TGS1567

Bus transceiver

Data sheet

1. Product Characteristics

- Compatible with HI-1567
- Complies with MIL-STD-1553A/B, MIL-STD-1760 standards
- Transfer rate up to 1Mbps
- Maximum power consumption less than 1W
- Compatible with TTL/CMOS levels
- Overcurrent protection
- Package type: CDIP20, SOP-20
- The quality level meets the national military standard GJB597A-1996 Level B requirements

2. Function description

TGS1567 is a dual-channel low-power transceiver chip that complies with MIL-STD-1553/1760 standards. Each channel of the transmitter section converts incoming complementary CMOS/TTL digital data into a biphase Manchester-encoded 1553 signal that is used to drive an isolation transformer. The switch of each channel is controlled with a control signal. Correspondingly, the receiver section converts the 1553 biphase code received from the bus into complementary CMOS/TTL data, and then inputs it to the Manchester decoder. Each of the two receivers has an enable terminal, which can force the receiver output to be always "0". To reduce package size, the transmitter output and receiver input are connected internally so that only two pins are required for each coupling transformer.

3. Block diagram

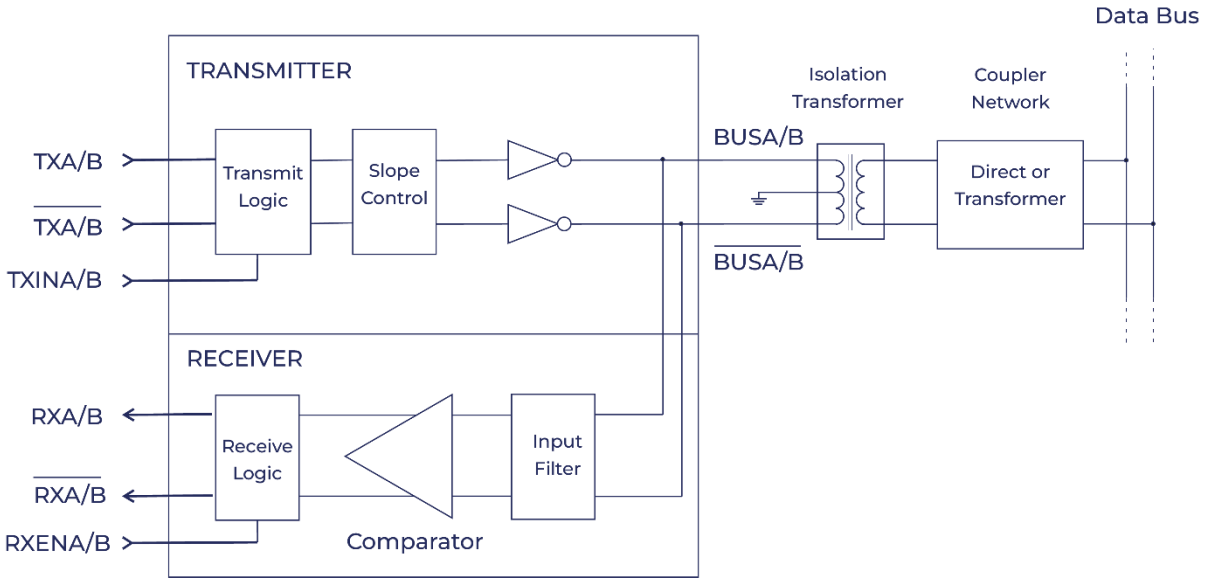


Figure 1. Block diagram

4. Package form diagram and package size

Product name meaning

Our integrated circuit products are labeled in accordance with the requirements of our company's program documents "Product Labeling and Traceability Control Procedure" and "Product Circuit Naming Specification". At the same time, if customers have requirements, product number identification can be carried out according to customer requirements without violating the basic characteristics of the product.

The naming of our current products generally does not include the military mark (J) unless the contract or user specifies the requirements. However, the quality level of the company's products all meet the quality levels stipulated in GJB597A-1996 or GJB2438A-2002 and the corresponding product detailed specifications. Require.

The content and meaning of the TGS1567 product model number are as follows:

TGS 1567 -C or P

Company name Product model Package type: C – Ceramic DIP-20 Package
P – Plastic SOP-20 Package

Package form diagram:

Unit is millimeters

Ceramic DIP-20 Package

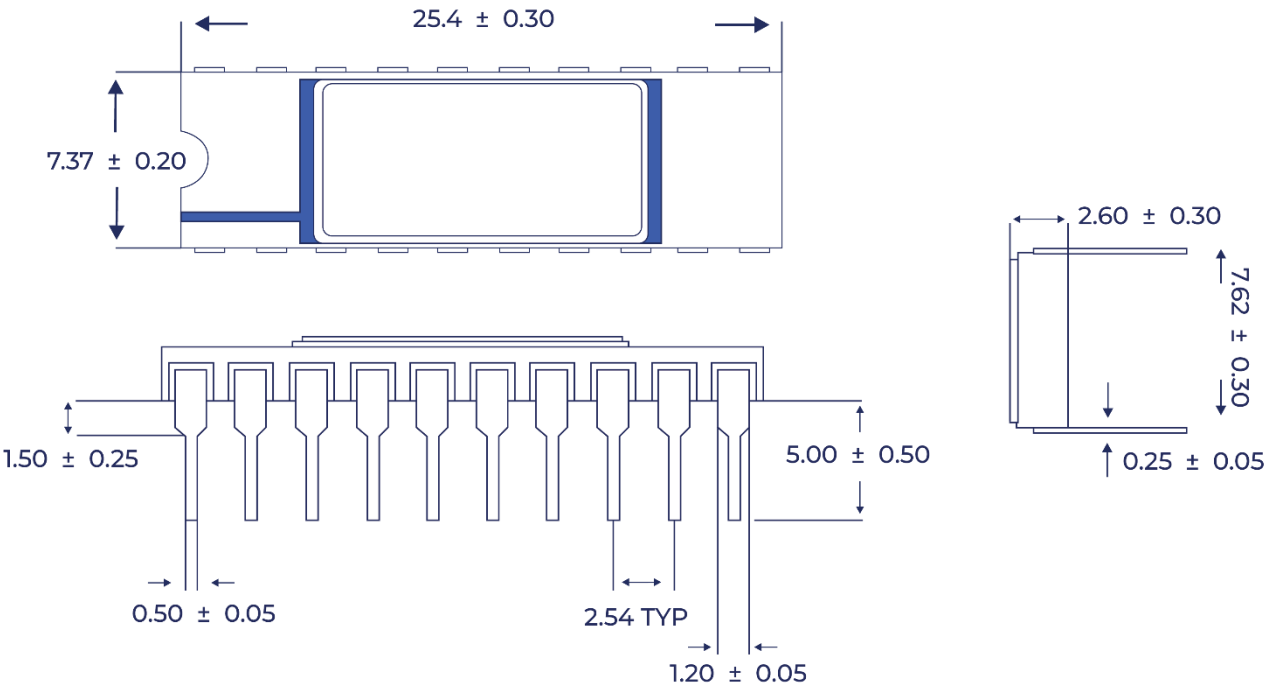
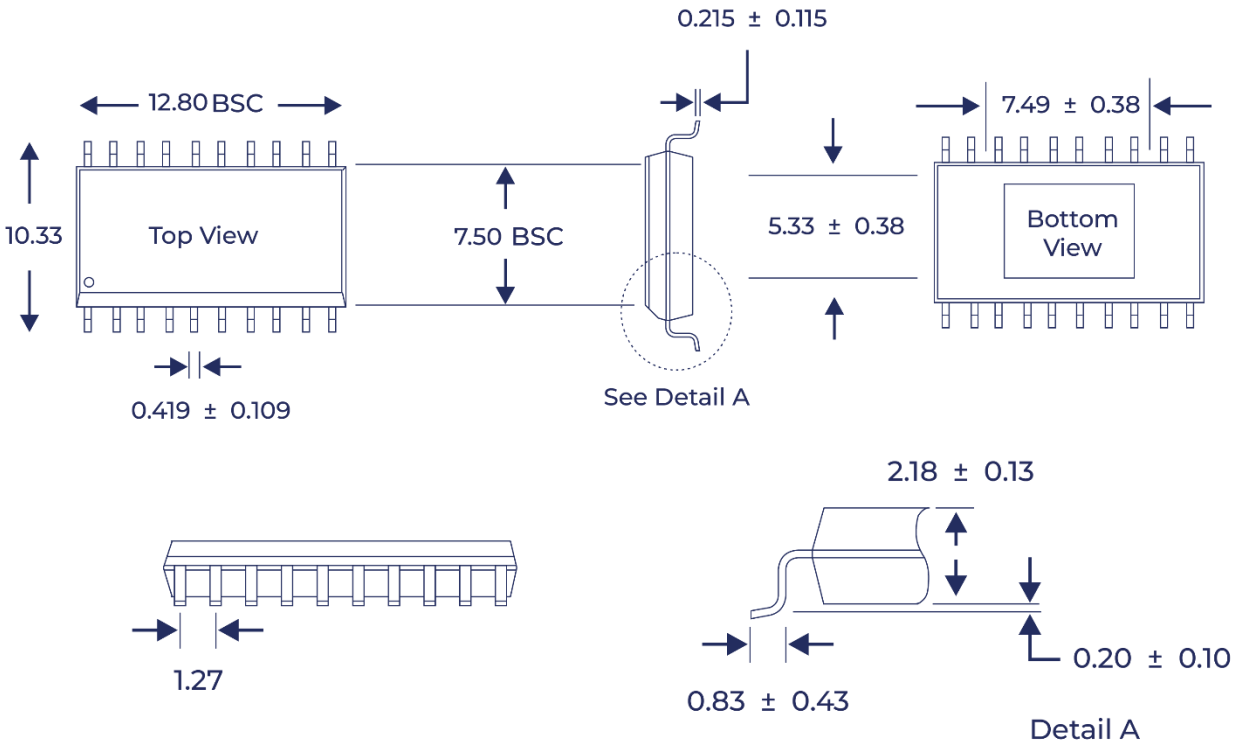


Figure 2. Overall dimensions

Plastic SOP-20 Package



Product marking

For example

PN: TGS1567-P

First line: Part number model

Second line: Manufacturer date code*

Note*

YY - last two digits of the calendar year

WW - last two digits being the week of the year

5. Terminal arrangement diagram

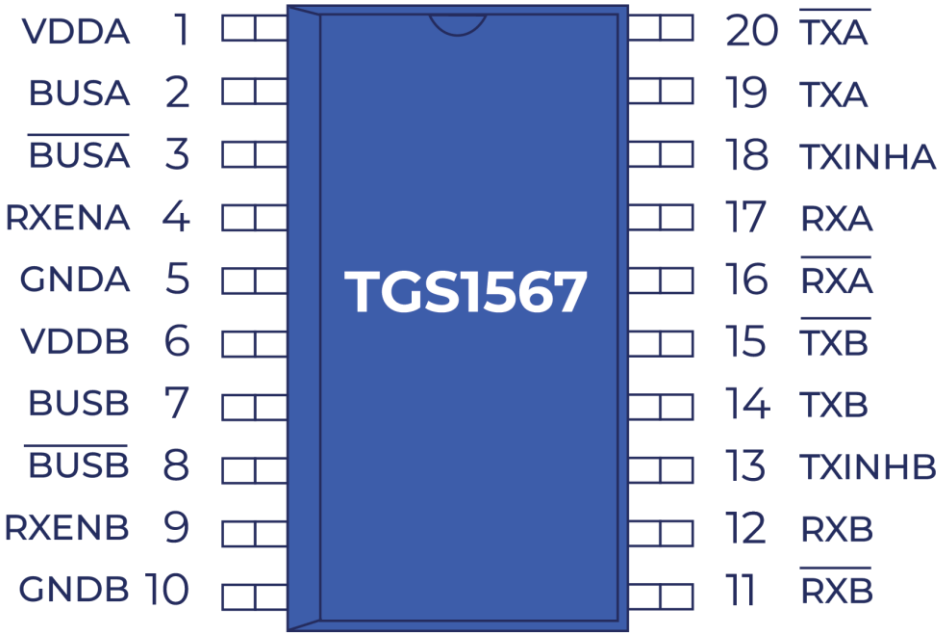


Figure 3. Pin arrangement (top view)

Table 1. Pinout function table

Terminal number	I/O	Function	Symbol	Terminal number	I/O	Function	Symbol
1	I	Power supply	VDDA	11	O	Digital output	#RXB
2	O	Analog output	BUSA	12	O	Digital output	RXB
3	O	Analog output	#BUSA	13	I	B sending prohibited	TXINHB
4	I	Receiver A enabled	RXENA	14	I	Digital input	TXB
5	I	Land	GNDA	15	I	Digital input	#TXB
6	I	Power supply	VDDB	16	O	Digital output	#RXA
7	O	Analog output	BUSB	17	O	Digital output	RXA
8	O	Analog output	#BUSB	18	I	A sending prohibited	TXINHA
9	I	Receiver B enabled	RXENB	19	I	Digital input	TXA
10	I	Land	GNDB	20	I	Digital input	#TXA
Note: means low level is effective							

6. Absolute maximum ratings

Supply voltage (V_{DD}): V～7.0V

Input voltage (V_{IN}): V～5.5V

Receiver differential voltage: $10V_{P-P}$

Drive output current (I_{OC}): 1.0A

Power consumption (PD): 0.95W

Load resistance to soldering temperature (10s) (Th): 275℃

Storage temperature (T_{stg}): -65℃ to 150℃

7. Recommended working conditions

Supply voltage (V_{DD}): 5.0V ±5%

Input high level voltage (V_{IH}): V

Input low level voltage (V_{IL}): V

Working temperature (T_A): -55℃ to 125℃

8. DC characteristic table

Table 2. DC characteristics table

Characteristic	Symbol	Condition Unless otherwise specified, V_{DD} = 5.0V -55℃ ≤ T_A ≤ 125℃	Limit value		Unit
			Smallest	Maximum	
Working current	I_{CC1}	Not sent	—	22	mA
	I_{CC2}	One channel transmits, 50% duty cycle	—	340	mA
	I_{CC3}	One channel transmits, 100% duty cycle	—	615	mA
Input high level voltage	V_{IH}	—	2.0	—	V
Input low level voltage	V_{IL}	—	—	0.8	V
Input high level current	I_{IH}	V_{IH} = 4.9V	—	20	μA
Input low level current	I_{IL}	V_{IL} = 0.1V	-20	—	μA
Output high level voltage	V_{OH}	I_{OUT} = -0.4 mA	2.7	—	V
Output low level voltage	V_{OL}	I_{OUT} = 4.0mA	—	0.4	V
Receiver					
Input level	V_{in}	Difference	—	8	VP-P
Input common mode voltage	V_{ICM}	—	-5.0	5.0	V-PK
Threshold voltage	V_{TH}	1MHz sine wave	0.56	1.2	VP-P
Transmitter					
Output voltage	V_{OUT}	35Ω load	7.0	9.0	VP-P
		140Ω load	28.0	36.0	VP-P
Output noise	V_{ON}	Differential, suppression	—	10.0	mVP-P
Output dynamic offset current press	V_{dyn}	35Ω load	-90	90	mV
		140Ω load	-360	360	mV

9. AC Characteristics table

Table 3. AC Characteristics Table

Characteristic	Symbol	Condition Unless otherwise specified, V_{DD}=5.0V -55℃ ≤ T_A ≤ 125℃	Limit value		Unit
			Minimum value	Maximum value	
Receiver					
Receiver delay	t_{DR}	Figure 4	—	450	ns
Receiver enable delay	t_{REN}	Figure 4	—	40	ns
Transmitter					
Drive latency	t_{DT}	Figure 5	—	150	ns
Rise time	t_r	35Ω load, Figure 5	100	300	ns
Fall time	t_f	35Ω load, Figure 5	100	300	ns
Inhibitory delay	t_{DI-H}	Suppress output, Figure 6	—	100	ns
	t_{DI-L}	Dynamic output, Figure 6	—	150	ns

10. Timing diagram

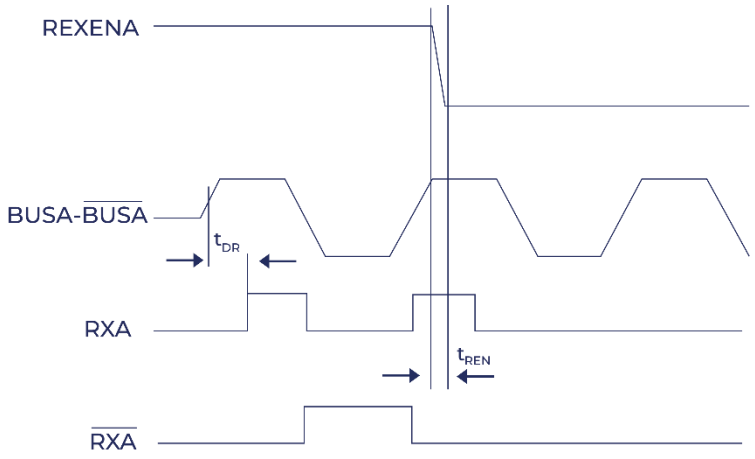


Figure 4. Receiver Timing Diagram

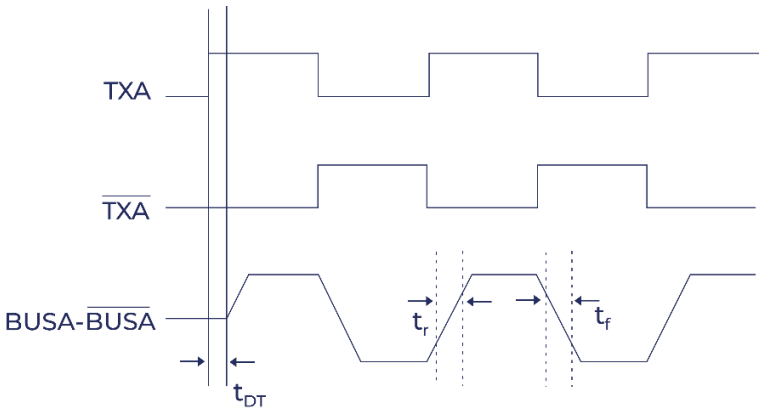


Figure 5. Transmitter Timing Diagram

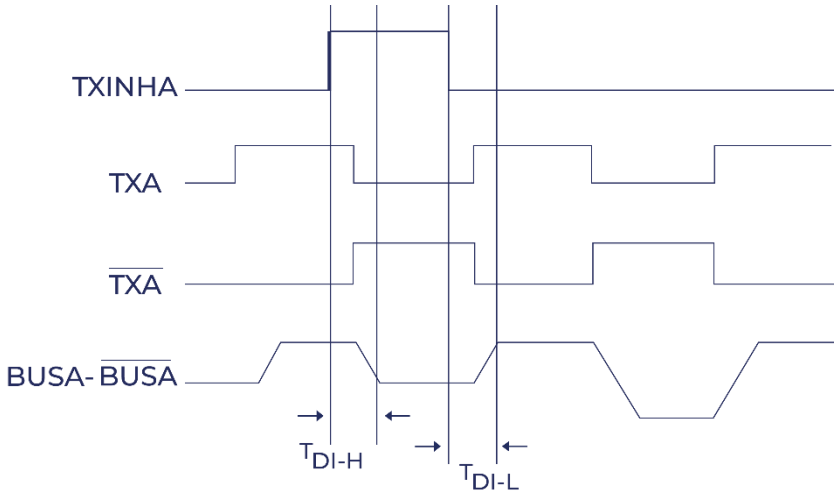


Figure 6. Transmitter Timing Diagram

11. Operating procedures and precautions

The device must be handled with anti-static measures. Wear anti-static gloves when handling chips to prevent the electrostatic impact of human body charges on the chip and damage to the chip. When inserting the chip into the base on the circuit board and when removing the chip from the base on the circuit board, pay attention to the direction of force application to ensure that the chip pins are evenly stressed. Do not use excessive force to damage the chip pins and render them unusable.

The following actions are recommended:

a) The device should be operated on an anti-static workbench or with finger cots;

b) Test equipment and appliances should be grounded;

c) Do not touch the device leads;

d) Devices should be stored in containers made of conductive materials (such as special boxes for integrated circuits);

e) Avoid using plastic, rubber or silk fabrics that cause static electricity during production, testing, use and transportation;

f) The relative humidity should be kept above 50% ±30% as much as possible.

12. Transportation and storage

The chip storage environment temperature is: -65℃ to +150℃.

Use designated anti-static packaging boxes for product packaging and transportation.

During transportation, ensure that the chip does not collide with foreign objects.

13. Unpacking and Inspection

When unpacking the chip and using it, please pay attention to the product logo on the chip casing. Make sure the product labels are clear and there are no stains or scratches. At the same time, pay attention to checking the chip shell and pins. Make sure that the tube shell is not damaged or scarred, and the pins are neat, missing or deformed.