

Delphi Serial Transmitter/Receiver IC

▶ Description

The Delphi Serial Transmitter/Receiver IC (SXR) has been designed for minimal impact on the system and for RF suppression. It allows continued communication within a system that has a number of powered down units on line. The SXR was designed to communicate with up to 1.0 volt of ground difference between assemblies. The SXR acts as a buffer between a microprocessor's serial data port and a serial data bus by shaping the waveform for both transmitting and receiving operations.

▶ Features

- Available in 28-pin PLCC or 16-pin DIP
- 1-volt ground difference tolerance in single-ended operation
- 6-volt ground difference tolerance in differential operation
- Tri-state output
- Receiver filtering
- Reduced Radio Frequency Interference (RFI)
- No Hardware Master
- Up to 10 SXRs on a common bus
- Allows communication on the bus when a number of assemblies are powered down
- Output short to battery protection

▶ Packaging

- 16-pin DIP
- 28-pin PLCC

▶ Typical Applications

- Serial Data Communications (8192 baud, NRZ)
- Primarily Automotive

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Recommended Operating Conditions			
Characteristic	Symbol	Value	Unit
Supply Voltage	V _{cc}	4.75 to 5.5	V
Input Voltage	V _{in}	0 to V _{cc}	V
Serial Data Speed	BPS	8192	Baud
Operating Temperature Range, Ambient (PLCC)	T _a	-40 to 125	°C
Operating Temperature Range (DIP)	T _a	-40 to 110	°C

Absolute Maximum Ratings			
Characteristic	Symbol	Value	Unit
Supply Voltage	V _{cc}	7	V
Input Voltage	V _{in}	-1 to 7	V
Voltage at the Output Bus		-1 to 16	V
Storage Temperature	T _{stg}	-65 to 150	°C
Maximum Junction Temperature	T _j	+150	°C

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Electrical Performance Characteristics					
Characteristics	Symbol	Condition	Min	Max	Unit
Input Voltage Low TXIN, TE, DE	Vilt			0.8	V
Input Voltage High TXIN, TE, DE	Viht		2.0		V
Output Voltage Low TXOUT	Volt			0.152*Vcc	V
Output Voltage High TXOUT	Voht		0.865*Vcc		V
Input Current	lit	Vin=0 to 2.4V TXIN	-75	-300	μA
		Vin=0.4 to 4V TE	15	50	μA
		Vin=0.4 to 4V DE		±20	μA
Tristate Leakage Current	lots	TE=DE=GND, TXOUT=-1V to 16V	-360	180	μA
Fault Condition Output Current	lofc	TE=DE=Vcc=TXIN=GND, TXOUT=-16V to 16V	-120	180	μA
Output Current TXOUT	lot	TE=Vcc, DE=GND Transmitting "0", Vout=0.2*Vcc	6.5		mA
		TE=Vcc, DE=GND Transmitting "1", Vout=0.8*Vcc	-6.5		mA
Input Threshold	Vt	V(RXIN*)=2.35V, Vcc=5.0V	2.25	2.45	V
Input Current RXIN, RXIN*	lir1	-1V < Vin < 16 V	-40	130	μA
Input Current Offset RXIN, RXIN*	lio	Vin=0V to 4V	-10	10	μA
RXOUT Output Voltage Low	Vol	Iol=400μA		0.4	V
RXOUT Output Voltage High	Voh	Iol=-15μA		0.8*Vcc	V
Supply Current	Lcc	TE=DE=0V, TXIN=Vcc		25	mA
		TE=Vcc, DE=0V, TXIN=4096Hz, 50% duty cycle sq wave		63	mA
Short Circuit Supply Current	lccs	DE=0V, TXIN=4V, TE=4V, V(TXOUT)=-1V		120	mA
		DE=0V, TXIN=0V, TE=4V, V(TXOUT)=16V		75	mA
Output Rise/Fall Time			12.5	17	μS
Enable/Disable Times				25	μS
Harmonic Content of Output Signal	Vhct	530kHz < f < 1670kHz, f(TXIN)=4096Hz 50% duty cycle		80	μV
Receiver Pulse Width Distortion	tpwdr		-6	1	μS