Industrial Bus
STDHx01D485H Series

single high speed high isolation
RS485 isolation transceiver module

FEATURES

- Two-terminal isolation (input and output are mutually isolated)
- Integrated Isolated DC/DC converter
- Bus protection
- Isolation voltage :3.75KVAC
- Operating temperature range:-40℃~+105℃
- Baud rate 115200bps
- Connect up to 32 nodes on one bus

PART NUMBER SYSTEM

STDHx01D485H

- Rate
- Interface signal type
- Package
- Serial Number
- Isolation power output
- Power input
- Isolation voltage
- Single Type

STDH301D485H/STDH501D485H series are transceiver isolation module with integrated power isolation, electrical isolation, and RS485 interface bus protector; The traditional isolation RS485 circuits uses a piece of power isolation module, three optocouplers and RS485 transceiver chip to realize the application. Now only a RS485 transceiver module can realize the functions. Simplify the customers on the isolation requirements of the design; Products can be easily embedded in the user equipment, achieve function of RS485 network connection.

Selection Guide

Part No.	Power Supply input (VDC)
STDH301D485H	3.17~3.45
STDH501D485H	4.75~5.25

Input Specifications

Item		Operating Conditions		Value
Power Input	Static current	Products energized, no communication	STDH301D485H	≤50mA
			STDH501D485H	≤40mA
	Send current	115200bps Square wave communication	STDH301D485H	≤100mA
			STDH501D485H	≤80mA
Single Input	Serial interface	STD301D485H		Compatible with + 3.3 V UART interface
		STD501D485H		Compatible with + 5 V UART interface
	Pin current			I_{TXD}≤2mA; I_{RXD}≤2mA; I_{CON}≤5mA

Bus Interface

Item		Operating Conditions	Value
Output	RS485 bus interface		Standard interface RS485, pull-up and pull-down resistor, whose value is 5.1K, have been set to A/B line.

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: 30μs (min.), 100μs (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

Truth Table	Receiving Status	Control	Input	Output
		CON	A-B	RXD
		1	≥0.2V	1
		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%	3.75KVAC
Operating Temperature		-40℃~ +85℃
Transportation and Storage Temperature		-55 ~ +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	Black flame-retardant heat-proof plastic
Package	DIP10
Weight	4.0g(Typ.)
Cooling Method	Free convection

EMC Specifications

EMI	CE	CISPR22/EN55022	CLASS A (see 2-② for recommended circuit)		
	RE	CISPR22/EN55022	CLASS A (see 2-② for recommended circuit)		
EMS	ESD	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	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

Please refer to Isolated Transmitter application notes.

Design Reference

1.Typical application

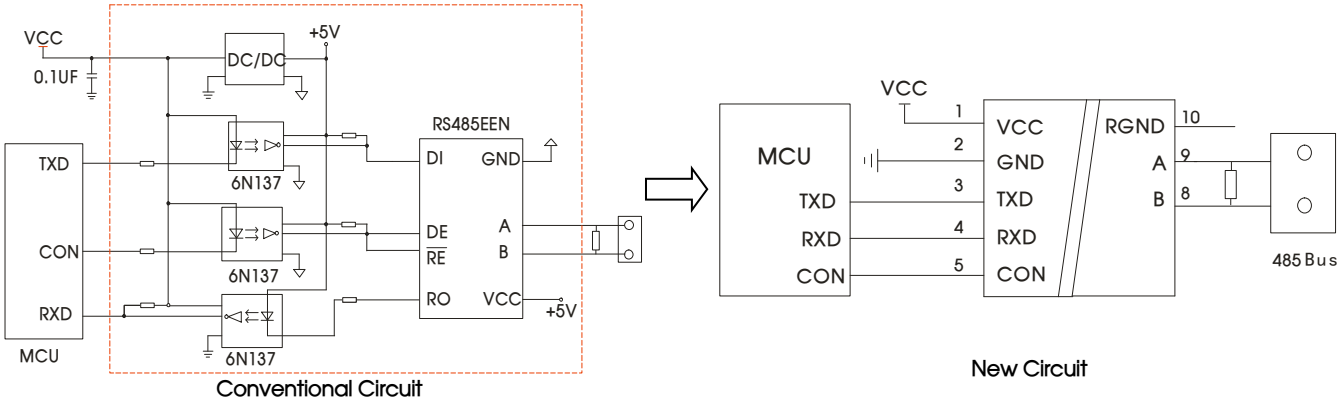


Fig. 1

2. EMC solution-recommended circuit

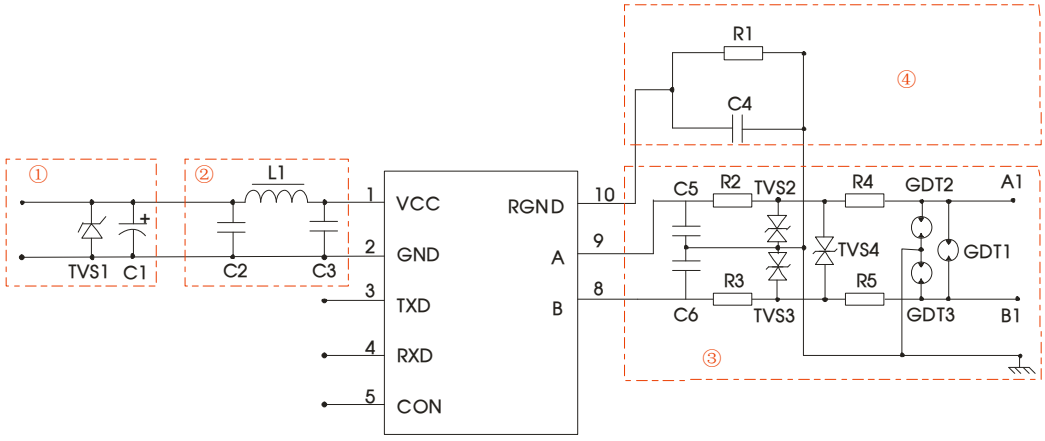


Fig. 2

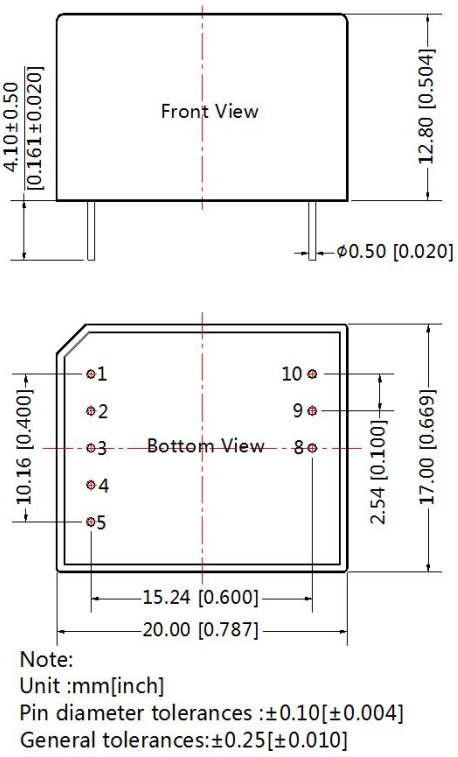
Recommended external circuit parameters:

Model	STD301D485H/STD501D485H				
	±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 (TD301D485H) / SMCJ6.5A(TD501D485H)				
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

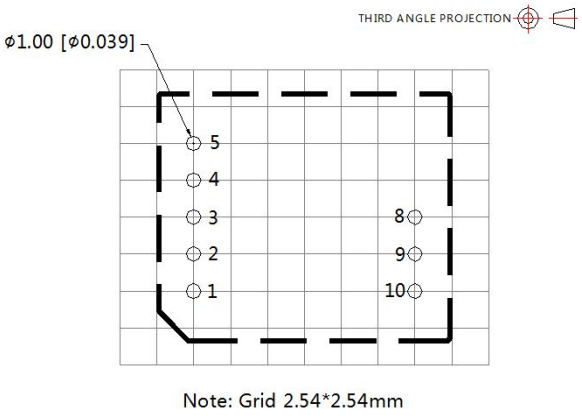
Notes:

1. GDT1, GDT2 and GDT3 be used instead of a three terminal gas discharge tube, 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 "± 4KV / ± 6KV" hierarchy, GDT4, GDT5 and GDT6 empathy, as B3D090L-C.
2. It is not needed the component when parameter with the symbol of "--".

Dimensions and Recommended Layout



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



Note: Grid 2.54*2.54mm

Pin-Out		
Pin	Designation	Function
1	VCC	Input Power
2	GND	GND
3	TXD	STDH_D485H Send Pin
4	RXD	STDH_D485H Receiving Pin
5	CON	Send&Receiving Control Pin
8	B	STDH_D485H Send B Pin
9	A	STDH_D485H Send A Pin
10	RGND	Isolation Power Output RGND

Notes:

1. If the customers using the product for wave soldering, recommended don't open hole on the bottom of the product coverage of PCB board, to avoid the product base thermal deformation;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output 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.