



电子元器件系列 (中国.厦门)

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Serial Interface

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SP200/204/205/206/207/208/211/213

+5V High-Speed RS-232 Transceivers with 0.1µF Capacitors

features

- 0.1µF External Charge Pump Capacitors
- 120kbps Data Rate
- Standard SOIC and SSOP Packages
- Multiple Drivers and Receivers
- Single 5V Supply Operation
- 1µA Shutdown Mode
- WakeUp Feature in Shutdown Mode
- Tri-State Receiver Outputs
- Meets All RS-232 and V.28 Specifications
- Improved Driver Output Capacity for Mouse Applications
- ±10kV ESD Protection*

description

The SP200 series are multi-channel RS-232 line transceivers in a variety of configurations to fit most communication needs. All models in this series feature low-power CMOS construction and Sipex patented (5,306,954) on-board charge pump circuitry to generate the ±10V RS-232 voltage levels, using 0.1µF charge pump capacitors to save board space and reduce circuit cost. The SP200, SP205, SP206, SP207B, SP211 and SP213 models feature a low power shutdown mode, which reduces power supply drain to 1µA. A WakeUp function keeps the receivers active in the shutdown mode.

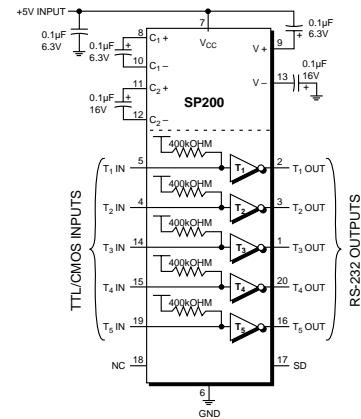
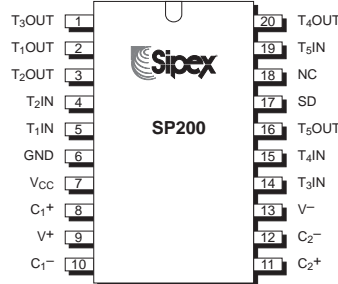
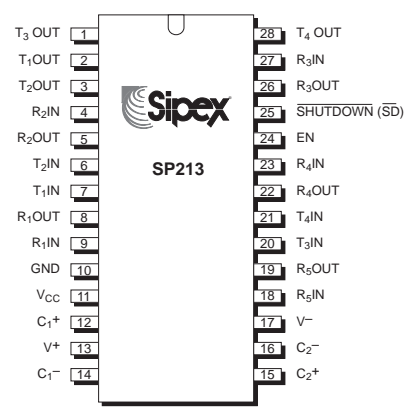
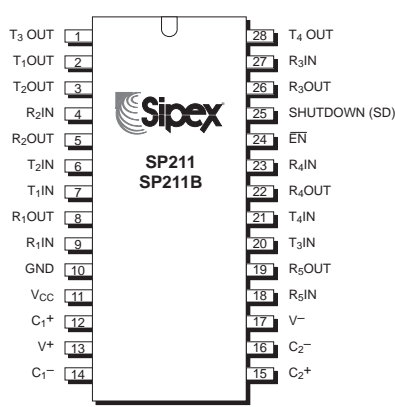
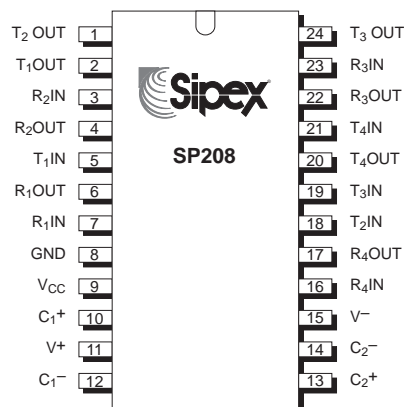
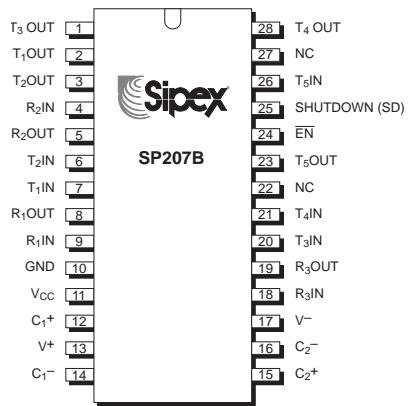
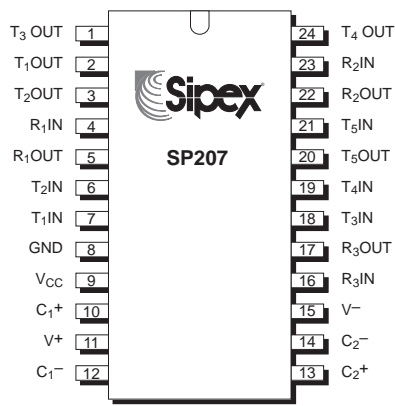
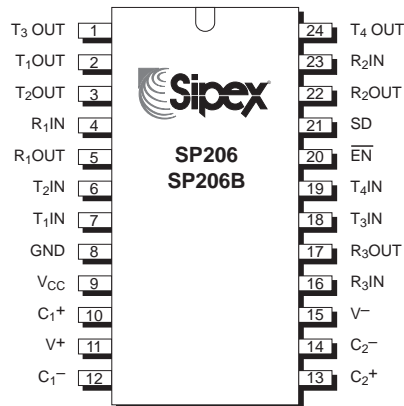
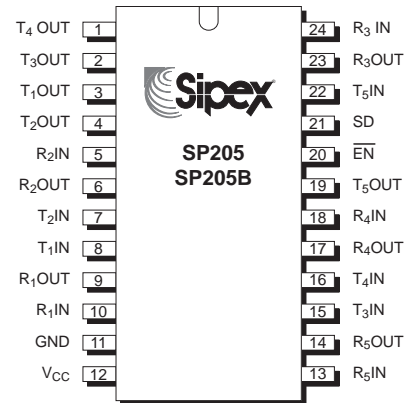
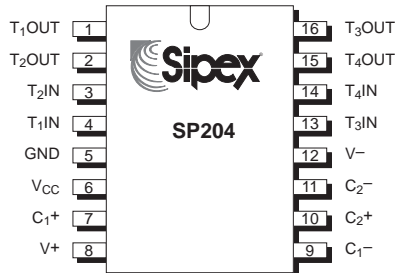
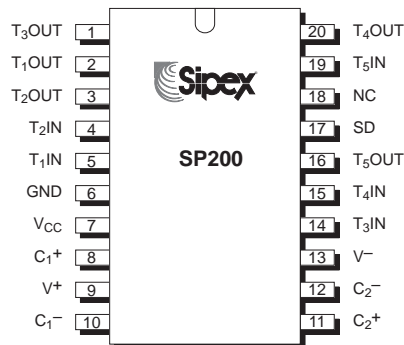


table 1. part selection table *All driver outputs and receiver inputs characterized per MIL-STD-883 Method 3015

Part No.	RS-232 Drivers	RS-232 Receivers	Receivers Active in Shutdown	External 0.1µF Capacitors	Shutdown	WakeUp	TTL Tri-State
SP200	5	0	0	4	Yes	No	No
SP204	4	0	0	4	No	No	No
SP205	5	5	0	None	Yes	No	Yes
SP205B	5	5	5	None	Yes	Yes	Yes
SP206	4	3	0	4	Yes	No	Yes
SP206B	4	3	3	4	Yes	Yes	Yes
SP207	5	3	0	4	No	No	No
SP207B	5	3	3	4	Yes	Yes	Yes
SP208	4	4	0	4	No	No	No
SP211	4	5	0	4	Yes	No	Yes
SP211B	4	5	5	4	Yes	Yes	Yes
SP213	4	5	2	4	Yes	Yes	Yes

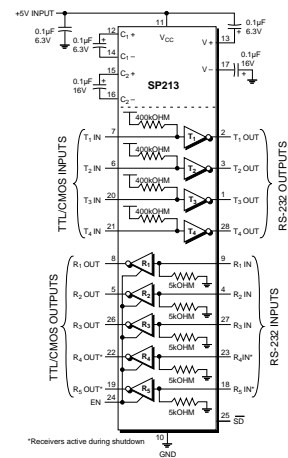
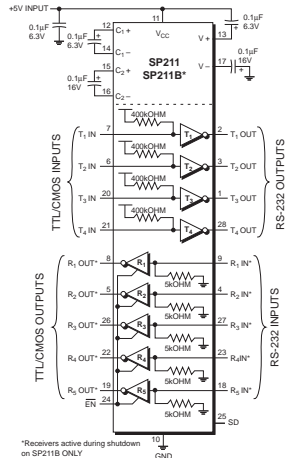
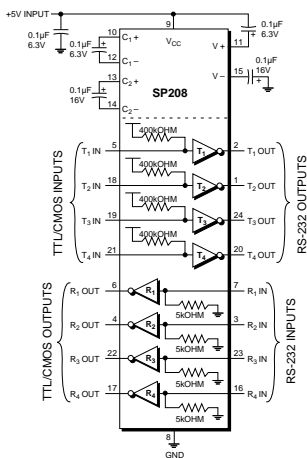
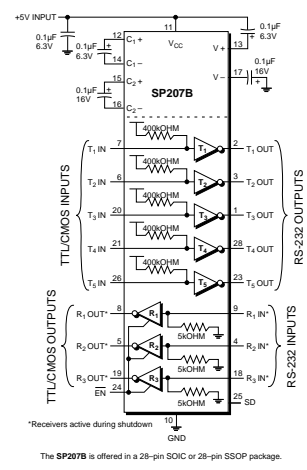
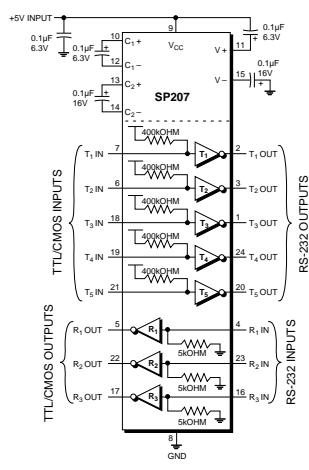
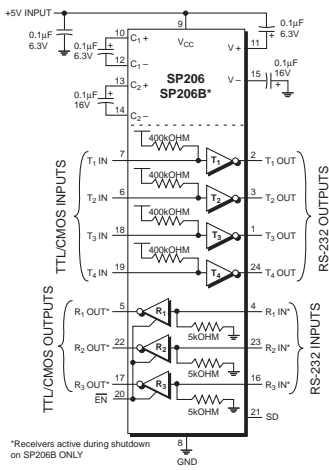
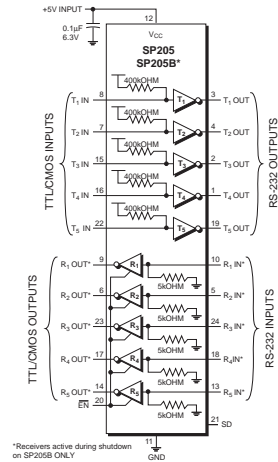
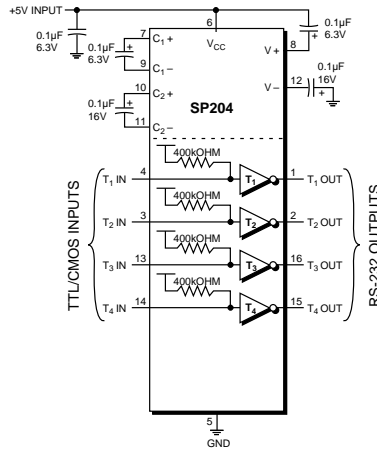
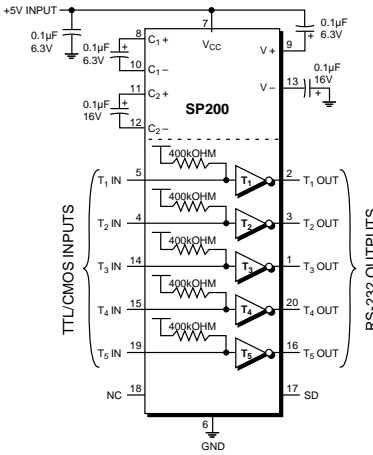
SP200/204/205/206/207/208/211/213

pin configurations



SP200/204/205/206/207/208/211/213

typical application circuits



SP200/204/205/206/207/208/211/213

ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP200CP SP200CT	SP200EP SP200ET	20-pin Plastic DIP 20-pin SOIC
SP204CP SP204CT	SP204EP SP204ET	16-pin Plastic DIP 16-pin SOIC
SP205BCP SP205CP	SP205BEP SP205EP	24-pin Plastic Double-Width DIP 24-pin Plastic Double-Width DIP
SP206BCA SP206BCP SP206BCT SP206CA SP206CP SP206CT	SP206BEA SP206BEP SP206BET SP206EA SP206EP SP206ET	24-pin SSOP 24-pin Plastic DIP 24-pin SOIC 24-pin SSOP 24-pin Plastic DIP 24-pin SOIC
SP207BCA SP207BCT SP207CA SP207CP SP207CT	SP207BEA SP207BET SP207EA SP207EP SP207ET	28-pin SSOP 28-pin SOIC 24-pin SSOP 24-pin Plastic DIP 24-pin SOIC
SP208CA SP208CP SP208CT	SP208EA SP208EP SP208ET	24-pin SSOP 24-pin Plastic DIP 24-pin SOIC
SP211BCA SP211BCT SP211CA SP211CT	SP211BEA SP211BET SP211EA SP211ET	28-pin SSOP 28-pin SOIC 28-pin SSOP 28-pin SOIC
SP213CA SP213CT	SP213EA SP213ET	28-pin SSOP 28-pin SOIC

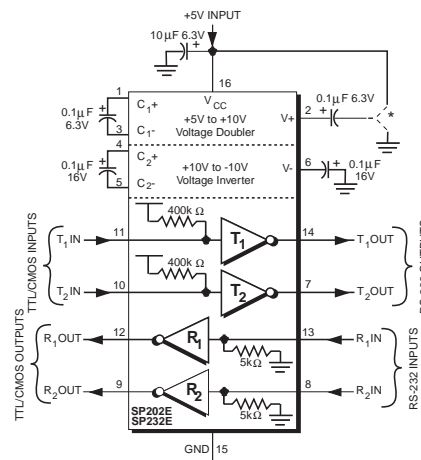
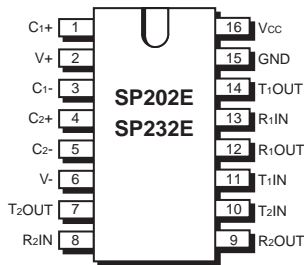
features

- Operates from Single +5V Power Supply
- Meets All RS-232D and ITU V.28 Specifications
- Operates with 0.1μF to 10μF Capacitors
- High Data Rate – 120kbps Under Load
- Low Power Shutdown $\leq 1\mu\text{A}$ (Typical)
- 3-State TTL/CMOS Receiver Outputs
- Low Power CMOS – 3mA Operation
- Improved ESD Specifications:
 - $\pm 15\text{kV}$ Human Body Model
 - $\pm 15\text{kV}$ IEC1000-4-2 Air Discharge
 - $\pm 8\text{kV}$ IEC1000-4-2 Contact Discharge

description

The SP202E/232E/233E/310E/312E devices are a family of line driver and receiver pairs that meet the specifications of RS-232 and V.28 serial protocols with enhanced ESD performance. The ESD tolerance has been improved on these devices to over $\pm 15\text{kV}$ for both Human Body Model and IEC1000-4-2 Air Discharge Method. These devices are pin-to-pin compatible with Sipex's SP232A/233A/310A/312A devices as well as popular industry standards. As with the initial versions, the SP202E/232E/233E/310E/312E devices feature at least 120kbps data rate under load, 0.1μF charge pump capacitors, and overall ruggedness for commercial applications. This family also features Sipex's BiCMOS design allowing low power operation without sacrificing performance. The series is available in plastic and ceramic DIP and SOIC packages operating over the commercial, industrial and military temperature ranges.

typical circuit using the SP202E or SP232E



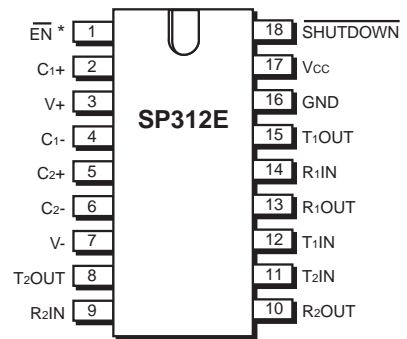
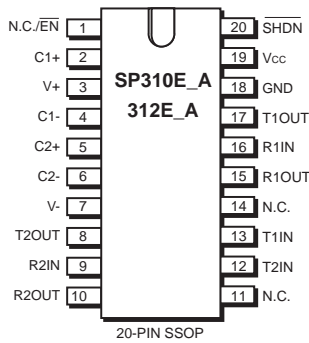
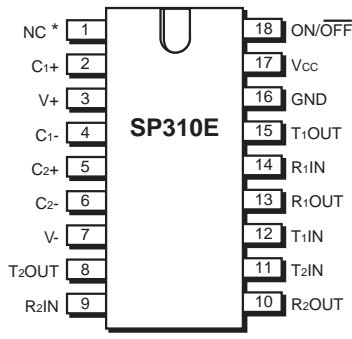
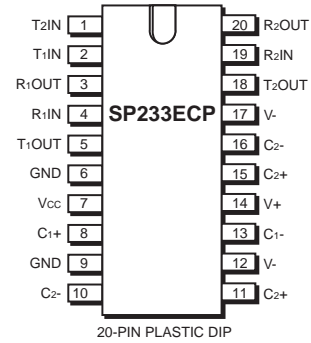
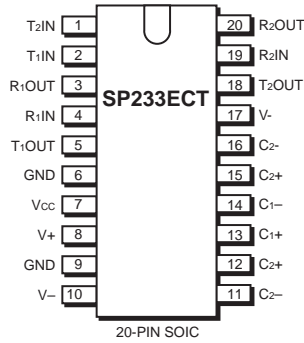
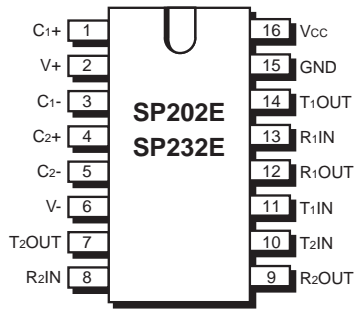
*The negative terminal of the V+ storage capacitor can be tied to either V_{CC} or GND. Connecting the capacitor to V_{CC} (+5V) is recommended.

table 1. part selection table

Part No.	RS-232 Drivers	RS-232 Receivers	Receivers Active in Shutdown	External 0.1μF Capacitors	Shutdown	WakeUp	TTL Tri-State
SP202E	2	2	0	4	No	No	No
SP232E	2	2	0	4	No	No	No
SP233E	2	2	0	0	No	No	No
SP310E	2	2	0	4	Yes	No	Yes
SP312E	2	2	2	4	Yes	Yes	Yes

SP202E/232E/233E/310E/312E

pin configuration



* NC for SP310E_A, EN for SP312E_A

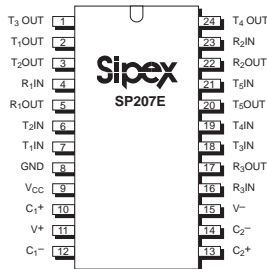
ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP202ECN SP202ECP SP202ECT	SP202EEN SP202EEP SP202EET	16-pin N-SOIC 16-pin Plastic DIP 16-pin SOIC
SP232ECN SP232ECP SP232ECT	SP232EEN SP232EEP SP232EET	16-pin N-SOIC 16-pin Plastic DIP 16-pin SOIC
SP233ECP SP233ECT	SP233EEP SP233EET	20-pin Plastic DIP 20-pin SOIC
SP310ECA SP310ECP SP310ECT	SP310EEA SP310EEP SP310EET	20-pin SSOP 18-pin Plastic DIP 18-pin SOIC
SP312ECA SP312ECP SP312ECT	SP312EEA SP312EEP SP312EET	20-pin SSOP 18-pin Plastic DIP 18-pin SOIC

+5V High Performance RS232 Transceivers

features

- Single +5V Supply Operation
- 0.1µF External Charge Pump Capacitors
- Typical 230kbps Transmission Rates
- Standard SOIC and SSOP Packages
- Lower Supply Current than Competition (typical 3mA)
- 1µA Shutdown Mode
- WakeUp Feature in Shutdown Mode
- Tri-State Receiver Outputs
- Meets All EIA-232 and ITU V.28 Specifications
- Improved ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge



description

The SP200E series are enhanced multi-channel RS-232 line transceivers with improved electrical performance. The SP200E family is pin-to-pin compatible with our previous SP200 family as well as popular industry standards. As with the original SP200 family, all models in this series feature low-power CMOS construction and Sipex-patented (5,306,954) on-board charge pump circuitry to generate the ±10V RS-232 voltage levels, using 0.1µF charge pump capacitors to save board space and reduce circuit cost. The SP211E and SP213E models feature a low-power shutdown mode, which reduces power supply drain to 1µA. Enhancements include lower power supply current at 3mA typical (no load) and superior ESD performance. The ESD tolerance has been improved on this family to over ±15kV for both Human Body Model and IEC1000-4-2 Air Discharge test methods.

typical application circuit

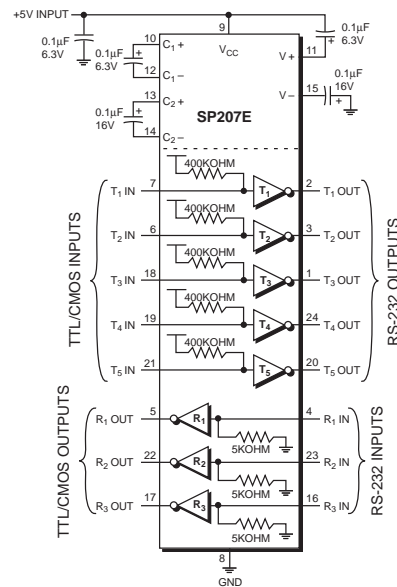
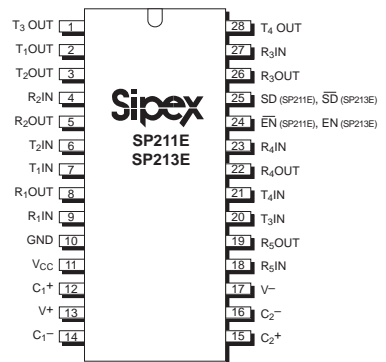
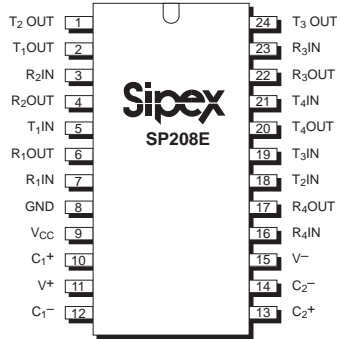
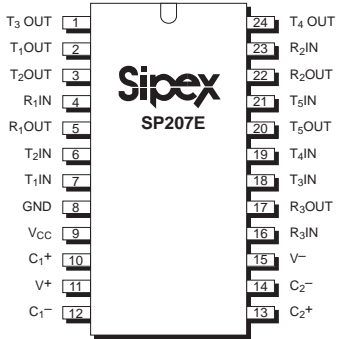


table 1. part selection table

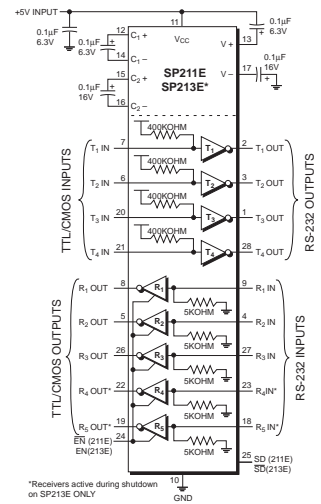
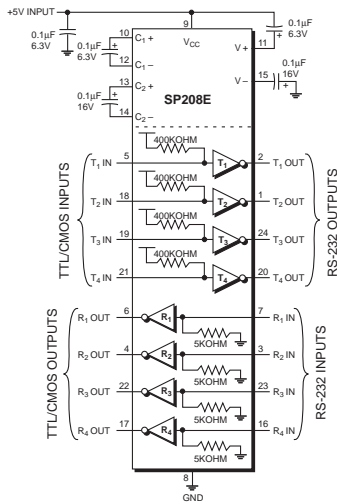
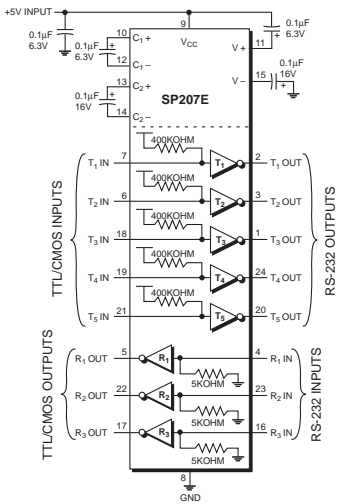
Part No.	RS-232 Drivers	RS-232 Receivers	Receivers Active in Shutdown	External 0.1µF Capacitors	Shutdown	WakeUp	TTL Tri-State
SP207E	5	3	0	4	No	No	No
SP208E	4	4	0	4	No	No	No
SP211E	4	5	0	4	Yes	No	Yes
SP213E	4	5	2	4	Yes	Yes	Yes

SP207E-SP213E

pin configurations



typical application circuits



ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP207ECA	SP207EEA	24-pin SSOP
SP207ECP	SP207EEP	24-pin Plastic DIP
SP207ECT	SP207EET	24-pin SOIC
SP208ECA	SP208EEA	24-pin SSOP
SP208ECP	SP208EEP	24-pin Plastic DIP
SP208ECT	SP208EET	24-pin SOIC
SP211ECA	SP211EEA	28-pin SSOP
SP211ECT	SP211EET	28-pin SOIC
SP213ECA	SP213EEA	28-pin SSOP
SP213ECT	SP213EET	28-pin SOIC

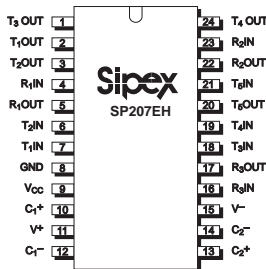


SP207EH-SP213EH

High Speed +5V High Performance RS232 Transceivers

features

- Single +5V Supply Operation
- 0.1µF External Charge Pump Capacitors
- 500kbps Data Rate under Load
- Standard SOIC and SSOP Packages
- Lower Supply Current than Competition (typical 3mA)
- 1µA Shutdown Mode
- WakeUp Feature in Shutdown Mode
- Tri-State Receiver Outputs
- Ideal for High Speed RS-232 Applications
- Improved ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge



description

The SP207EH/208EH/211EH/213EH devices are high speed, enhanced multi-channel RS-232 line transceivers with improved electrical performance. The SP207EH/208EH/211EH/213EH series is a superior drop-in replacement to our previous versions as well as popular industry standards. All devices feature low-power CMOS construction and the Sipex-patented (5,306,954) on-board charge pump circuitry that generates the +10V RS-232 voltage levels using 0.1µF charge pump capacitors. The SP211E and SP213E devices feature a low-power shutdown mode, which reduces power supply drain to 1mA. Enhancements to this series include a higher transmission rate of 500kbps, a lower power supply current at 3mA typical (no load), and superior ESD performance. The ESD tolerance has been improved for this series to over ±15kV for both Human Body Model and IEC1000-4-2 Air Discharge test methods.

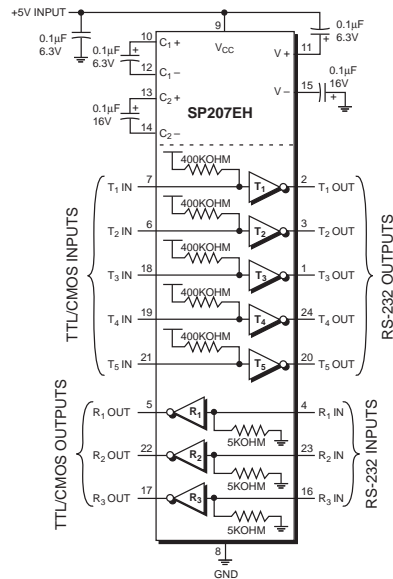
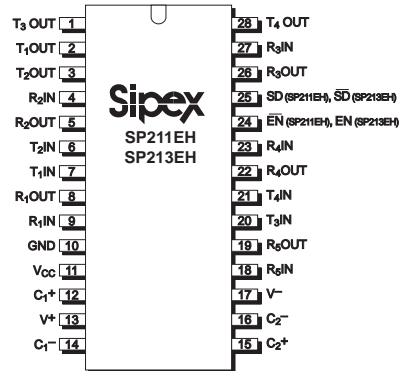
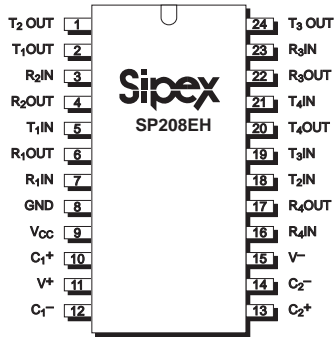
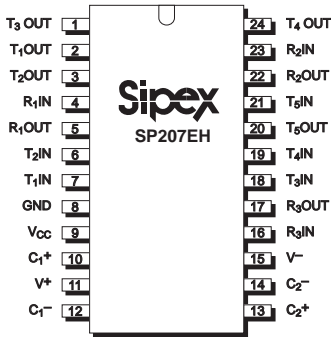


table 1. part selection table

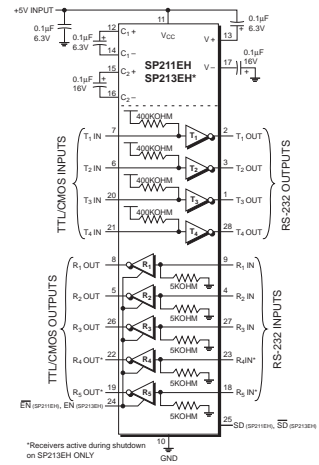
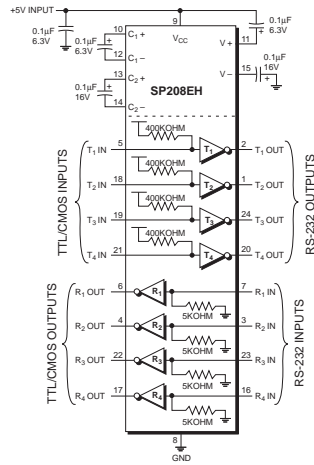
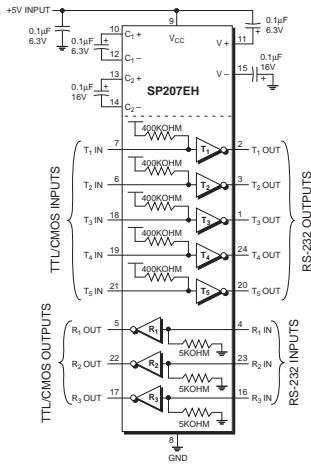
Part No.	RS-232 Drivers	RS-232 Receivers	Receivers Active in Shutdown	External 0.1µF Capacitors	Shutdown	WakeUp	TTL Tri-State
SP207EH	5	3	0	4	No	No	No
SP208EH	4	4	0	4	No	No	No
SP211EH	4	5	0	4	Yes	No	Yes
SP213EH	4	5	2	4	Yes	Yes	Yes

SP207EH - SP213EH

pin configuration



typical application circuit



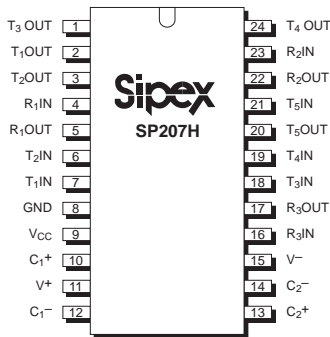
ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP207EHCA SP207EHCP SP207EHCT	SP207EHEA SP207EHEP SP207EHET	24-pin SSOP 24-pin Plastic DIP 24-pin SOIC
SP208EHCA SP208EHCP SP208EHCT	SP208EHEA SP208EHEP SP208EHET	24-pin SSOP 24-pin Plastic DIP 24-pin SOIC
SP211EHCA SP211EHCT	SP211EHEA SP211EHET	28-pin SSOP 28-pin SOIC
SP213EHCA SP213EHCT	SP213EHEA SP213EHET	28-pin SSOP 28-pin SOIC

+5V High-Speed RS-232 Transceivers

features

- Single 5V Supply Operation
- 0.1μF External Charge Pump Capacitors
- 460kbps Minimum Data Rate
- Standard SOIC and SSOP Packages
- SP207H - Five (5) Drivers and Three (3) Receivers
SP211H - Four (4) Drivers and Five (5) Receivers
- 1μA Shutdown Mode
- WakeUp Feature in Shutdown Mode
- Tri-State Receiver Outputs
- Ideal for V.34 and High Speed RS-232 Applications



description

The SP207H and SP211H are multi-channel RS-232 line transceivers configured to fit most communication needs. The "H" series is based on Sipex's SP200 Series transceivers and has been enhanced for speed. The data rate is improved to over 460kbps which easily meets the 230.4kbps data rates for V.34. The SP207H and SP211H use the same on-board charge pump to provide ±10V voltage levels, using 0.1μF charge pump capacitors to save board space and reduce circuit cost. The SP207HB, SP211H and SP211HB feature a low-power shutdown mode, which reduces power supply drain to 1μA. A WakeUp function keeps the receivers active in the shutdown mode (SP207HB and SP211HB only).

typical application circuit

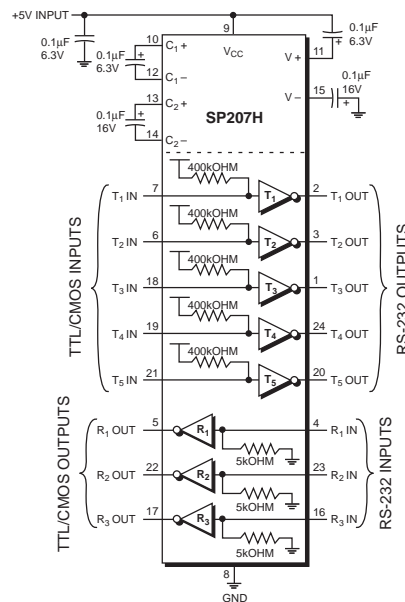
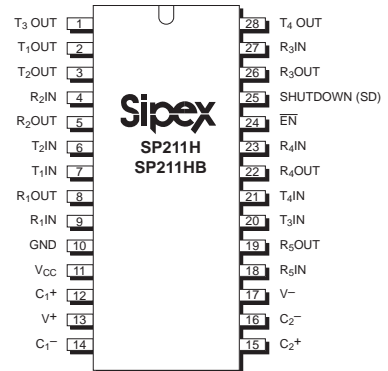
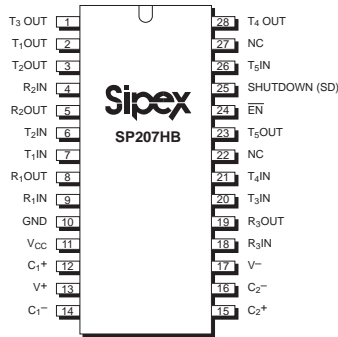
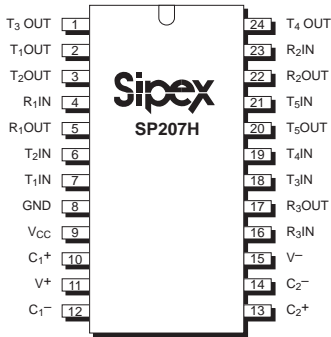


table 1. part selection table

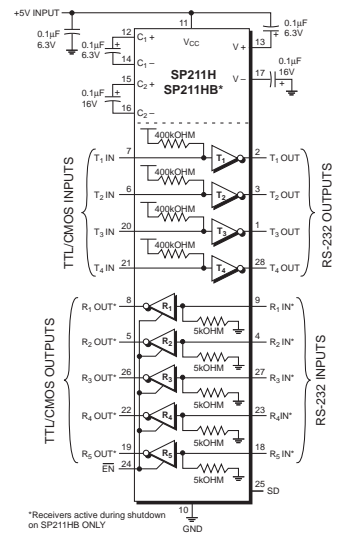
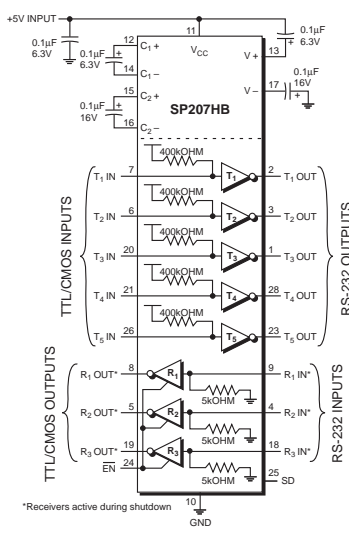
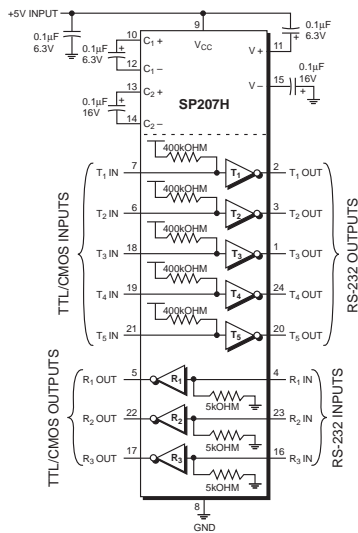
Part No.	RS-232 Drivers	RS-232 Receivers	Receivers Active in Shutdown	External 0.1μF Capacitors	Shutdown	WakeUp	TTL Tri-State
SP207H	5	3	0	4	No	No	No
SP207HB	5	3	3	4	Yes	Yes	Yes
SP211H	4	5	0	4	Yes	No	Yes
SP211HB	4	5	5	4	Yes	Yes	Yes

SP207H/SP211H

pin configuration



typical application circuit



ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP207HBCA	SP207HBEA	28-pin SSOP
SP207HBCT	SP207HBET	28-pin SOIC
SP207HCA	SP207HEA	24-pin SSOP
SP207HCP	SP207HEP	24-pin Plastic DIP
SP207HCT	SP207HET	24-pin SOIC
SP211HBCA	SP211HBEA	28-pin SSOP
SP211HBCT	SP211HBET	28-pin SOIC
SP211HCA	SP211HEA	28-pin SSOP
SP211HCT	SP211HET	28-pin SOIC

High ESD Dual Port RS-232 Transceiver

features

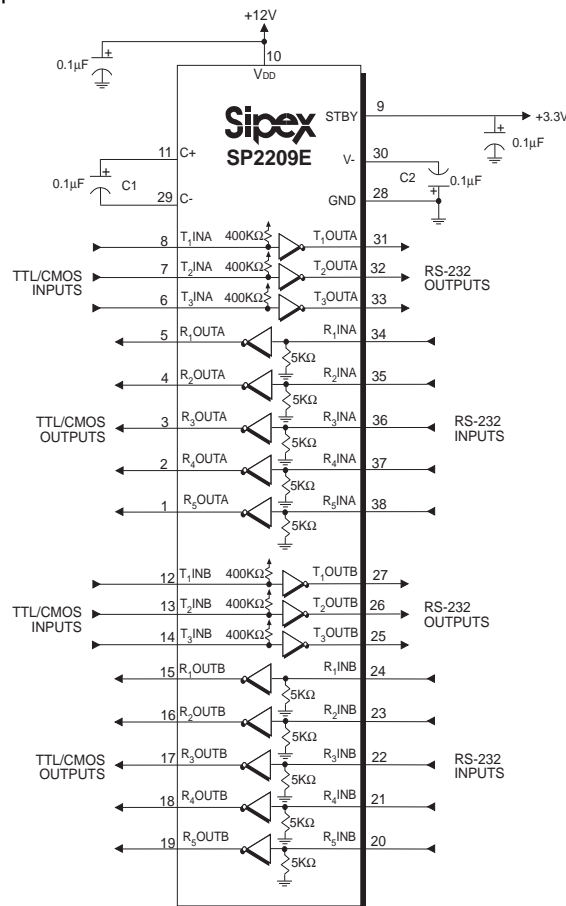
- Meets True EIA/TIA-232-F Standards
- Complies with 89/336/EEC EMC Directive
- Single +12V Power Supply
- <5mA Low Power CMOS Operation
- 100µA Low Standby Current
- Operates with +3V Or +5V Logic
- Allows +3.3V to +5V Standby Supply
- Two Complete Serial Ports, 6 Drivers and 10 Receivers
- One Receiver on Each Port Active in Standby
- Failsafe Receiver Outputs
- 460kbps Minimum Data Rate
- Guaranteed LapLink® - Compatible
- Ideal for High Speed RS-232 Applications
- 0.1µF Charge Pump Capacitors
- Low EMI Emissions (EN55022)
- Pin Compatible with ADM2209E
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV EN61000-4-2 Air Discharge
 - ±8kV EN61000-4-2 Contact Discharge
- Fast Transient Burst (EFT) Immunity (EN61000-4-2)

description

The rugged, high ESD SP2209E device is a complete dual RS-232 port integrated onto a single integrated circuit. Six drivers and ten receivers provide designers with a dual port solution that meets the EIA/TIA-232 and ITU-T V.28/V.24 communication protocols and can be implemented in applications such as personal desktop computers and workstations.

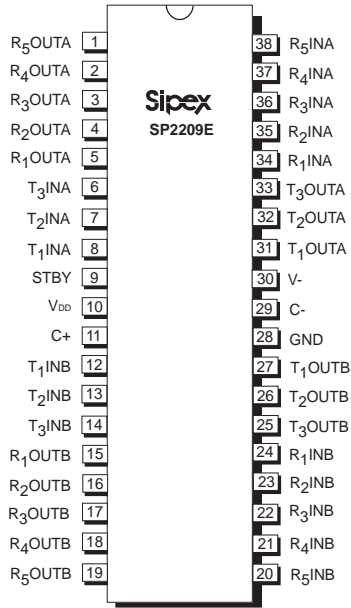
Features include high transmission rates, low power consumption, an internal charge-pump power supply that requires only two capacitors, space saving 38-pin TSSOP package dimensions, and compatibility with the EU directive on electromagnetic compatibility.

This device is ideal for operation in electrically harsh environments or where RS-232 cables are frequently being plugged and unplugged. This device is also immune to high RF field strengths without special shielding precautions.



SP2209E

Pin configuration and description



pin number	name	description
1 - 5	R ₅ OUTA - R ₁ OUTA	+3.3V to +5V TTL/CMOS logic level receiver output for port A.
6 - 8	T ₃ INA - T ₁ INA	+3.3V to +5V TTL/CMOS logic level driver input for port A.
9	STBY	+3.3V to +5V standby power supply for receivers R ₅ OUTA and R ₅ OUTB.
10	V _{DD}	+12V power supply.
11	C+	Positive terminal for the polarized C1 charge-pump capacitor.
12 - 14	T ₁ INB - T ₃ INB	+3.3V to +5V TTL/CMOS logic level driver input for port B.
15 - 19	R ₁ OUTB - R ₅ OUTB	+3.3V to +5V TTL/CMOS logic level receiver output for port B.
20 - 24	R ₅ INB - R ₁ INB	RS-232 receiver input for port B.
26, 27	T ₂ OUTB, T ₁ OUTB	RS-232 driver output for port B.
28	GND	Ground.
29	C-	Negative terminal for the polarized C1 charge-pump capacitor.
30	V-	-12V output generated by the charge pump at the negative terminal of the polarized C2 charge-pump capacitor.
31 - 33	T ₁ OUTA - T ₃ OUTA	RS-232 driver output for port A.
34 - 38	R ₁ INA - R ₅ INA	RS-232 receiver input for port A.

ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP2209EEY	-40°C to +85°C	38-pin TSSOP



**SP230A/234A/235A/236A/237A/238A/241A
SP235B/236B/240A/240B/241A/241B**

+5V Powered Multi-Channel RS-232 Drivers/Receivers

features

- Operates from Single +5V Power Supply
- Meets all RS-232D and V.28 Specifications
- ±9V Output Swing with +5V Supply
- Improved Driver Output Capacity for Mouse Applications
- Low Power Shutdown – 1µA
- WakeUp Feature in Shutdown Mode
- 3-State TTL/CMOS Receiver Outputs
- ±30V Receiver Input Levels
- Low Power CMOS: 5mA Operation
- Wide Charge Pump Capacitor Value Range: 1 to 10µF

description

The SP230A Series are multi-channel RS-232 line drivers/receivers that provide a variety of configurations to fit most communication needs, especially where ±12V is not available. Some models feature a shutdown mode to conserve power in battery-powered systems. Some require no external components. All, except one model, feature a built-in charge pump voltage converter, allowing them to operate from a single +5V power supply. All drivers and receivers meet all EIA RS-232D and CCITT V.28 requirements. The series is available in plastic and ceramic DIP and SOIC packages.

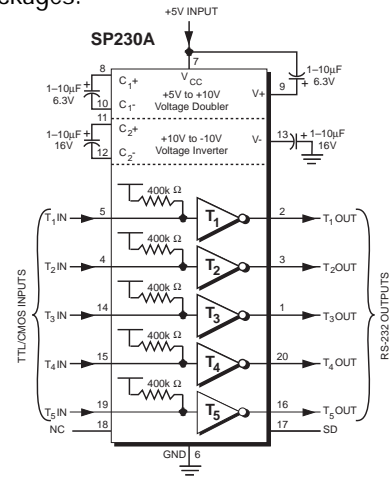
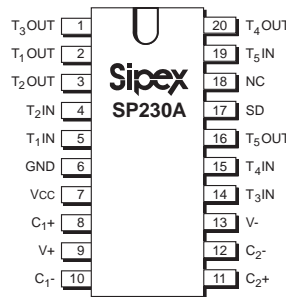
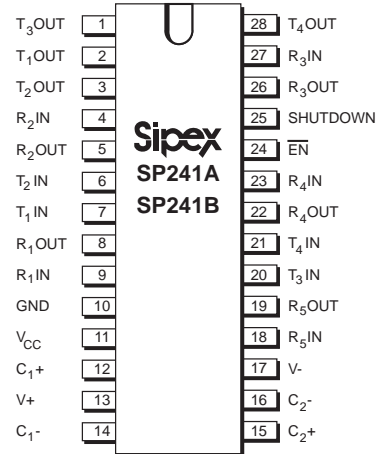
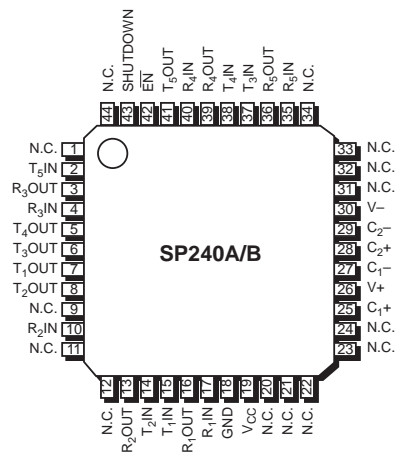
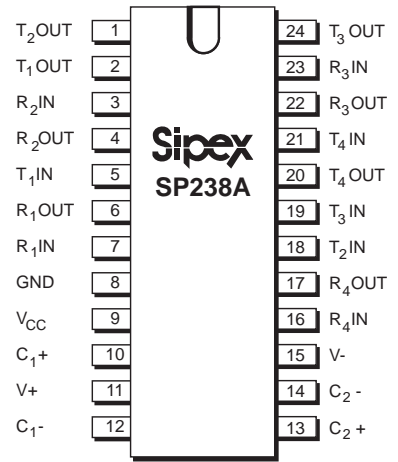
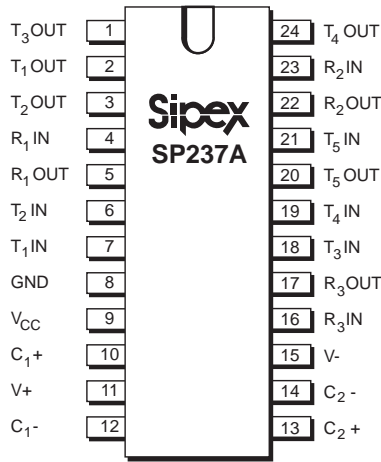
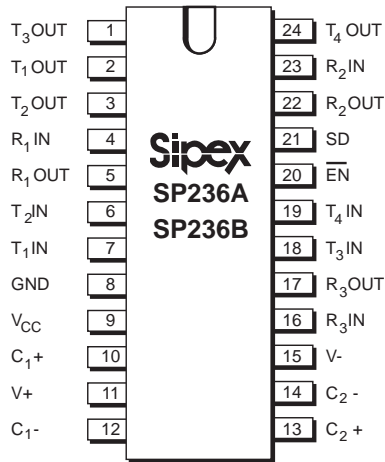
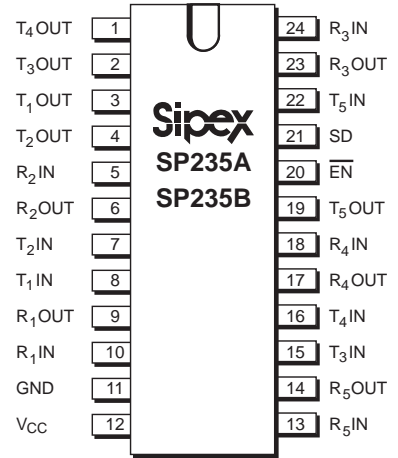
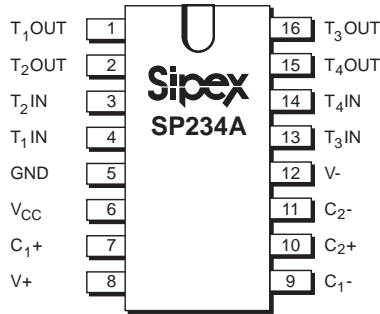
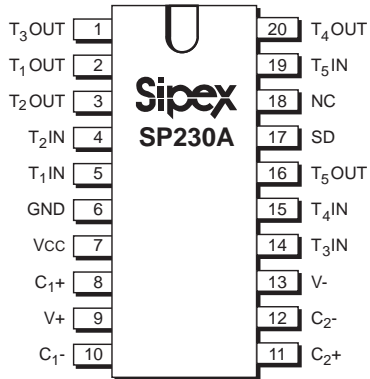


table 1. part selection table

Part No.	Power Supplies	RS-232 Drivers	RS-232 Receivers	External Components	Low Power Shutdown	TTL 3-State	WakeUp	No. of Pins
SP230A	+5V	5	0	4 Capacitors	Yes	No	No	20
SP234A	+5V	4	0	4 Capacitors	No	No	No	16
SP235A	+5V	5	5	None	Yes	Yes	No	24
SP235B	+5V	5	5	None	Yes	Yes	Yes	24
SP236A	+5V	4	3	4 Capacitors	Yes	Yes	No	24
SP236B	+5V	4	3	4 Capacitors	Yes	Yes	Yes	24
SP237A	+5V	5	3	4 Capacitors	No	No	No	24
SP238A	+5V	4	4	4 Capacitors	No	No	No	24
SP240A	+5V	5	5	4 Capacitors	Yes	Yes	No	44
SP240B	+5V	5	5	4 Capacitors	Yes	Yes	Yes	44
SP241A	+5V	4	5	4 Capacitors	Yes	Yes	No	28
SP241B	+5V	4	5	4 Capacitors	Yes	Yes	Yes	28

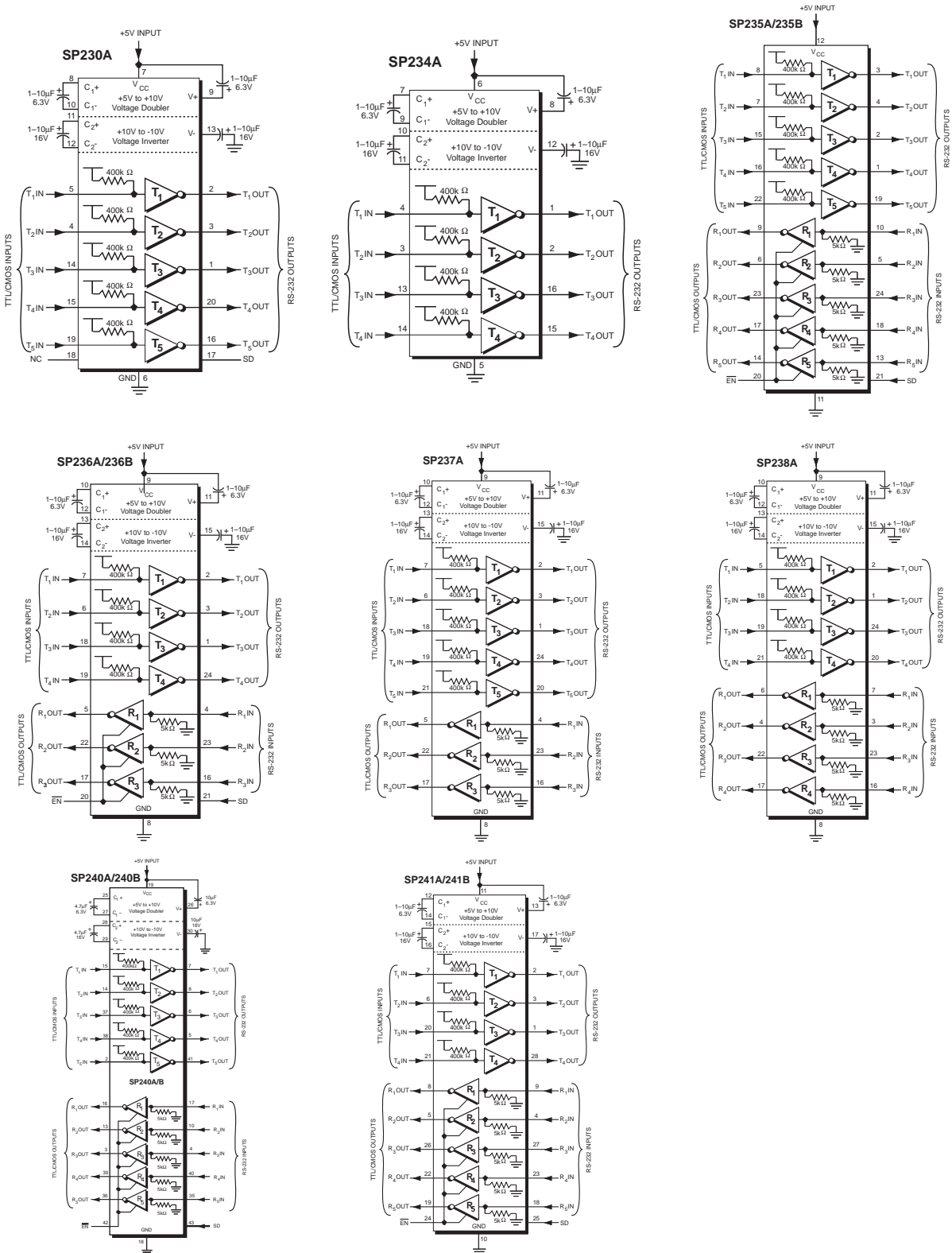
SP230A/234A-241A/SP235B/236B/240A/240B/241B

pin configuration



SP230A/234A-241A/SP235B/236B/240A/240B/241B

typical application circuit



SP230A/234A-241A/SP235B/236B/240A/240B/241B

ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP230ACP SP230ACT SP230ACX	SP230AEP SP230AET	20-pin Plastic DIP 20-pin SOIC Dice
SP234ACP SP234ACT SP234ACX	SP234AEP SP234AET	16-pin Plastic DIP 16-pin SOIC Dice
SP235ACP SP235BCP	SP235AEP SP235BEP	24-pin Plastic Double-width DIP 24-pin Plastic Double-width DIP
SP236ACS SP236ACT SP236ACX SP236BCS SP236BCT SP236BCX	SP236AES SP236AET SP236BES SP236BET	24-pin Plastic DIP 24-pin SOIC Dice 24-pin Plastic DIP 24-pin SOIC Dice
SP237ACS SP237ACT SP237ACX	SP237AES SP237AET	24-pin Plastic DIP 24-pin SOIC Dice
SP238ACS SP238ACT SP238ACX	SP238AES SP238AET	24-pin Plastic DIP 24-pin SOIC Dice
SP240ACF SP240BCF		44-pin Quad Flatpack 44-pin Quad Flatpack
SP241ACT SP241BCT	SP241AET SP241BET	28-pin SOIC 28-pin SOIC

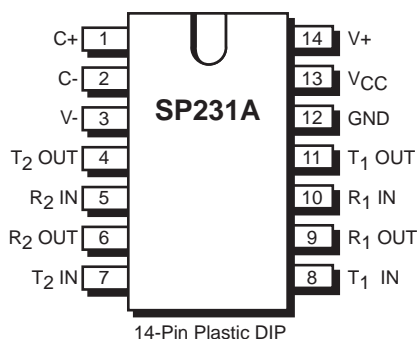


SP231A/232A/233A/310A/312A

Enhanced RS-232 Line Drivers/Receivers

features

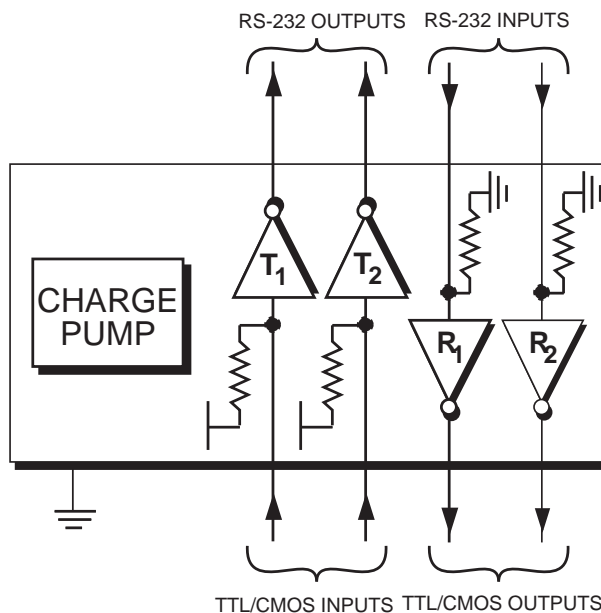
- Operates from Single 5V Power Supply
- Meets all RS-232D and V.28 Specifications
- Multiple Drivers and Receivers
- Small Charge Pump Capacitors – 0.1 μ F
- Operates with 0.1 μ F and 100 μ F Capacitors
- High Data Rate – 120kbps under Load
- High Output Slew Rate – 10V/ μ s under Load
- Low Power Shutdown $\leq 1\mu$ A
- 3-State TTL/CMOS Receiver Outputs
- ± 30 V Receiver Input Levels
- Low Power CMOS – 15mA Operation



description

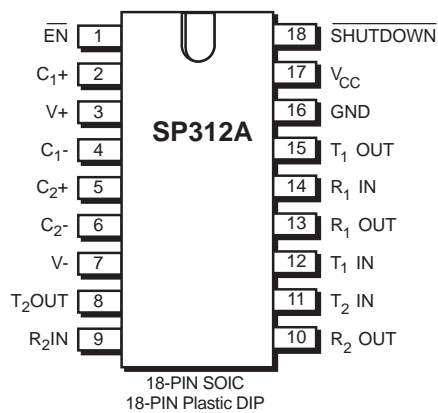
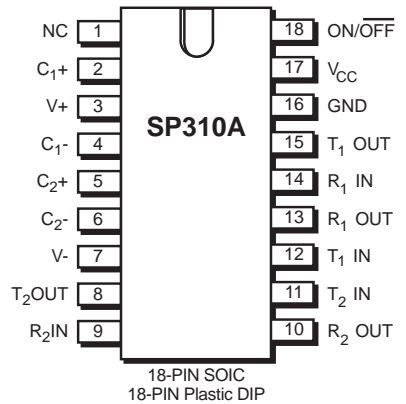
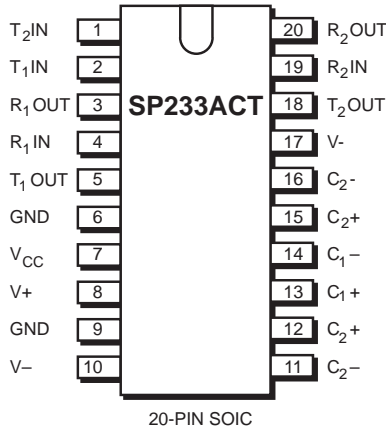
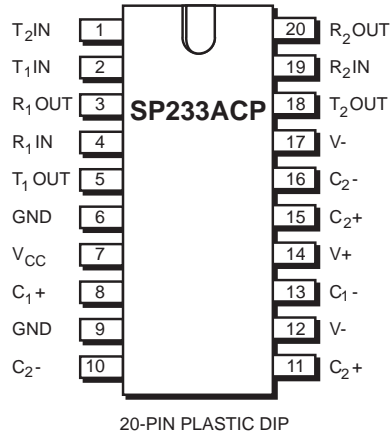
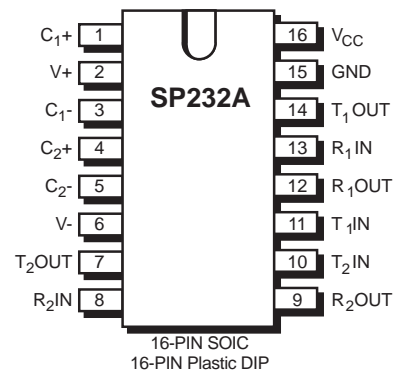
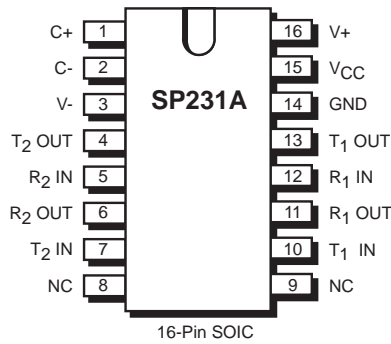
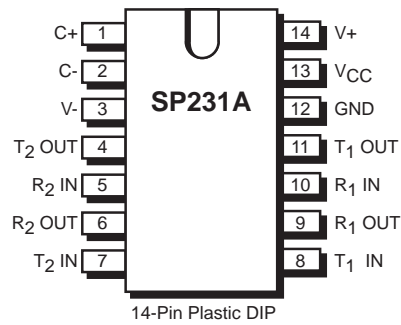
The Sipex SP231A, SP232A and SP233A are enhanced versions of the Sipex SP231, SP232 and SP233 RS-232 line drivers/receivers. They are pin-for-pin replacements for these earlier versions and will operate in their sockets. Performance enhancements include 10V/ μ s slew rate, 120kbps guaranteed transmission rate, and increased drive current for longer and more flexible cable configurations. Ease of use enhancements include smaller, 0.1 μ F charge pump capacitors, enhanced ESD protection, low power dissipation and overall ruggedized construction for commercial environments. The series is available in plastic and ceramic DIP and SOIC packages operating over the commercial, industrial and military temperature ranges.

block diagram



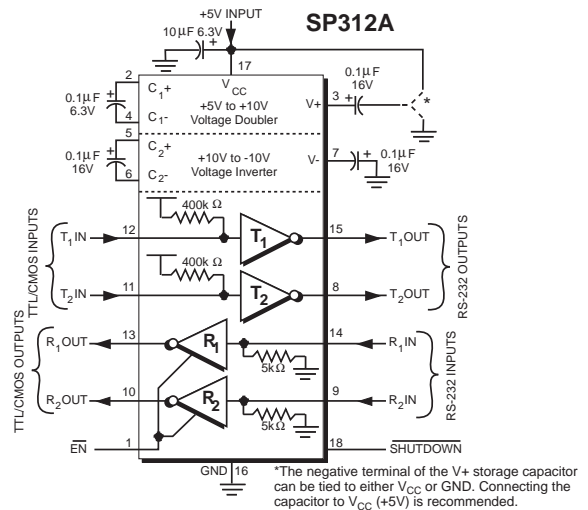
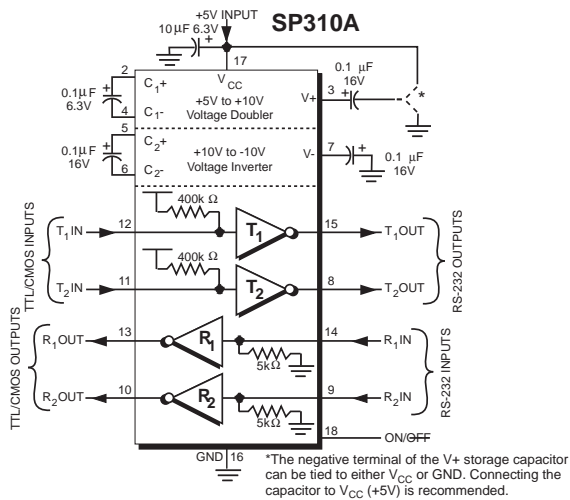
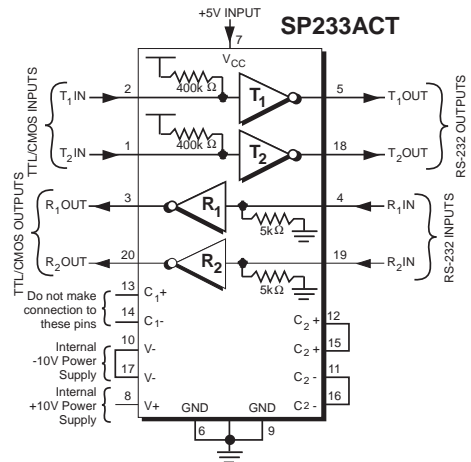
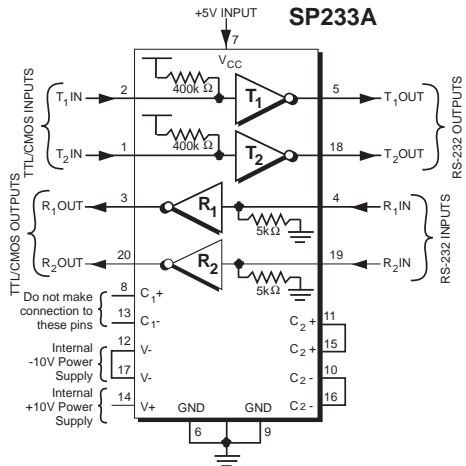
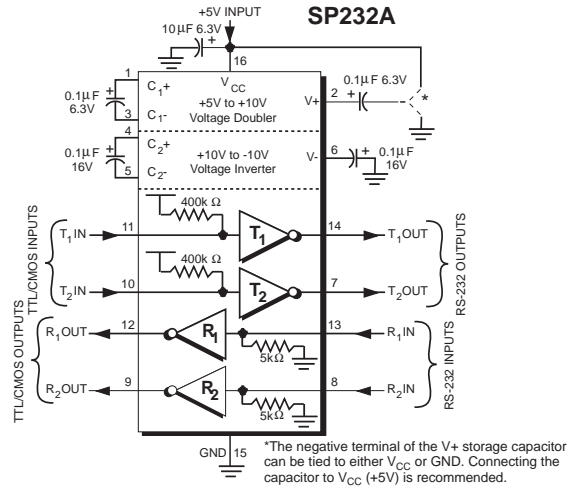
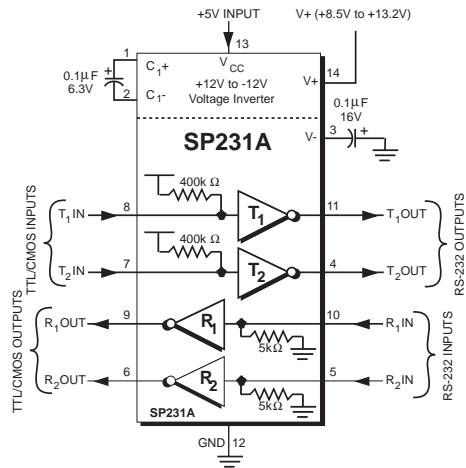
SP231A/232A/233A/310A/312A

pin configuration



SP231A/232A/233A/310A/312A

typical application circuit



SP231A/232A/233A/310A/312A

ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP231ACP SP231ACT SP231ACX	SP231AEP SP231AET	14-pin Plastic DIP 16-pin SOIC Dice
SP232ACN SP232ACP SP232ACT SP232ACX	SP232AEN SP232AEP SP232AET	16-pin N-SOIC 16-pin Plastic DIP 16-pin SOIC Dice
SP233ACP SP233ACT	SP233AEP SP233AET	20-pin Plastic DIP 20-pin SOIC
SP310ACP SP310ACT SP310ACX	SP310AEP SP310AET	18-pin Plastic DIP 18-pin SOIC Dice
SP312ACP SP312ACT SP312ACX	SP312AEP SP312AET	18-pin Plastic DIP 18-pin SOIC Dice

20Mbps, +5V-Only V.35 Interface with RS-232 (V.28) Control Lines

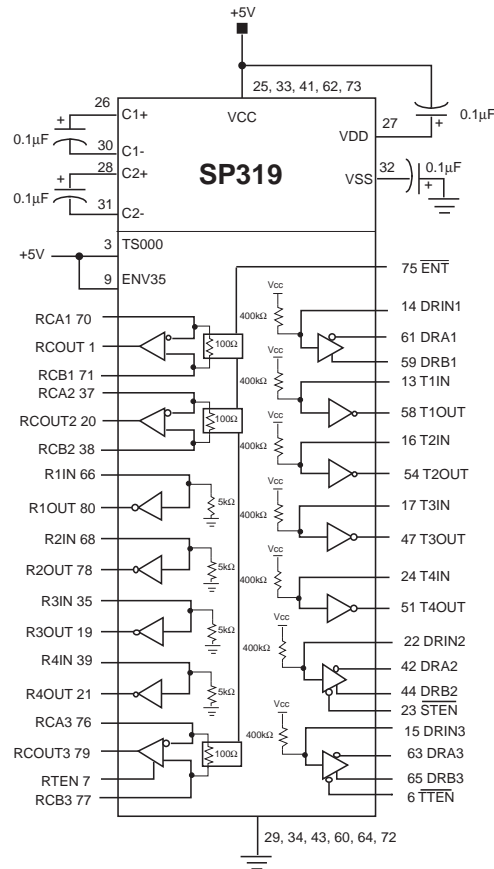
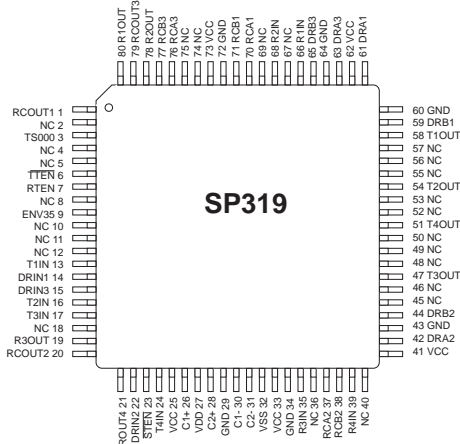
features

- 20Mbps V.35 Data Throughput
- +5V-Only, Single Supply Operation
- 3 Drivers, 3 Receivers – V.35
- 4 Drivers, 4 Receivers – RS-232
- Improved V.35 Receiver Propagation Delays
- No External V.35 Termination Resistors Required
- Termination Disable for V.35
- 80-pin QFP Surface Mount Packaging
- Pin Compatible with SP320

description

The SP319 is a complete V.35 interface transceiver offering 3 drivers and 3 receivers for V.35, and 4 drivers and 4 receivers for RS-232 (V.28). A Sipex patented charge pump allows +5V only low power operation. RS-232 drivers and receivers are specified to operate at 120kbps, all V.35 drivers and receivers operate up to 10Mbps.

typical applications diagram



ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP319CF	0°C to +70°C	80-pin JEDEC (BE-2 Outline) QFP

Complete +5V-Only V.35 Interface with RS-232 (V.28) Control Lines

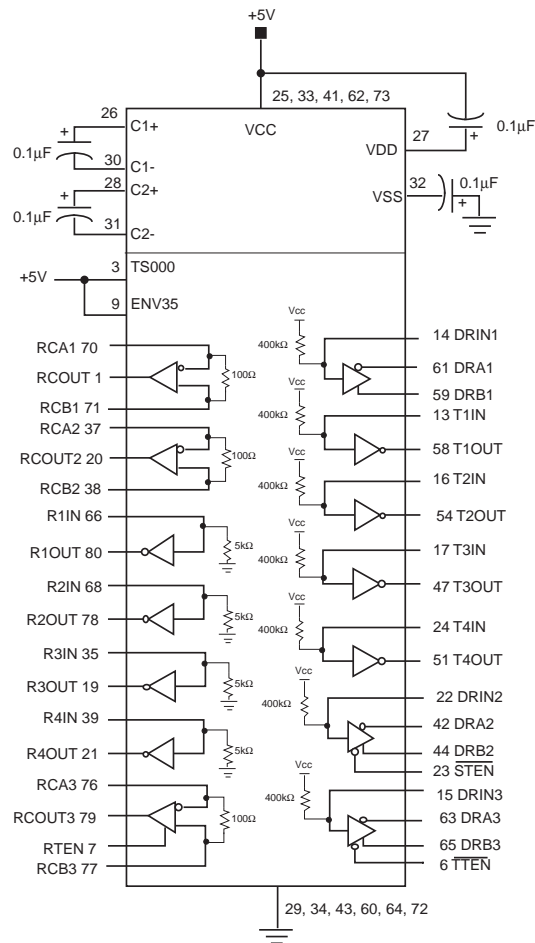
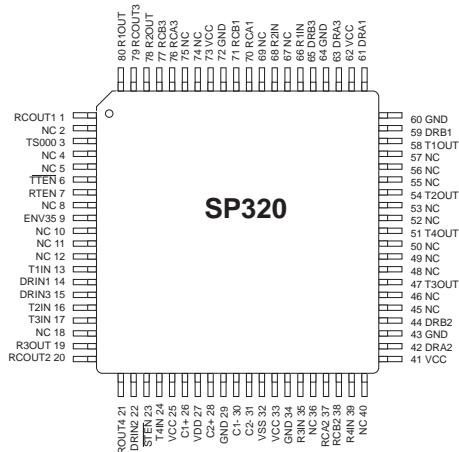
features

- 10Mbps Data Throughput
- +5V-Only, Single Supply Operation
- 3 Drivers, 3 Receivers – V.35
- 4 Drivers, 4 Receivers – RS-232
- 80-pin QFP Surface Mount Packaging
- Pin Compatible with SP319

description

The SP320 is a complete V.35 interface transceiver offering 3 drivers and 3 receivers for V.35, and 4 drivers and 4 receivers for RS-232 (V.28). A Sipex patented charge pump allows +5V only low power operation. RS-232 drivers and receivers are specified to operate at 120kbps, all V.35 drivers and receivers operate up to 5Mbps.

SP320 block diagram



ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP320ACF	0°C to +70°C	80-pin JEDEC (BE-2 Outline) QFP

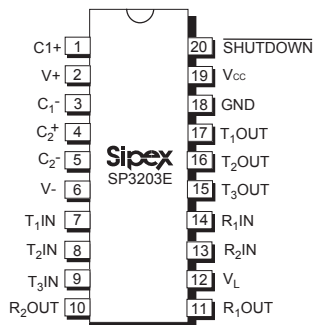
3V RS-232 Serial Transceiver with Logic Selector and 15kV ESD Protection

features

- 3 Driver/ 2 Receiver Architecture
- Logic Selector Function (VL) Sets TTL Input/Output Levels for Mixed Logic Systems
- Meets True EIA/TIA-232-F Standards from a +3.0V to +5.5V Power Supply
- Interoperable with EIA/TIA-232 and Adheres to EIA/TIA-562 Down to a +2.7V Power Source
- Minimum 250kbps Data Rate under Load
- Regulated Charge Pump Yields Stable RS-232 Outputs Regardless of V_{CC} Variations
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge

applications

- Palmtops
- Cell phone Data Cables
- PDA's

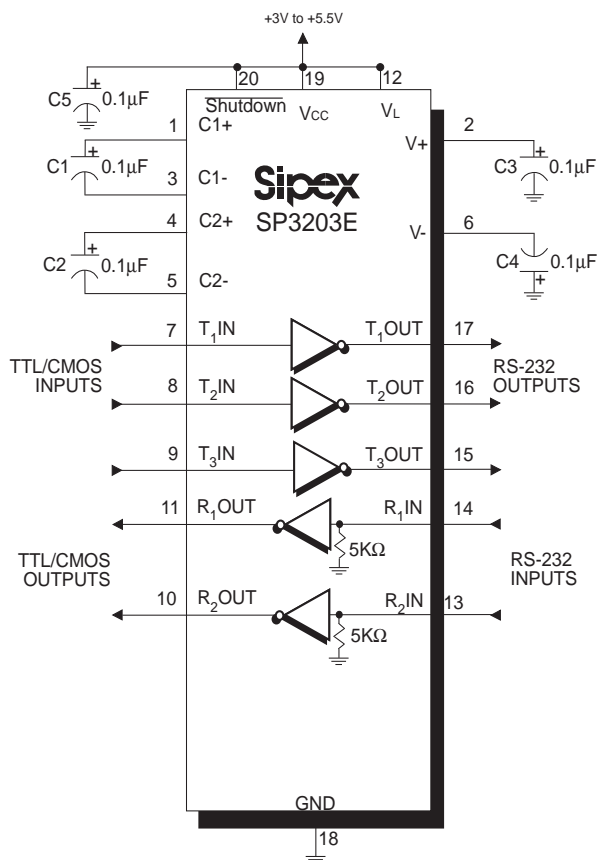


description

The SP3203E provides an RS-232 transceiver solution for portable and hand-held applications such as palmtops, PDA's and cell phones. The SP3203E uses an internal high-efficiency, charge-pump that requires only 0.1μF capacitors during 3.3V operation. This charge pump and Sipex's driver architecture allow the SP3203E to deliver compliant RS-232 performance from a single power supply ranging from +3.0V to +5.5V.

The SP3203E is a 3-driver/2-receiver device, with a unique V_L pin to program the TTL input and output logic levels to allow interoperation in mixed-logic voltage systems such as PDA's and cell phones. Receiver outputs will not exceed V_L for V_{OH} and transmitter input logic levels are scaled by the magnitude of the V_L input.

SP3203E typical operating circuit



SP3203E

pin number	name	description
1	C1+	Positive terminal of the symmetrical charge-pump capacitor, C1.
2	V+	Regulated +5.5V output generated by the charge pump.
3	C1-	Negative terminal of the symmetrical charge-pump capacitor, C1.
4	C2+	Positive terminal of the symmetrical charge-pump capacitor, C2.
5	C2-	Negative terminal of the symmetrical charge-pump capacitor, C2.
6	V-	Regulated -5.5V output generated by the charge pump.
14	R ₁ IN	RS-232 receiver input.
13	R ₂ IN	RS-232 receiver input.
11	R ₁ OUT	TTL/CMOS receiver output.
10	R ₂ OUT	TTL/CMOS receiver output.
7	T ₁ IN	TTL/CMOS driver input.
8	T ₂ IN	TTL/CMOS driver input.
9	T ₃ IN	TTL/CMOS driver input.
17	T ₁ OUT	RS-232 driver output.
16	T ₂ OUT	RS-232 driver output.
15	T ₃ OUT	RS-232 driver output.
18	GND	Ground.
19	V _{CC}	+3.0V to +5.5V supply voltage.
20	$\overline{\text{SHUTDOWN}}$	Apply logic LOW to shut down drivers and charge pump.
12	V _L	Logic-Level Supply Voltage Selection

ordering information - *Please consult the factory for pricing and availability on a Tape-On-Reel option.*

Part Number	Temperature Range	Package Type
SP3203ECY	0°C to +70°C	20-pin TSSOP
SP3203EEY	-40°C to +85°C	20-pin TSSOP

Programmable V.11/V.35 Transceiver

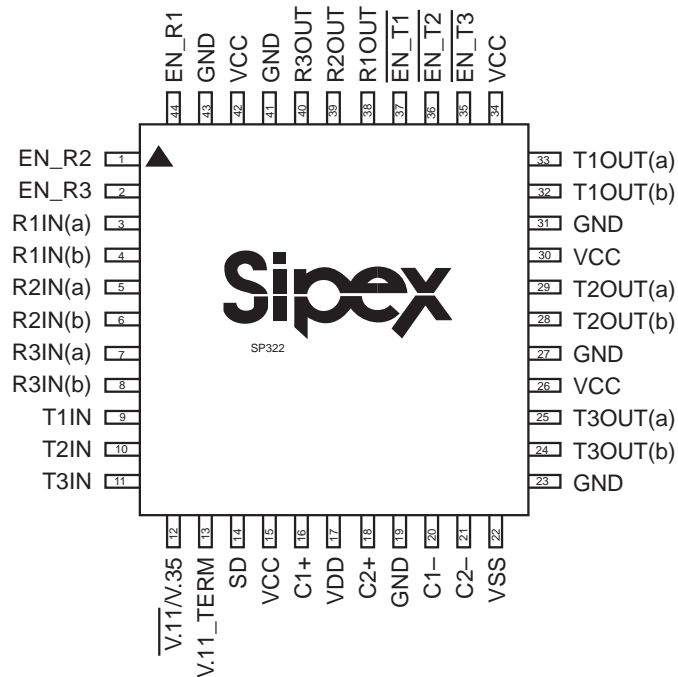
features

- +5V Only Operation
- Programmable V.11 or V.35 Selection
- Three Differential V.11 Transceivers in V.11 Mode
- Three Differential V.35 Transceivers in V.35 Mode
- No External Resistor Termination for Compliant V.35 Operation
- V.11 Cable Termination (approx. 120Ω) Internally Configured in V.11 Mode
- Tri-State Capability on Drivers and Receivers
- Ideal Low Cost Solution for X.25 or Frame Relay Serial Ports

description

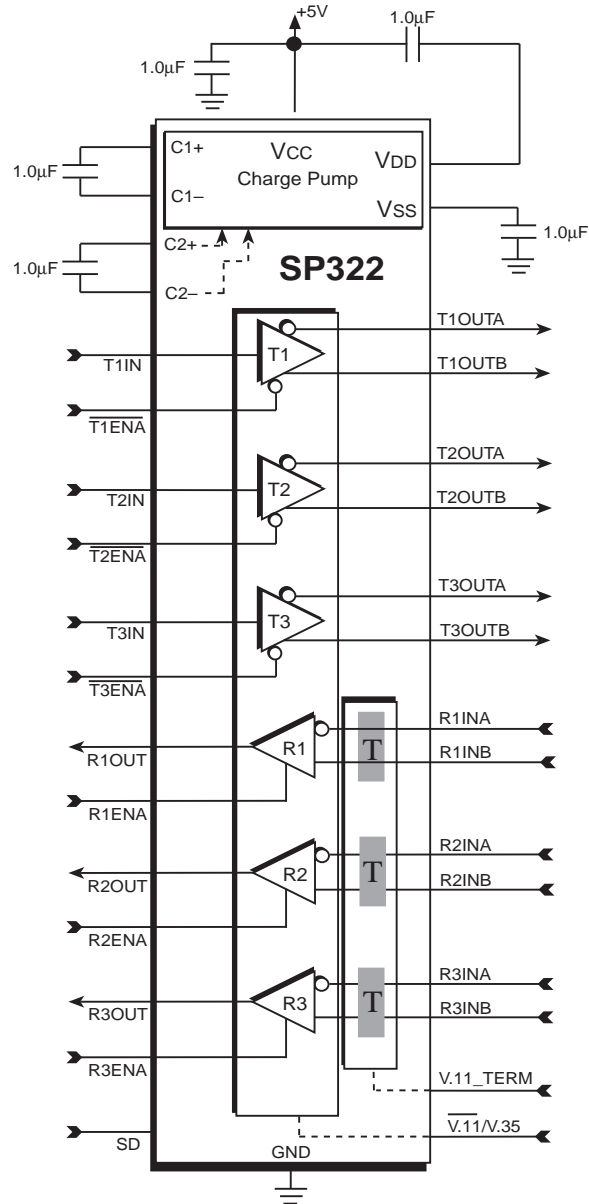
The SP322 is a programmable V.11 or V.35 transceiver IC. The SP322 contains three drivers and three receivers when selected in each mode. The selection is done by the V.11/V.35 select pin. The V.11 transceivers can typically operate at 10Mbps while adhering to the ITU V.11 specifications. The V.35 transceivers can operate up to 10Mbps while adhering to the ITU V.35 specifications.

The SP322 contains internal resistor termination for compliant V.35 operation as well as the V.11 termination on the receiver inputs for optional cable termination. Each SP322 driver contains a control pin which disables the output and places the output pins in a high impedance state. Each receiver also has a control pin which places the receiver outputs in a high impedance state. The enable pins will disconnect the internal termination network for whichever mode the SP322 is selected. For the receivers, the enable pin will place the input pins in a high impedance (approx. 15kΩ). This allows for convenient DTE-DCE configuration by connecting the driver outputs to the receiver inputs, thus allowing the enable pins to select the desired DTE or DCE operation.



SP322

typical application circuit



ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP322CF	0°C to +70°C	44-pin LQFP

+3.0V to +5.5V RS-232 Driver/Receiver Pair

features

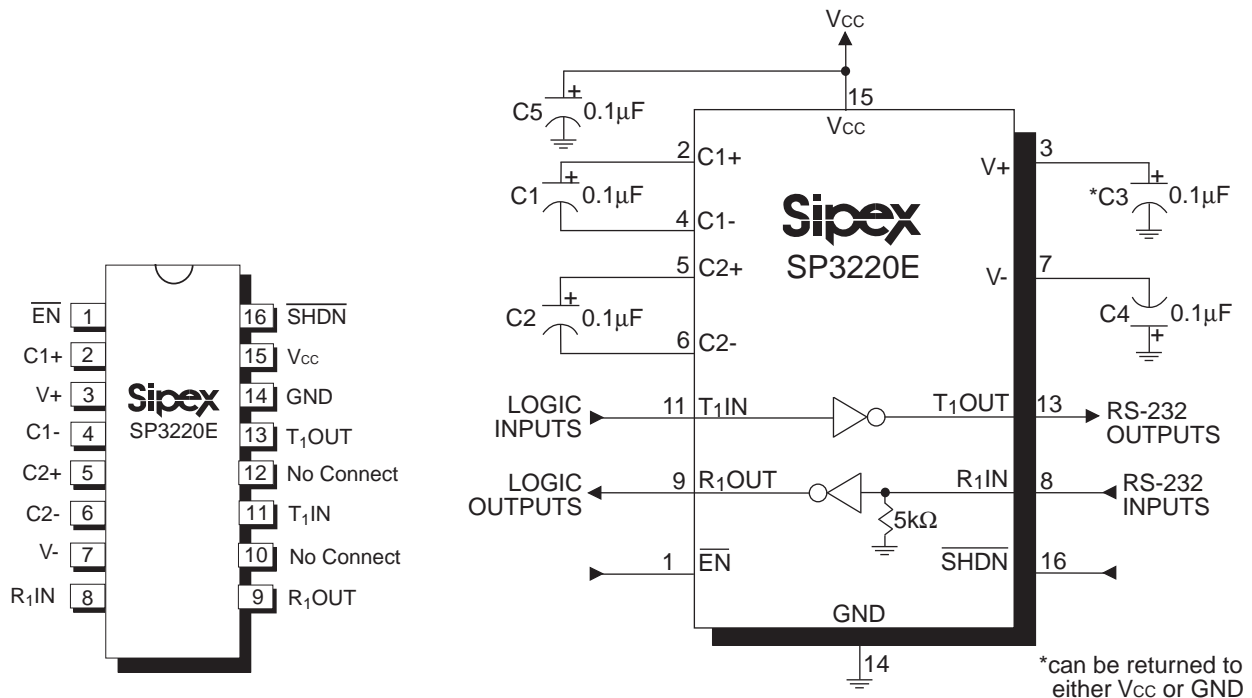
- Meets True RS-232 Protocol Operation from A +3.0V to +5.5V Power Supply
- 235kbps Data Rate under Load
- 1mA Low-Power Shutdown with Receivers Active
- Interoperable with RS-232 Down To +2.7V Power Source
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge

description

The SP3220E device is an RS-232 driver/receiver solution intended for portable or hand-held applications such as notebook or palmtop computers. The SP3220E device has a high-efficiency, charge-pump power supply that requires only 0.1μF capacitors in 3.3V operation. This charge pump allows the SP3220E device to deliver true RS-232 performance from a single power supply ranging from +3.3V to +5.0V. The ESD tolerance of the SP3220E device is over ±15kV for both Human Body Model and IEC1000-4-2 Air discharge test methods.

The SP3220E device has a low-power shutdown mode where the driver outputs and charge pumps are disabled. During shutdown, the supply current falls to less than 1μA.

typical application circuit



SP3220E

pin number	name	description
1	$\overline{\text{EN}}$	Receiver Enable Control. Drive LOW for normal operation. Drive HIGH to Tri-State the receiver outputs (high-Z state).
2	C1+	Positive terminal of the voltage doubler charge-pump capacitor.
3	V+	+5.5V generated by the charge pump.
4	C1-	Negative terminal of the voltage doubler charge-pump capacitor.
5	C2+	Positive terminal of the inverting charge-pump capacitor.
6	C2-	Negative terminal of the inverting charge-pump capacitor.
7	V-	-5.5V generated by the charge pump.
8	R ₁ IN	RS-232 receiver input.
9	R ₁ OUT	TTL/CMOS receiver output.
10, 12	N.C.	No Connect.
11	T ₁ IN	TTL/CMOS driver input.
13	T ₁ OUT	RS-232 driver output.
14	GND	Ground.
15	V _{CC}	+3.0V to +5.5V supply voltage
16	$\overline{\text{SHDN}}$	Shutdown Control Input. Drive HIGH for normal device operation. Drive LOW to shutdown the drivers (high-Z output) and the on-board charge pump power supply.

I

ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP3220ECA	0°C to +70°C	16-Pin SSOP
SP3220ECT	0°C to +70°C	16-Pin Wide SOIC
SP3220ECY	0°C to +70°C	16-Pin TSSOP
SP3220EEA	-40°C to +85°C	16-Pin SSOP
SP3220EET	-40°C to +85°C	16-Pin Wide SOIC
SP3220EEY	-40°C to +85°C	16-Pin TSSOP

True +3.0V to +5.5V RS-232 Transceivers

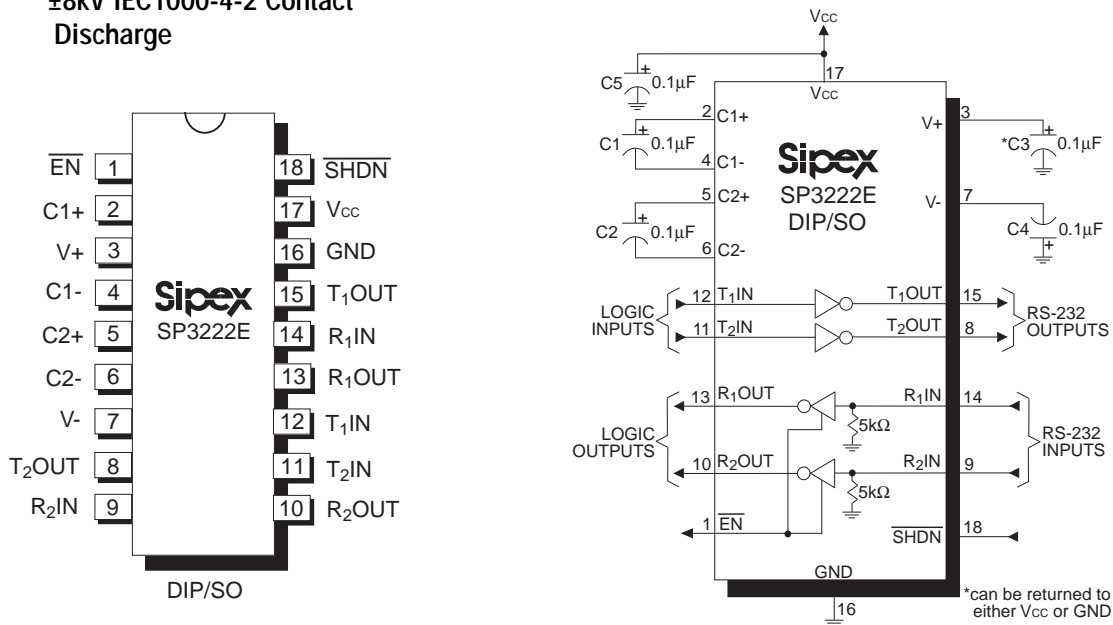
features

- Meets True EIA/TIA-232-F Standards from a +3.0V to +5.5V Power Supply
- 235kbps Transmission Rate under Load
- 1 μ A Low-Power Shutdown with Receivers Active (SP3222E)
- Interoperable with RS-232 down to +2.7V Power Source
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge

description

The SP3222E/3232E series is an RS-232 transceiver solution intended for portable or hand-held applications such as notebook or palmtop computers. The SP3222E/3232E series has a high-efficiency, charge-pump power supply that requires only 0.1 μ F capacitors in 3.3V operation. This charge pump allows the SP3222E/3232E series to deliver true RS-232 performance from a single power supply ranging from +3.3V to +5.0V. The SP3222E/3232E are 2-driver/2-receiver devices. This series is ideal for portable or hand-held applications such as notebook or palmtop computers. The ESD tolerance of the SP3222E/3232E devices are over \pm 15kV for both Human Body Model and IEC1000-4-2 Air discharge test methods. The SP3222E device has a low-power shutdown mode where the devices' driver outputs and charge pumps are disabled. During shutdown, the supply current falls to less than 1 μ A.

typical application circuit



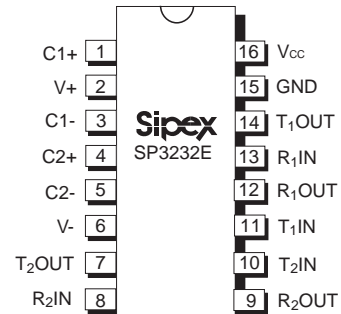
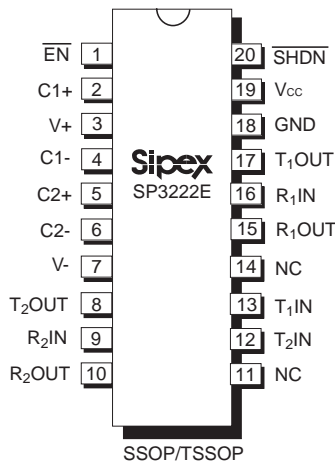
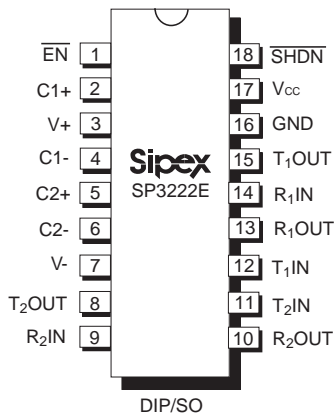
Part No.	Power Supplies	RS-232 Drivers	RS-232 Receivers	External Components	Shutdown	TTL 3-State	No. of Pins
SP3222E	+3.0V to +5.5V	2	2	4	Yes	Yes	18, 20
SP3232E	+3.0V to +5.5V	2	2	4	No	No	16

SP3222E/SP3232E

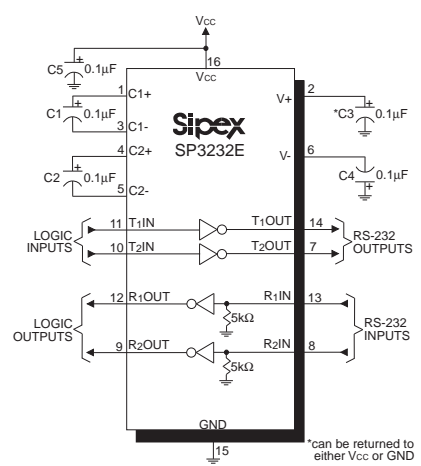
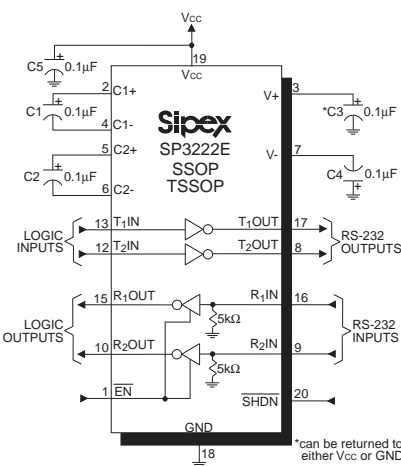
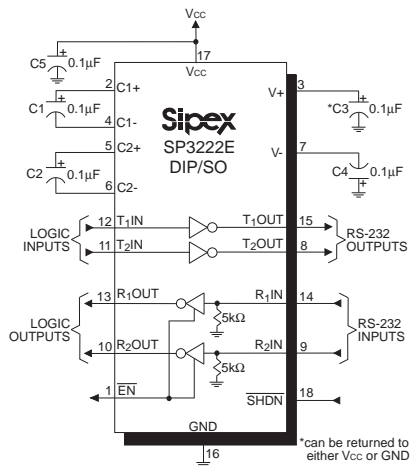
PIN NUMBER			NAME	DESCRIPTION
SP3222E		SP3232E		
18 Pin DIP/SOIC	20 Pin SSOP/TSSOP	16 Pin PDIP/SOIC/ SSOP/TSSOP		
1	1	-	$\overline{\text{EN}}$	Receiver Enable. Apply logic LOW for normal operation. Apply Logic HIGH to disable the receiver outputs (high-Z state).
2	2	1	C1+	Positive terminal of the voltage doubler charge-pump capacitor.
3	3	2	V+	+5.5V generated by the charge pump.
4	4	3	C1-	Negative terminal of the voltage doubler charge-pump capacitor.
5	5	4	C2+	Positive terminal of the inverting charge-pump capacitor.
6	6	5	C2-	Negative terminal of the inverting charge-pump capacitor.
7	7	6	V-	-5.5V generated by the charge pump.
15	17	14	T ₁ OUT	RS-232 driver output.
8	8	7	T ₂ OUT	RS-232 driver output.
14	16	13	R ₁ IN	RS-232 receiver input.
9	9	8	R ₂ IN	RS-232 receiver input.
13	15	12	R ₁ OUT	TTL/CMOS receiver output.
10	10	9	R ₂ OUT	TTL/CMOS receiver output.
12	13	11	T ₁ IN	TTL/CMOS driver input.
11	12	10	T ₂ IN	TTL/CMOS driver input.
16	18	15	GND	Ground.
17	19	16	V _{CC}	+3.0V to +5.5V supply voltage
18	20	-	$\overline{\text{SHDN}}$	Shutdown Control Input. Drive HIGH for normal device operation. Drive LOW to shutdown the drivers (high-Z output) and the on-board power supply.
-	11, 14	-	NC	No Connect.

SP3222E/SP3232E

pin configurations



typical application circuits



ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP3222ECA	SP3222EEA	20-Pin SSOP
SP3222ECP	SP3222EEP	18-Pin PDIP
SP3222ECT	SP3222EET	18-Pin SOIC
SP3222ECY	SP3222EEY	20-Pin TSSOP
SP3232ECA	SP3232EEA	16-Pin SSOP
SP3232ECP	SP3232EEP	16-Pin PDIP
SP3232ECT	SP3232EET	16-Pin Wide SOIC
SP3232ECY	SP3232EEY	16-Pin TSSOP

3.3V, 460 kbps RS-232 Transceivers

features

- Meets True EIA/TIA-232-F Standards from a +3.0V to +5.5V Power Supply
- Interoperable with RS-232 down to +2.7V power source
- 1μA Low-Power Shutdown with Receivers Active (SP3222EH)
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge
- 460kbps Minimum Transmission Rate
- Ideal for Handheld, Battery Operated Applications

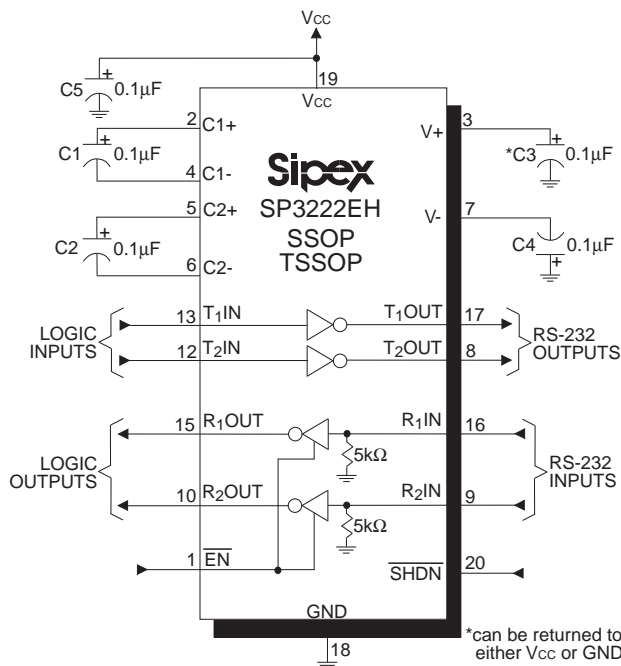
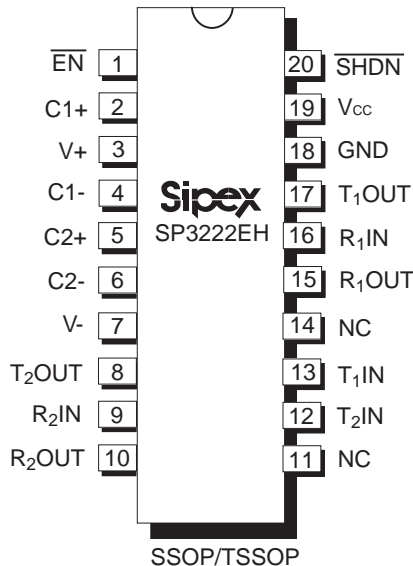
description

The SP3222EH and the 3232EH are 2 driver/2 receiver RS-232 transceiver solutions intended for portable or hand-held applications such as notebook or palmtop computers.

Their data transmission rate of 460kbps meeting the demands of high speed RS-232 applications. Both ICS have a high-efficiency, charge-pump power supply that requires only 0.1μF capacitors for 3.3V operation. The charge pump allows the SP3222EH and the 3232EH series to deliver true RS-232 performance from a single power supply ranging from +3.3V to +5.0V. The ESD tolerance of the SP3222EH/3232EH devices exceeds ±15kV for both Human Body Model and IEC1000-4-2 Air discharge test methods.

The SP3222EH device has a low-power shutdown mode where the devices' driver outputs and charge pumps are disabled. During shutdown, the supply current is less than 1μA.

SP3222EH typical operating circuit



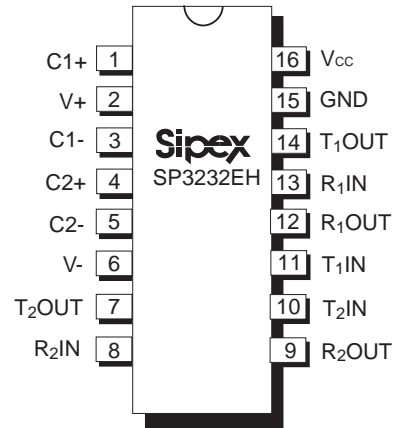
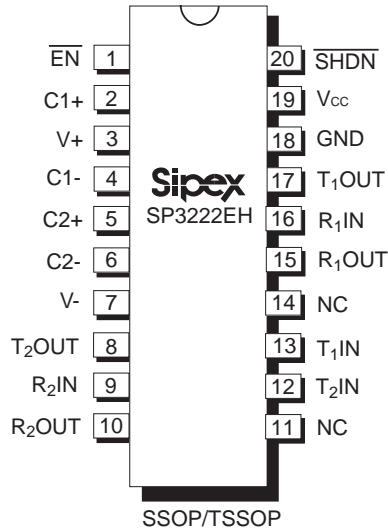
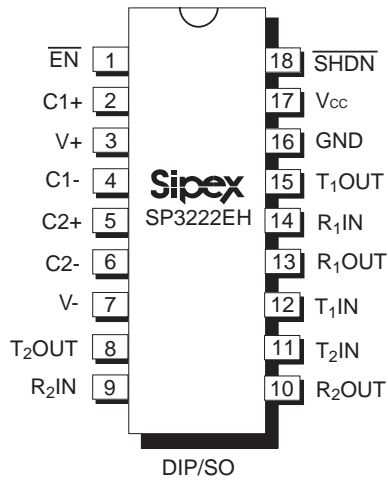
Part No.	Power Supplies	RS-232 Drivers	RS-232 Receivers	External Components	Shutdown	TTL 3-State	No. of Pins
SP3222EH	+3.0V to +5.5V	2	2	4	Yes	Yes	18, 20
SP3232EH	+3.0V to +5.5V	2	2	4	No	No	16

SP3222EH/SP3232EH

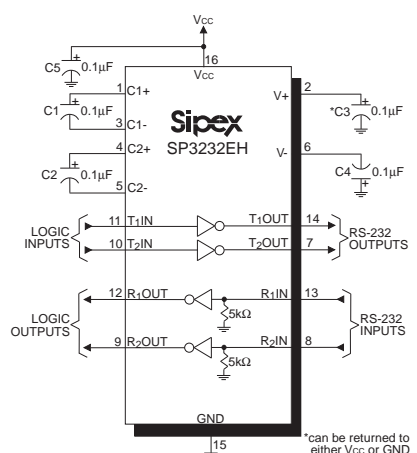
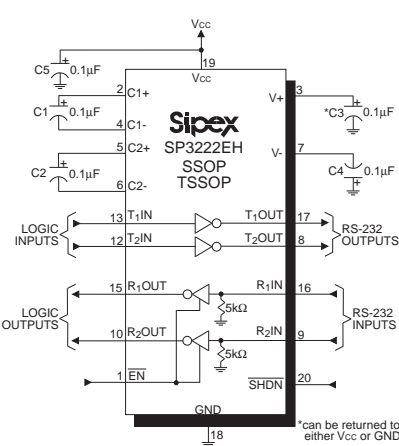
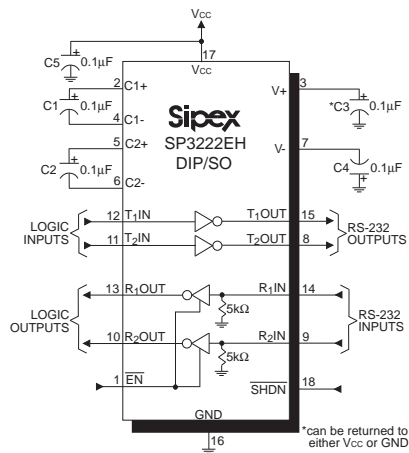
PIN NUMBER			NAME	DESCRIPTION
SP3222EH		SP3232EH		
18 Pin DIP/SOIC	20 Pin SSOP/TSSOP	16 Pin PDIP/SOIC/ SSOP/TSSOP		
1	1	-	\overline{EN}	Receiver Enable. Apply logic LOW for normal operation. Apply Logic HIGH to disable the receiver outputs (high-Z state).
2	2	1	C1+	Positive terminal of the voltage doubler charge-pump capacitor.
3	3	2	V+	+5.5V generated by the charge pump.
4	4	3	C1-	Negative terminal of the voltage doubler charge-pump capacitor.
5	5	4	C2+	Positive terminal of the inverting charge-pump capacitor.
6	6	5	C2-	Negative terminal of the inverting charge-pump capacitor.
7	7	6	V-	-5.5V generated by the charge pump.
15	17	14	T ₁ OUT	RS-232 driver output.
8	8	7	T ₂ OUT	RS-232 driver output.
14	16	13	R ₁ IN	RS-232 receiver input.
9	9	8	R ₂ IN	RS-232 receiver input.
13	15	12	R ₁ OUT	TTL/CMOS receiver output.
10	10	9	R ₂ OUT	TTL/CMOS receiver output.
12	13	11	T ₁ IN	TTL/CMOS driver input.
11	12	10	T ₂ IN	TTL/CMOS driver input.
16	18	15	GND	Ground.
17	19	16	V _{CC}	+3.0V to +5.5V supply voltage
18	20	-	\overline{SHDN}	Shutdown Control Input. Drive HIGH for normal device operation. Drive LOW to shutdown the drivers (high-Z output) and the on-board power supply.
-	11, 14	-	NC	No Connect.

SP3222EH/SP3232EH

pin configurations



typical application circuits



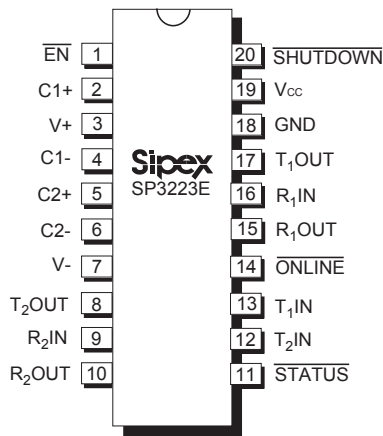
ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP3222EHCA	0°C to +70°C	20-Pin SSOP
SP3222EHCP	0°C to +70°C	18-Pin PDIP
SP3222EHCT	0°C to +70°C	18-Pin SOIC
SP3222EHCY	0°C to +70°C	20-Pin TSSOP
SP3232EHCA	0°C to +70°C	16-Pin SSOP
SP3232EHCP	0°C to +70°C	16-Pin PDIP
SP3232EHCT	0°C to +70°C	16-Pin Wide SOIC
SP3232EHCY	0°C to +70°C	16-Pin TSSOP

Intelligent +3.0V to +5.5V RS-232 Transceivers

features

- Meets True EIA/TIA-232-F Standards from a +3.0V to +5.5V Power Supply
- Interoperable with EIA/TIA-232 and Adheres to EIA/TIA-562 Down to a +2.7V Power Source
- AUTO ON-LINE™ Circuitry Automatically Wakes up from a 1µA Shutdown
- Minimum 120kbps Data Rate under Load
- Regulated Charge Pump Yields Stable RS-232 Outputs Regardless of V_{CC} Variations
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge

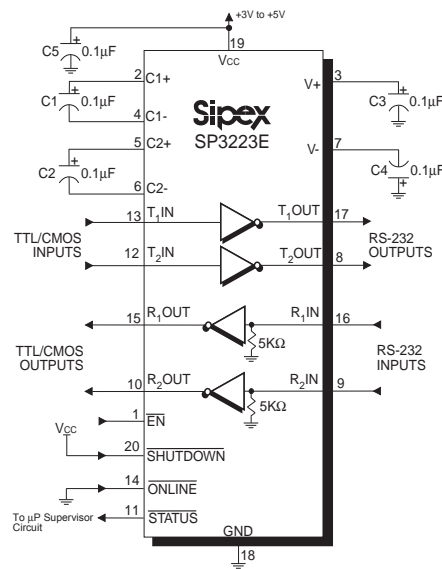


description

The SP3223E and 3243E products are RS-232 transceiver solutions intended for portable or hand-held applications such as notebook and palmtop computers. The SP3223E and 3243E use an internal high-efficiency, charge-pump power supply that requires only 0.1µF capacitors in 3.3V operation. This charge pump and Sipex's driver architecture allow the SP3223E/3243E series to deliver compliant RS-232 performance from a single power supply ranging from +3.3V to +5.0V. The SP3223E is a 2-driver/2-receiver device, and the SP3243E is a 3-driver/5-receiver device ideal for laptop/notebook computer and PDA applications. The SP3243E includes one complementary receiver that remains alert to monitor an external device's Ring Indicate signal while the device is shutdown.

The AUTO ON-LINE™ feature allows the device to automatically "wake-up" during a shutdown state when an RS-232 cable is connected and a connected peripheral is turned on. Otherwise, the device automatically shuts itself down drawing less than 1µA.

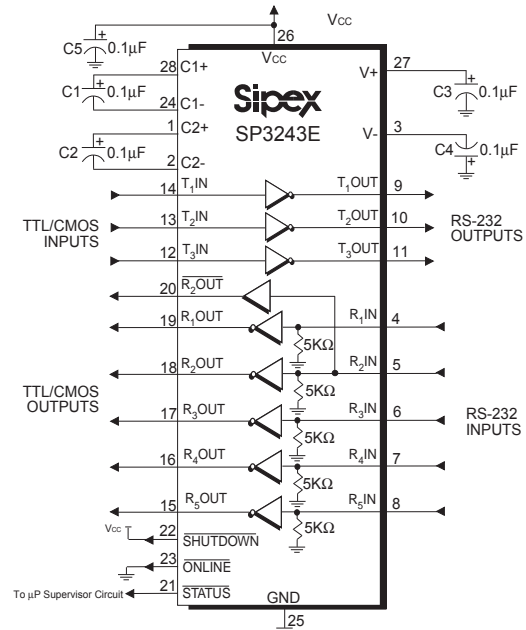
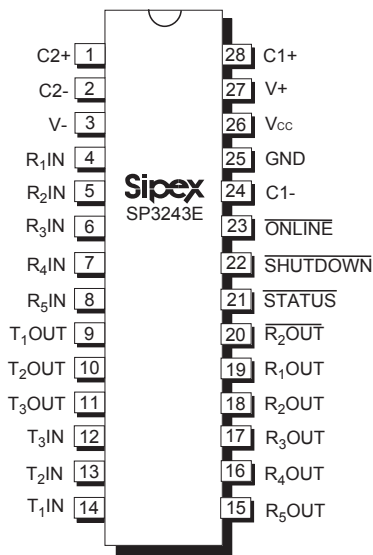
SP3223E typical application circuit



Part No.	Power Supplies	RS-232 Drivers	RS-232 Receivers	External Components	AUTO ON-LINE™ CIRCUITRY	TTL 3-State	No. of Pins
SP3223E	+3.0V to +5.5V	2	2	4	Yes	Yes	20
SP3243E	+3.0V to +5.5V	3	5	4	Yes	Yes	28

SP3223E/SP3243E

SP3243E pin configuration and typical application circuit



pin number		name	description
SP3223E	SP3243E		
1	-	$\overline{\text{EN}}$	Receiver Enable. Apply logic HIGH for normal operation. Apply logic LOW to disable the receiver outputs (high-Z state).
2	28	C1+	Positive terminal of the voltage doubler charge-pump capacitor.
3	27	V+	Regulated +5.5V output generated by the charge pump.
4	24	C1-	Negative terminal of the voltage doubler charge-pump capacitor.
5	1	C2+	Positive terminal of the inverting charge-pump capacitor.
6	2	C2-	Negative terminal of the inverting charge-pump capacitor.
7	3	V-	Regulated -5.5V output generated by the charge pump.
16	4	R ₁ IN	RS-232 receiver input.
9	5	R ₂ IN	RS-232 receiver input.
-	6	R ₃ IN	RS-232 receiver input.
-	7	R ₄ IN	RS-232 receiver input.
-	8	R ₅ IN	RS-232 receiver input.
15	19	R ₁ OUT	TTL/CMOS receiver output.
10	18	$\overline{\text{R}}_2\text{OUT}$	TTL/CMOS receiver output.
-	20	R ₂ OUT	Noninverting receiver-2 output, active in shutdown.
-	17	R ₃ OUT	TTL/CMOS receiver output.
-	16	R ₄ OUT	TTL/CMOS receiver output.
-	15	R ₅ OUT	TTL/CMOS receiver output.

SP3223E/SP3243E

pin description: continued

pin number		name	description
SP3223E	SP3243E		
11	21	$\overline{\text{STATUS}}$	TTL/CMOS Output indicating ONLINE and SHUTDOWN status.
13	14	T ₁ IN	TTL/CMOS driver input.
12	13	T ₂ IN	TTL/CMOS driver input.
-	12	T ₃ IN	TTL/CMOS driver input.
14	23	$\overline{\text{ONLINE}}$	Apply logic HIGH to override AUTO ON-LINE circuitry keeping drivers active ($\overline{\text{SHUTDOWN}}$ must also be logic HIGH).
17	9	T ₁ OUT	RS-232 driver output.
8	10	T ₂ OUT	RS-232 driver output.
-	11	T ₃ OUT	RS-232 driver output.
18	25	GND	Ground.
19	26	V _{CC}	+3.0V to +5.5V supply voltage.
20	22	$\overline{\text{SHUTDOWN}}$	Apply logic LOW to shut down drivers and charge pump. This overrides all AUTO ON-LINE™ circuitry and $\overline{\text{ONLINE}}$.

ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Temperature Range		Package Type
0°C to +70°C	-40°C to +85°C	
SP3223ECA	SP3223EEA	20-pin SSOP
SP3223ECP	SP3223EEP	20-pin PDIP
SP3223ECY	SP3223EEY	20-pin TSSOP
SP3243ECA	SP3243EEA	28-pin SSOP
SP3243ECT	SP3243EET	28-pin Wide SOIC



SP3223EH/3243EH

High Speed Intelligent +3.0V to +5.5V RS-232 Transceivers

features

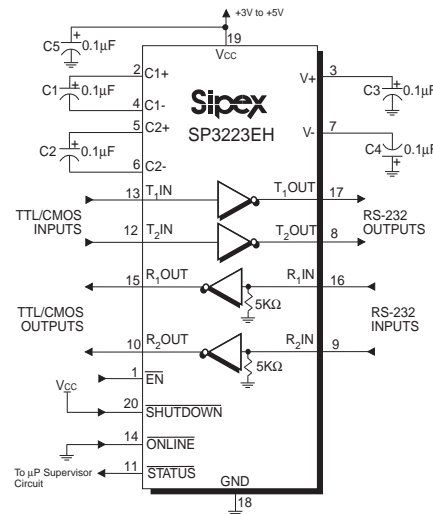
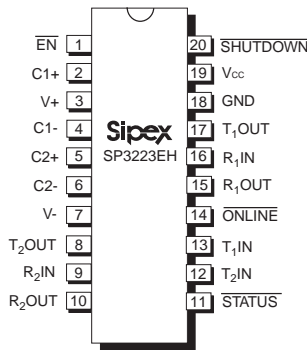
- Meets true EIA/TIA-232-F standards from a +3.0V to +5.5V power supply
- Interoperable with EIA/TIA-232 and adheres to EIA/TIA-562 down to a +2.7V power source
- AUTO ON-LINE™ circuitry automatically wakes up from a 1mA shutdown
- Regulated charge pump yields stable RS-232 outputs regardless of V_{CC} variations
- Enhanced ESD specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge
- 460 kbps minimum transmission rate
- Ideal for high speed RS-232 applications

description

The SP3223EH and 3243EH products are RS-232 transceiver solutions intended for portable or hand-held applications such as notebook and palmtop computers. The "H" series is based on Sipex's SP3223E/3243E series and has been enhanced for high speed. The data rate is improved to 460kbps, easily meeting the demands of high speed RS-232 applications. The SP3223EH and 3243EH use an internal high-efficiency, charge-pump power supply that requires only 0.1µF capacitors in 3.3V operation. This charge pump and Sipex's driver architecture allow the SP3223EH/3243EH series to deliver compliant RS-232 performance from a single power supply ranging from +3.3V to +5.0V. The SP3223EH is a 2-driver/2-receiver device, and the SP3243EH is a 3-driver/5-receiver device, ideal for laptop/notebook computer and PDA applications. The SP3243EH includes one complementary receiver that remains alert to monitor an external device's Ring Indicate signal while the device is shutdown.

The AUTO ON-LINE™ feature allows the device to automatically "wake-up" during a shutdown state when an RS-232 cable is connected and a connected peripheral is turned on. Otherwise, the device automatically shuts itself down drawing less than 1µA.

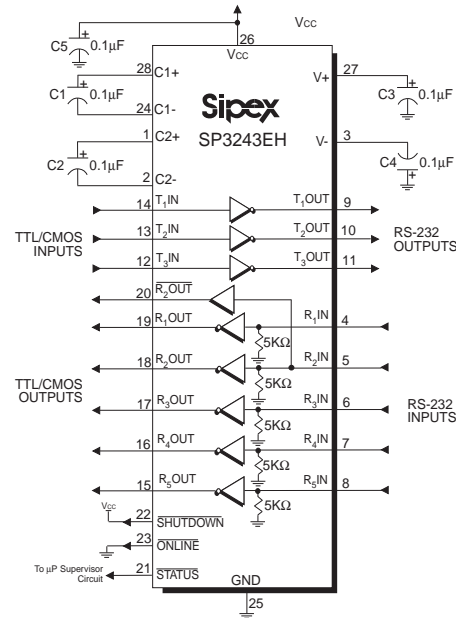
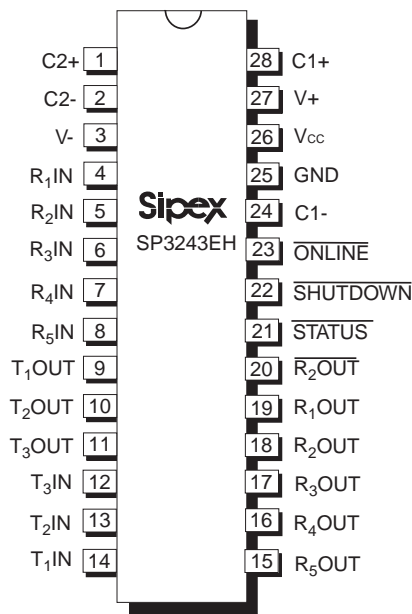
SP3223EH typical application circuit



Part No.	Power Supplies	RS-232 Drivers	RS-232 Receivers	External Components	AUTO ON-LINE™ Circuitry	TTL Tri-State	No. of Pins
SP3223EH	+3.0V to +5.5V	2	2	4 capacitors	YES	YES	20
SP3243EH	+3.0V to +5.5V	3	5	4 capacitors	YES	YES	28

SP3223EH/SP3243EH

SP3243EH pin configuration and typical application circuit



pin number		name	description
SP3223EH	SP3243EH		
1	-	\overline{EN}	Receiver Enable. Apply logic LOW for normal operation. Apply logic HIGH to disable the receiver outputs (high-Z state).
2	28	C1+	Positive terminal of the voltage doubler charge-pump capacitor.
3	27	V+	Regulated +5.5V output generated by the charge pump.
4	24	C1-	Negative terminal of the voltage doubler charge-pump capacitor.
5	1	C2+	Positive terminal of the inverting charge-pump capacitor.
6	2	C2-	Negative terminal of the inverting charge-pump capacitor.
7	3	V-	Regulated -5.5V output generated by the charge pump.
16	4	R ₁ IN	RS-232 receiver input.
9	5	R ₂ IN	RS-232 receiver input.
-	6	R ₃ IN	RS-232 receiver input.
-	7	R ₄ IN	RS-232 receiver input.
-	8	R ₅ IN	RS-232 receiver input.
15	19	R ₁ OUT	TTL/CMOS receiver output.
10	18	$\overline{R_2OUT}$	TTL/CMOS receiver output.
-	20	R ₂ OUT	Non-inverting receiver-2 output, active in shutdown.
-	17	R ₃ OUT	TTL/CMOS receiver output.

SP3223EH/SP3243EH

pin description: continued

pin number		name	description
SP3223EH	SP3243EH		
-	16	R ₄ OUT	TTL/CMOS receiver output.
-	15	R ₅ OUT	TTL/CMOS receiver output.
11	21	$\overline{\text{STATUS}}$	TTL/CMOS Output indicating online and shutdown status.
13	14	T ₁ IN	TTL/CMOS driver input.
12	13	T ₂ IN	TTL/CMOS driver input.
-	12	T ₃ IN	TTL/CMOS driver input.
14	23	$\overline{\text{ONLINE}}$	Apply logic HIGH to override AUTO ON-LINE™ circuitry keeping drivers active (SHUTDOWN must also be logic HIGH, refer to Table 2).
17	9	T ₁ OUT	RS-232 driver output.
8	10	T ₂ OUT	RS-232 driver output.
-	11	T ₃ OUT	RS-232 driver output.
18	25	GND	Ground.
19	26	V _{CC}	+3.0V to +5.5V supply voltage.
20	22	SHUTDOWN	Apply logic LOW to shut down drivers and charge pump. This overrides all AUTO ON-LINE™ circuitry and $\overline{\text{ONLINE}}$.

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ordering information - Please consult the factory for pricing and availability on a Tape-On-Reel option.

Part Number	Temperature Range	Package Type
SP3223EHCP	0°C to +70°C	20-pin PDIP
SP3223EHCA	0°C to +70°C	20-pin SSOP
SP3223EHCY	0°C to +70°C	20-pin TSSOP
SP3243EHCT	0°C to +70°C	28-pin Wide SOIC
SP3243EHCA	0°C to +70°C	28-pin SSOP