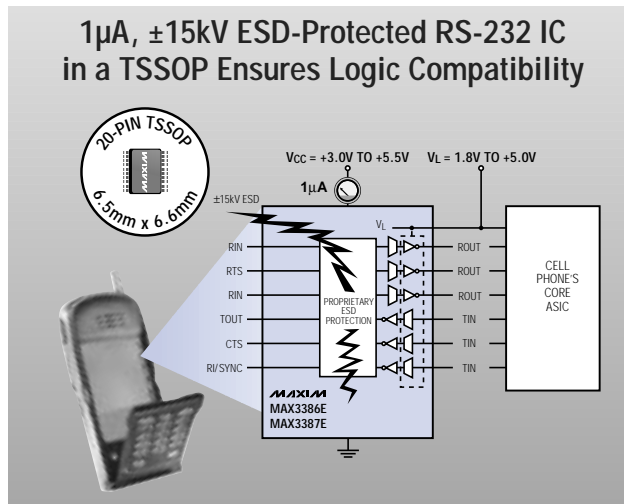
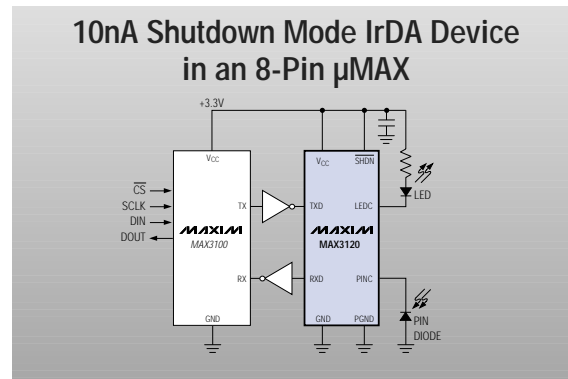


Tiny, Low-Power RS-232, RS-485, and IrDA Solutions Designed to Improve Your Portable Product

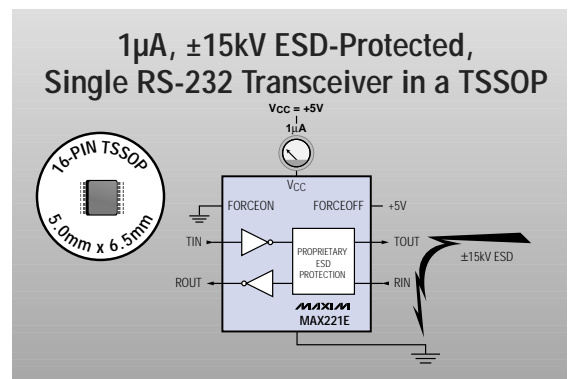
1 μ A, \pm 15kV ESD-Protected RS-232 IC in a TSSOP Ensures Logic Compatibility



10nA Shutdown Mode IrDA Device in an 8-Pin μ MAX

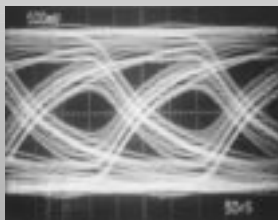


1 μ A, \pm 15kV ESD-Protected, Single RS-232 Transceiver in a TSSOP



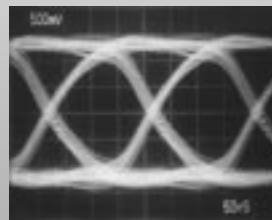
Integrated Preemphasis Circuitry Increases RS-485 Cable Length and Data Rate

COMPETITION



75180 Transceiver (no preemphasis) Driving 1000ft of Cable at 5Mbps

MAXIM



MAX3291/MAX3292 (featuring preemphasis) Driving 1000ft of Cable at 5Mbps



For over 15 years, Maxim has been inventing RS-232, RS-485, and IrDA solutions that add value to our customers' electronic equipment.

Look inside for details on our hottest new solutions.

ANALOG
DESIGN GUIDE

1	Multiplexers, Switches
2	Interface Products
3	Op Amps, Comparators
4	DC-DC Converters, Power Supplies
5	μ P Supervisory
6	Analog Filters
7	A/D Converters
8	Video/High-Speed Amps
9	D/A Converters
10	Analog Functions
11	Voltage References
12	Temperature Sensors

NEW

+3V, 1 μ A, \pm 15kV ESD-Protected RS-232 IC Simplifies Smart Phone Designs

Separate Logic Supply Ensures Compatibility with Mixed ASIC Logic Levels

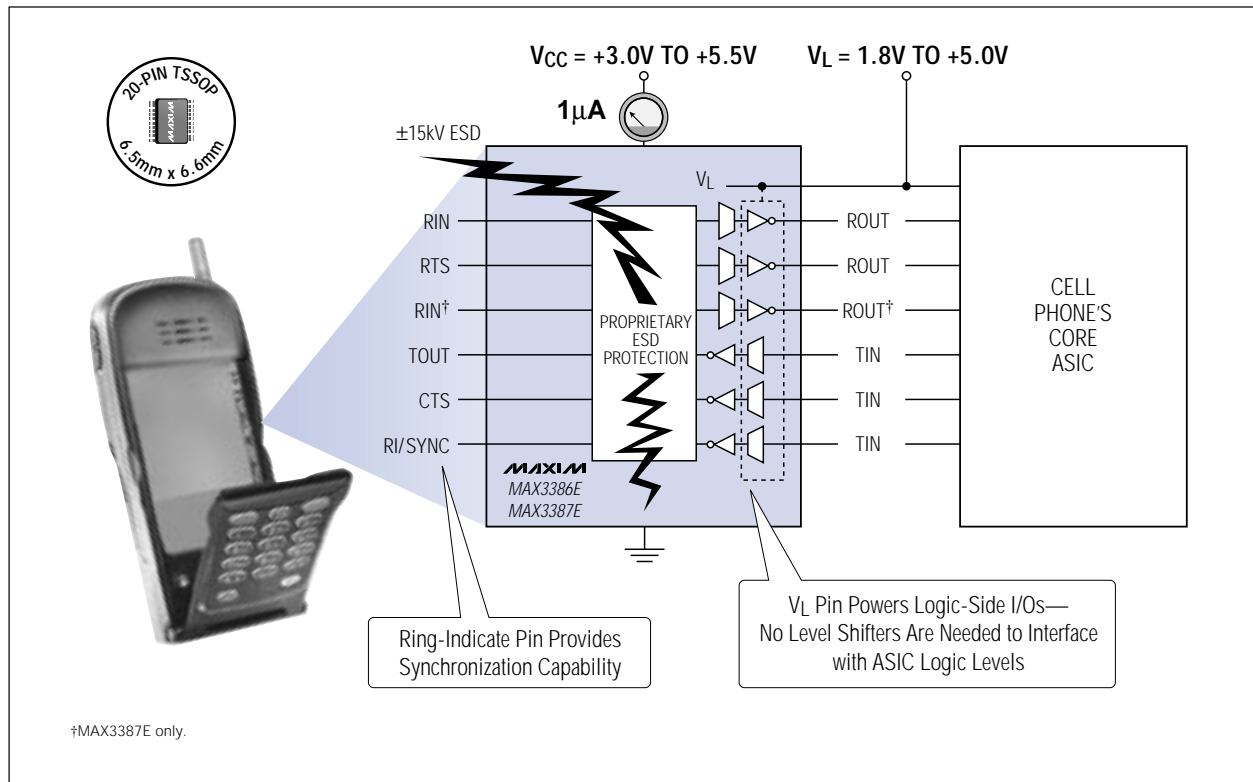
The MAX3386E/MAX3387E* feature a unique V_L pin allowing the devices to operate with various logic levels. Input and output logic levels are pin programmable down to 1.8V through the V_L pin, eliminating the need for level shifters in mixed voltage logic systems.

A proprietary low-dropout transmitter output stage enables RS-232-compliant performance over a full +3.0V to +5.5V supply range via a dual charge pump and consumes only 1 μ A of supply current in shutdown mode. Each device is guaranteed to run at data rates of 250kbps, and the charge pump requires only four small 0.1 μ F capacitors.

All RS-232 inputs and outputs are protected to \pm 15kV per IEC 1000-4-2 Air-Gap Discharge, \pm 8kV per IEC 1000-4-2 Contact Discharge, \pm 15kV per the Human Body Model, and \pm 4kV per IEC 1000-4-4 Electrical Fast Transient**. The MAX3386E has two receivers and three transmitters, while the MAX3387E has three receivers and three transmitters. Both devices are available in space-saving TSSOP packages.

* Future product—contact factory for availability.

**Pending completion of testing.

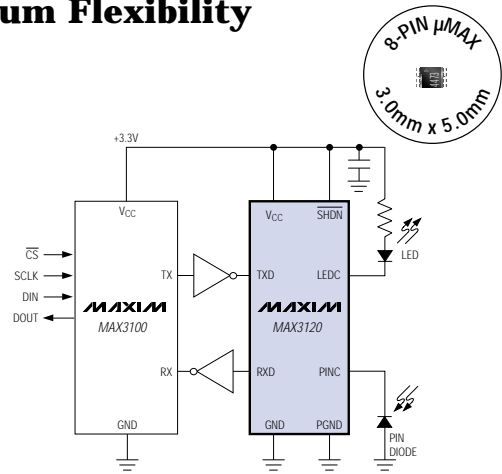


+3V, 120 μ A, Low-Profile IrDA SIR Transceiver Saves Space and Power

External Optical Components Allow Maximum Flexibility in PC Board Design

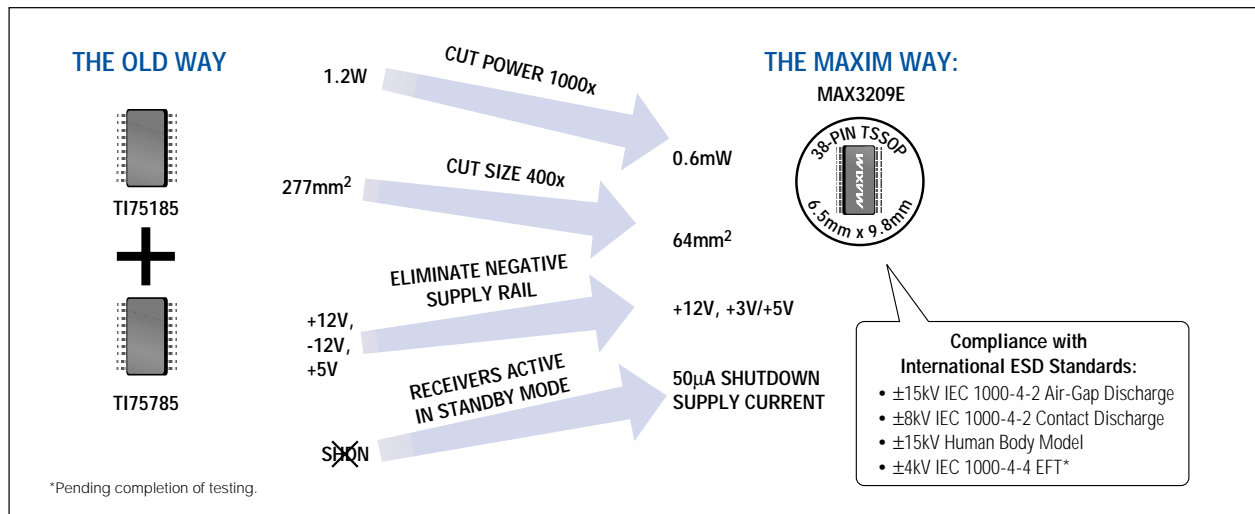
The MAX3120 infrared data association (IrDA) 1.2-compatible transceiver provides the best combination of low power, small size, and flexible layout on the market, making it the ideal solution for battery-powered and space-constrained applications. The device consumes 120 μ A while supporting data rates up to 115kbps over a wide +3V to +5.5V operating range. A 10nA shutdown mode further extends battery life.

This transceiver saves space in IrDA applications by minimizing the number of external components needed: a photodiode, an infrared LED, and a current setting are all that's required. Its use of external components allows customers to make optimal trade-offs between cost and size. The MAX3120 is available in an 8-pin μ MAX package that consumes half the board space of an 8-pin SO.



NEW Low-Power, ± 15 kV ESD-Protected, Dual RS-232 Serial Port in TSSOP

50 μ A Standby Supply Current: Meets Desktop ACPI Specifications



- 38-Pin TSSOP Package
- Integrated ESD Protection
- Requires Only +12V Supply and +3.3V/+5V Logic Supply
- 460kbps Data Rate

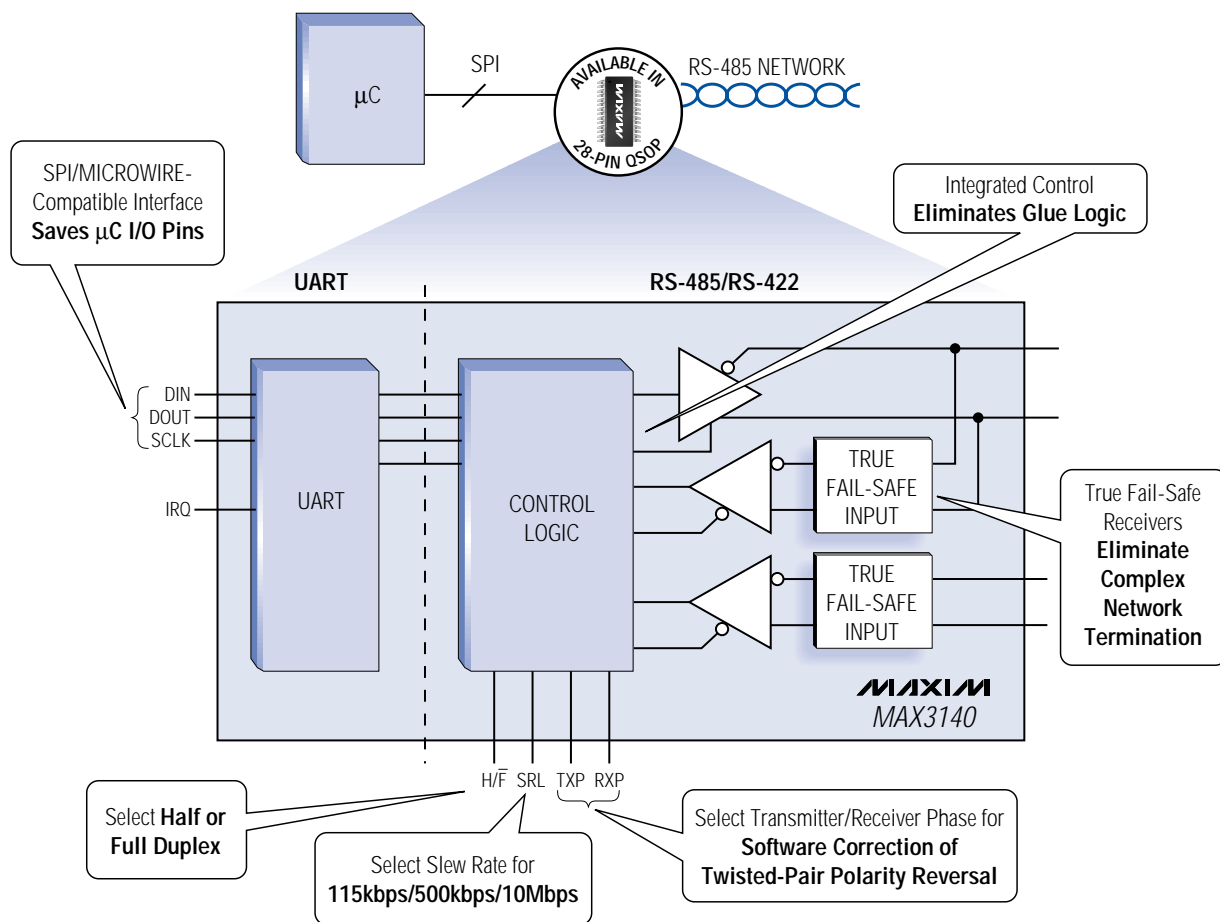
- Guaranteed Mouse Driveability
- Low-Power 50 μ A Standby Supply Current
- One Receiver per Serial Port Active in Standby Mode



World's Most Complete UART and RS-485 Transceiver Solution Available

Pin-Programmable Network Configuration with True Fail-Safe Operation

The MAX3140 is the world's most highly integrated and complete RS-485/RS-422 solution. It includes a full-featured UART, true fail-safe transceivers, and all required control logic in a single 28-pin QSOP package. The UART features an SPI™/QSPI™/MICROWIRE™-compatible serial interface that saves additional board space, as well as microcontroller (μC) I/O pins. The control logic makes the MAX3140 configurable for all RS-485/RS-422 networks by providing pin-programmable control of half- or full-duplex operation, data rate, slew rate, and transmitter and receiver phase (to correct for twisted-pair polarity reversal).



SPI and QSPI are trademarks of Motorola, Inc.
MICROWIRE is a trademark of National Semiconductor Corp.

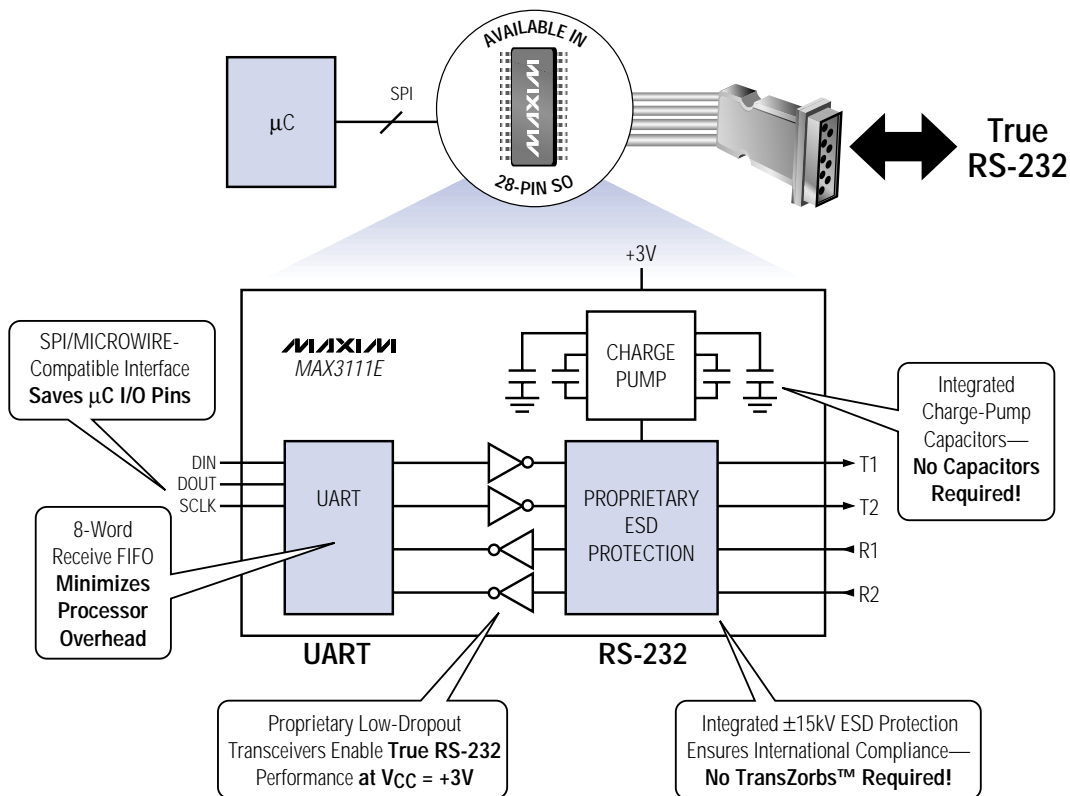


World's First Integrated Serial UART and RS-232 IC

Internal Charge-Pump Capacitors and $\pm 15\text{kV}$ ESD Protection in a 28-Pin SO

The MAX3110E/MAX3111E are the most integrated and flexible UART and RS-232 solutions in the industry. These devices combine a full-featured UART with an RS-232 transceiver and integrated charge-pump capacitors—all in a single 28-pin SO package for space- and power-constrained applications. Also featured is an SPI/QSPI/MICROWIRE-compatible serial interface to save additional board space and microcontroller (μC) I/O pins. A proprietary low-dropout output stage allows the 2-driver/2-receiver interface to deliver true RS-232 performance up to 230kbps at $V_{\text{CC}} = +3\text{V}$ for the MAX3111E or $V_{\text{CC}} = +4.5\text{V}$ for the MAX3110E, while consuming only $600\mu\text{A}$. The receivers remain active in a hardware/software-invoked shutdown, allowing external devices to be monitored while consuming only $10\mu\text{A}$.

The UART and RS-232 functions can be used together or independently since the two functions share only supply and ground connections. The MAX3110E operates from a single +5V supply, and the MAX3111E operates from a single +3.3V supply.



- $\pm 15\text{kV}$ per IEC 1000-4-2 Air-Gap Discharge
- $\pm 8\text{kV}$ per IEC 1000-4-2 Contact Discharge
- $\pm 15\text{kV}$ per the Human Body Model
- $\pm 4\text{kV}$ per IEC 1000-4-4 Electrical Fast Transient*

*Pending completion of testing.

TransZorb is a trademark of General Semiconductor Industries, Inc.





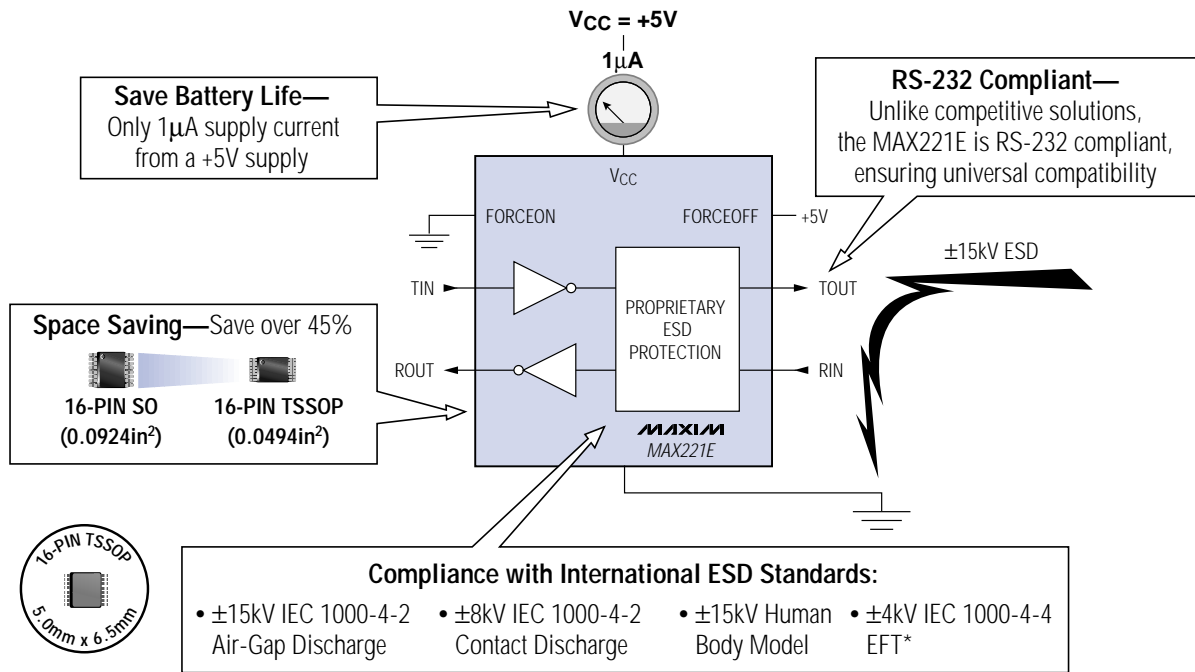
World's Smallest Low-Power, Single RS-232 Transceiver

1µA Supply Current, AutoShutdown, and ±15kV ESD Protection in a 16-Pin TSSOP

The MAX221E achieves a low 1µA supply current with Maxim's revolutionary AutoShutdown™ feature. AutoShutdown saves power without changes to the existing BIOS or operating system by entering low-power shutdown mode when the RS-232 cable is disconnected or when the transmitter of the connected peripheral is off. The MAX221E wakes up and drives the INVALID pin high when an active RS-232 cable is connected, signaling the host that a peripheral is connected to the communications port.

The MAX221E features enhanced integrated electrostatic discharge (ESD) protection. Both the transmitter output and the receiver input are protected to ±15kV using the IEC 1000-4-2 Air-Gap Discharge method, to ±8kV using the IEC 1000-4-2 Contact Discharge method, to ±15kV using the Human Body Model, and to ±4kV using the electrical fast transient (EFT)* method.

The MAX221E guarantees a 250kbps data rate in compliance with RS-232 specifications. Additionally, the 16-pin TSSOP package uses 50% less board space than a 16-pin SO.



Select the Ideal Single RS-232 Transceiver for Your Application

Part	No. of Tx/Rx	Supply Voltage (V)	Supply Current (µA)	Auto-Shutdown	ESD Protection (kV)				Pin-Package
					IEC 1000-4-2 Air-Gap Discharge	IEC 1000-4-2 Contact Discharge	Human Body Model	IEC 1000-4-4 EFT*	
MAX221E	1/1	+5	1	Yes	±15	±8	±15	±4	16-TSSOP
MAX221	1/1	+5	1	Yes	—	—	—	—	16-TSSOP

AutoShutdown is a trademark of Maxim Integrated Products.
*Pending completion of testing.



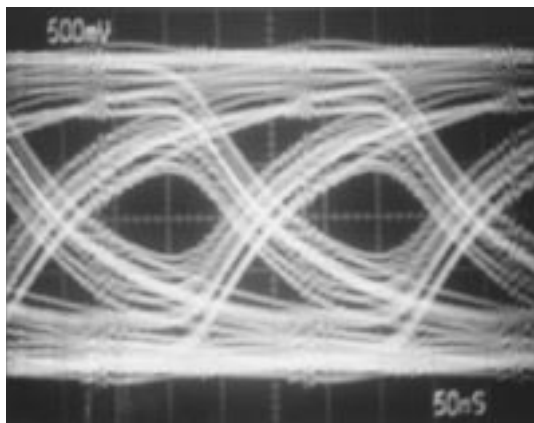
Increase Cable Length and Data Rate with World's Only Preemphasis RS-485/RS-422 ICs

Plug-In Upgrades to Industry-Standard Solutions

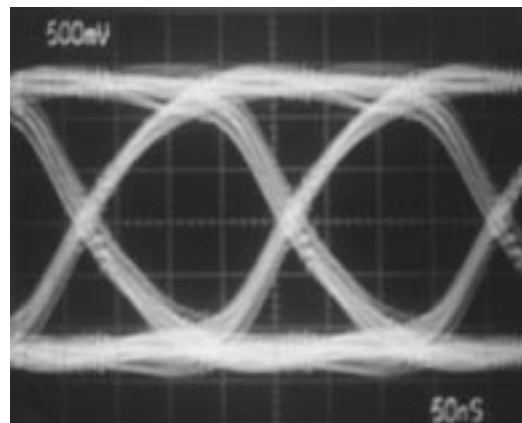
The MAX3291/MAX3292 high-speed RS-485/RS-422 transceivers are the first of their kind to feature integrated preemphasis circuitry, which increases the distance and data rate of reliable communication by minimizing intersymbol interference (ISI). ISI is pattern-dependent timing jitter caused by the effect of cable parasitics on varying bit patterns. This jitter sharply decreases data reliability by preventing the UART from synchronizing with the data stream.

The MAX3291 is optimized for 5Mbps to 10Mbps operation, while the MAX3292 can be optimized for data rates from 38.4kbps to 10Mbps with a single external resistor. The MAX3291 and MAX3292 are available in 14-pin SO packages and are pin compatible with the industry-standard MAX489, MAX491, and '75180.

- **Preemphasis More than Doubles the Distance or Data Rate of Reliable Communication**
- **Pin Compatible with Industry-Standard '75180, '489, '491, '1482, '3080, '3083, and '3086**
- **Data Rate**
 - **Optimized for 5Mbps to 10Mbps Operation (MAX3291)**
 - **Programmable up to 10Mbps (MAX3292)**
- **100nA Low-Current Shutdown Mode**
- **Allow up to 128 Transceivers on the Bus**



'75180 Transceiver (Without Preemphasis) Driving 1000ft of Cable at 5Mbps

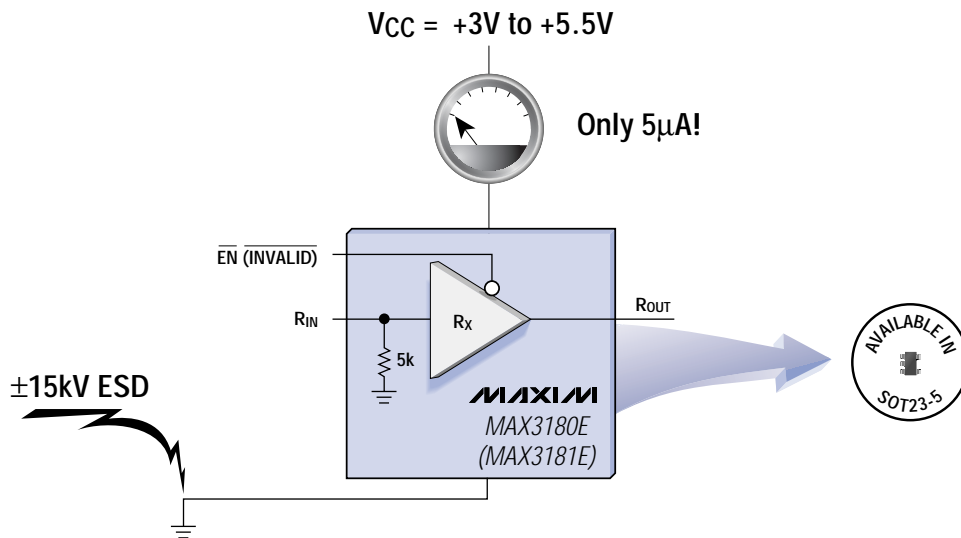


MAX3291/MAX3292 (With Preemphasis) Driving 1000ft of Cable at 5Mbps



Industry's First +3V to +5.5V, ±15kV ESD-Protected RS-232 Receivers in a SOT Package

Smallest RS-232 Receiver Uses Only 0.5µA Supply Current and
Receives Data up to 1.5Mbps



- **Designed for Space-Constrained Applications Requiring Minimal RS-232 Communications**
- **INVALID Output Indicates Valid RS-232 Signal at Receiver Inputs for Automatic Wake-Up**
- **Meets EIA/TIA-232 and V.28/V.24 Specifications Down to VCC = +3V**
- **Three-State TTL/CMOS Receiver Output (MAX3180/MAX3182)**
- **Noninverting RS-232 Outputs (MAX3182/MAX3183)**

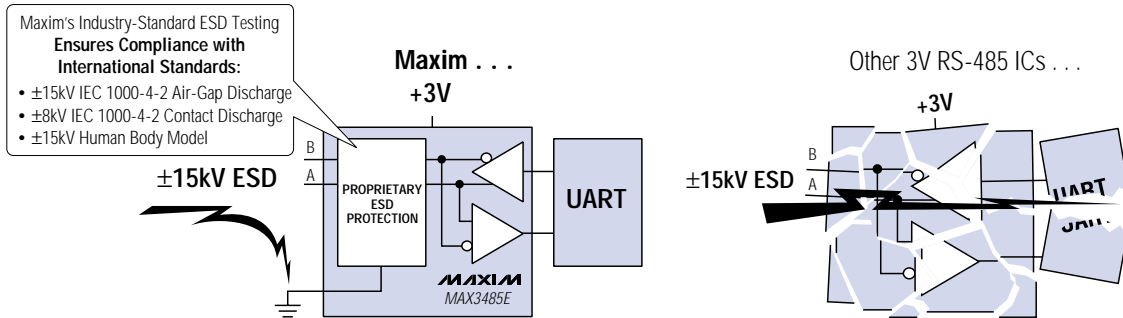
Select the Ideal, Low-Power RS-232 Receiver for Your Design

Part	ESD Protection (kV)	Pin-Package	Supply Current (µA)	$\overline{\text{EN}}$ Input	$\overline{\text{INVALID}}$ Output	Inverting ROUT	Noninverting ROUT
MAX3180E	±15	SOT23-5	0.5	✓	—	✓	—
MAX3180	Standard	SOT23-5	0.5	✓	—	✓	—
NEW MAX3181E	±15	SOT23-5	0.5	—	✓	✓	—
NEW MAX3181	Standard	SOT23-5	0.5	—	✓	✓	—
MAX3182E	±15	SOT23-5	0.5	✓	—	—	✓
MAX3182	Standard	SOT23-5	0.5	✓	—	—	✓
NEW MAX3183E	±15	SOT23-5	0.5	—	✓	—	✓
NEW MAX3183	Standard	SOT23-5	0.5	—	✓	—	✓



Use the First +3V RS-485 ICs with $\pm 15\text{kV}$ ESD Protection

Run at 12Mbps and Meet True RS-485 Specs—Guaranteed!



Select the Ideal $\pm 15\text{kV}$ ESD-Protected, +3V RS-485 IC for Your Design

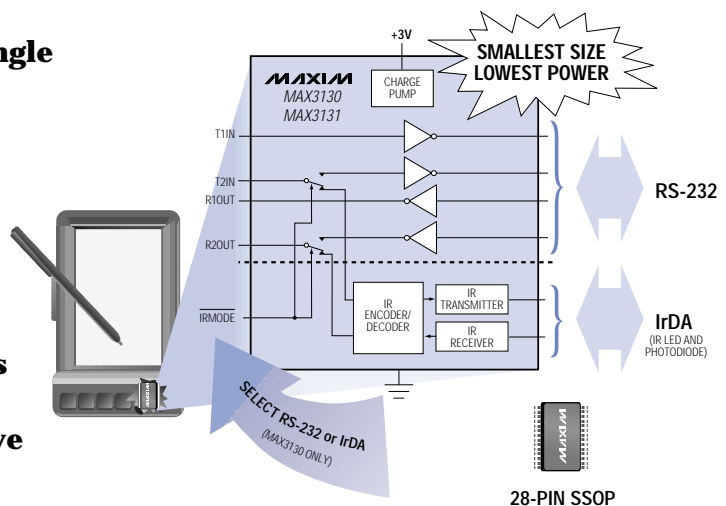
Part	Guaranteed Data Rate (Mbps)	Supply Voltage (V)	Half/Full Duplex	Slew-Rate Limited	Driver/Receiver Enable	Shutdown Current (nA)	ESD Protection			Industry-Standard Pinout
							Human Body Model (kV)	IEC 1000-4-2 Contact Discharge (kV)	IEC 1000-4-2 Air-Gap Discharge (kV)	
MAX3483E	0.25	+3.0 to +3.6	Half	Yes	Yes	2	± 15	± 8	± 15	75176
MAX3485E	12	+3.0 to +3.6	Half	No	Yes	2	± 15	± 8	± 15	75176
MAX3486E	2.5	+3.0 to +3.6	Half	Yes	Yes	2	± 15	± 8	± 15	75176
MAX3488E	0.25	+3.0 to +3.6	Full	Yes	No	—	± 15	± 8	± 15	75179
MAX3490E	12	+3.0 to +3.6	Full	No	No	—	± 15	± 8	± 15	75179
MAX3491E	12	+3.0 to +3.6	Full	No	Yes	2	± 15	± 8	± 15	75180

First Integrated IrDA/RS-232 Transceivers Save Space and Power

Meet IrDA and EIA/TIA-232 Specifications Down to $V_{CC} = 3\text{V}$

MAX3130/MAX3131:

- **Integrated RS-232 and IrDA in Single 28-Pin SSOP Package**
- **370 μA Supply Current**
- **IrDA 1.2 Compatible: 2.4kbps to 115.2kbps**
- **On-Board IR Encoder/Decoder Allows Use of Non-IrDA UARTs**
- **+3V to +5.5V Operation**
- **Meets EIA/TIA-232 Specifications Down to $V_{CC} = 3.0\text{V}$**
- **200mA, High-Current IR LED Drive**
- **1 μA Low-Power Shutdown with RS-232 Receivers Active**

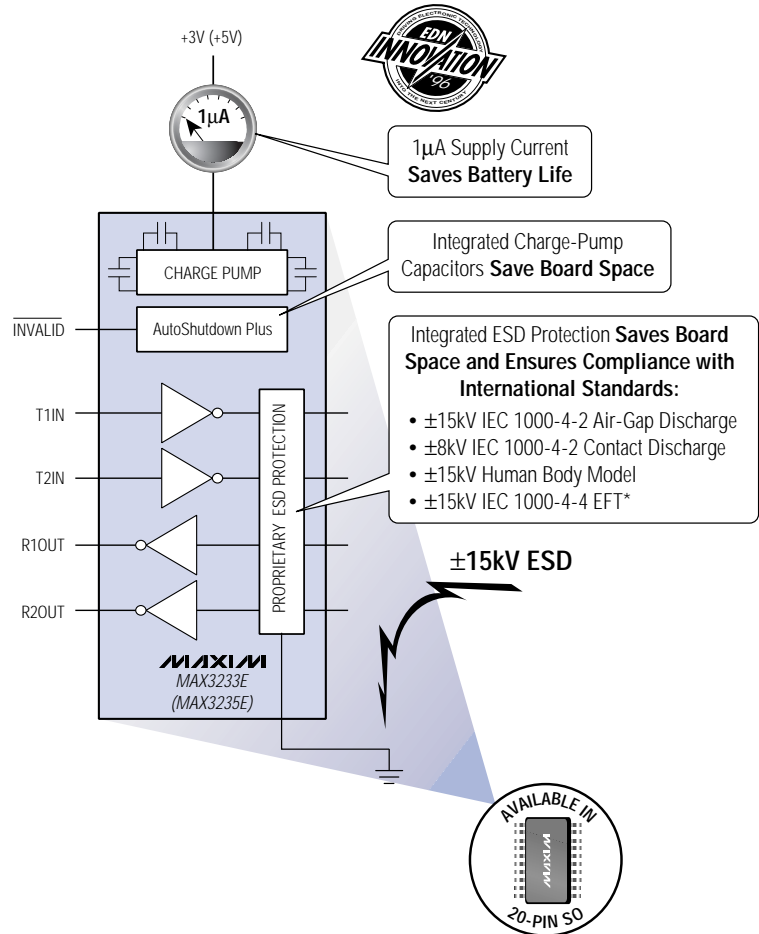


First +3V, ±15kV ESD-Protected RS-232 IC with Integrated Capacitors

**Reduce Board Space, Components, and Power—
Only 1µA Supply Current!**

The MAX3233E is the industry's first +3V, ±15kV ESD-protected RS-232 transceiver to eliminate the need for external charge-pump capacitors, thereby reducing board space and component count. The MAX3233E and MAX3235E also integrate Maxim's proprietary ESD protection to eliminate the need for external protection and ensure compliance with international industry standards: ±15kV per IEC 1000-4-2 Air-Gap Discharge, ±8kV per IEC 1000-4-2 Contact Discharge, ±15kV per the Human Body Model, and ±4kV per IEC 1000-4-4 Electrical Fast Transient (EFT)*.

Maxim's AutoShutdown Plus™ architecture (awarded *EDN's Innovation of the Year*) reduces supply current to only 1µA by sensing when the RS-232 port is disconnected or idle for more than 30 seconds. A proprietary voltage doubler and low-dropout output stage allow the MAX3233E to deliver true RS-232 performance down to VCC = +3V (down to VCC = +4.5V for the MAX3235E).



Select the Ideal ±15kV ESD-Protected, Complete RS-232 IC for Your Design

Part	Supply Voltage (V)	Supply Current (µA)	Data Rate (kbps)	External Capacitors	ESD/EFT Protection			
					Human Body Model (kV)	IEC 1000-4-2 Contact Discharge (kV)	IEC 1000-4-2 Air-Gap Discharge (kV)	IEC 1000-4-4 EFT* (kV)
MAX3233E	+3.0 to +3.6	1	250	None	±15	±8	±15	±4
MAX3235E	+4.5 to +5.5	1	250	None	±15	±8	±15	±4

*Pending completion of testing.
AutoShutdown Plus is a trademark of Maxim Integrated Products.



Isolated RS-485 in One Package for Under \$10!

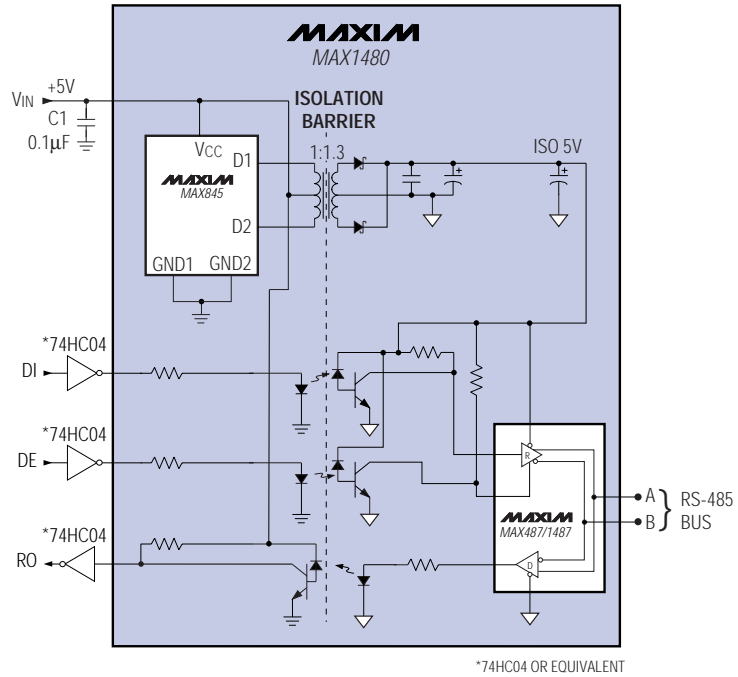
Hybrid Approach Keeps Cost Down and Improves Reliability

Many industrial systems require that the RS-485 interface be isolated from the rest of the system because of harsh industrial environments. Designing an isolated RS-485 interface requires up to 25 discrete components, which consumes extensive design time and PC board space, and raises the reliability issues inherent in a discrete solution.

In response to these issues, Maxim's engineers set the following design objectives:

- Achieve 1500V of isolation.
- Make the isolation transparent to the user.
- Keep the price under \$10.

Obviously, it would be next to impossible to achieve a price goal of \$10 with a design that uses 25 internal components. Therefore, Maxim's engineers focused on reducing component count without reducing functionality. The MAX1480A/B/C, MAX1490A/B, and MAX3480A/B have a small number of internal components, all prepackaged. Prepackaging components greatly simplifies assembly, improving both performance and reliability.



Select the Isolated RS-485 IC for Your Design

Part	Supply Voltage Range (V)	Data Rate (Mbps)	No. of RS-485 Tx/Rx	Driver Enable Time (µs)	Isolation Voltage (V)	Full/Half Duplex
MAX1480A	+4.5 to +5.5	2.5	1/1	0.2	1500	Half
MAX1480B	+4.5 to +5.5	0.25	1/1	35	1500	Half
MAX1480C	+4.5 to +5.5	0.25	1/1	1.5	1500	Half
MAX1490A	+4.5 to +5.5	2.5	1/1	—	1500	Full
MAX1490B	+4.5 to +5.5	0.25	1/1	—	1500	Full
MAX3480A	+3.0 to +3.6	2.5	1/1	0.3	1500	Half
MAX3480B	+3.0 to +3.6	0.25	1/1	50	1500	Half

Our Web Site at <http://www.maxim-ic.com> is the fastest, easiest way to get Maxim data sheets and free samples. Visit it today!



Lowest Power and Highest Speed +3V RS-232 Interface ICs Now Include $\pm 15\text{kV}$ ESD Protection

Use Only $1\mu\text{A}$ Supply Current and Achieve 1Mbps Operation with MegaBaud™ (continued on next page)

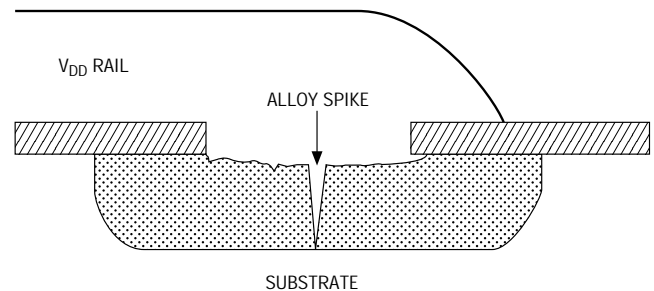
Whenever someone replaces a cable or even touches an I/O port, ESD can render the port useless by destroying the interface ICs connected to it. These failures result in costly warranty repairs and reduce the perceived quality of a product.

To protect I/O ports from ESD damage, engineers have traditionally had only one choice: use costly external protection devices, such as TransZorbs, at a rate of up to 30¢ per line. Recognizing the need for a cost-effective ESD-protection method and anticipating the minimum ESD standard soon to be required by the European Community, Maxim's design engineers have developed an ESD structure that meets stringent criteria and eliminates the need for TransZorbs.

Maxim's "E" series of RS-232 products meets the following criteria:

- ESD structures are transparent during normal operation.
- Devices comply with all relevant ESD test standards:
 - $\pm 15\text{kV}$ ESD using the Human Body Model
 - $\pm 8\text{kV}$ ESD using IEC 1000-4-2 Contact Discharge
 - $\pm 15\text{kV}$ ESD using IEC 1000-4-2 Air-Gap Discharge
 - $\pm 4\text{kV}$ using IEC 1000-4-4 Electrical Fast Transient/Burst*
- No latchup occurs during an ESD event.

Typical IC Failure Due to ESD



Select the Latchup-Free, $\pm 15\text{kV}$ ESD-Protected +3V RS-232 IC for Your Design (continued on next page)

Part	Supply Voltage Range (V)	No. of Tx/Rx	Supply Current (μA)	AutoShutdown Plus	AutoShutdown
MAX3241E	+3.0 to +5.5	3/5	300	—	—
MAX3243E	+3.0 to +5.5	3/5	1	—	Yes
MAX3244E	+3.0 to +5.5	3/5	1	Yes	—
MAX3245E	+3.0 to +5.5	3/5	1	Yes	—
MAX3232E	+3.0 to +5.5	2/2	300	—	—
MAX3222E	+3.0 to +5.5	2/2	300	—	—
MAX3223E	+3.0 to +5.5	2/2	1	—	Yes
MAX3224E	+3.0 to +5.5	2/2	1	Yes	—
MAX3225E	+3.0 to +5.5	2/2	1	Yes	—
MAX3221E	+3.0 to +5.5	1/1	1	—	Yes
MAX3226E	+3.0 to +5.5	1/1	1	Yes	—
MAX3227E	+3.0 to +5.5	1/1	1	Yes	—
MAX3386E	+3.0 to +5.5	3/3	1	—	—

*Pending completion of testing.

Lowest Power and Highest Speed +3V RS-232 Interface ICs Now Include ±15kV ESD Protection

Use Only 1µA Supply Current and Achieve 1Mbps Operation with MegaBaud™ (continued from previous page)

Why Specify Four Different ESD Test Methods?

In the real world, ESD may not resemble a laboratory-produced waveform. Therefore, Maxim's engineers designed a structure flexible enough to protect the IC from damage, regardless of the waveform. To ensure that these structures meet requirements, they are rigorously tested according to the following procedure:

- 1) Starting at ±200V, each device is zapped 10 times with each polarity of voltage.
- 2) After each zap, supply current is checked to ensure that the device does not latch up. Additionally, the transmitters and receivers are checked to ensure functionality.
- 3) The above procedure is repeated in 500V increments until the device fails or the limit of the ESD tester is reached.
- 4) The above is repeated using the Human Body Model, IEC 1000-4-2 Contact Discharge, IEC 1000-4-2 Air-Gap Discharge, and IEC 1000-4-4 Electrical Fast Transient (EFT)/Burst*.
- 5) Testing is repeated in normal operation, in shutdown mode, and with power off.

What Is the Difference Between IEC 1000-4-2 and the Human Body Model?

The main difference between the two ESD standards is the peak current. A device zapped using IEC 1000-4-2 must absorb over five times more peak current for the same voltage, compared to the Human Body Model (see adjacent table).

Voltage (kV)	Peak Current	
	IEC 1000-4-2 (A)	Human Body Model (A)
2	7.50	1.33
4	15.00	2.67
6	22.50	4.00
8	30.00	5.33
10	37.50	6.67
15	56.25	10.00

What Is IEC 1000-4-4?

IEC 1000-4-4 is designed to simulate the result of arcing between switches and relays. Maxim's devices provide ±4kV of protection—double the ±2kV specification.

MegaBaud is a trademark of Maxim Integrated Products.

Select the Latchup-Free, ±15kV ESD-Protected +3V RS-232 IC for Your Design (continued from previous page)

ESD/EFT Protection

Human Body Model (kV)	IEC 1000-4-2 Contact Discharge (kV)	IEC 1000-4-2 Air-Gap Discharge (kV)	IEC 1000-4-4 EFT/Burst* (kV)	External Capacitors (µF)	Guaranteed Data Rate (bps)
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	1M
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	1M
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	250k
±15	±8	±15	±4	4 x 0.1	1M
±15	±8	±15	±4	4 x 0.1	250k

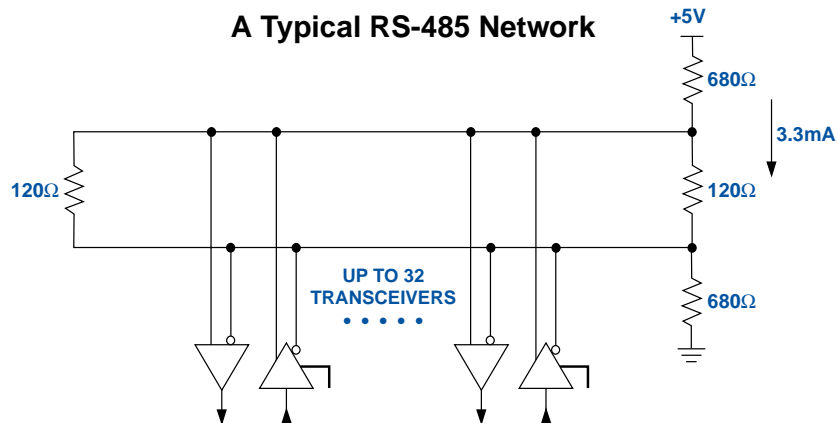


Next-Generation RS-485 Family Delivers Enhanced Features (continued on next page)

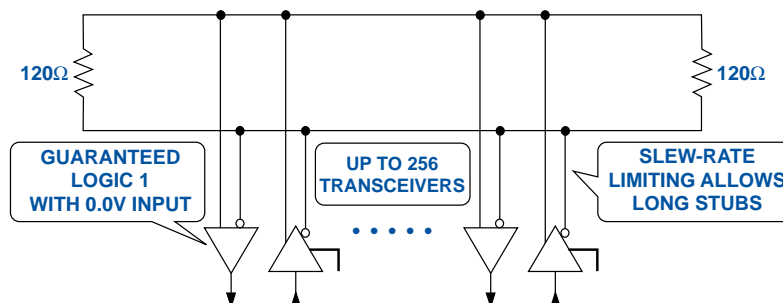
The MAX3080–MAX3089 RS-485 transceivers combine many of the most valuable features and innovations introduced by Maxim: true fail-safe operation, software-selectable half/full-duplex operation, 1/8-unit load (256 transceivers on the bus), three levels of slew-rate limiting, and 10Mbps data rate. These devices are the first RS-485 transceivers to meet the RS-485 specifications while providing a true fail-safe output.

When an RS-485 bus is shorted, open circuited, or idle, the differential bus voltage will go to 0.0V. Unfortunately, this is in the middle of the specified RS-485 receiver threshold range of $\pm 200\text{mV}$, so the receiver output state is indeterminate under both fault conditions and when no driver is actively driving the bus. Early attempts by transceiver manufacturers to address this problem employed internal pull-up resistors at the receiver inputs, but this approach was only effective for open-circuit detection. More recent attempts resulted in devices with a receiver threshold specification of 0.0V to -0.5V. This caused an indeterminate output if the threshold was 0.0V, and violated the RS-485 specification since the minimum threshold was lower than -200mV.

Maxim's MAX3080 family solves both of those problems by offering a precise receiver threshold range of -50mV to -200mV—thereby complying fully with RS-485 and also guaranteeing that a 0.0V input will result in a logic 1 at the receiver.



Maxim's Next-Generation RS-485 Network Solution



Next-Generation RS-485 Family Delivers Enhanced Features (continued from previous page)

The MAX3080 family comes with a host of other features. To minimize EMI, as well as reflections caused by unterminated stubs, the MAX3080/MAX3081/MAX3082 are heavily slew-rate limited and are optimized for applications at 115kbps and slower. Other devices are optimized for either <500kbps applications or for full 10Mbps operation. The 14-pin MAX3089 uses pins that would normally be no-connects to add logic-level selection of 115kbps/500kbps/10Mbps operation.

In each speed group there is an 8-pin half-duplex device, an 8-pin full-duplex device with no controls, and a 14-pin device with transmitter and receiver enables. The MAX3089 supports both full-duplex and half-duplex operation through the addition of a second receiver, and a control pin to select which receiver is used. In addition, the MAX3089 has control pins that can correct for incorrect field wiring by performing a phase reversal of the RS-485/RS-422 bus pins.

All ICs in the MAX3080 family have a 1/8-unit-load receiver, allowing up to 256 transceivers on a single bus—that's eight times as many as a standard RS-485 transceiver. The MAX3080 family operates from +4.5V to +5.5V while using only 600µA of supply current—a three-times improvement over the closest competing 10Mbps device.

- **Fail-Safe Output**
- **256 Transceivers per Bus**
- **3 Levels of Slew-Rate Limiting**
- **Up to 10Mbps Operation**
- **Half/Full-Duplex Operation**
- **600µA Supply Current**

Select the Ideal Fail-Safe RS-485 Product for Your Design

Part	Half/Full Duplex	Data Rate (Mbps)	Slew-Rate Limited	Low-Power Shutdown	Receiver/Driver Enable	Quiescent Current (µA)	Pin Count	No. of Transceivers On Bus	Industry-Standard Pinout
MAX3080	Full	0.115	Yes	Yes	Yes	600	14	256	75180
MAX3081	Full	0.115	Yes	No	No	600	8	256	75179
MAX3082	Half	0.115	Yes	Yes	Yes	600	8	256	75176
MAX3083	Full	0.5	Yes	Yes	Yes	600	14	256	75180
MAX3084	Full	0.5	Yes	No	No	600	8	256	75179
MAX3085	Half	0.5	Yes	Yes	Yes	600	8	256	75176
MAX3086	Full	10	No	Yes	Yes	600	14	256	75180
MAX3087	Full	10	No	No	No	600	8	256	75179
MAX3088	Half	10	No	Yes	Yes	600	8	256	75176
MAX3089	Selectable	Selectable	Selectable	Yes	Yes	600	14	256	75180*

*Pin compatible with 75180, with additional features implemented using pins 1, 6, 8, and 13.

