



3.0V to 5.5V, Low-Power, up to 1Mbps, True RS-232 Transceivers Using Four 0.1μF External Capacitors

General Description

The MAX3222/MAX3232/MAX3237/MAX3241 transceivers have a proprietary low-dropout transmitter output stage enabling true RS-232 performance from a 3.0V to 5.5V supply with a dual charge pump. The devices require only four small 0.1μF external charge-pump capacitors. The MAX3222, MAX3232, and MAX3241 are guaranteed to run at data rates of 120kbps while maintaining RS-232 output levels. The MAX3237 is guaranteed to run at data rates of 250kbps in the normal operating mode and 1Mbps in the MegaBaud™ operating mode, while maintaining RS-232 output levels.

The MAX3222/MAX3232 have 2 receivers and 2 drivers. The MAX3222 features a 1μA shutdown mode that reduces power consumption and extends battery life in portable systems. Its receivers remain active in shutdown mode, allowing external devices such as modems to be monitored using only 1μA supply current. The MAX3222 and MAX3232 are pin, package, and functionally compatible with the industry-standard MAX242 and MAX232, respectively.

The MAX3241 is a complete serial port (3 drivers/5 receivers) designed for notebook and subnotebook computers. The MAX3237 (5 drivers/3 receivers) is ideal for fast modem applications. Both these devices feature a shutdown mode in which all receivers can remain active while using only 1μA supply current. Receivers R1 (MAX3237/MAX3241) and R2 (MAX3241) have extra outputs in addition to their standard outputs. These extra outputs are always active, allowing external devices such as a modem to be monitored without forward biasing the protection diodes in circuitry that may have VCC completely removed.

The MAX3222, MAX3237, and MAX3241 are available in space-saving TSSOP and SSOP packages.

Applications

Notebook, Subnotebook, and Palmtop Computers
High-Speed Modems
Battery-Powered Equipment
Hand-Held Equipment
Peripherals
Printers

Typical Operating Circuits appear at end of data sheet.

MegaBaud and UCSP are trademarks of Maxim Integrated Products, Inc.

*Covered by U.S. Patent numbers 4,636,930; 4,679,134; 4,777,577; 4,797,899; 4,809,152; 4,897,774; 4,999,761; and other patents pending.



Next Generation Device Features

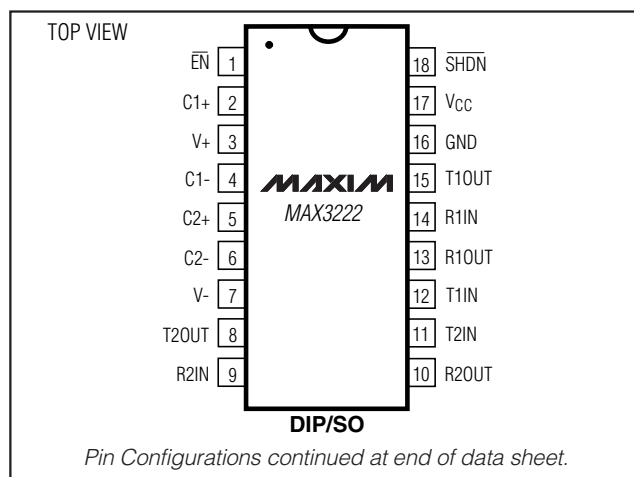
- ◆ **For Smaller Packaging:**
MAX3228E/MAX3229E: +2.5V to +5.5V RS-232 Transceivers in UCSP™
- ◆ **For Integrated ESD Protection:**
MAX3222E/MAX3232E/MAX3237E/MAX3241E*/MAX3246E: ±15kV ESD-Protected, Down to 10nA, 3.0V to 5.5V, Up to 1Mbps, True RS-232 Transceivers
- ◆ **For Low-Voltage or Data Cable Applications:**
MAX3380E/MAX3381E: +2.35V to +5.5V, 1μA, 2 Tx/2 Rx RS-232 Transceivers with ±15kV ESD-Protected I/O and Logic Pins

Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX3222CUP	0°C to +70°C	20 TSSOP
MAX3222CAP	0°C to +70°C	20 SSOP
MAX3222CWN	0°C to +70°C	18 SO
MAX3222CPN	0°C to +70°C	18 Plastic DIP

Ordering Information continued at end of data sheet.

Pin Configurations



MAX3222/MAX3232/MAX3237/MAX3241 *

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Ordering Information (continued)

PART	TEMP RANGE	PIN-PACKAGE
MAX3222EUP	-40°C to +85°C	20 TSSOP
MAX3222EAP	-40°C to +85°C	20 SSOP
MAX3222EWN	-40°C to +85°C	18 SO
MAX3222EPN	-40°C to +85°C	18 Plastic DIP
MAX3222C/D	0°C to +70°C	Dice*
MAX3232CUE	0°C to +70°C	16 TSSOP
MAX3232CSE	0°C to +70°C	16 Narrow SO
MAX3232CWE	0°C to +70°C	16 Wide SO
MAX3232CPE	0°C to +70°C	16 Plastic DIP
MAX3232EUE	-40°C to +85°C	16 TSSOP
MAX3232ESE	-40°C to +85°C	16 Narrow SO

PART	TEMP RANGE	PIN-PACKAGE
MAX3232EWE	-40°C to +85°C	16 Wide SO
MAX3232EPE	-40°C to +85°C	16 Plastic DIP
MAX3237CAI	0°C to +70°C	28 SSOP
MAX3237EAI	-40°C to +85°C	28 SSOP
MAX3241CUI	0°C to +70°C	28 TSSOP
MAX3241CAI	0°C to +70°C	28 SSOP
MAX3241CWI	0°C to +70°C	28 SO
MAX3241EUI	-40°C to +85°C	28 TSSOP
MAX3241EAI	-40°C to +85°C	28 SSOP
MAX3241EWI	-40°C to +85°C	28 SO

* Dice are tested at $T_A = +25^\circ\text{C}$, DC parameters only.

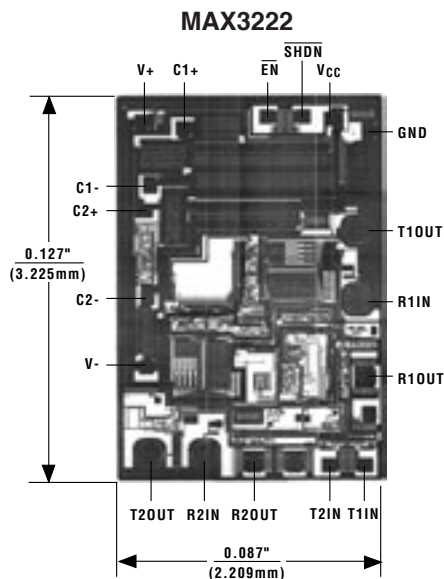
3V-Powered EIA/TIA-232 and EIA/TIA-562 Transceivers from Maxim

PART	POWER-SUPPLY VOLTAGE (V)	No. OF TRANSMITTERS/RECEIVERS	No. OF RECEIVERS ACTIVE IN SHUTDOWN	GUAR-ANTEED DATA RATE (kbps)	EIA/TIA-232 OR 562	FEATURES
MAX212	3.0 to 3.6	3/5	5	120	232	Drives mice
MAX218	1.8 to 4.25	2/2	2	120	232	Operates directly from batteries without a voltage regulator
MAX562	2.7 to 5.25	3/5	5	230	562	Wide supply range
MAX563	3.0 to 3.6	2/2	2	230	562	0.1µF capacitors
MAX3212	2.7 to 3.6	3/5	5	235	232	AutoShutdown, complementary receiver, drives mice, transient detection
MAX3222	3.0 to 5.5	2/2	2	120	232	0.1µF capacitors
MAX3223	3.0 to 5.5	2/2	2	120	232	0.1µF capacitors, AutoShutdown
MAX3232	3.0 to 5.5	2/2	N/A	120	232	0.1µF capacitors
MAX3237	3.0 to 5.5	5/3	3	250/1000	232	0.1µF capacitors, 1 complementary receiver, MegaBaud operation
MAX3241	3.0 to 5.5	3/5	5	120	232	0.1µF capacitors, 2 complementary receivers, drives mice
MAX3243	3.0 to 5.5	3/5	1	120	232	0.1µF capacitors, AutoShutdown, complementary receiver, drives mice

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Chip Topography

Chip Information

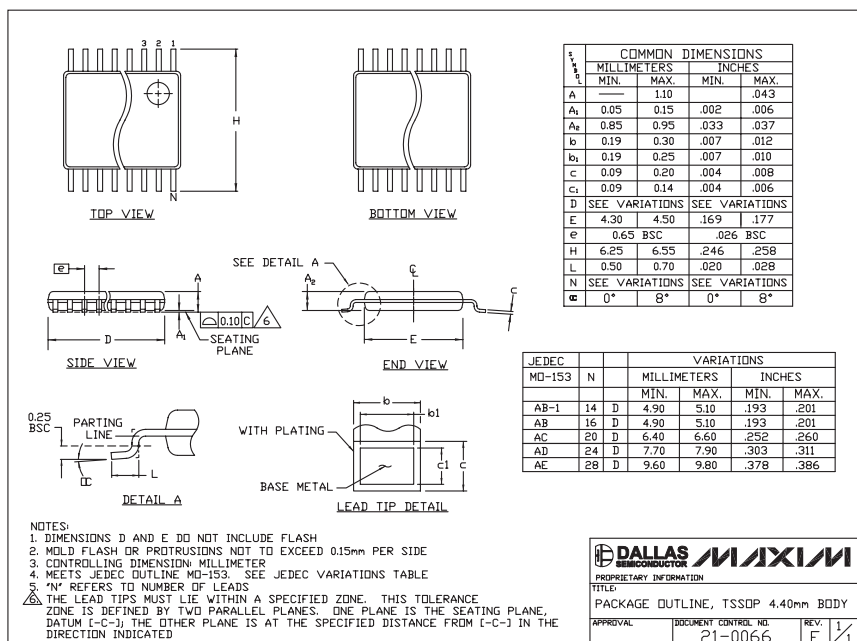


PART	TRANSISTOR COUNT
MAX3222	339
MAX3232	339
MAX3237	1212
MAX3241	894

TRANSISTOR COUNT: 339
SUBSTRATE CONNECTED TO GND

Package Information

(The package drawing(s) in this data sheet may not reflect the most current specifications. For the latest package outline information, go to www.maxim-ic.com/packages.)



TSSOP 4.40mm BSC

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16 Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600