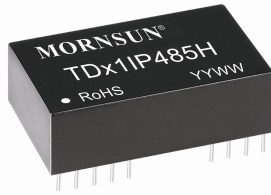


dual isolation high speed RS485 transceiver module (Power distribution)



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

Dual double isolation high speed RS485 isolated transceiver module TD31IP485H/TD51IP485H series are transceiver isolation module with integrated twin power isolation, electrical isolation, and RS485 interface bus protector. It has two way independent of RS485 network function, and the two-port RS485 networks are isolated. Products can be easily embedded in the user equipment, achieve function of RS485 network connection.

The isolation RS485 circuits of using a piece of power isolation module, six road light coupling and 2 RS485 transceivers and device is only need to adopt a RS485 isolation module now. Simplify the customers on the isolation requirements of the design.

Selection Guide

Part No.	Power Supply input (VDC)
TD31IP485H	3.17~3.45
TD51IP485H	4.75~5.25

Input Specifications

Item	Operating Conditions	Value
Input Power Supply	Static current	Products energized, no communication
	Send current	115200bps Square wave communication
Input	Serial interface	TD31IP485H compatible with + 3.3 V UART interface
		TD51IP485H compatible with + 5 V UART interface
Pin current		$I_{TXD} \leq 2\text{mA}; I_{RXD} \leq 2\text{mA}; I_{CON} \leq 5\text{mA}$

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.
	Isolation power output	Nominal 5V, $\leq 0.15\text{W}$

Transmission Specifications

Item	Operating Conditions	Value				
Data Rate		115200bps (max.)				
Transceiver Switching Delay		The delay time from the receiving data switch to the send data : 30 μs (min.), 100 μs (max.).				
The Number of Nodes		Connect up to 32 nodes on one bus				
Transceiver control		Contrary to common RS485 transceiver control level				
Truth Table	Sending Status	Control	Input	Output		
		CON	TXD	A	B	Line state
		0	1	1	0	Normal
		0	0	0	1	Normal
	Receiving Status	Control	Input	Output		
		CON	A-B	RXD		
		1	$\geq 0.2\text{V}$	1		
		1	$\leq -0.2\text{V}$	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	DIP24
Weight	11.0g
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

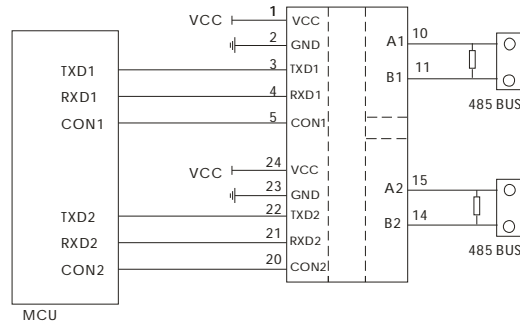


Fig.1

Note:1 pin and 24 pin are internal connected,23 pin and 2 pin are internal connected.

2. Recommended EMC circuit

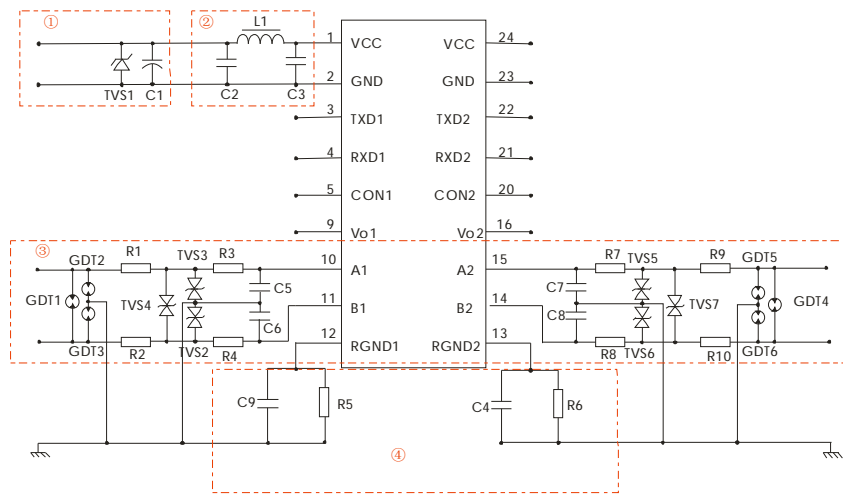


Fig. 2

Recommended external circuit parameters:

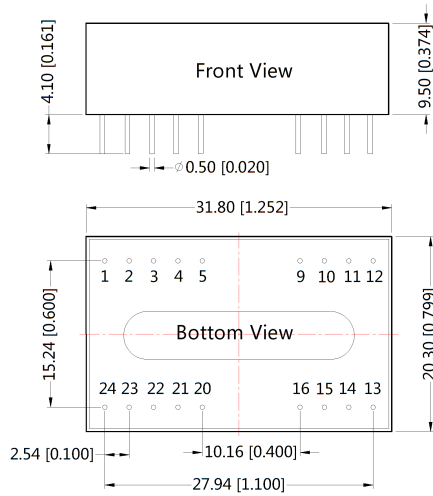
Model	TD31IP485H / TD51IP485H				
	$\pm 0.25KV/\pm 0.5KV$	$\pm 0.5KV/\pm 1KV$	$\pm 1KV/\pm 2KV$	$\pm 2KV/\pm 4KV$	$\pm 4KV/\pm 6KV$
C1	220uF/10V(Electrolytic capacitor)		220uF/10V(Electrolytic capacitor)		
TVS1	SMCJ5.0A (TD31IP485H) / SMCJ6.5A(TD51IP485H)				
C2/C3	1uF/50V		1uF/50V		
L1	10μH		10μH		
C5/C6/C7/C8	100pF/100V		100pF/100V		
C4/C9	1nF/2KV		1nF/2KV		
R5/R6	1MΩ		1MΩ		
TVS2/TVS3/TVS4	SMBJ15CA		SMBJ15CA		
TVS5/TVS6/TVS7	SMBJ15CA		SMBJ15CA		
R1/R2/R9/R10	--	--	10Ω/2W(Wire-wound resistor)	10Ω/2W(Wire-wound resistor)	10Ω/2W(Wire-wound resistor)
R3/R4/R7/R8	10Ω/1W(Wire-wound resistor)	10Ω/2W(Wire-wound resistor)	--	--	--
GDT1/GDT2/GDT3	--	--	G30-A90X	S30-A90X	S50-A90X
GDT4/GDT5/GDT6	--	--	G30-A90X	S30-A90X	S50-A90X

Notes:

- GDT1, GDT2 and GDT3 be used instead of a three terminal gas discharge tube, GDT4, GDT5 and GDT6 empathy. Such as GDT1, GDT2 and GDT3 three two-terminal device available gas discharge tube instead of a three-terminal at " $\pm 4KV / \pm 6KV$ " hierarchy, GDT4, GDT5 and GDT6 empathy, as B3D090L-C.
- It is not needed the component when parameter with the symbol of "--".

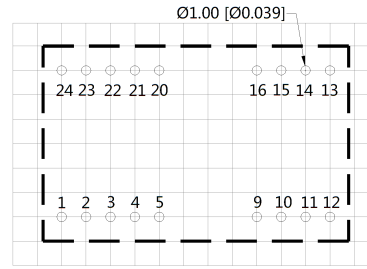
3. For more information please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout



Note:
Unit:mm[inch]
Pin diameter tolerances:±0.10[±0.004]
General tolerances:±0.25[±0.010]

THIRD ANGLE PROJECTION ☺ ◀



Note : Grid 2.54*2.54mm

Pin-Out					
Pin	Designation	Function	Pin	Designation	Function
1,24	VCC	Input Power +	12	RGND1	Channel 1 Isolation Power Output RGND
2,23	GND	GND	13	RGND2	Channel 2 Isolation Power Output RGND
3	TXD1	Channel 1 TD_P485H Send Pin	14	B2	Channel 2 B Pin
4	RXD1	Channel 1 TD_P485H Receiving Pin	15	A2	Channel 2 A Pin
5	CON1	Channel 1 Send&Receiving Control Pin	16	Vo2	Channel2 Isolation Power Output +5V
9	Vo1	Channel 1 Isolation Power Output +5V	20	CON2	Channel2 Send&Receiving Control Pin
10	A1	Channel 1 A Pin	21	RXD2	Channel2 TD_P485H Receiving Pin
11	B1	Channel 1 B Pin	22	TXD2	Channel1 TD_P485H Send Pin

Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58210008;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25°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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