TGS8585-P

ARINC429 bus signal driver

Data sheet

1. Product characteristics

Overview

TGS8585-P is an ARINC429 bus signal driver that converts 0-5V differential digital signals into the ±5V ARINC429 bus differential analog signal is transmitted with a maximum transmission rate of 100kbps. It is mainly used in the aviation field and is compatible with the foreign chip HI-8585.

Features

- Miniature package ARINC429 products
- SLP pin configures transmission rate mode
- Low power consumption dual power supply (±12V ~ ±15V) power supply
- Compatible with TTL input

Application scope

ARINC 429 bus system

2. Function description

TGS8585-P is a signal driver circuit that complies with the ARINC429 aviation bus protocol. Its main function is to convert 0-5V differential digital signals into ±5V ARINC429 bus analog signals for transmission, with a maximum transmission rate of 100kbps.

TGS8585-P is mainly composed of a reference circuit, a logic control circuit, a slope control circuit and an output drive circuit. The functional block diagram is shown in the figure below.

3. Principal block diagram

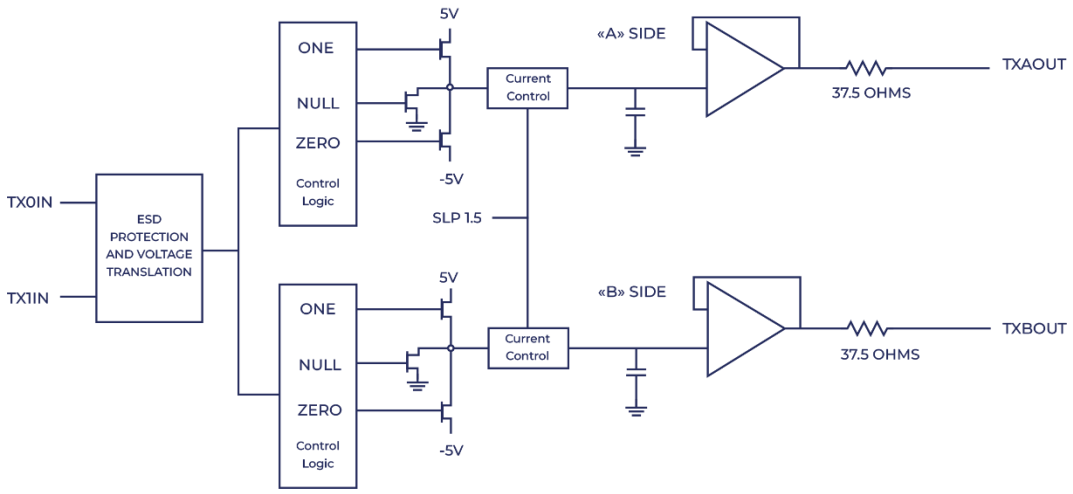

Figure 1. Chip principal block diagram

4. Package size diagram

The device is available in an 8-lead SOP plastic package. The specific package dimensions are shown in figure 2:

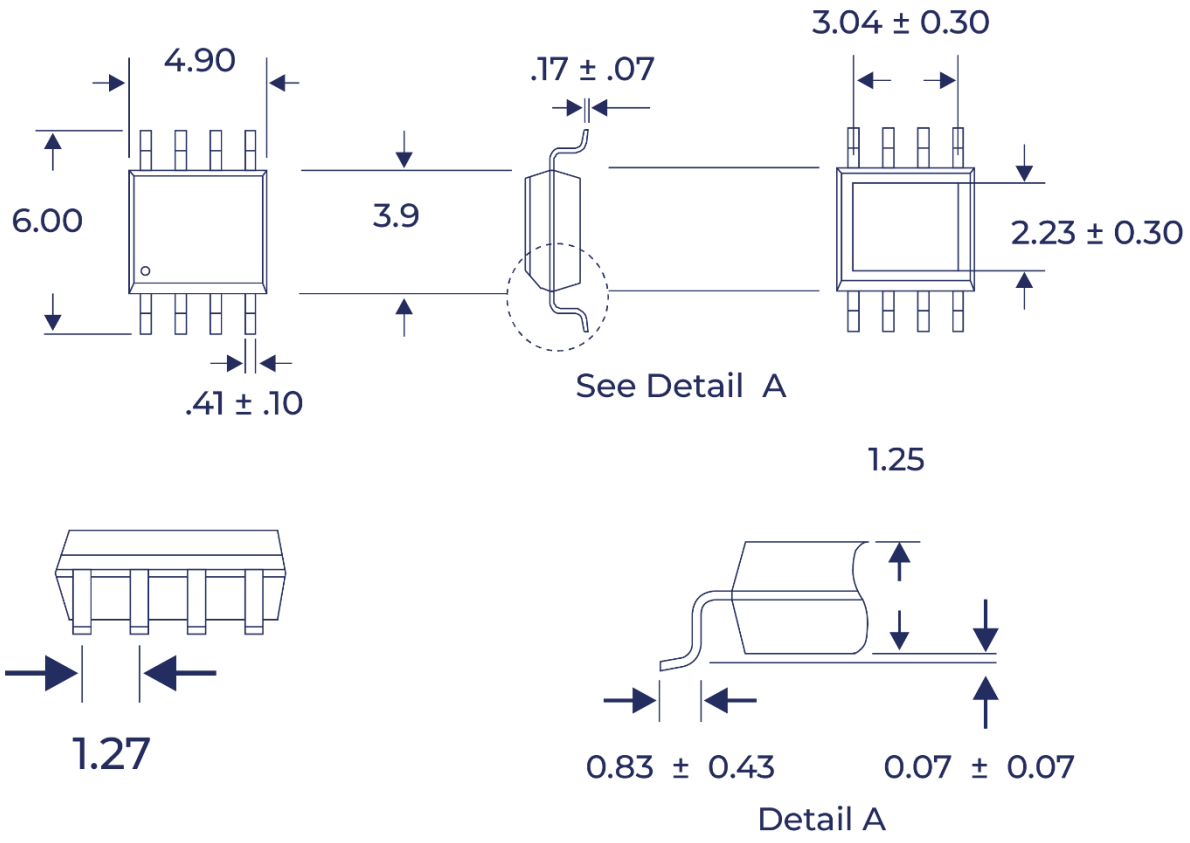

Figure 2. Package form diagram

Product marking

PN: TGS8585-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. Arrangement of terminals

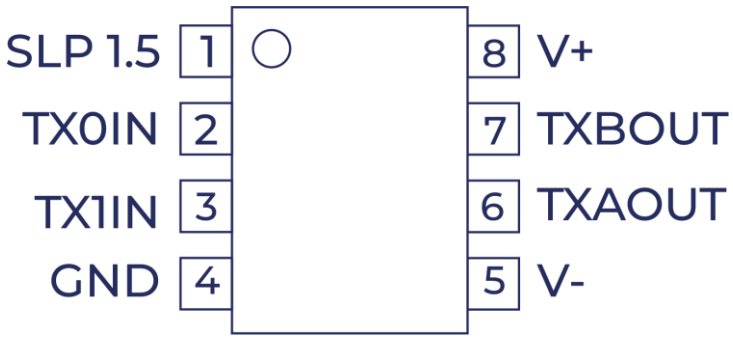

Figure 3 Terminal arrangement diagram

Table 1 Pinout function table

Terminal serial number	Symbol	I/O	Describe	Terminal serial number	Symbol	I/O	Describe
1	SLP1.5	I	Rate setting port	5	V-	P	-12 ~ -15V power supply
2	TX0IN	I	Signal input port	6	TXAOUT	O	Signal output
3	TX1IN			7	TXBOUT		
4	GND	P	Land	8	V+	P	+12~+15V power supply

6. Absolute maximum ratings

The absolute maximum ratings are as follows:

Supply voltage (V+): +20V

Supply voltage (V-): -20V DC current per input

Pin (I_{pin}): +10mA

Lead resistance to soldering temperature (10s) (T_h): 260℃

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

7. Recommended working conditions

Recommended working conditions are as follows:

Supply voltage (V+): +11.4V～+16.5V

Supply voltage (V-): -11.4V～-16.5V

Working temperature (T_A) -55℃～125℃

8. DC characteristics table

The direct current (DC) electrical characteristics of the TGS8585-P product are shown in the table below:

Table 1 DC characteristics

Characteristics	Symbol	Condition Unless otherwise specified, V+ = +12V ～ +15V, V- = -12V ～ -15V, -55℃ ≤ T_A ≤ 125℃	Limit value		Unit
			Minimum value	Maximum value	
Input high-level voltage (TX0IN, TX1IN, SLP1.5)	V_{IH}	—	2.1	V+	V
Input low-level voltage (TX0IN, TX1IN, SLP1.5)	V_{IL}	—	—	0.5	V
Input current (TX0IN, TX1IN, SLP1.5)	I_{IH}	V_{IN}=0V	—	0.1	μA
Input current (TX0IN, TX1IN, SLP1.5)	I_{IL}	V_{IN}=5V	—	0.1	μA
Differential output voltage	V_{DIFF1}	No load, TXAOUT-TXBOUT	9.00	11.00	V
	V_{DIFF0}	No load, TXAOUT-TXBOUT	-11.00	-9.00	V
	V_{DIFFN}	No load, TXAOUT-TXBOUT	-0.50	0.50	V
Output voltage (Ref to ground)	V_{DOUT}	No load	4.50	5.50	V
	V_{DOUT}	No load	-0.25	0.25	V

Continued table 2

Characteristics	Symbol	Condition Unless otherwise specified, V+ = +12V ～ +15V, V- = -12V ～ -15V, -55℃ ≤ T_A ≤ 125℃	Limit value		Unit
			Minimum value	Maximum value	
Working current (V+)	I_{DD}	SLP1.5 = V+, TX1IN and TX0IN = 0V: no load	—	14.0	mA
Working current (V-)	I_{EE}	SLP1.5 = V+， TX0IN and TX1IN = 0V: no load	-14.0	—	mA
Output impedance	Z_{OUT}	Single-ended output impedance	25	50	Ω
Functional testing	—	f =100 Kbps	—	—	—

9. AC characteristics table

The alternating current (AC) electrical characteristics of the TGS8585-P product are shown in the table below:

Table 3 AC characteristics

Characteristics	Symbol	Condition Unless otherwise specified, V+=+12V～+15V, V-=-12V～-15V, -55℃ ≤ T_A ≤ 125℃	Limit value		Unit
Output passes from high to low input delay time	tphlx	Figure 4, SLP1.5 = V+, no load -40℃ ≤ T_A ≤ 85℃	—	500	ns
Output passes from low to high input delay time	tplhx	Figure 4, SLP1.5 = V+, no load -40℃ ≤ T_A ≤ 85℃	—	500	ns
Output passes from high to low input delay time	tphlx	Figure 4, SLP1.5 = V+, no load -55℃ ≤ T_A ≤ 125℃		1000	ns
Output passes from low to high input delay time	tplhx	Figure 4, SLP1.5 = V+, no load -55℃ ≤ T_A ≤ 125℃		1000	ns
The output switches from high to low Change time (high speed)	tfx	Figure 4, SLP1.5 = V+, pin1 = logic 1	—	2.0	μs
The output changes from low to high Change time (high speed)	trx	Figure 4, SLP1.5 = V+, pin1 = logic 1	—	2.0	μs
The output switches from high to low Change time (low speed)	tfx	Figure 4, SLP1.5 = GND, pin1 = logic 0	5.0	15.0	μs
The output changes from low to high Change time (low speed)	trx	Figure 4, SLP1.5 = GND, pin1 = logic 0	5.0	15.0	μs

10. Timing diagram

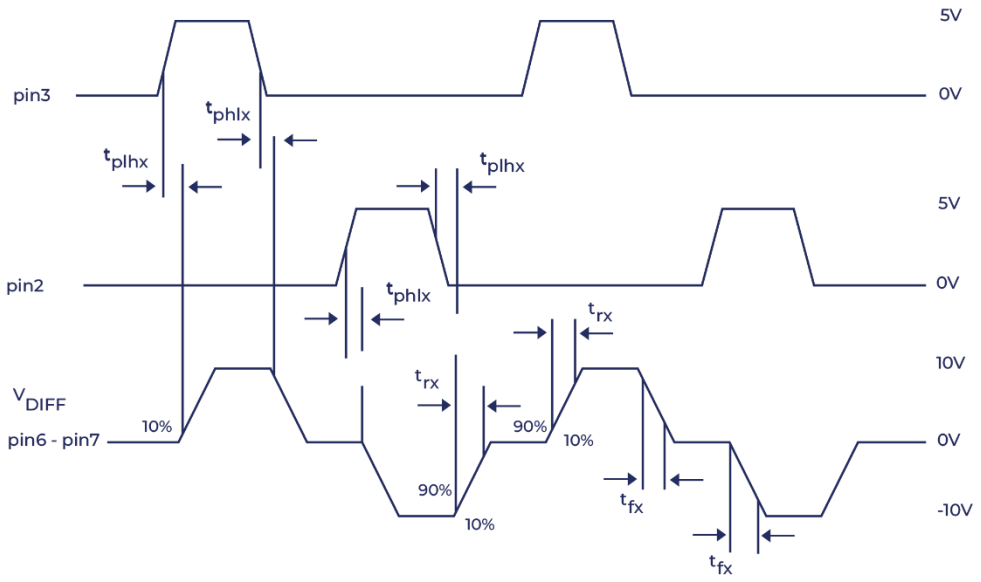

Figure 4. 429 bus transmitter timing diagram

11. Typical application guide

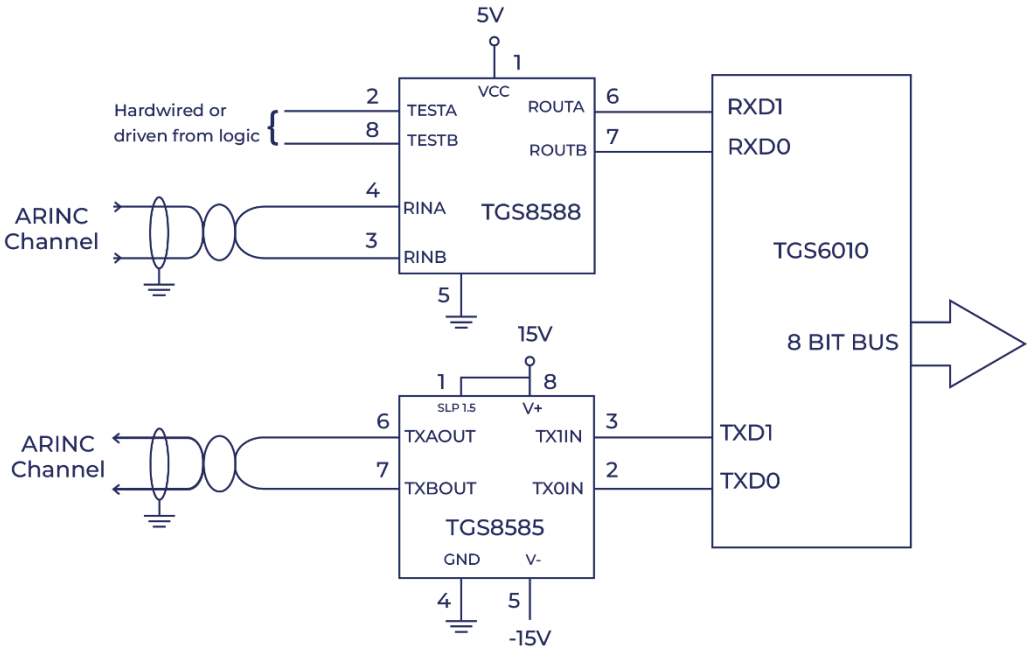

Figure 5. Device Circuit Design Guidelines

This device is mainly used in the ARINC429 bus system. As a transmitter, it can be used in conjunction with the ARINC429 controller and receiver to process ARINC 429 bus system communication data. Recommended operating voltage is ±12V~±15V, by configuring the SLP pin, the TGS8585-P can operate in 100kpbs and 12.5kbps transmission rate modes.

12. Operating procedures and precautions

The device must be handled with anti-static measures. Wear anti-static gloves when handling chips, and place people The electrostatic impact of body charge on the chip will damage 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:

- The device should be operated on an anti-static workbench or with finger cots;
- Test equipment and appliances should be grounded;
- Do not touch the device leads;
- Devices should be stored in contains made of conductive materials (such as special boxes for integrated circuits);
- Avoid using plastic, rubber or silk fabrics that cause static electricity during production, testing, use and transportation.
- Keep the relative humidity above 50% as much as possible.

13. 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.

14. Unpacking and Inspection

When unpacking the chip and using it, please pay attention to the product logo on the chip tube. 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.

15. Quality assurance and after-sales service

The company is committed to the development, production, promotion and application of military microprocessors, military programmable logic devices, military memories and military high-performance SOCs. The company's quality management system has passed the National Army GJB9001B-2009 system certification. In accordance with the requirements of the national military standard system, a complete quality management workflow has been developed to conduct daily quality management on product design, production and sales. Each product has an enterprise military standard approved by the Fourth Institute of Electronics, and all products are strictly Design and produce in accordance with the standards of GJB597B-2012 "General Specification for Semiconductor Integrated Circuits" or GJB2438A-2002 "General Specification for Hybrid Circuits", and conduct testing and inspection in accordance with the requirements of GJB548B-2005 "Microelectronic Device Test Methods and Procedures". The products have good compatibility, high reliability and high degree of system integration innovation, and have been widely used in many key models of weapons and equipment of our army.

It has a professional after-sales service team distributed in major sales areas across the country. We can go to the user's unit to provide necessary technical services at any time when the user needs it. Including helping users debug system boards, modify test vectors, conduct failure analysis, etc.