SIT Corelite

SIT232

5V single power supply dual channel RS232 transceiver

Features:

Product appearance:

ÿ 5V±10% power supply;

ÿ Dual channel

ÿ 120kbps communication rate;

ÿ Driver input compatible with TTL/CMOS logic level

ÿ RS232 output compatible with TTL level input circuit

ÿ Receiver input impedance minimum 3Kÿ

SIT 232

Provide green lead-free package

describe

SIT232 is a 5V single-supply, dual-channel, low-power RS-232 that fully meets the requirements of TIA/EIA-232 standards

transceiver.

SIT232 includes two drivers and two receivers, both of which can be used independently, the receiver converts RS-232 signals into CMOS

Logic output level, EIA/TIA-232E defines a voltage greater than 3V as logic 0, all receivers of SIT232 are reversed, so the receiver responds to the

TTL level consistent with the EIA/TIA-232E level. Under 5V power supply, the charge pump only needs four external capacitors of 1uF, and the rate

can reach at least 120Kbps error-free data transmission

output, both can be enabled and disabled independently. Each driver and receiver can be used independently.
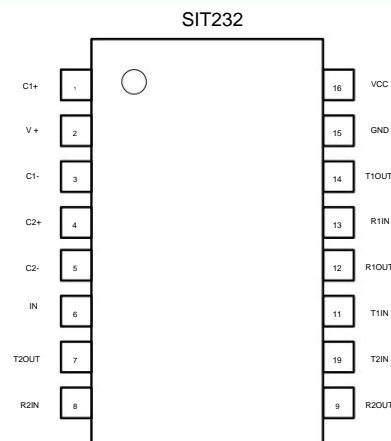
pinout diagram

SIT232

Pin	Signal		Pin	Signal
1	C1+		16	VCC
2	V +		15	GND
3	C1-		14	T1OUT
4	C2+		13	R1IN
5	C2-		12	R1OUT
6	IN		11	T1IN
7	T2OUT		19	T2IN
8	R2IN		9	R2OUT

Figure 1 SIT232 pinout diagram

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Limit parameters

parameter	symbol	size	unit
voltage	VCC	-0.3~+6	IN
Voltage doubler pin	V +	VCC-0.3~+14	IN
reverse voltage pin	IN-	+0.3~-14	IN
V+ + |V-|		+13	IN
Transmitter input pin	T1INÿT2IN	-0.3~VCC+0.3	IN
receiver input pin	R1INÿR2IN	±30	IN
Transmitter output pins T1OUT, T2OUT		V+ +0.3~V- -0.3	IN
Receiver output pins R1OUT, R2OUT		-0.3~VCC+0.3	IN
range of working temperature		-40~85	ÿ
Storage operating temperature range		-60~150	ÿ
Soldering temperature range		300	ÿ
Continuous power consumption	SOP16	760	mW
	DIP16	840	mW

Maximum limit parameter values are those values that may cause irreversible damage to the device. Under these conditions it is not conducive to the

normal operation of the device, continuous operation of the device under the maximum allowable rating may affect the reliability of the device, and the reference point of all voltages is ground.

pin definition

Pin No. Pin Name Pin Function	
1	C1+ Positive terminal of voltage doubler charge pump capacitor
2	V+ voltage doubler charge pump voltage port
3	C1- Negative terminal of voltage doubler charge pump capacitor
4	C2+ Positive terminal of the inverting charge pump capacitor
5	C2- Negative terminal of the inverting charge pump capacitor
6	V- Inverting charge pump voltage output
7	T2OUT second transmitter signal output terminal
8	R2IN second receiver signal input terminal
9	R2OUT The second receiver signal output terminal
10	T2IN second transmitter signal input terminal
11	T1IN First transmitter signal input terminal

12	R1OUT First receiver signal output terminal	
13	R1IN First receiver signal input terminal	
14	T1OUT First transmitter signal output terminal	
15	GND ground	
16	VCC power	

	Corelite		**SIT232**
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Supply current

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	Unit
No-load supply current Isup				5	10	mA

(Unless otherwise stated, the typical value is measured at VCC=+5V, Temp=25ÿ, and capacitors C1~C4=1uF)

Logic Input Electrical Characteristics

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	Unit
Logic control low level **VTTIN_L** T1IN, T2IN ports					**0.8**	**IN**
Logic control high level **VTTIN_H** T1IN, T2IN port **2**						**IN**
Logic Control Hysteresis		T1IN, T2IN port		**0.3**		**IN**
Input logic current **ITIN** T1IN, T2IN port				**±1**	**±10**	**uA**

(Unless otherwise stated, the typical value is measured at VCC=+5V, Temp=25ÿ, and capacitors C1~C4=1uF)

Receiver Output Electrical Characteristics

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	Unit
Receiver output low level VROL		IOUT=3.2mA,			0.4	IN
Receiver output high level VROH		IOUT=-1mA, (if not	3.5			IN

otherwise specified, the typical value is measured at VCC=+5V, Temp=25ÿ, capacitor C1~C4=1uF)

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Receiver Input Electrical Characteristics

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	Unit
Receiver Input Range **VRIN**			**-30**		**+30**	**IN**
Receiver Input Low Threshold **VRIL**			0.8	1.1		IN
Receiver Input High Threshold **VRIH**				1.5	2.4	IN
receiver input Hysteresis				0.4		IN
Receiver Input Impedance **RRIN**			3	5	7	**kÿ**

(Unless otherwise stated, the typical value is measured at VCC=+5V, Temp=25ÿ, and capacitors C1~C4=1uF)

Transmitter Output Electrical Characteristics

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	Unit
Transmitter output swing VTOUT		All transmitter outputs Terminated with 3 kÿ to ground load	±5.0	±7.3		IN
Transmitter output impedance RTOUT		VCC=0Vÿ Transmitter Input = ±2V	300			ÿ
Transmitter short circuit current Itsc				±10	±60	mA

(Unless otherwise stated, the typical value is measured at VCC=+5V, Temp=25ÿ, and capacitors C1~C4=1uF)

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Switching Characteristics

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	Unit
rate	Speed	RL=3kÿ, CL=1000pF		120		kbps
Receiver propagation delay	tRPHL	CL=150pF		0.5	10	us
	tRPLH			0.5	10	us
Transmitter Slew Rate	SR	RL=3kÿ~7 kÿÿ CL=50pF~1000pF From -3.0V to 3.0V or 3.0V~-3.0V		4		V/us

(Unless otherwise stated, the typical value is measured at VCC=+5V, Temp=25ÿ, and capacitors C1~C4=1uF)

illustrate

1 Dual charge pump operation

There are two charge pumps inside the SIT232 to support the level conversion work of the chip. The dual charge pumps convert the 5V power supply voltage to ±

10V (no-load) voltage is used for the 232 driver, each charge pump needs a flying capacitor (C1, C2) and a storage capacitor (C3, C4),

Generate V+ and V- supplies. As shown in Figure 8.

2 RS232 transmitter

Converts TTL/CMOS logic levels to levels compatible with EIA/TIA-232 standards, SIT232 transmitters operate under worst-case conditions

(3kΩ resistor and 4.5V supply voltage) can guarantee a data rate of 120kbps, the transmitter can drive multiple receivers in parallel, driving

The slew rate of the device is limited to 30V/us per EIA/TIA-232E requirements.

3 RS232 receiver

SIT232 has two independent receivers that convert RS-232 signals to CMOS logic output levels, EIA/TIA-232E

Define the voltage greater than 3V as logic 0, all receivers of SIT232 are reversed, so the receiver responds to the TTL level consistent with the EIA/TIA-232E level.

4 Typical applications

A typical dual-channel application scheme is shown in Figure 2, in which the typical capacitance value of C1-C5 is 1uF, and the power supply VCC should be connected with C1, C2

Decoupling capacitors of the same value to ground should be placed as close to the device as possible.
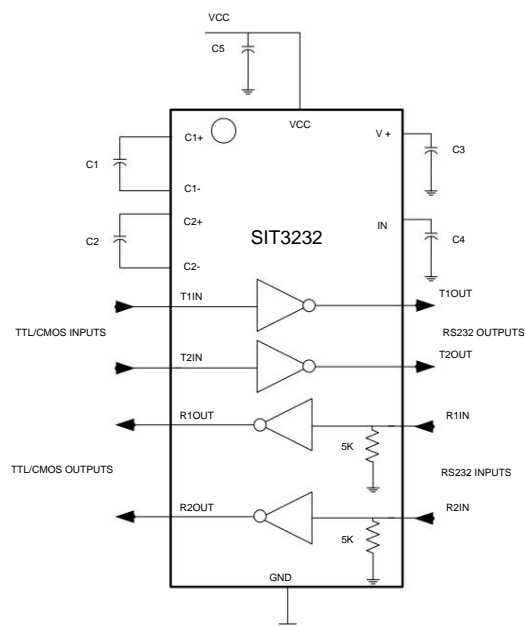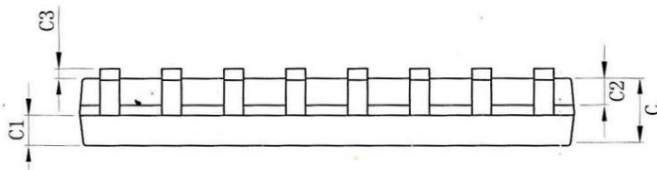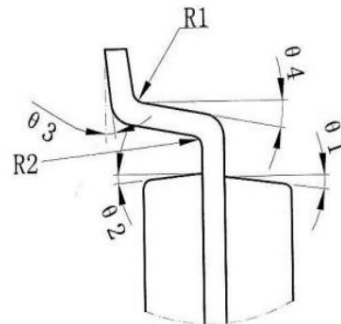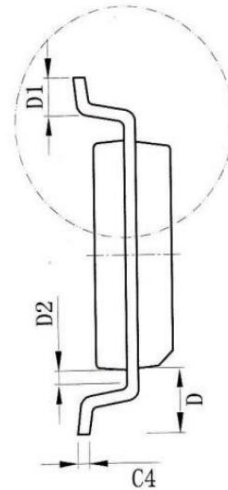

Figure 2 Typical dual-channel application scheme

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SOP16 Dimensions

Package size

Dimension	minimum value/mm	maximum value/mm
A	9.80	10.00
A1	0.356	0.456
A2	1.27TYP	
A3	0.302TYP	
B	3.85	3.95
B1	5.84	6.24
B2	5.00 TYPE	
C	1.40	1.60
C1	0.61	0.71
C2	0.54	0.64
C3	0.05	0.25
C4	0.203	0.233
D	1.05 TYPE	
D1	0.40	0.70
D2	0.15	0.25
R1	0.20TYP	
R2	0.20TYP	
ÿ1	8°~12°TYP4	
ÿ2	8°~12°TYP4	
ÿ3	0°~8°	
ÿ4	4°~12°	

φ1.0±0.1
球形标记
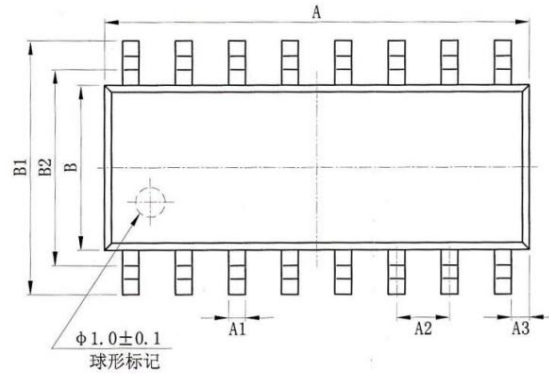
Ordering Information

order code	temperature	package
SIT232ESE	-40ÿ~85ÿ	16 SO

Tape packaging is 2500 pcs/reel