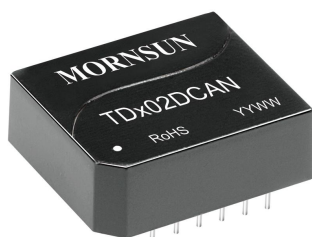


Duplex universal CAN isolation transceiver module



RoHS



## FEATURES

- Integrated high efficiency isolated DC/DC converter
- Two-port isolation (2.5kVDC)
- High baud rate up to 1Mbps
- Operating ambient temperature range: -40°C to +105°C
- Complies with ISO 11898 standard
- An unpowered node does not disturb the bus lines
- The bus supports maximum 110 nodes
- Set isolation and ESD bus protection in one

The TD302DCAN/ TD502DCAN series' main function is to convert TTL / CMOS level into isolated CAN bus differential level signals. The use of IC integrated technology allows for power isolation, signal isolation, CAN transceiver and bus protection all in one single CAN bus transceiver module, which withstands an isolation test voltage of 2500VDC. Also, they can easily be embedded in the user's end equipment, to achieve fully functional CAN bus network connectivity.

## Selection Guide

Certification	Part No.	Power Input (VDC)	Maximum Baud Rate (bps)	Static Current (mA)	Maximum Operating Current(mA)	Number of Nodes
--	TD302DCAN	3.0-3.6	1M	80	±30	110
	TD502DCAN	4.5-5.5	1M	50	±30	110

## Input Specifications

Item		Operating Conditions	Value
Input Power Supply	Static Current	TD302DCAN	≤80mA
		TD502DCAN	≤50mA
Input	Serial Interface	TD302DCAN	Compatible with the CAN control port of +3.3V
		TD502DCAN	Compatible with the CAN control port of +5V
	Pin current		I <sub>TXD</sub> ≤2mA; I <sub>RXD</sub> ≤2mA

## Bus Interface

Item		Operating Conditions	Value
Output	CAN Bus Interface		Up to standard of ISO-11898, twisted-pair output
	The Maximum DC Voltage of Bus Pin		-30V to +30V
	Bus Protection		Over-voltage bus protected, thermally protected and high-voltage transient protected

## Transmission Specifications

Item	Operating Conditions	Value
Data Rate		1Mbps (max.)
The Number of Nodes		110 nodes (min.)

## Output Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Dominant Level (Logic 0)	CANH	V <sub>(OD)CANH</sub>	2.75	3.5	4.5	VDC
	CANL	V <sub>(OD)CANL</sub>	0.5	1.5	2.25	
Recessive Level (Logic 1)	CANH	V <sub>(OR)CANH</sub>	2	2.5	3	
	CANL	V <sub>(OR)CANL</sub>	2	2.5	3	
Differential Level	Dominant Level (Logic 0)	V <sub>diff(d)</sub>	1.5	2	3	
	Recessive Level (Logic 1)	V <sub>diff(r)</sub>	-0.05	0	0.05	

## General Specifications

Item	Operating Conditions	Value
Electrical Isolation		Two-terminal isolation (input to output)
Isolation Test	Electric strength test for 1 min., leakage current <5mA	2.5kVDC
Operating Temperature		-40℃ to +105℃
Transportation and Storage Temperature		-55℃ to +125℃
Operating Humidity		10% - 90%
Temperature Rising	Ta=25℃	25℃ (Typ.)
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 (UL94 V-0)
Package	DIP12
Dimensions	19.90 x 16.90 x 7.05 mm
Weight	4.5g(Typ.)
Cooling Method	Natural cooling

## Electromagnetic Compatibility (EMC)

Emission	CE	CISPR32/EN55032	CLASS A (see 2for recommended circuit)		
	RE	CISPR32/EN55032	CLASS A (see 2 for recommended circuit)		
Immunity	ESD	IEC/EN61000-4-2	Contact ±4kV		perf. Criteria B
	EFT	IEC/EN61000-4-4	Power supply port ±2kV	(see 2for recommended circuit)	perf. Criteria B
		IEC/EN61000-4-4	Signal port ±1kV	(see 2 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	Power supply port ±1kV	(see 2 for recommended circuit)	perf. Criteria B
			Signal port ±0.25kV/±0.5kV	(see 2for recommended circuit)	perf. Criteria B
			Signal port ±0.5kV/±1kV	(see 2 for recommended circuit)	perf. Criteria B
			Signal port ±1kV/±2kV	(see 2 for recommended circuit)	perf. Criteria B
			Signal port ±2kV/±4kV	(see 2 for recommended circuit)	perf. Criteria B
			Signal port ±4kV/±6kV	(see 2 for recommended circuit)	perf. Criteria B

## Application Precautions

- Carefully read and follow the instructions before use; contact our technical support if you have any question;
- Do not use the product in hazardous areas;
- Use only DC power supply source for this product. 220V AC power supply is prohibited;
- It is strictly forbidden to disassemble the product privately in order to avoid product failure or malfunction;
- Hot-swap is not supported;
- If the external input of TXD is insufficient, the pull-up resistor should be added according to the situation.

### After-sales service

- 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;
- 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

Refer to the CAN Industrial Bus Interface Isolating Module Application Manual.

## Design Reference

### 1. Typical application

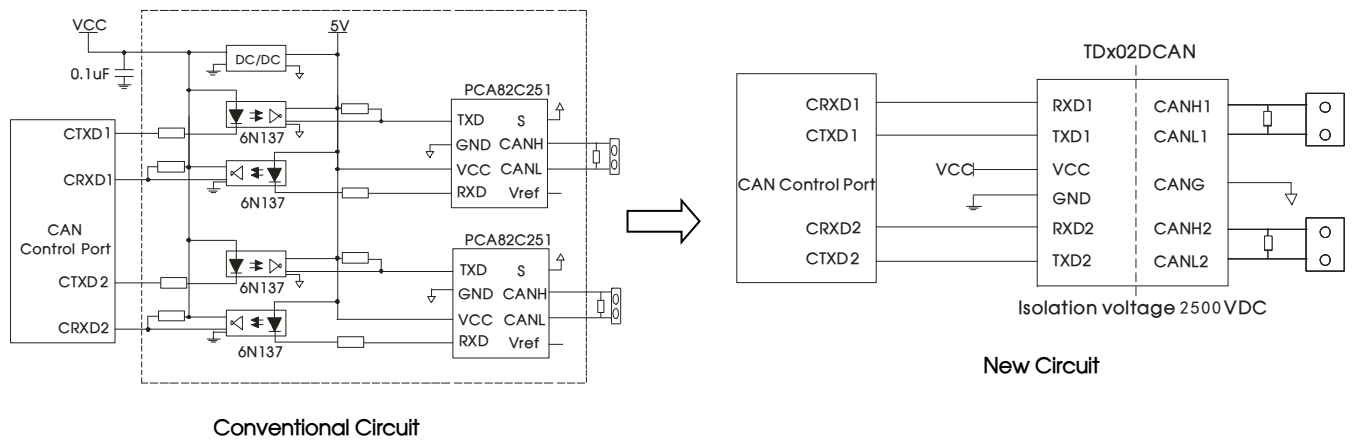


Fig. 1

### 2. Recommended circuit for EMC compliance

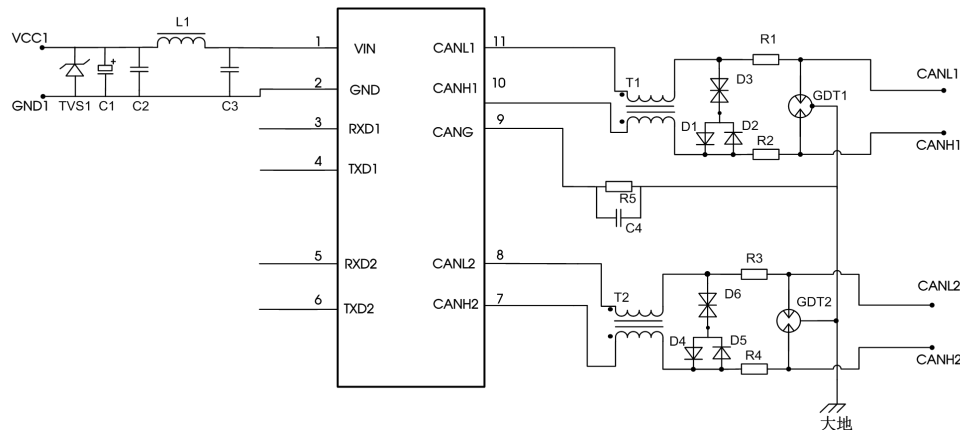


Fig. 2

Recommended components and values:

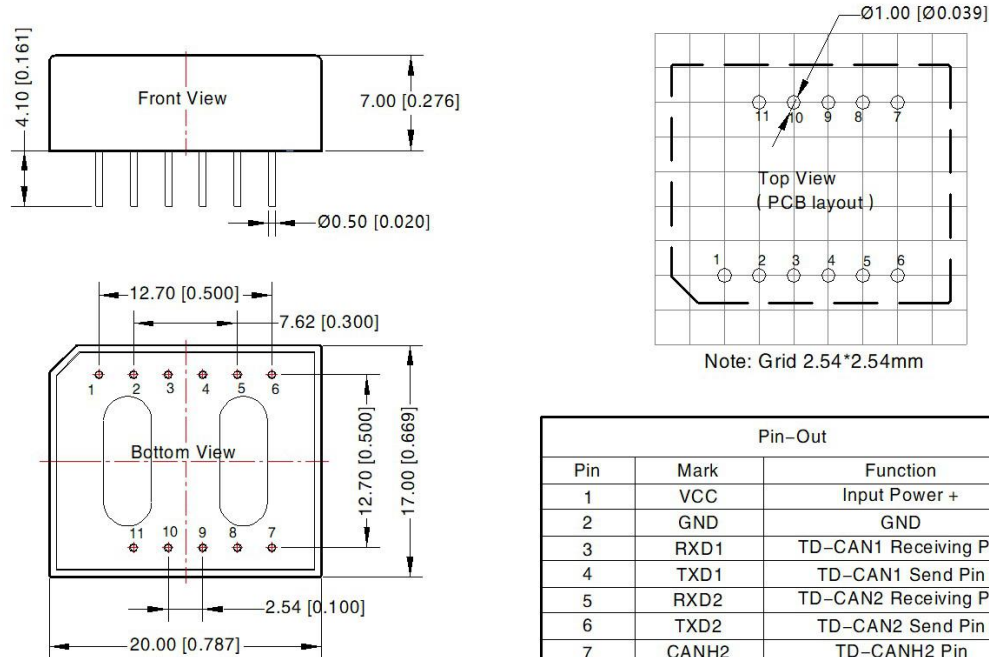
Components	TD302DCAN / TD502DCAN				
	±0.25kV/±0.5kV	±0.5kV/±1kV	±1kV/±2kV	±2kV/±4kV	±4kV/±6kV
C1	220uF/10V(Electrolytic capacitor)		220uF/10V(Electrolytic capacitor)		
TVS1	SMCJ5.0A (TD302DCAN) / SMCJ6.5A(TD502DCAN)				
C2/C3	1uF/50V		1uF/50V		
L1	10uH		10uH		
T1/T2	ACM2520-301-2P		ACM2520-301-2P		
C4	1nF/2kV		1nF/2kV		
R5	1MΩ		1MΩ		
D1/D2/D4/D5	1N4007		1N4007		
D3/D6	SMBJ30CA		SMBJ30CA		
R1/R2/R3/R4	2.7 Ω /2W	2.7 Ω /2W	2.7 Ω /2W	2.7 Ω /2W	2.7 Ω /2W
GDT1/GDT2	--	--	B3D090L	B3D090L	B3D090L

Note: The recommended components that will change the Specifications of Bus Pin Maximum Withstand Voltage by D3 and D6 and its values is a general guideline only. It must be verified for the actual user's application. We recommended using PTC's for R1 and R2 and R3 and R4 and to use fast recovery diodes for D1 and D2 and D4 and D5.

3. For additional information, please refer to our application note on [www.mornsun-power.com](http://www.mornsun-power.com)

## Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note: Grid 2.54\*2.54mm

Note:

Unit: mm[inch]

Pin diameter tolerances:  $\pm 0.10$  [ $\pm 0.004$ ]

General tolerances:  $\pm 0.50$  [ $\pm 0.020$ ]

The layout of the device is for reference only, please refer to the actual product

Pin-Out		
Pin	Mark	Function
1	VCC	Input Power +
2	GND	GND
3	RXD1	TD-CAN1 Receiving Pin
4	TXD1	TD-CAN1 Send Pin
5	RXD2	TD-CAN2 Receiving Pin
6	TXD2	TD-CAN2 Send Pin
7	CANH2	TD-CANH2 Pin
8	CANL2	TD-CANL2 Pin
9	CANG	Isolation Power Output CANG
10	CANH1	TD-CANH1 Pin
11	CANL1	TD-CANL1 Pin

### Notes:

- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). The Packaging bag number: 58040014;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , 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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