

Active high precision output signal conditioning module



CE Report
EN62368-1

RoHS

FEATURES

- Two-port isolation (signal input to signal output)
- High accuracy of 0.1% Full Scale
- High linearity of 0.1% Full Scale
- Isolation test voltage 2kVAC (60s)
- Low ripple & noise: $\leq 35\text{mVpp}$ (20MHz)
- Extremely low temperature coefficient $\leq 50\text{PPM}/^{\circ}\text{C}$ over entire -40°C to $+85^{\circ}\text{C}$ range
- Compact DIP18 size measures 26 x 9.5 x 12.5mm

TFxxxxGN series are analog signal isolation modules with incoming positive signal input and transformed positive/negative signal output. They are equipped with an efficient built-in micro-power source. The adopted electromagnetic isolation technology has a better performance, a much higher accuracy and a lower temperature coefficient in comparison with photo/opto-coupler isolators. This type of product has in addition to low temperature drift and high linearity, a low power consumption and low ripple & noise. This module has a two-port isolation (input and output).

Selection Guide

Certification	Model	Power Supply input Typ. (VDC)	Input Signal	Output Signal	Isolated Power Output (VDC)
EN	TF6550GN	12	0-5V	-10V to +10V	None

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Power Input	Input Voltage	Typ.-5%	Typ.	Typ.+5%	VDC
	Input Power	Single output full load	--	1.0	W
	Power Supply Protection	Input reverse polarity protection			
Signal Input	Input Signal	See selection guide			
	Input Impedance	In case of max. input of voltage signal	10	--	M Ω
	Over Range	In case of input of voltage signal	-15	--	+15 V

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Signal Output	Output Signal	See selection guide			
	Load Capacity	In case of max. output of voltage signal	2	--	k Ω
	Ripple & Noise	20MHz Bandwidth	--	35	mVpp

Transmission Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Signal Precision	Ta=25 $^{\circ}\text{C}$	-0.1%FS	--	+0.1%FS	--
Power Regulation	Power supply input Typ. $\pm 5\%$	-0.05%FS	--	+0.05%FS	--
Load Regulation	Change from no-load to full load	-0.05%FS	--	+0.05%FS	--
Temperature Coefficient	Operating temperature from -40°C to $+85^{\circ}\text{C}$	--	--	50	PPM/ $^{\circ}\text{C}$
Band Width		2	--	--	kHz
Response Time		--	--	1	ms

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Electric Isolation		Isolated between the signal input and the signal output.			
Isolation Test	Electric strength test for 1 minute with a leakage current $< 1\text{mA}$, humidity $< 70\%\text{RH}$	2	--	--	kVAC

Insulation Resistance	At 500VDC	100	--	--	MΩ
Operating Temperature		-40	--	+85	°C
Transportation and Storage Temperature		-50	--	+105	°C
Case Temperature Rise	Ta=25°C	--	--	30	°C
Safety Standard		EN62368-1 (Report)			
Safety Class		CLASS III			
Application Environment		The presence of dust, severe vibration, shock and corrosive gas may cause damage to the product.			

Mechanical Specifications

Case Material	Black flame-retardant heat-proof plastic
Package	DIP18
Weight	5.8g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Immunity	ESD	IEC/EN61000-4-2	Contact ±4kV	perf. Criteria B
	EFT	IEC/EN61000-4-4	Signal port ±1kV (see Fig. 4 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	Signal port ±1kV (line to ground) (see Fig. 4 for recommended circuit)	perf. Criteria B

Application Precautions

1. Carefully read and follow the instructions before use; contact our technical support if you have any question;
2. Do not use the product in hazardous areas;
3. Use only DC power supply source for this product. 220VAC power supply is prohibited;
4. It is strictly forbidden to disassemble the product privately in order to avoid product failure or malfunction;

After-sales service

1. Factory inspection and quality control are strictly enforced before shipping any product; please contact your local representative or our technical support if you experience any abnormal operation or possible failure of the module;
2. The products have a 3-year warranty period, from the date of shipment. The product will be repaired or exchanged free of charge within the warranty period for any quality problem that occurs under normal use.

Applied circuit

Please refer to Isolated Transmitter Application Notes.

Design Reference

1. Schematic diagram

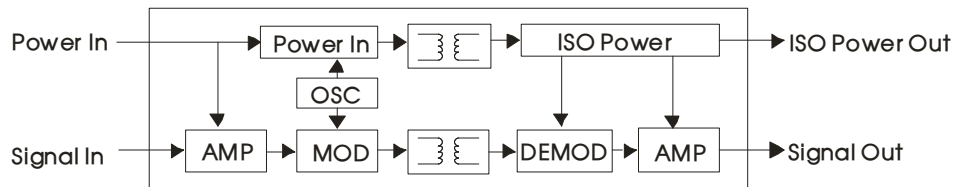


Fig. 1

2. Schematic diagram of signal input and signal output(Ideal state)

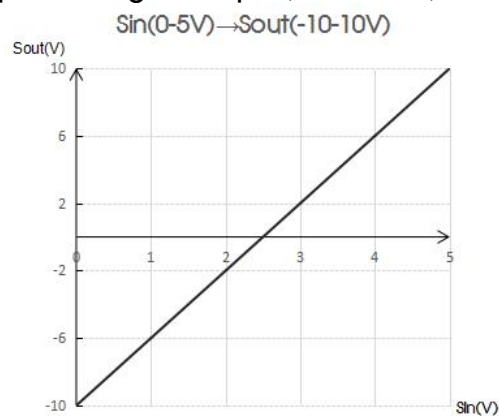


Fig. 2

3. Wiring diagram for product application

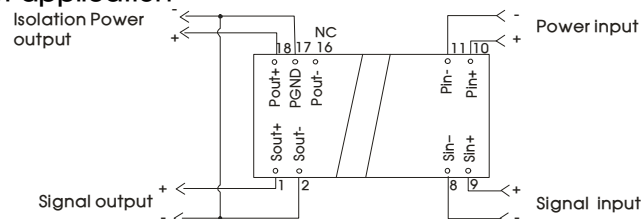


Fig. 3

Notes:

1. The signal negative output is required to be short with isolation power GND (pin 2 and pin 17).
2. Pins 16 and 18 are NC pins in case of no Isolation power output. NC: no connection.

4. EMC compliance circuit

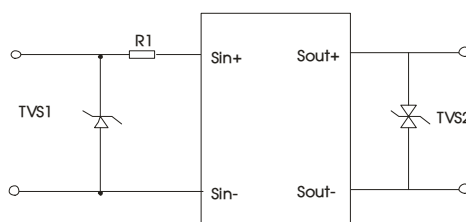


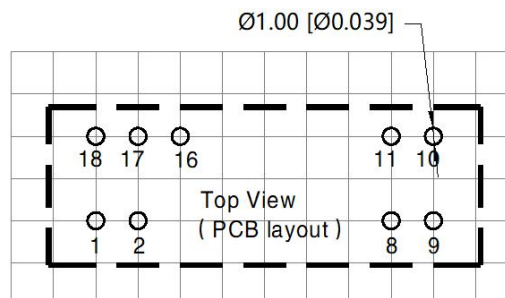
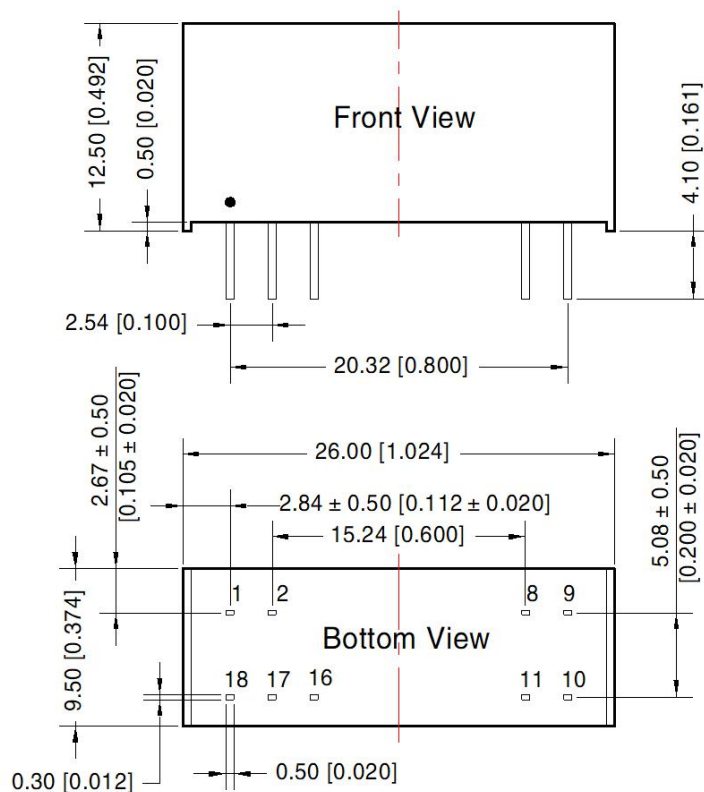
Fig. 4

Component	Recommended part, value
R1	12 Ω /2W
TVS1	SMBJ6.5A
TVS2	SMBJ15CA

5. For additional information please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

Pin-Out		
1	Sout+	Signal output(+)
2	Sout-	Signal output(-)
8	Sin-	Signal input(-)
9	Sin+	Signal input(+)
10	Pin+	Power input(+)
11	Pin-	Power input(-)
16	Pout-	Isolation power output(-)
17	PGND	GND
18	Pout+	Isolation power output(+)

Note:

Unit: mm[inch]

Pin section tolerances: ± 0.10 [± 0.004]

General tolerances: ± 0.25 [± 0.010]

Notes:

- For additional information on Product Packaging please refer to www.mornsun-power.com. The Packaging bag number: 58240002;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on company corporate standards;
- The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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