Features:

- Depend on3.3VSingle power supply operation;
- meets theISO 11898-2standard;
- bus pinESDprotect more than±16kVmannequin (HBM);
- Allows up to120nodes;
- Adjustable driver transition time for improved radiation performance;
- for Gundam1Mbpsdesigned for the data rate;
- Thermal shutdown protection;
- Open circuit fail-safe design;
- Glitch-free power-up and power-down protection for hot-swap applications

Product appearance:

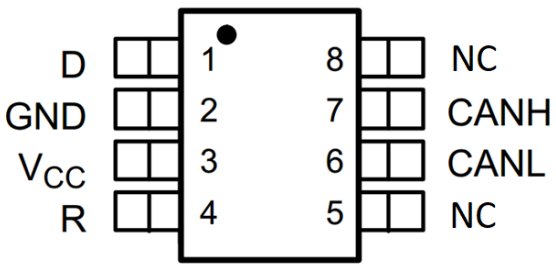
Provide green lead-free package

describe

SIT65HVD232is an applicationCANThe interface chip between the protocol controller and the physical bus, withCANcontroller's3.3V Microprocessors, microcontrollers (MCU)and digital signal processors (DSP)Or combined with equivalent protocol controllers for industrial automation, control, sensor and actuation systems, motor and robotic control, building and temperature control, telecommunications and base station control and status. Suitable for use withISO 11898standardCANThe application of serial communication physical layer.

parameter	symbol	Test Conditions	minimum	maximum	unit
Supply voltage	V_{cc}		3	3.6	V
maximum transfer rate	$1/t_{bit}$	non-return-to-zero code	1		Mbaud
CANH,CANL pin voltage	V_{can}		- 16	+ 16	V
Bus differential voltage	V_{diff}		1.5	3.0	V
ambient temperature	T_{amb}		- 40	125	°C

pinout diagram



Limit parameters

parameter	symbol	size	unit
voltage	V_{CC}	- 0.3~+6	V
MCUside port voltage	D,R	- 0.5~VCC+0.5	V
Bus side input voltage	CANL,CANH	- 18~18	V
6,7No. pin transient voltage 100Ωtest (see Fig.8)	V_{tr}	- 25~+25	V
receiver output current,Io		- 11~11	mA
Storage operating temperature range		- 40~150	°C
ambient temperature		- 40~125	°C
Soldering temperature range		300	°C

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. The reference point of all voltages is ground.

pin definition

pin number	pin name	pin function
1	D	CANTransmit data input (low in dominant bus state; high in recessive bus state), also known asTXD, drive input
2	GND	ground connection
3	VCC	transceiver3.3Vvoltage
4	R	CANReceive data output (low in dominant bus state; high in recessive bus state), also known asRXD, driver output
5	-	do not answer
6	CANL	low levelCANbus
7	CANH	high levelCANbus
8	-	do not answer

Bus Transmitter DC Characteristics

symbol	parameter		Test Conditions	minimum	typical	maximum	unit
$V_{O(D)}$	The output voltage (dominant)	CANH	VI=0V ,R 60Ω (see Fig.1,picture2)	2.45		VCC	V
		CANL		0.5		1.25	
$V_{OD(D)}$	Differential output voltage (dominant)		VI=0V, R_L=60Ω (see Fig.1)	1.5	2	3	V
			VI=0V,R_L=60Ω,R_S=0V (see Fig.3)	1.2	2	3	V
$V_{O(R)}$	The output voltage (implicit)	CANH	VI=3V,R_L=60Ω (see Fig.1)		2.3		V
		CANL			2.3		
$V_{OD(R)}$	Differential output voltage (recessive)		VI=3V	- 0.12		0.012	V
			VI=3V, NO LOAD	- 0.5		0.05	V
I_{IH}	High voltage input current		VI=2V	- 30			μA
I_{IL}	Low voltage input current		VI=0.8V	- 30			μA
I_{OS}	Short circuit output current		CANH=-2V	- 250			mA
			CANH=7V			1	
			CANL=-2V	- 1			
			CANL=7V			250	
Co	output capacitor		see receiver				
I_{CC}	Supply current		V_I=0V(dominant), no load		10	17	mA
			V_I=VCC(recessive), no load		10	17	mA

(Unless otherwise stated,V_{CC}=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Bus Transmitter Switching Characteristics

symbol	parameter	Test Conditions	minimum	typical	maximum	unit
t_{PLH}	Propagation delay (low to high)	R=0, that is, a short circuit (see Fig.4)		35	85	ns
		R=10kΩ		70	125	
		R=100kΩ		500	870	
t_{PHL}	Propagation delay (high to low)	R=0, that is, a short circuit (see Fig.4)		70	120	
		R=10kΩ		130	180	
		R=100kΩ		870	1200	
$t_{sk(p)}$	Propagation Delay Symmetry ($\lvert t_{PLH}- t_{PHL}\rvert$)	R=0, that is, a short circuit (see Fig.4)		35		
		R=10kΩ		60		

		R=100kΩ		370		
tr	Differential output rise time	R=0, that is, a short circuit (see Fig.4)	25	50	100	
		R=10kΩ	80	120	160	
		R=100kΩ	600	800	1200	
tf	Differential output fall time	R=0, that is, a short circuit (see Fig.4)	40	55	80	
		R=10kΩ	80	125	150	
		R=100kΩ	600	825	1000	

(Unless otherwise stated,V_{CC}=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Bus Receiver DC Characteristics

symbol	parameter	Test Conditions	minimum	typical	maximum	unit
V_{IT+}	Receiver Positive Threshold	see table1		750	900	mV
V_{IT-}	Receiver Negative Threshold	see table1	500	650		mV
V_{hys}	Hysteresis interval	VIT+- VIT-		100		mV
V_{OH}	High level output voltage	- 6V< <500mV =-8mA(see Fig.5)	2.4			V
V_{OL}	Low level output voltage	900mV< <6V =8mA(see Fig.5)			0.4	V
	Bus input current	VIH=7V,VCC=0V	100		350	μA
		VIH=7V,VCC=3.3V	100		250	μA
		VIH=-2V,VCC=0V	- 100		- 20	μA
		VIH=-2V,VCC=3.3V	- 200		- 30	μA
	Bus input resistance	ISO 11898-2Corresponding standard	20	35	50	KΩ
	Differential input resistance	ISO 11898-2Corresponding standard	40		100	KΩ
	Bus input capacitance	ISO 11898-2Corresponding standard		40		pF
	Differential Input Capacitance	ISO 11898-2Corresponding standard		20		pF

Icc	Supply current	see drive				

(Unless otherwise stated,V_{CC}=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Bus Receiver Switching Characteristics

symbol	parameter	Test Conditions	minimum	typical	maximum	unit
	Receiver propagation delay (low-high)	see figure6		35	50	ns
	Receiver propagation delay (high-low)	see figure6		35	50	ns
	pulse offset	| – |			10	ns
	When the output signal rises between	see figure6		1.5		ns
	When the output signal drops between	see figure6		1.5		ns

(Unless otherwise stated,V_{CC}=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Device Switching Characteristics

symbol	parameter	Test Conditions	minimum	typical	maximum	unit
$t_{(LOOP1)}$	loop delay1,driver input to receiver output, implicit to explicit	R=0, that is, a short circuit (see Fig.7)		70	115	ns
		R=10kΩ		105	175	
		R=100kΩ		535	920	
$t_{(LOOP2)}$	loop delay2,driver input to receiver output, dominant to recessive	R=0, that is, a short circuit (see Fig.7)		100	135	ns
		R=10kΩ		155	185	
		R=100kΩ		830	990	

(Unless otherwise stated,V_{CC}=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Over temperature protection

symbol	parameter	Test Conditions	minimum	typical	maximum	unit
Over temperature shutdown	Tj(sd)		155	165	180	℃

(Unless otherwise stated,V_{CC}=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Supply current

parameter	symbol	Test Conditions	minimum	typical	maximum	unit
Explicit power consumption		V_I=0V, LOAD=60Ω		50	70	mA
hidden power		V∓VCC, NO LOAD		6	10	mA

(Unless otherwise stated,VCC=3.3V±10%,Temp=T_{MIN}~T_{MAX}, the typical value isVCC=+3.3V,Temp=25℃)

Menu

surface1Receiver Characteristics in Common Mode ($V_{(RS)}$=1.2V)

V_{IC}	V_{ID}	V_{CANH}	V_{CANL}	ROUTPUT	
- 2V	900mV	- 1.55V	- 2.45V	L	VOL
7V	900mV	8.45V	6.55V	L	
1 V	6V	4V	- 2V	L	
4V	6V	7V	1V	L	
- 2V	500mV	- 1.75V	- 2.25V	H	VOH
7V	500mV	7.25V	6.75V	H	
1 V	- 6V	- 2V	4V	H	
4V	- 6V	1V	7V	H	
X	X	Open	Open	H	

(1)H=high level;L=low level;X=irrelevant

surface2Drive function

enterD	output		bus status
	CANH	CANL	
L	H	L	dominant
H	Z	Z	recessive
X	Z	Z	recessive

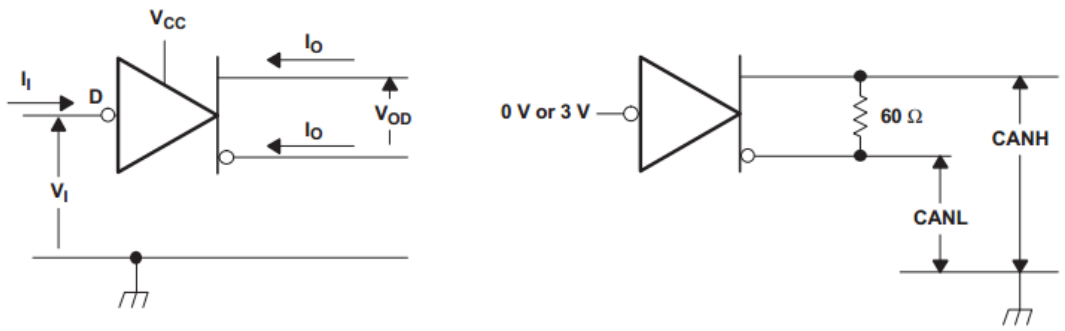
(1)H=high level;L=low level;Z=High impedance state

surface3Receiver function

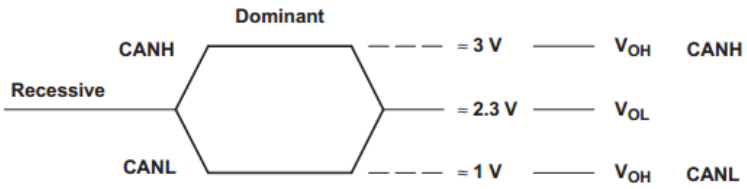
V_{ID}=CANH-CANL	Rs	outputR
V_{ID}≥0.9V	X	L
0.5< V_{ID}<0.9V	X	?
V_{ID}≤0.5V	X	H
Open	X	H

(2)H=high level;L=low level; ? = not sure;X=irrelevant

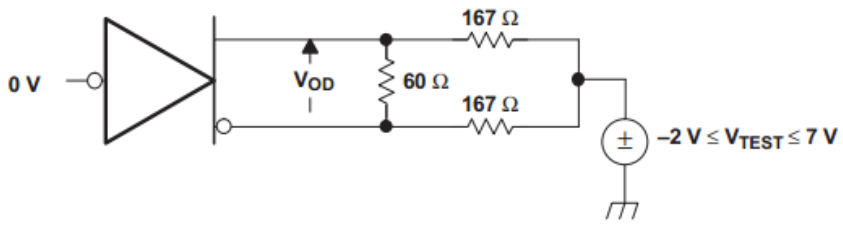
test circuit



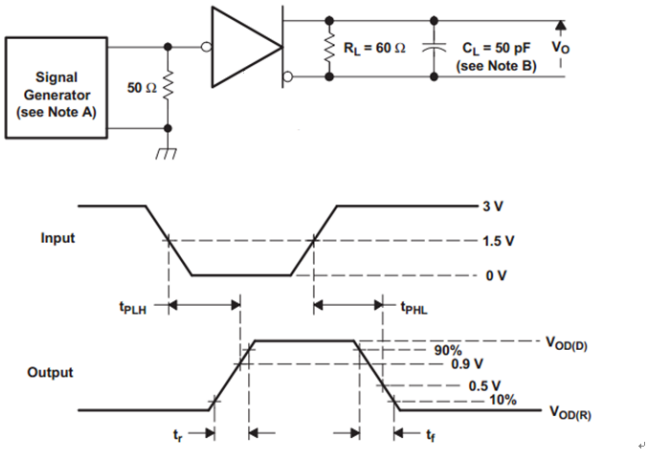
picture1Driver voltage, current test definition



picture2Bus Logic Voltage Definition



picture3driverVODtest circuit

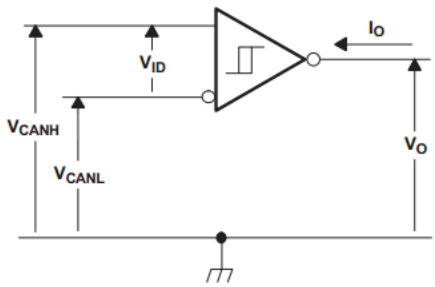


A, Input pulse generator features: pulse repetition ratePRR≤500KHz,50%duty cycle,tr<6ns,tf<6ns,Zo=50Ω

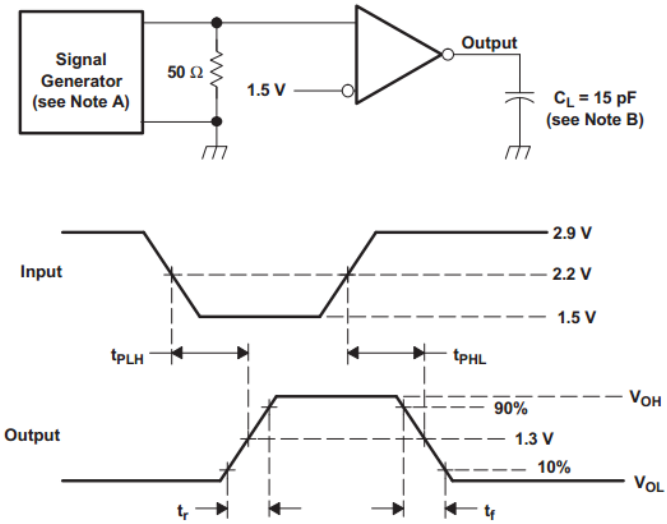
B,CLIncluding instrumentation with fixed capacitors, the error is in20%within.

picture4Driver Test Circuit and Voltage Waveforms

$$V_{IC} = \frac{V_{CANH} + V_{CANL}}{2}$$



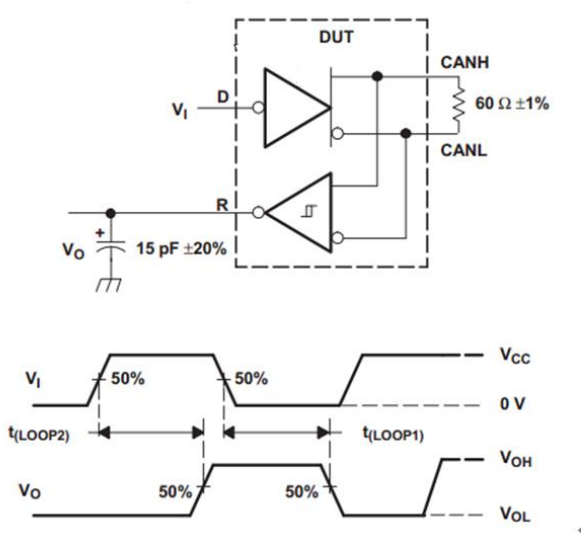
picture5Receiver Voltage and Current Definitions



A, Input pulse generator features: pulse repetition ratePRR≤500KHz,50%duty cycle,tr<6ns,tf<6ns,Zo=50Ω

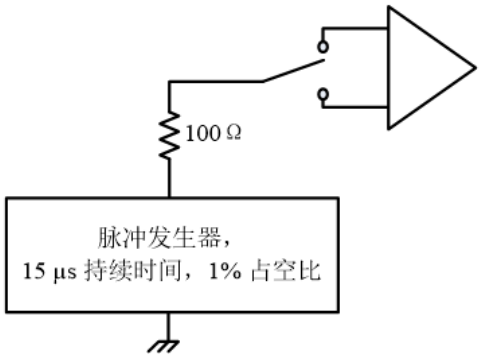
B,CLIncluding instrumentation with fixed capacitors, the error is in20%within.

picture6Receiver Test Circuit and Voltage Waveforms



A, Input pulse generator features: pulse repetition ratePRR≤125KHz,50%duty cycle,tr<6ns,tf<6ns,Zo=50Ω

picture7$t_{(LOOP)}$Test Circuits and Voltage Waveforms



picture8Overvoltage protection

illustrate

1Briefly

SIT65HVD232is an applicationCANThe interface chip between the protocol controller and the physical bus, withCANcontroller's3.3V Microprocessors, microcontrollers (MCU)and digital signal processors (DSP)Or combined with equivalent protocol controllers, it can be used in industrial automation, control, sensor and drive systems, motor and robot control, building and temperature control, telecommunications and base station control and status, etc.1Mbps, fully compatible"ISO 11898”standard.

2Short circuit protection

SIT65HVD232The driver stage has a current-limiting protection function to prevent the driver circuit from being short-circuited to the positive and negative supply voltages, the power consumption will increase when a short circuit occurs, and the short-circuit protection function can protect the driver stage from being damaged.

3Over temperature protection

SIT65HVD232With over temperature protection function, when the junction temperature exceeds160℃When , the current of the driver stage will be reduced, because the driver tube is the main energy-consuming component, the current reduction can reduce the power consumption and thus reduce the chip temperature. At the same time other parts of the chip still keep working normally.

4Electrical Transient Protection

Electrical transients often occur in automotive application environments,SIT65HVD232ofCANH,CANLFeatures to prevent damage from electrical transients.

5control mode

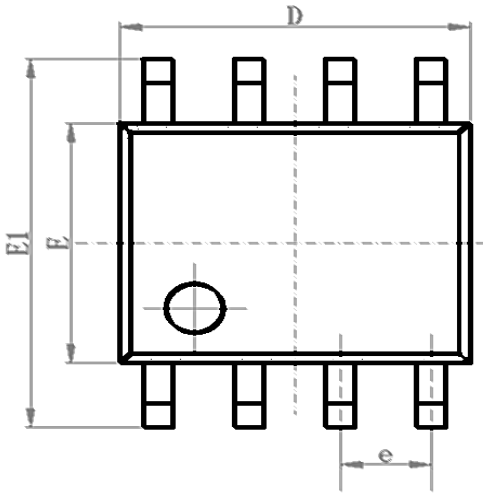
SIT65HVD232Provides default operating modes: High-speed mode.

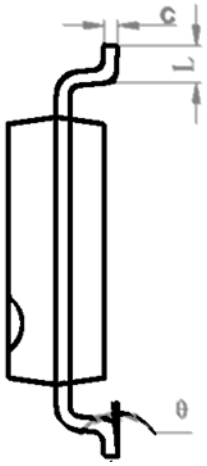
High-speed operating modes are often used in industrial applications. High-speed mode allows the output to switch as fast as possible, and there are no internal limits on the output rise and fall slopes.

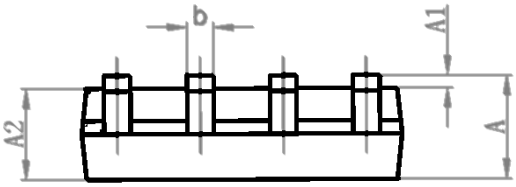
SOP8Dimensions

Package size

symbol	min/mm	Typical value/mm	max/mm
A	1.40	-	1.80
A1	0.10	-	0.25
A2	1.30	1.40	1.50
b	0.38	-	0.51
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
e		1.27BSC	
L	0.40	0.60	0.80
c	0.20	-	0.25
θ	0°	-	8°



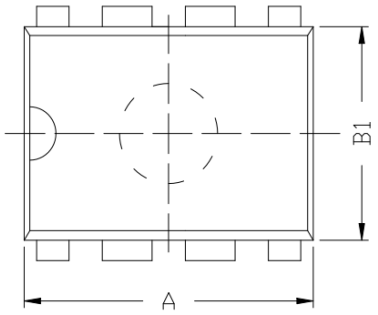


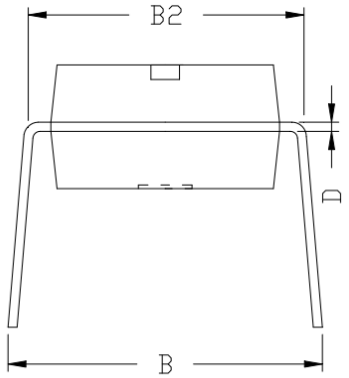


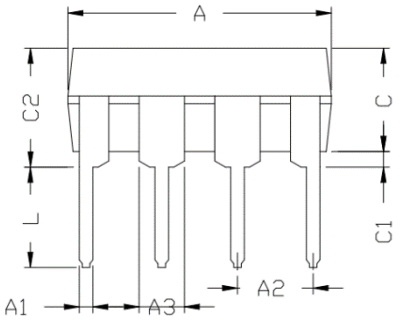
DIP8Dimensions

Package size

symbol	min/mm	Typical value/mm	max/mm
A	9.00	9.20	9.40
A1	0.33	0.45	0.51
A2	2.54TYP		
A3	1.525TYP		
B	8.40	8.70	9.10
B1	6.20	6.40	6.60
B2	7.32	7.62	7.92
C	3.20	3.40	3.60
C1	0.50	0.60	0.80
C2	3.71	4.00	4.31
D	0.20	0.28	0.36
L	3.00	3.30	3.60







Ordering Information

order code	temperature	package
SIT65HVD232DR	- 40°C~125°C	SOP8
SIT65HVD232P	- 40°C~125°C	DIP8

Taped packaging is2500pcs/disk

Important Notice

Corepower reserves the right to change the above information without prior notice.