output

Product Description :

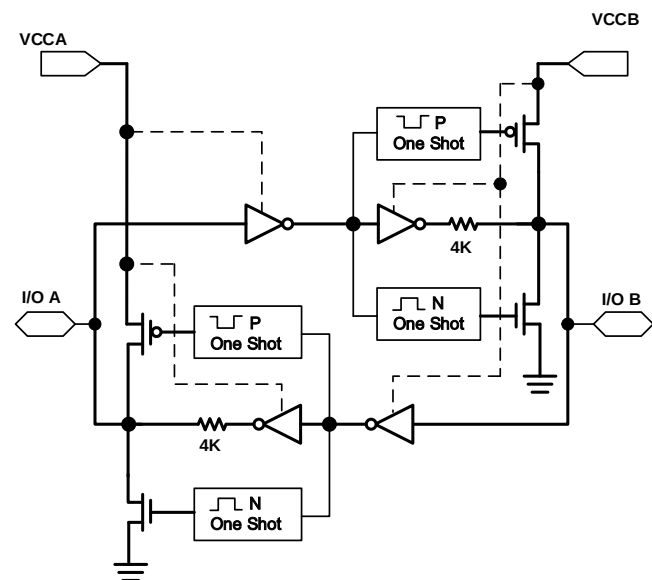
The UM330X series, ESD-protected level translator, provides the level shifting necessary to allow data transfer in multi-voltage system. The A port is designed to track V_{CCA} . V_{CCA} accepts any supply voltage from 1.2V to 3.6V. The B port is designed to track V_{CCB} . V_{CCB} accepts any supply voltage from 1.65V to 5.5V. Both I/O ports are auto-sensing; thus, no direction pin is required.

Key Features :

- 1.2V to 3.6V on A Port and 1.65V to 5.5V on B
- VCC Isolation Feature – If Either VCC Input is at GND, All Outputs are in the High-Impedance State
- OE Input Circuit Referenced to V_{CCA}
- No External components
- Low Power Consumption
- Latch-Up Performance Exceeds 100mA
- $\pm 15\text{kV}$ ESD Protection on B ports
- Operates at a guaranteed data rate of 20Mbps over the entire specified operating voltage range. Within specific voltage domains, higher data rates are up to 100Mbps.

Package :

UM3301 SOT23-6/SOT363/DFN6
 UM3302 CSP8
 UM3304 CSP12/WQFN14/QFN16
 UM3308 CSP20



Bidirectional Voltage-Level Translator for Open-Drain and Push-Pull Application

UM3202/UM3204

Product Description :

The UM320X series are $\pm 15\text{kV}$ dual channel ESD-protected level translator provide the level shifting necessary to allow data transfer in a multi-voltage system. Externally applied voltages, V_{CCB} and V_{CCA} , set the logic levels on either side of the device. A low-voltage logic signal present on the V_{CCA} side of the device appears as a high-voltage logic signal on the V_{CCB} side of the device, and vice-versa.

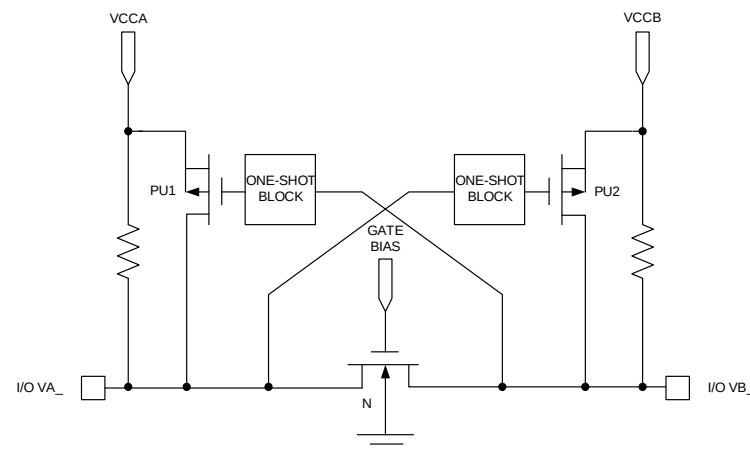
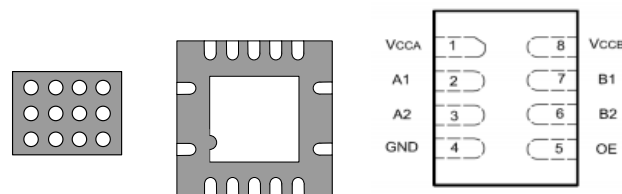
Key Features :

- Max Data Rates:
24Mbps(Push Pull),
2Mbps(Open Drain)
- Bidirectional Level Translation
- 1.65V to 3.6V on A Port and 2.3V to 5.5V on B Port
- $\pm 15\text{kV}$ ESD Protection on B Port
- No External components
- No Power-Supply Sequencing Required
- V_{CCA} or V_{CCB} can be Ramped First

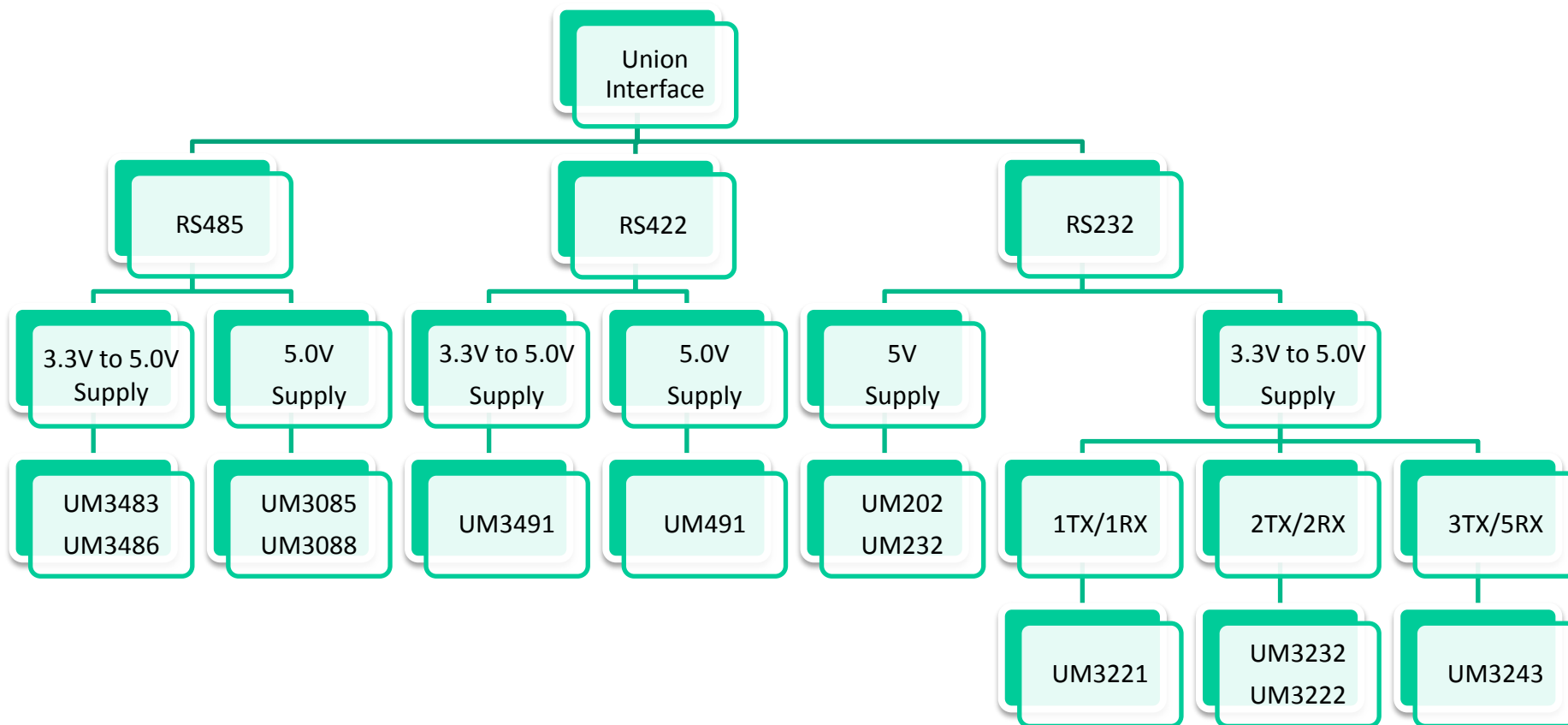
Package :

UM3202 DFN8/QFN10

UM3204 CSP12/QFN14/TSSOP14



Union Semi Interface Product Portfolio





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Union Semi RS232 Interface Series

Part Number	Description	Data Rate (kbps)	Operating Temperature (°C)	Fail Safe	ESD (kV)		Package
					Contact	Air	
UM202EEExE	Single 5V Powered 2TX/2RX	120	-40~+85	Yes	±8	±15	SOP16 DIP16 TSSOP16
UM232ECxE	Single 5V Powered 2TX/2RX	120	0~+70	Yes	±8	±15	SOP16 DIP16 TSSOP16
UM232EEExE	Single 5V Powered 2TX/2RX	120	-40~+85	Yes	±8	±15	SOP16 DIP16 TSSOP16
UM3232EEExE	3V~5.5V Powered 2TX/2RX	250	-40~+85	Yes	±8	±15	TSSOP16 SOP16 SSOP16 DIP16
UM3222EEUE	3V~5.5V Powered 2TX/2RX with Enable and Shutdown Control	250	-40~+85	Yes	±8	±15	TSSOP20
UM3221EEExE	3V~5.5V Powered 1TX/1RX with Enable and Shutdown Control	250	-40~+85	Yes	±8	±15	TSSOP16 SSOP16
UM3243EEExx	3V~5.5V Powered 3TX/5RX	250	-40~+85	Yes	±8	±15	TSSOP28 SSOP28 SOP28 QFN32 5.0×5.0

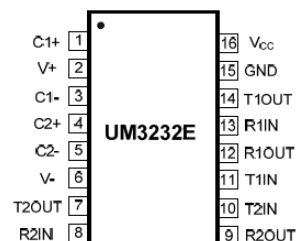
Product Description :

The UM3221E/UM3222E/UM3232E series are 3.3V powered RS-232 transceivers intended for portable or hand-held applications. The UM3221E has one driver/one receiver while the UM3222E/UM3232E has two drivers/two receivers. The device features low power consumption, high data-rate capability and enhanced ESD protection.

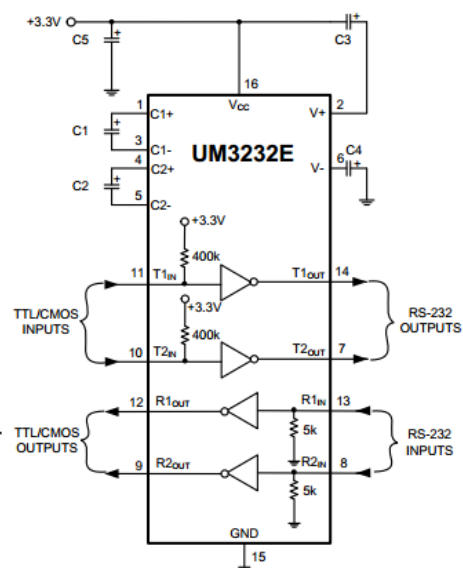
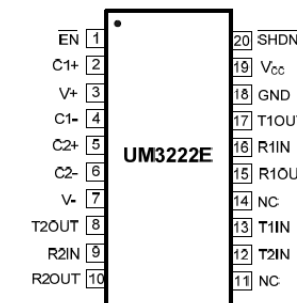
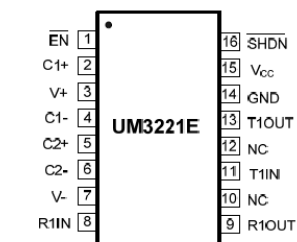
Key Features :

- EIA/TIA-232-F Standards from a +3.0V to +5.5V Power Supply
- EIA/TIA-562 Levels of $\pm 3.7V$ with Supply Voltages at 2.7V
- Enhanced ESD Specifications:
- $\pm 15kV$ Human Body Mode
- $\pm 15kV$ IEC61000-4-2 Air Discharge Mode
- $\pm 8kV$ IEC61000-4-2 Contact Discharge Mode
- 1 μA Low Power Shutdown (UM3221E/UM3222E)
- 250kbps Minimum Transmission Rate
- Latch-Up Performance Exceeds 200mA
- Hot Swap and Fail-Safe
- I/O Logic Compatible with 1.8V Logic @ $V_{cc}=3.3V$

Package :



UM3232 TSSOP16/SSOP16/SOP16
 UM3222 TSSOP20
 UM3221 TSSOP16/SOP16



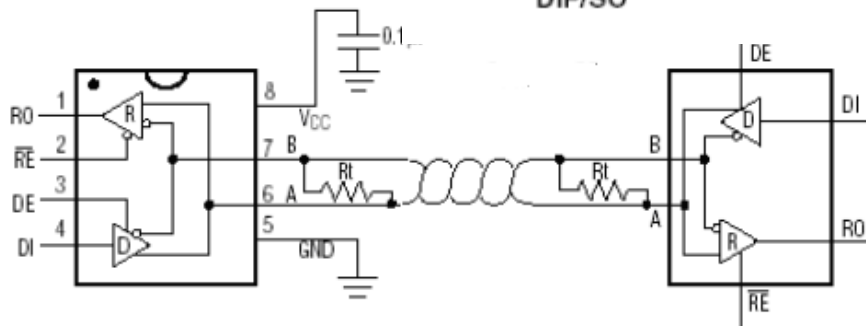
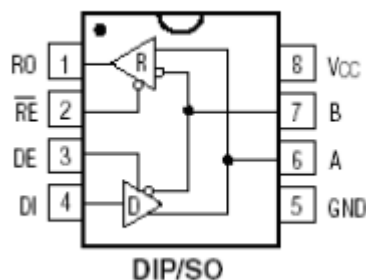
Part Number	Description	Data Rate (kbps)	Operating Temperature(℃)	Fail Safe	ESD (kV)		Package
					Contact	Air	
RS485 Interface							
UM3085EE	5V Supply,1TX/1RX Interface	0.5	Yes	256	±8	±15	SOP8 DIP8
UM3088EE	5V Supply,1TX/1RX Interface	2.5	Yes	256	±8	±15	SOP8 DIP8
UM3483EE	3.3V Supply,1TX/1RX Interface	0.5	Yes	256	±8	±15	SOP8 DIP8
UM3486EE	3.3V Supply,1TX/1RX Interface	2.5	Yes	256	±8	±15	SOP8 DIP8
UM3352EE	5V Supply,1TX/1RX Interface	0.5	Yes	256	±8	±12	SOP8 DIP8
UM3087EE	5V Supply,1TX/1RX Interface Auto Polarity Reversal	0.5	Yes	256	±8	±15	SOP8
RS422 Interface							
UM491EE	5V Supply,1TX/1RX Interface	2.5	Yes	256	±8	±15	SOP14 DIP14
UM3491EE	3.3V Supply, 1TX/1RX RS422 Interface	10	Yes	256	±8	±15	SOP14 DIP14
*UM488EE	5V Supply, 1TX/1RX RS422 Interface	2.5	Yes	256	±8	±15	SOP8 DIP8

±15kV ESD-Protected, Slew-Rate-Limited, Fail-Safe, True RS-485 Transceivers UM3085/UM3088

Product Description :

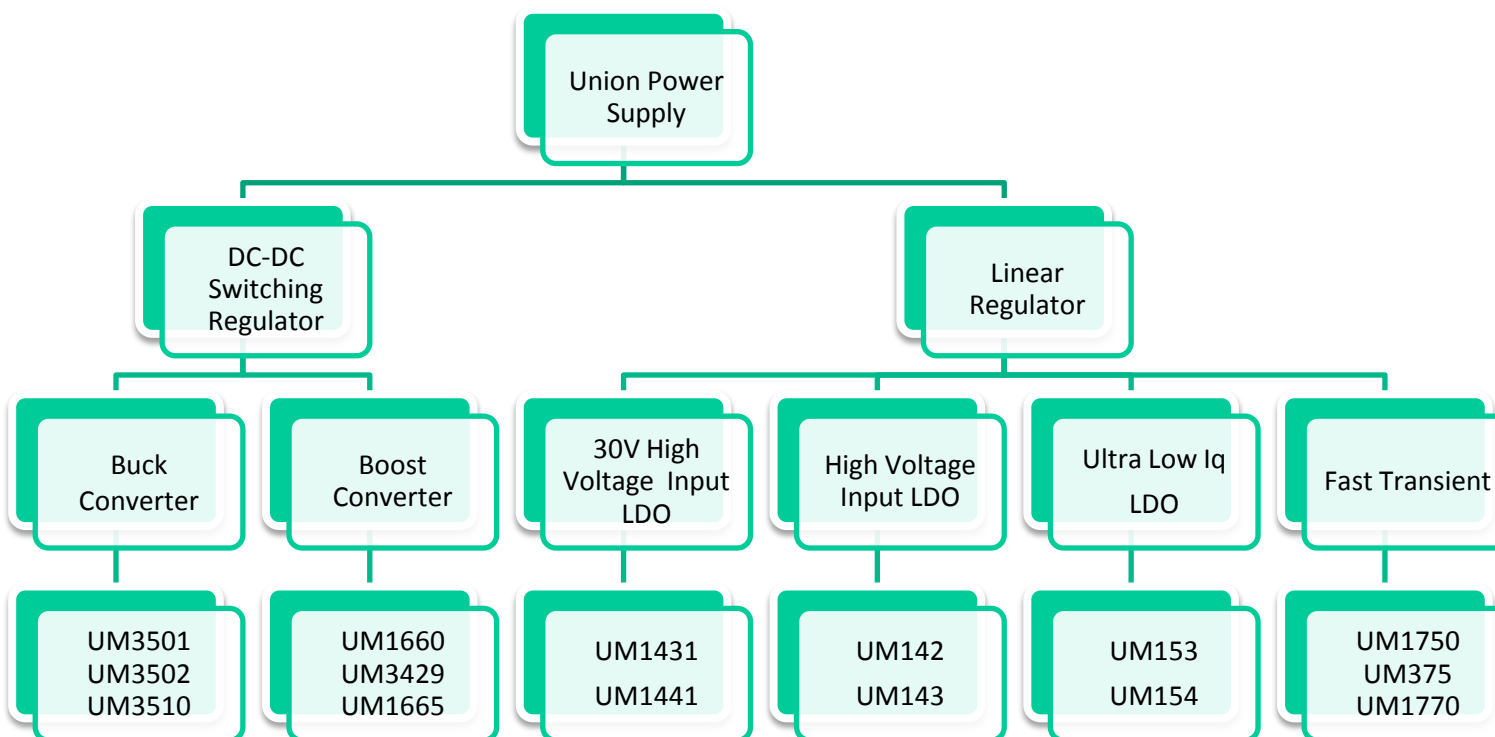
The UM3085/UM3088 are $\pm 15\text{kV}$ ESD-protected, high-speed transceivers for RS-485 communication that contain one driver and one receiver. These devices feature fail-safe circuitry, which guarantees a logic-high receiver output when the receiver inputs are open, shorted or idle. This means that the receiver output will be logic high if all transmitters on a terminated bus are disabled (high impedance).

Package : SOP8 DIP8



Key Features :

- ESD Protection for RS-485 I/O Pins
- $\pm 15\text{kV}$ —Human Body Model
- $\pm 15\text{kV}$ —IEC61000-4-2, Air-Gap Discharge
- True Fail-Safe Receiver while Maintaining
- EIA/TIA-485 Compatibility
- Enhanced Slew-Rate Limiting Facilitates
- Error-Free Data Transmission
- 2nA Low-Current Shutdown Mode
- - 7V to +12V Common-Mode Input Voltage Range
- Allows up to 256 Transceivers on the Bus
- Thermal Shutdown
- Current-Limiting for Driver Overload Protection



DC/DC Boost Converters

Part Number	Description	V _{IN} (V)	V _{OUT} (V)	I _{LIMIT} (mA) (Max)	Frequency (MHz) (Typ)	Peak Efficiency	Package
*UM3429	Voltage Mode PWM Boost with Light Load Mode	0.9~4.4	2.5~5	600	0.6	92%	SOT23-6 DFN8 2.0×2.0
UM1660	Constant Voltage PFM Boost Converter	2.0~6.0	2.0~28	450	1 (Max)	88%	SOT23-5 DFN6 2.0×2.0
UM1665	Constant Voltage PFM Boost Converter	2.0~6.0	2.0~28	500	1 (Max)	88%	SOT23-5 DFN6 3.0×3.0

DC/DC Buck Converters

Part Number	Description	V _{IN} (V)	V _{OUT} (V)	I _{OUT} (mA) (Max)	Frequency (MHz) (Typ)	Peak Efficiency	Package
Sync Low Voltage Buck Converters (V _{IN} ≤6V)							
UM3500	Current Mode PWM Buck	2.5~5.5	0.6~V _{IN}	600	1.5	96%	SOT23-5
UM3501	Current Mode PWM Buck with Light Load Mode	2.5~5.5	0.6~V _{IN}	600	1.2	90%	SOT23-5 DFN6 2.0×2.0
UM3502QA	Current Mode PWM Buck with Integrated Inductor	2.5~5.5	0.6~5.0	600	1.2	90%	QFN24 4.0×4.0
UM3510	Current Mode PWM Buck with Light Load Mode and Mode Selection	2.5~6.0	0.6~V _{IN}	1000	2.25	95%	SOT23-6 DFN6 2.0×2.0
High Input Voltage High Output Current Buck Converters (V _{IN} ≥6V, I _{OUT} ≥2A)							
*UM5482S8	Current Mode PWM Buck	4.75~18.0	1.8~5.0	2000	0.34	90	SOP8

600mA, 1.2MHz, Synchronous Step-Down DC-DC Converter

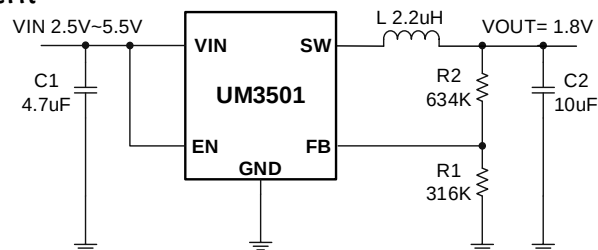
UM3501

Product Description :

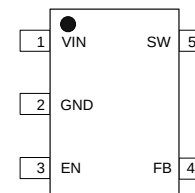
UM3501 is a high-efficiency PWM step-down DC-DC converter, capable of delivering 600mA output current over a wide input voltage range from 2.5V to 5.5V. The UM3501 automatically turns off the synchronous rectifier while the inductor current is low and enters discontinuous PWM mode.

Key Features :

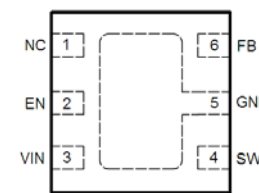
- High Efficiency: Up to 90%
- 1.2MHz Constant Switching Frequency
- 600mA Output Current
- Integrated Main Switch and Synchronous Rectifier. No Schottky Diode Required.
- 2.5V to 5.5V Input Voltage Range
- Low Quiescent Current: 50 A
- Thermal Fault Protection
- <1uA Shutdown Current



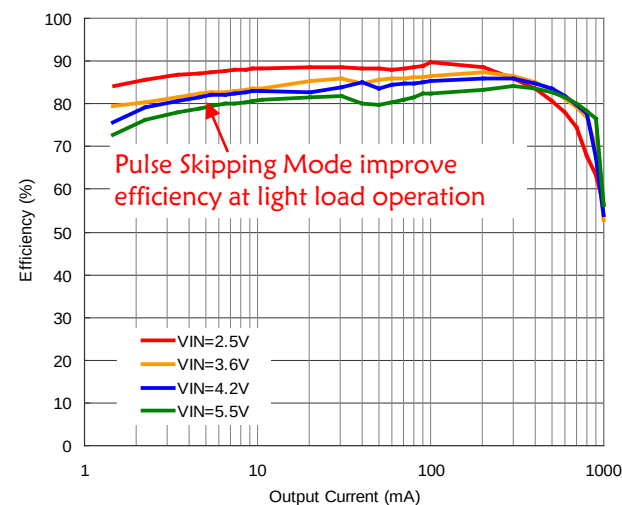
Package :



SOT23-5



DFN2020-6L



DC-DC Buck Converter with Mode Control UM3510

Device Description:

UM3510 is a high efficiency PWM/PFM synchronous DC-DC buck converter with Forced PWM mode control. Its input voltage range from 2.5V to 6V, operation switching frequency is 2.25MHz. Output current capability is guaranteed to 1A. Featured Mode Control feature give system designer flexibility of optimize power efficiency and noise level.

Key Features

- High Efficiency: Up to 96%
- 2.25MHz Constant Switching Frequency
- 1A Output Current
- Synchronous rectifier. No Schottky Diode Required
- 2.5V to 6.0V Input Voltage Range
- Low Quiescent Current: 56 μ A(TYP, Mode=0)
- Mode Control Input
- <1 μ A Shutdown Current

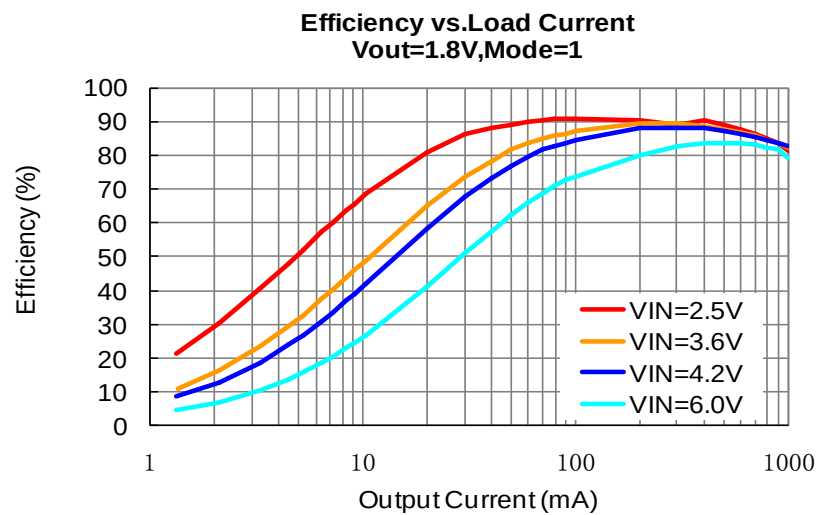
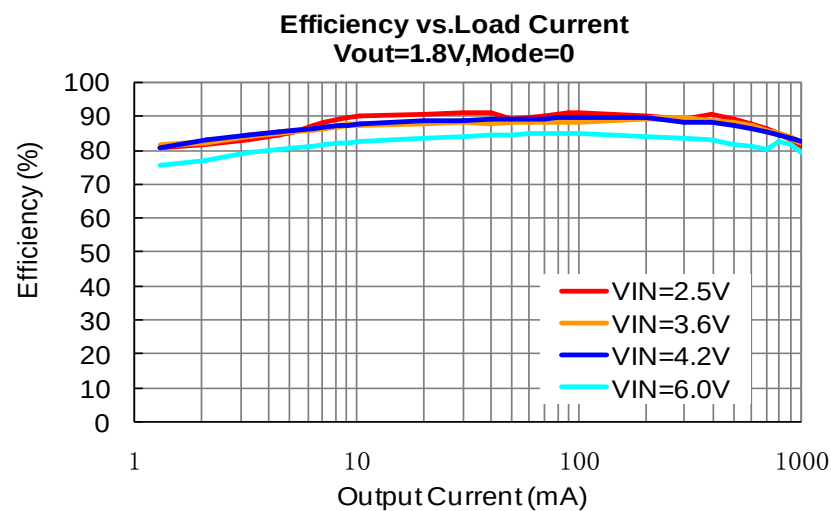
Packages:

SOT23-6

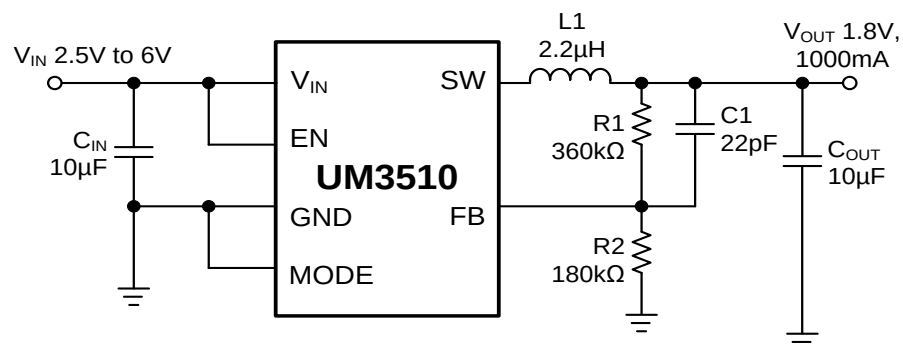
DFN2.0X2.0 6PIN

WLCSP 1.5mm X 1mm

UM3510 Efficiency @ PWM/PFM & Forced PWM MODE



UM3510 Typical Application Circuit



2A 18V Synchronous Rectified Step Down DC DC Converter UM5482

Device Description:

UM5482 is a monolithic synchronous rectifier step down DC-DC converter with internal power MOSFETS. It offers a very compact solution with minimal external components to achieve 2A continuous output current over a wide input supply range with excellent load and line regulation.

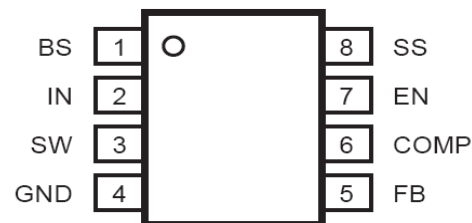
Current mode operation provides fast transient response and eases loop stabilization.

Protection features include over current protection, soft start and thermal shutdown.

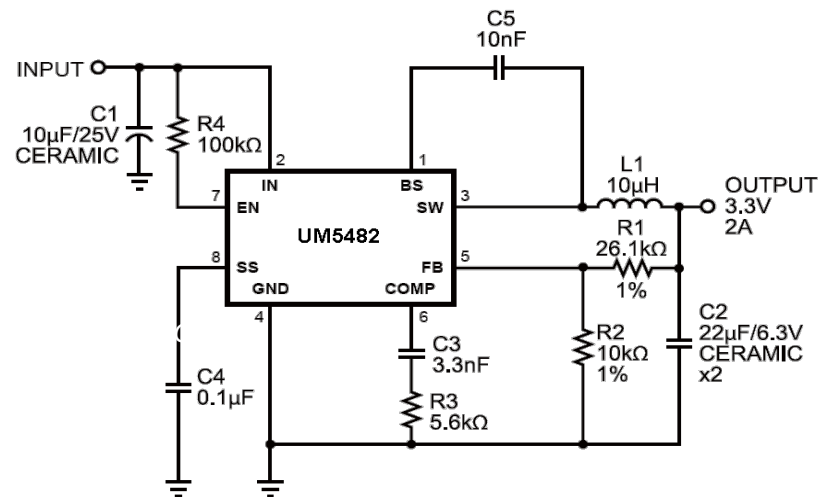
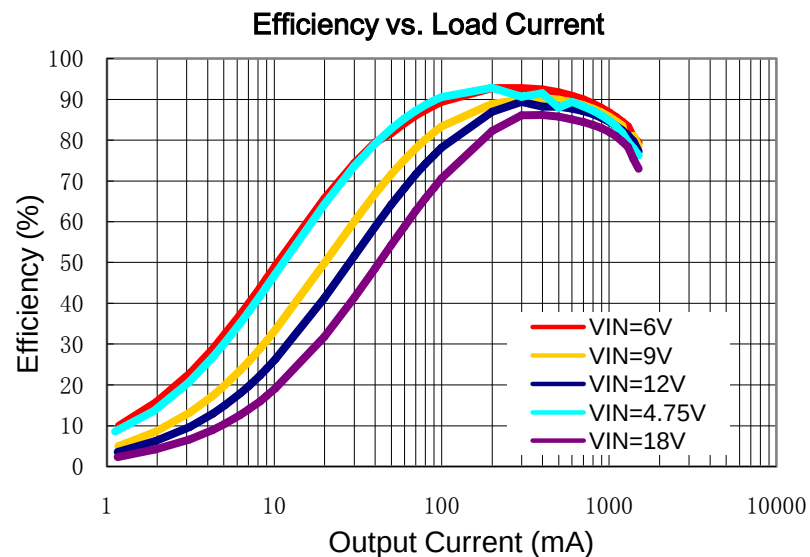
Key Features

- 2A Output Current
- Wide 4.75V to 18V Operating Input Range
- Maximum Duty Cycle:90%
- Up to 93% Efficiency
- Fixed 340kHz Frequency
- Integrated Two 130mΩ Power MOSFET Switches
- Programmable Soft-Start
- Cycle-by-Cycle Over Current Protection
- Input Under Voltage Lockout

Package



2A 18V Synchronous Rectified Step Down DC DC Converter UM5482

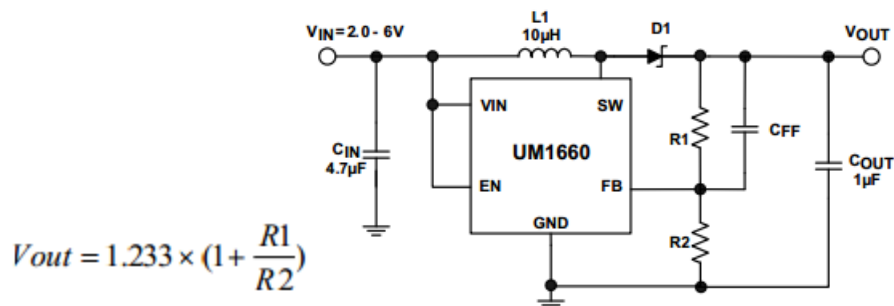


Product Description :

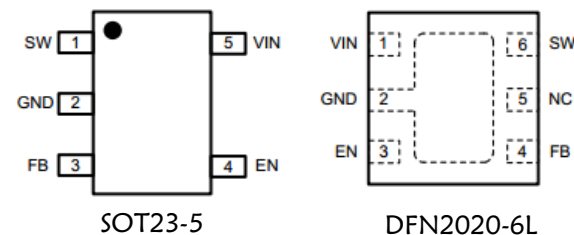
The UM1660 is a PFM controlled step-up DC-DC converter with a switching frequency up to 1MHz. The UM1660 has an internal 400mA switch current limit, offering lower output voltage ripple. The low quiescent current (typically 36µA) together with an optimized control scheme, allows device operation at very high efficiencies over the entire load current range.

Key Features :

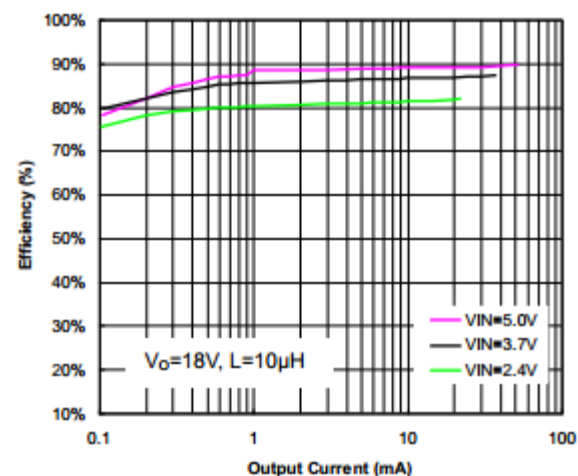
- 2.0V to 6.0V Input Voltage Range
- Adjustable Output Voltage up to 28V
- 400mA Internal Switch Current
- Up to 1MHz Switching Frequency
- 36uA Typical No Load Quiescent Current
- 1uA Maximum Shutdown Current
- Internal Soft-Start



Package :



Efficiency vs Output Current





Innovative Mixed Signal Silicon Solutions Provider
Union Semi Linear Regulators

Part Number	Features	V _{IN} (V) (Min)	V _{IN} (V) (Max)	V _{OUT} (V)	I _{OUT} (mA) (Max)	I _q @ V _{IN_MAX} (μA) (Typ)	V _{DROP} (mV)@ I _O (Max)Note2	Package
350mA, Very Low Dropout with EN								
UM1750-00	Fast Transient Response	2.5	6.0	Adjustable Output 1.0V to 5.0V	350	190	150@150mA	SOT23-5 SOT89-5 DFN 2.0×2.0
UM1750-xx	Fast Transient Response	2.5	6.0	1.0V to 4.0V with 0.1V interval	350	190	150@150mA	SOT23-5 SOT89-5 DFN 2.0×2.0
500mA Output Current								
UM177xx	500mA Output Current Very Low Dropout	2.5	6.0	1.2V to 3.5V with 0.1V interval	500	120	400@500mA	DFN2020-6 SOT89-5
Low Noise Linear Regulators								
UM1330	150mA Output Current 56μVrms Low Noise	2.7	5.5	1.5V to 3.3V with 0.1V interval	150	88	140@100mA	SOT23-5 SOT353 DFN2.0X2.0
High Input Voltage Linear Regulators								
UM142xx	12V Input Voltage	2.5	12.0	2.5V to 5.0V with 0.1V interval	300	9	300@150mA	SOT23-3 SOT89-3
UM1430	18V Input Voltage	3.6	18.0	2.0V to 6.0V with 0.1V interval	30	4.8	200@30mA	SOT23-3 SOT89-3
Ultra Low I _q								
UM153xx	Ultra Low I _q	2.2	5.5	1.5V to 4.0V with 0.1V interval	100	1.2	700@100mA	SOT23-3 SOT89-3

350mA, Very Low Dropout, Fast Transient Response LDO

UM1750

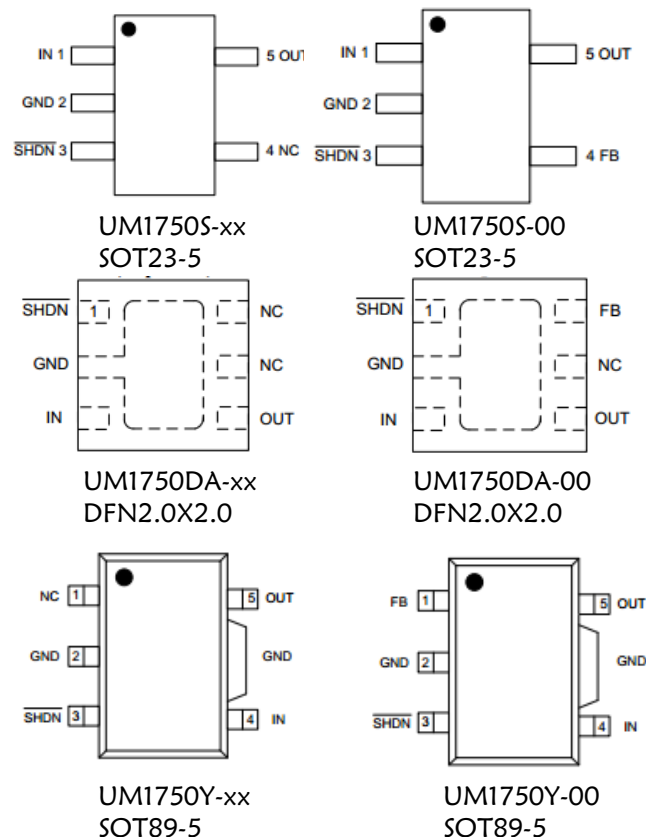
Product Description :

The UM1750 series are very low dropout linear regulators designed for low power portable applications. Typical output noise is only 195 μ V_{RMS} and maximum dropout is just 110mV(Typ) at the load current of 150mA. The internal P-channel MOSFET pass transistor requires no base current, allowing the device to draw only 190 μ A during normal operation at the maximum load current of 350mA. With a shutdown control pin, the UM1750 consumes less than 1 μ A current in shutdown mode.

Key Features :

- Very Low Dropout: 150mV(max) at 150mA
- Maximum Input Voltage: 6.0V
- $\pm 2\%$ Voltage Accuracy at $V_{OUT} > 1.5V$
- $\pm 30mV$ Voltage Accuracy at $V_{OUT} \leq 1.5V$
- **Fast Transient Response**
- Under Voltage Lockout
- Fixed Output Voltage of UM1750X-xx from 1.0V to 4.0V with 0.1V Interval
- Adjustable Output Voltage of UM1750X-00 from 1.0V to 5.0V
- Output Current Limit
- Stable with 1 μ F Output Capacitor
- Short-Circuit and Thermal Overload Protection

Package :

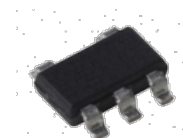


UM1550- Ultra Low Quiescent Current LDO**Description**

The UM1550 series are ultra-low quiescent current LDO. The range of output voltage is from 1.2V to 5.0V while operated from 2.2V to 8V input.

Packaging

DFN1X1, SOT23-5, SC70-5

**Market & Applications**

- Wireless Sensor
- Utility Meter
- Cellular Phones
- Remote Controller
- IOT
- Electronics Toy

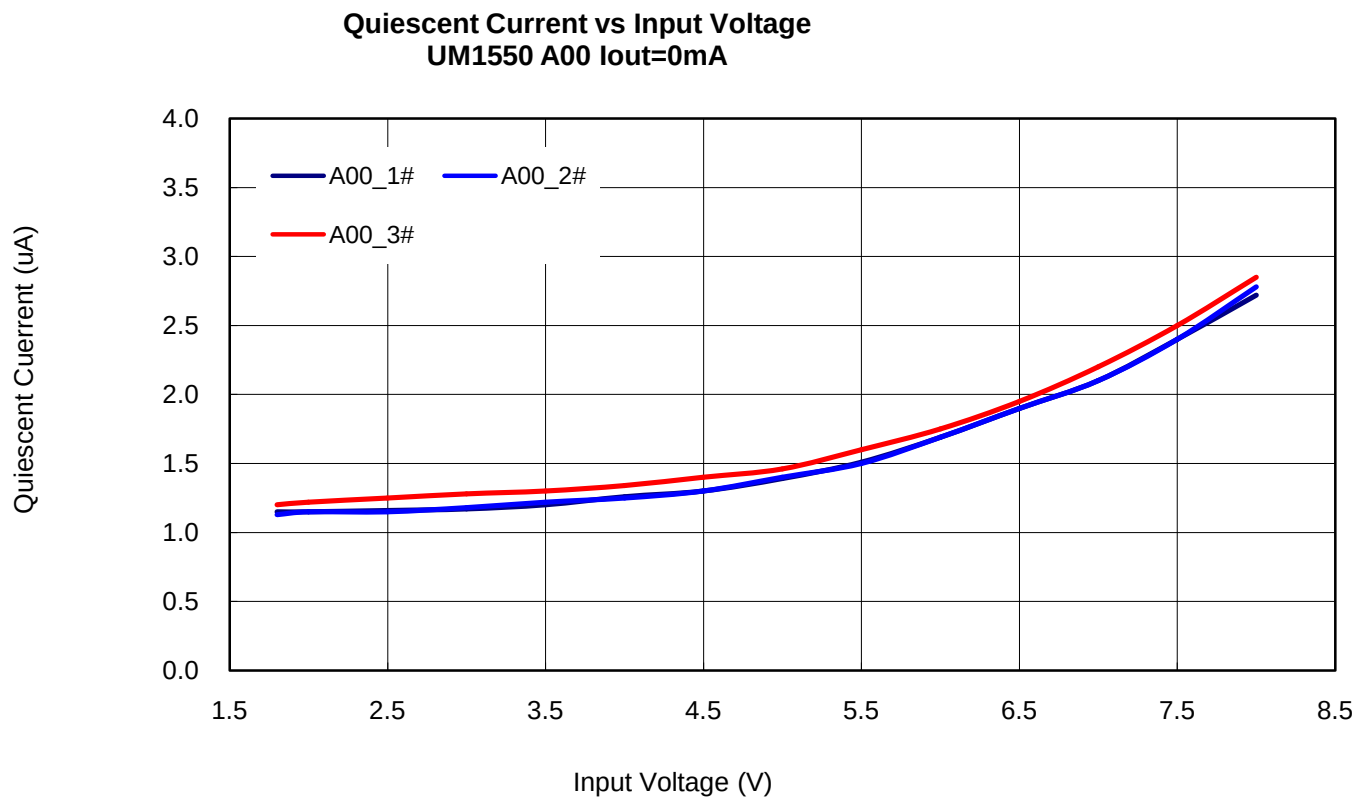
**Key Features**

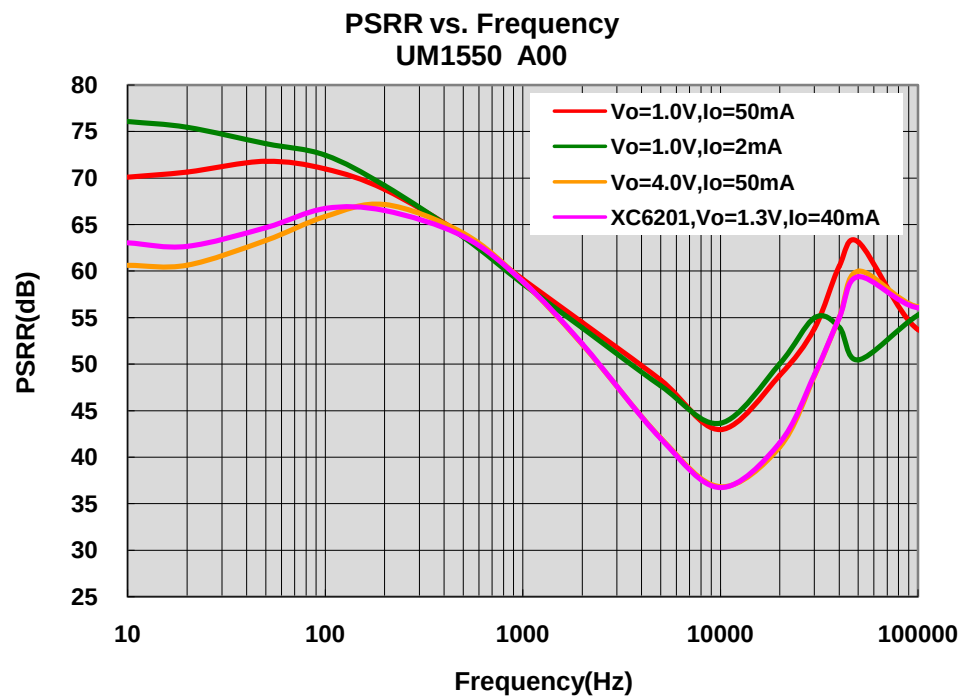
- **Ultra Low Iq: 2μA @ V_{IN}=3V**
- Operating Voltage Range: 2.2V to 7V
- Output Voltage: 1.2V to 5.0V
- 250mA Output Current @ V_{IN} ≥ 3.5 V
- Fast Transient Response
- Output Current Limit

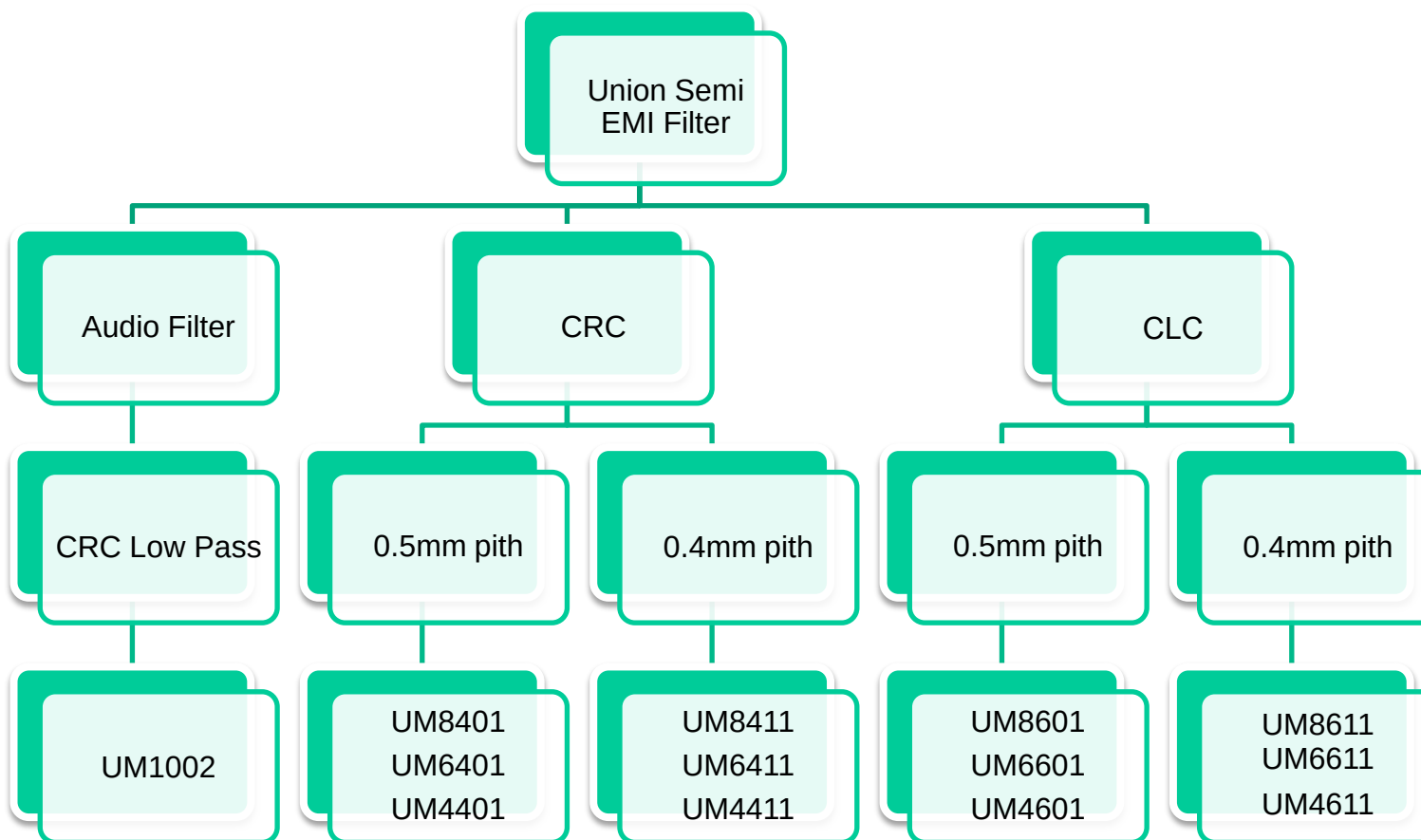
Benefits

- 1. Comfortable for different battery Power Supply**
- 2. High input Voltage**
- 3. Easy to use**
- 4. Lower power consumption**

UM1550 Quiescent Current vs Input Voltage

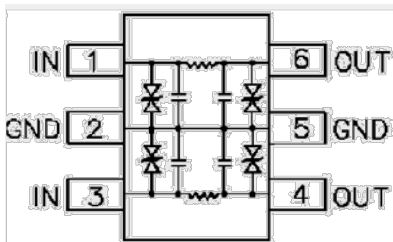




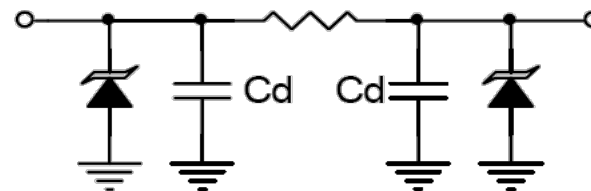


CRC EMI Filters with ESD Protectors

Union Audio Filter Pin Configuration



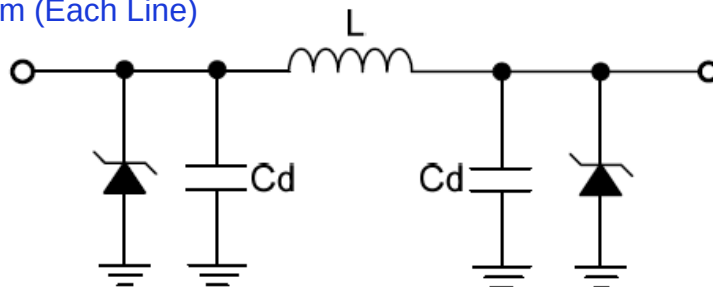
Union CRC EMI Filter Circuit Diagram (Each Line)



CRC EMI Filter								
Part Number	Protected Lines	V_{RWM} (V) Max.	$R(\Omega)$ Typ.	C_J (pF) @ $V_R=2.5V$	f_{3db} (MHz) Typ.	ESD (kV)		Package
						Contact	Air	
UM1002	2	5	1	15	-	± 8	± 15	SOT23-6
UM4401	4	5	100	10	150	± 8	± 15	DFN2116-8
UM4411	4	5	100	10	150	± 8	± 15	DFN1713-8
UM6401	6	5	100	10	150	± 8	± 15	DFN3016-12
UM6411	6	5	100	10	150	± 8	± 15	DFN2513-12
UM8401	8	5	100	15	150	± 8	± 15	DFN4016-16
UM8411	8	5	100	10	150	± 8	± 15	DFN3313-16

CLC EMI Filters with ESD Protectors

Union CLC EMI Filter Circuit Diagram (Each Line)



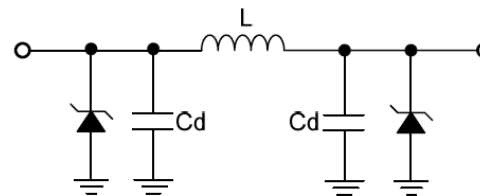
CLC EMI Filter									
Part Number	Protected Lines	V_{RWM} (V) Max.	L (nH) Typ.	DCR (Ω) Typ.	C_{TOTAL} @ $V_R=2.5V$ (pF)	f_{3db} (MHz) Typ.	ESD (KV)		Package
							Contact	Air	
UM4601	4	5	19	18	36	150	± 8	± 15	DFN2020-8
UM4611	4	5	19	18	36	150	± 8	± 15	DFN1713-8
UM6601	6	5	19	18	36	150	± 8	± 15	DFN3016-12
UM6611	6	5	19	18	36	150	± 8	± 15	DFN2513-12
UM8601	8	5	19	18	36	150	± 8	± 15	DFN4016-16
UM8611	8	5	19	18	36	150	± 8	± 15	DFN3313-16

Function :

8-line ESD/EMI Protection

Packaging

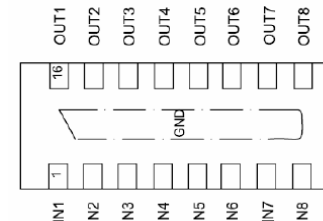
DFN3313-16



Device Schematic (8X)

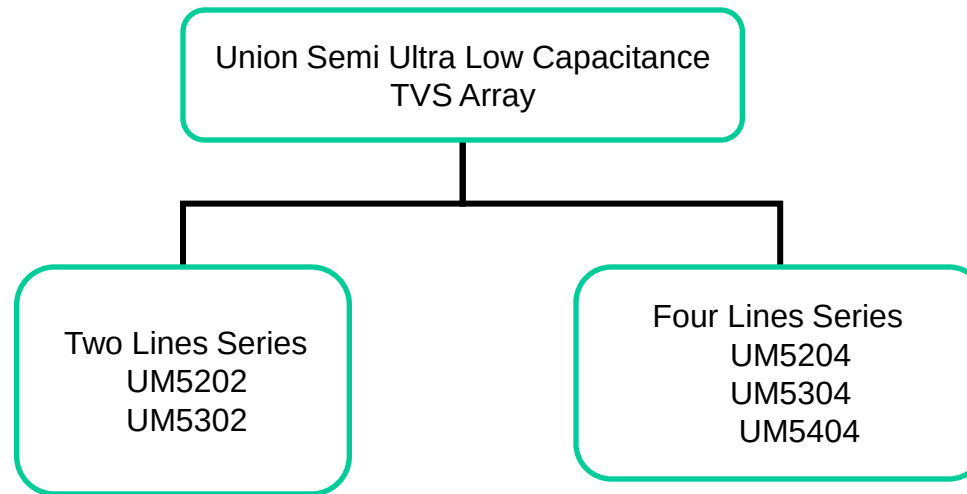
Key Features

1. ESD IEC61000-4-2, $\pm 8\text{kV}$ contact, $\pm 15\text{kV}$ air
2. 30dB minimum attenuation 800MHz to 2.7GHz
3. TVS Working Voltage: 5V
4. Inductor: 17nH (Typical)
5. Capacitors: 15pF (Typical at VR = 2.5V)



Benefits

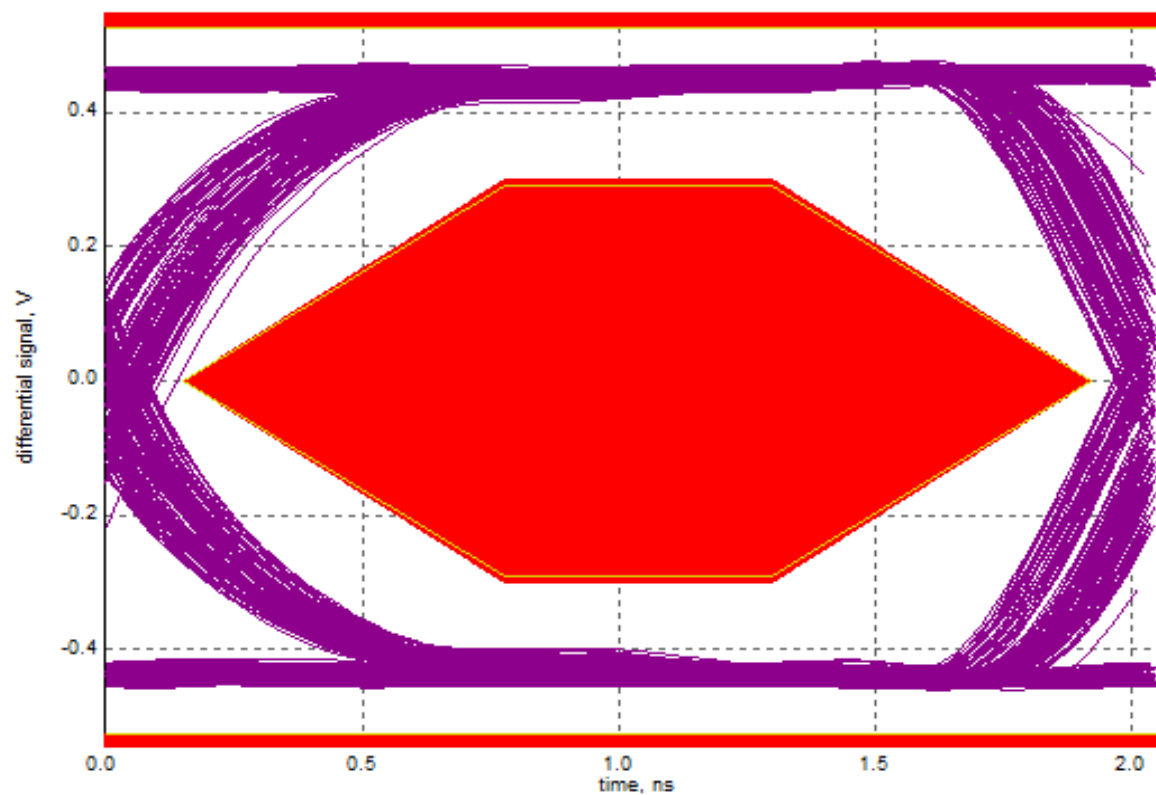
1. Bidirectional EMI Filter with Integrated TVS
2. Protection and filtering for eight lines
3. Solid-state Technology



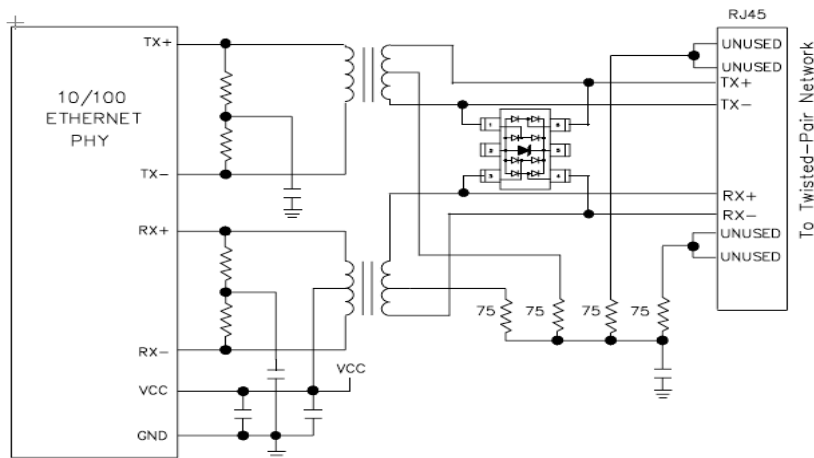
USB Port and Ethernet Port Protection

Part Number	Description	Protected Lines	V _{RWM} (V) (Max)	C _J (pF) @V _R =0V (Typ)	ESD(kV)		Package
					Contact	Air	
USB Port and Ethernet Port Protection							
UM5202EEDF	Unidirection	2	5	2	±8	±15	SOT143
UM5204EEAF	Unidirection	4	5	2	±8	±15	SC70-6
UM5204EEBF	Unidirection	4	5	2	±8	±15	SC89-6
UM5204EECF	Unidirection	4	5	2	±8	±15	TSOP-6
UM5304EEAF	Unidirection	4	5	2	±8	±15	SC70-6
UM5304EEBF	Unidirection	4	5	2	±8	±15	SC89-6
UM5304EECF	Unidirection	4	5	2	±8	±15	TSOP-6

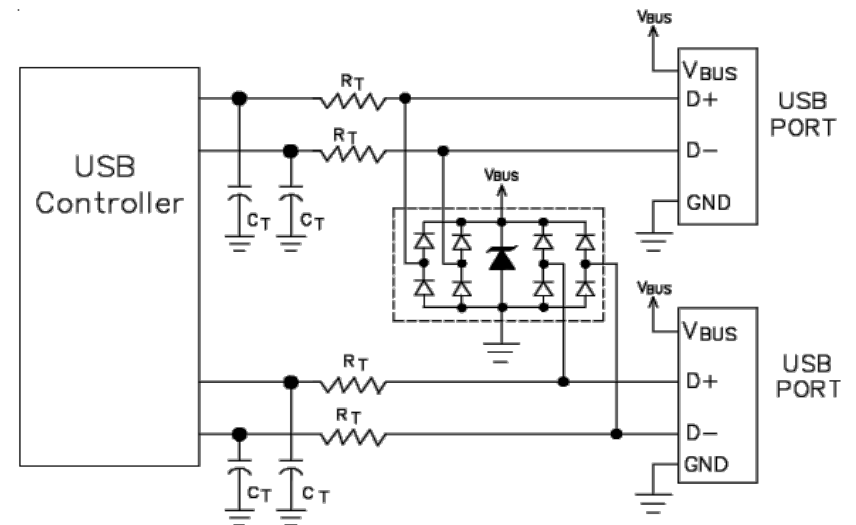
UM5204 USB2.0 Eye Diagram Test



Innovative Mixed Signal Silicon Solutions Provider
UM5204EE for Ethernet Port and USB Port Protection

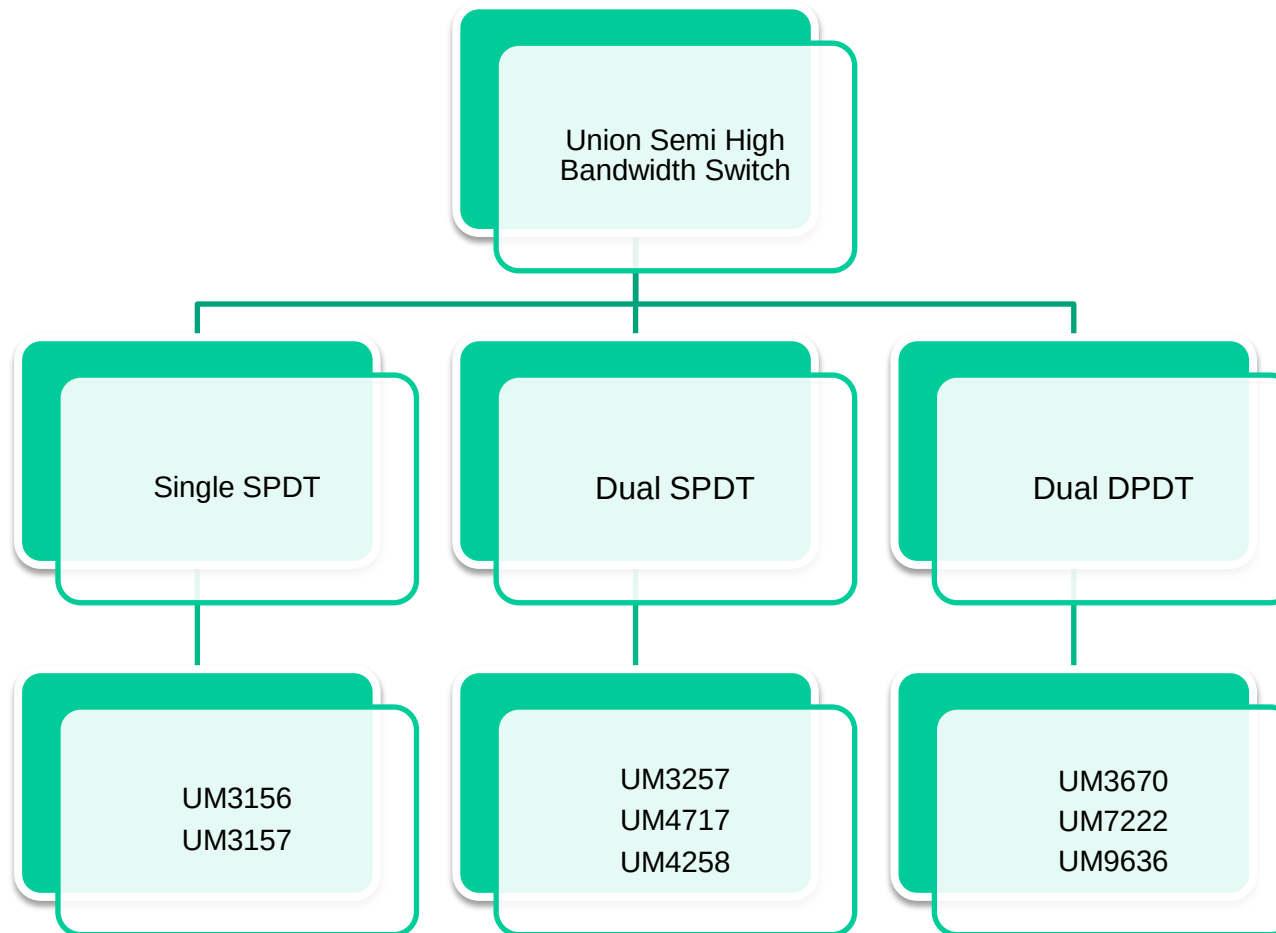


10/100M Ethernet Port ESD Protection



USB2.0 Port ESD Protection

Union Semi Switch Products



High Bandwidth Switch (BW > 200MHz)

Part Number	V _{CC} (V)	Features	R _{ON} (Ω) (Max)	Bandwidth (MHz)	Off Isolation (dB)**	Cross-talk (dB)**	Package
UM3156	1.65 ~5.5	Single SPDT, Low ICCT	10	230	-60	-54	SC70-6
UM3157	1.65 ~5.5	Single SPDT, Low ICCT	10	250	-57	-54	SC70-6
UM3257	1.65 ~5.5	Dual SPDT, Low ICCT	10	250	-55	-54	DFN3016-12
UM3258	1.65 ~5.5	Dual SPDT, Low ICCT	10	300	-55	-54	DFN3010-12
UM4717	1.8 ~ 5.5	Dual SPDT	6	300	-55	-80	CSP10
UM4717Q	1.8 ~ 5.5	Dual SPDT	6	300	-55	-80	QFN1814-10
UM4258Q	1.8 ~ 5.5	Dual SPDT	4.5	300	-55	-80	QFN1814-10
UM3670	1.8~5.5	Dual DPDT	10	300	-55	-60	QFN3030-16
UM3670A	1.8~5.5	Dual DPDT	10	300	-55	-60	QFN2618-16
UM7222	2.7~5.5	Dual SPDT	9	550	-25dB@ 250MHz	-48dB@ 250MHz	QFN1814-10
UM7222A	2.7~5.5	Dual SPDT	9	550	-25dB@ 250MHz	-48dB@ 250MHz	QFN2116-10
UM9636	2.7~12	Dual SPDT	110	720	-58	-67	QFN1814-10
*UM1153	2.7~5.0	Single DPDT, Negative Signal Capability	4.6 (Audio) 5.5(USB)	900(USB)	-81dB@ 100kHz	-93dB@ 100kHz	QFN1814-10

Description

The UM7222 is a dual port high-speed, low-power data switch optimized for USB 2.0 signal switching. It handles bidirectional signal flow, achieving a 550 MHz -3dB bandwidth, and a port to port crosstalk and isolation at -50dB at 250MHz.

Packaging

Available in micro-packages
QFN-10 1.8mm × 1.4mm/2.1mm × 1.6mm

Industry Standard

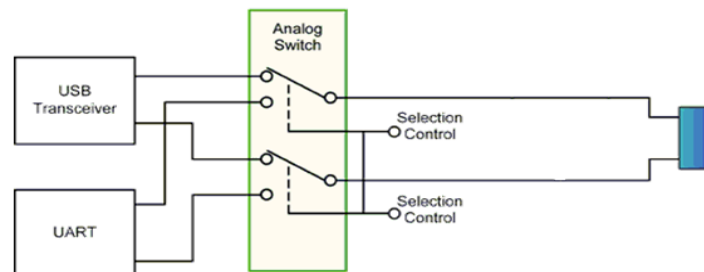
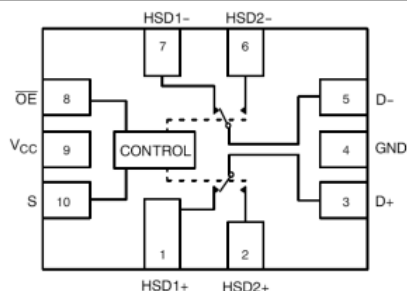


Key Features

- R_{ON} as low as: 6.5Ω @3V
- Ultra low charge injection
- 550MHZ(Typ) -3dB Bandwidth
- USB 2.0 Full Bandwidth capability
- Power OFF Protection
- Near-Zero Propagation Delay

Benefits

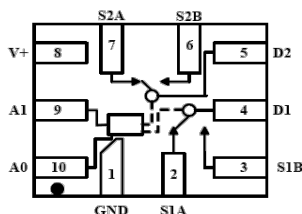
- Compatible with wide voltage sources
- Provides minimum insertion loss
- Perfect for differential signaling
- Low distortion
- Full compliance for connector pin count reduction
- OVT on D+ and D-



UM9636 HV Wide Band Analog Switch Product

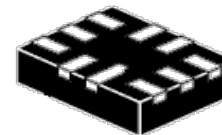
Description

High-Speed
2 SPDT Analog Switch



Packaging

QFN10
1.8 *1.4*0.55
P0.4



Market & Applications

- High-end data acquisition
- Medical instruments
- Precision instruments
- High speed communications applications
- Automated test equipment
- Sample and hold applications



Key Features

1. Single-Supply Operation: 2.7V to 12V
2. 720MHz, -3dB Bandwidth
3. Low Crosstalk: Typically -67dB (10MHz)
Low Off-Isolation: Typically -58dB (10MHz)
4. Channel On-Capacitance: 6.5pF(Typical)
5. Low Current Consumption: 1μA
6. Lead (Pb) Free QFN10 Package

Benefits

1. Wide V_{CC} operating range
2. Good signal integrity for high-speed signal
3. Minimal noise interference
4. Low distortion
5. Low Power Consumption
6. Space saving