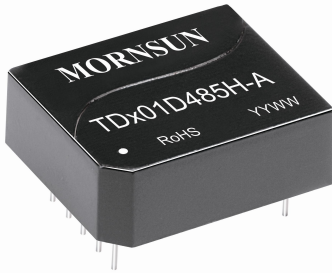


single high speed RS485 isolation transceiver module (automatic switch to send and receive)



## FEATURES

- | Baud rate high up to 115200bps
- | Connect up to 32 nodes on one bus
- | 2500VDC isolation input and output
- | Integrated high efficiency isolated DC/DC converter
- | Operating temperature range: -40°C~ +85°C
- | ESD protection, perfect EMC recommend circuit
- | Automatic transceiver switching

Single high speed RS485 isolation transceiver module TD301D485H-A/ TD501D485H-A series are RS485 transceiver module with integrated isolated power, signal isolated chip and the bus protection device.

Product's main function is to convert logic level to difference level of the RS485 agreement, and it implements the function of signal isolation. Products is with isolation power. It can achieve 2500 VDC electrical isolation and have the function of ESD protection and automatic switch to send and receive. It does not need to control through the CON pin, and reduce the complexity of the design. Product can be easily embedded user equipment, makes the equipment easily implement connection of RS485 protocol network.

## Selection Guide

Part No.	Power Supply input (VDC)
TD301D485H-A	3.17~3.45
TD501D485H-A	4.75~5.25

## Input Specifications

Item	Operating Conditions	Value
Input Power Supply	Static current	Products energized, no communication ≤40mA
	Send current	115200bps Square wave communication ≤70mA
Input	Serial interface	TD301D485H-A compatible with + 3.3 V UART interface TD501D485H-A compatible with + 5 V UART interface
	Pin current	$I_{TXD} \leq 2\text{mA}; I_{RXD} \leq 2\text{mA};$

## Bus Interface

Item	Operating Conditions	Value
Output	RS485 bus interface	Standard interface RS485 ,pull-up and pull-down resistor, whose value is 4.7K,have been set to A/B line.

## Transmission Specifications

Item	Operating Conditions	Value				
Data Rate		115200bps (max.)				
The Number of Nodes		Connect up to 32 nodes on one bus				
Transceiver control		Half duplex, automatic transmission				
Truth Table	Sending Status	Control	Input	Output		
		--	TXD	A	B	Line state
		--	1	1	0	Normal
	Receiving Status	--	0	0	1	Normal
		Control	Input	Output		
		--	A-B	RXD		
		--	≥0.2V	1		
--	≤-0.2V	0				

### General Specifications

Item	Operating Conditions	Value
Electric Isolation		Two-terminal isolation (input and output are mutually isolated)
Degree of Isolation	testing for 1 minute, leakage current <5mA, humidity <95%	2.5KVDC
Operating Temperature		-40℃ ~ +85℃
Transportation and Storage Temperature		-50℃ ~ +105℃
Operating Humidity		10%~90%
Max. Operating Temperature for casing	Ta=25℃	25℃ (Typ.)
Application Environment		The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product

### Physical Specifications

Casing Material	WH8100-F
Package	DIP10
Weight	About 4.0g
Cooling Method	Free air convection

### EMC Specifications

EMI	Conducted Disturbance	CISPR22/EN55022	CLASS A (see 2-② for recommended circuit)
	Radiated Emission	CISPR22/EN55022	CLASS A (see 2-② for recommended circuit)
EMS	Electrostatic Discharge	IEC/EN61000-4-2	Contact ±4KV perf. Criteria B
	EFT	IEC/EN61000-4-4	Power supply port ±2KV (see 2-① for recommended circuit) perf. Criteria B
		IEC/EN61000-4-4	Signal port ±1KV (see 2-③ for recommended circuit) perf. Criteria B
	Surge Immunity	IEC/EN61000-4-5	Power supply port ±1KV (see 2-① for recommended circuit) perf. Criteria B
			Signal port ±0.25KV/±0.5KV (see 2-③ for recommended circuit) perf. Criteria B
			Signal port ±0.5KV/±1KV (see 2-③ for recommended circuit) perf. Criteria B
			Signal port ±1KV/±2KV (see 2-③ for recommended circuit) perf. Criteria B
		Signal port ±2KV/±4KV (see 2-③ for recommended circuit) perf. Criteria B	
		Signal port ±4KV/±6KV (see 2-③ for recommended circuit) perf. Criteria B	

### Application Precautions

1. Please read the technical manual carefully before use; contact our technical support if you have any problem.
2. Do not use the product in hazardous areas.
3. Use DC power supply for the product and 220V AC power supply is prohibited.
4. Do not dismount and assemble the product without permission to avoid failure or malfunction of equipment.

#### After-sales service

1. Ex-factory inspection and quality control have been strictly conducted for the product; if there occurs abnormal operation or possibility of failure of internal module, please contact the local representative or our technical support.
2. The warranty period for the product is 3 years as calculated from the date of delivery. If any quality problem occurs under normal use within the warranty period, the product can be repaired or changed for free.

#### Applied circuit

See *Application Notes for Isolated Transmitter* for details.

Design Reference

1. Typical application

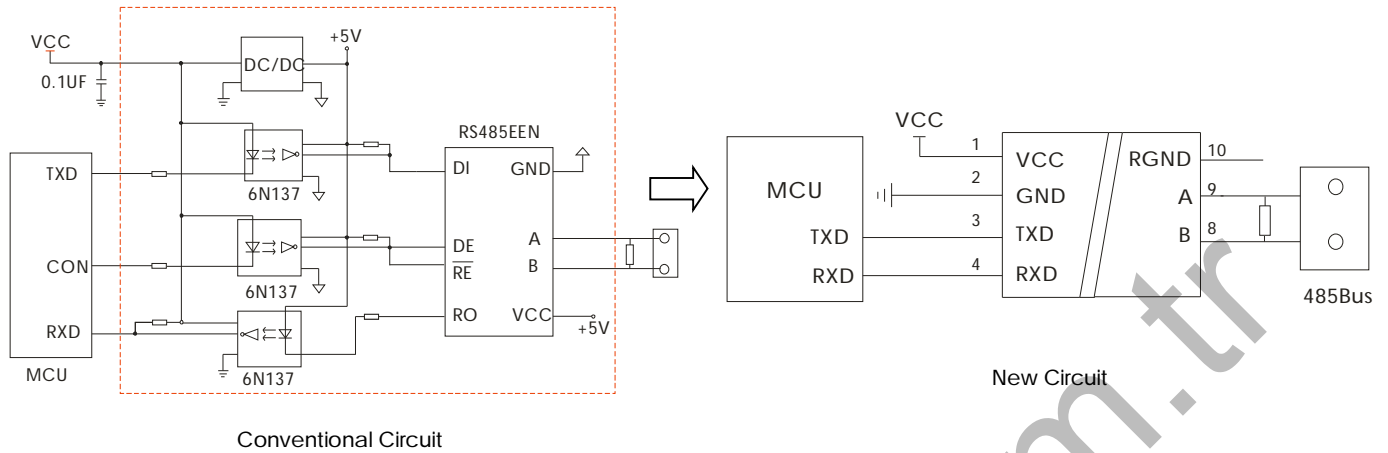


Fig. 1

2. Recommended EMC circuit

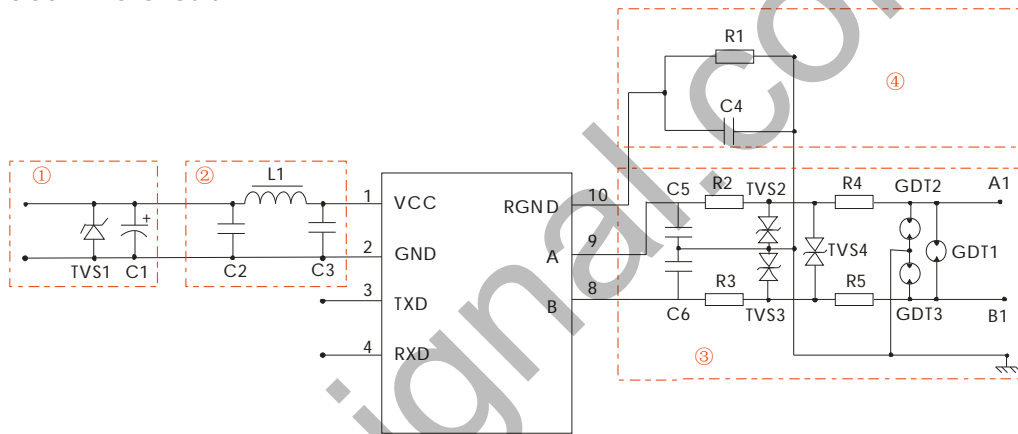


Fig. 2

Recommended external circuit parameters:

Model	TD301D485H-A / TD501D485H-A				
	±0.25KV/±0.5KV	±0.5KV/±1KV	±1KV/±2KV	±2KV/±4KV	±4KV/±6KV
C1	220uF/10V(Electrolytic capacitor)				
TVS1	SMCJ5.0A (TD301D485H-A) / SMCJ6.5A(TD501D485H-A)				
C2/C3	1uF/50V		1uF/50V		
L1	10μH		10μH		
C5/C6	100pF/100V		100pF/100V		
C4	1nF/2KV		1nF/2KV		
R1	1MΩ		1MΩ		
TVS2/TVS3/TVS4	SMBJ15CA		SMBJ15CA		
R4/R5	--	--	10Ω/2W(Wire-wound resistor)	10Ω/2W(Wire-wound resistor)	10Ω/2W(Wire-wound resistor)
R2/R3	10Ω/1W(Wire-wound resistor)	10Ω/2W(Wire-wound resistor)	--	--	--
GDT1/GDT2/GDT3	--	--	G30-A90X	S30-A90X	S50-A90X

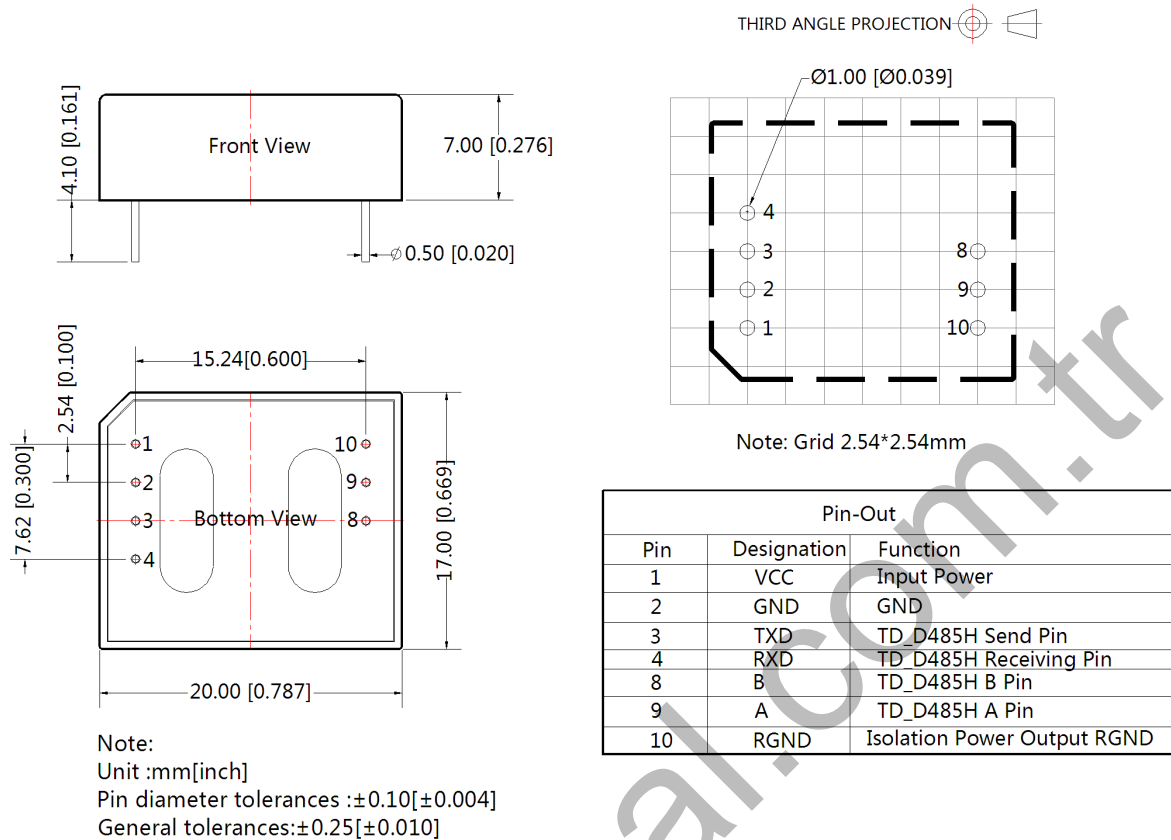
Notes:

① GDT1, GDT2 and GDT3 be used instead of a three terminal gas discharge tube. Such as GDT1, GDT2 and GDT3 three two-terminal device available gas discharge tube instead of a three-terminal at "± 4KV / ± 6KV" hierarchy, as B3D090L-C.

② It is not needed the component when parameter with the symbol of "--".

3. For more information please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

Dimensions and Recommended Layout



Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58040012;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75% when inputting nominal voltage and outputting rated load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance indexes of the product models listed in this datasheet are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

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