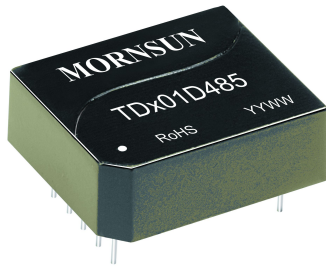


single RS485 isolation transceiver module



FEATURES

- Two-terminal isolation (input and output are mutually isolated)
- Integrated Isolated DC/DC converter
- Bus protection
- Isolation voltage :2.5KVDC
- Operating temperature range:-40℃ ~+85℃
- Baud rate 9600bps
- Connect up to 32 nodes on one bus

TD301D485/TD501D485 series are transceiver isolation module with integrated duplex power isolation, electrical isolation, and RS485 interface bus protector.; 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, three light couplings and RS485 transceivers and device are 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) |
|-----------|--------------------------|
| TD301D485 | 3.17~3.45 |
| TD501D485 | 4.75~5.25 |

Input Specifications

| Item | Operating Conditions | Value |
|--------------------|----------------------|---|
| Input Power Supply | Static current | Products energized, no communication |
| | Send current | 9600bps Square wave communication |
| Input | Serial interface | TD501D485≤30 mA,TD301D485≤40mA |
| | | TD501D485≤40 mA,TD301D485≤60mA |
| | Pin current | TD301D485 compatible with + 3.3 V UART interface TD501D485 compatible with + 5 V UART interface $I_{TXD} \leq 5mA; I_{RXD} \leq 3 mA; I_{CON} \leq 5mA$ |

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 | | 9600bps (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 | ≥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% | 2.5KVDC |
| Operating Temperature | | -40°C~+85°C |
| Transportation and Storage Temperature | | -50°C~+105°C |
| Operating Humidity | | 10%~90% |
| Temperature rising | Ta=25°C | 25°C (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 (UL94-V0) |
| Package | DIP10 |
| Weight | About 10g |
| 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

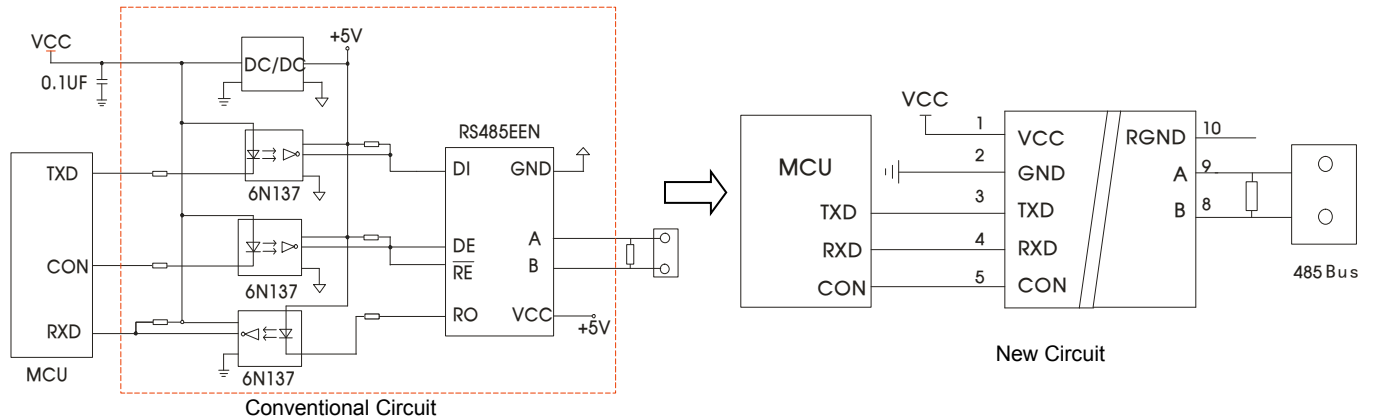


Fig. 1

2. Recommended EMC circuit

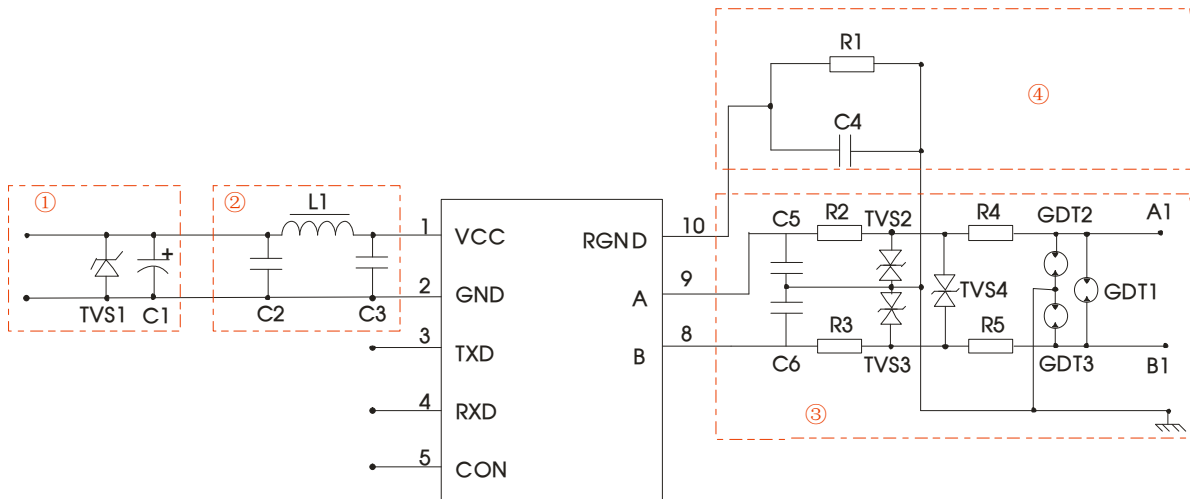


Fig. 2

Recommended external circuit parameters:

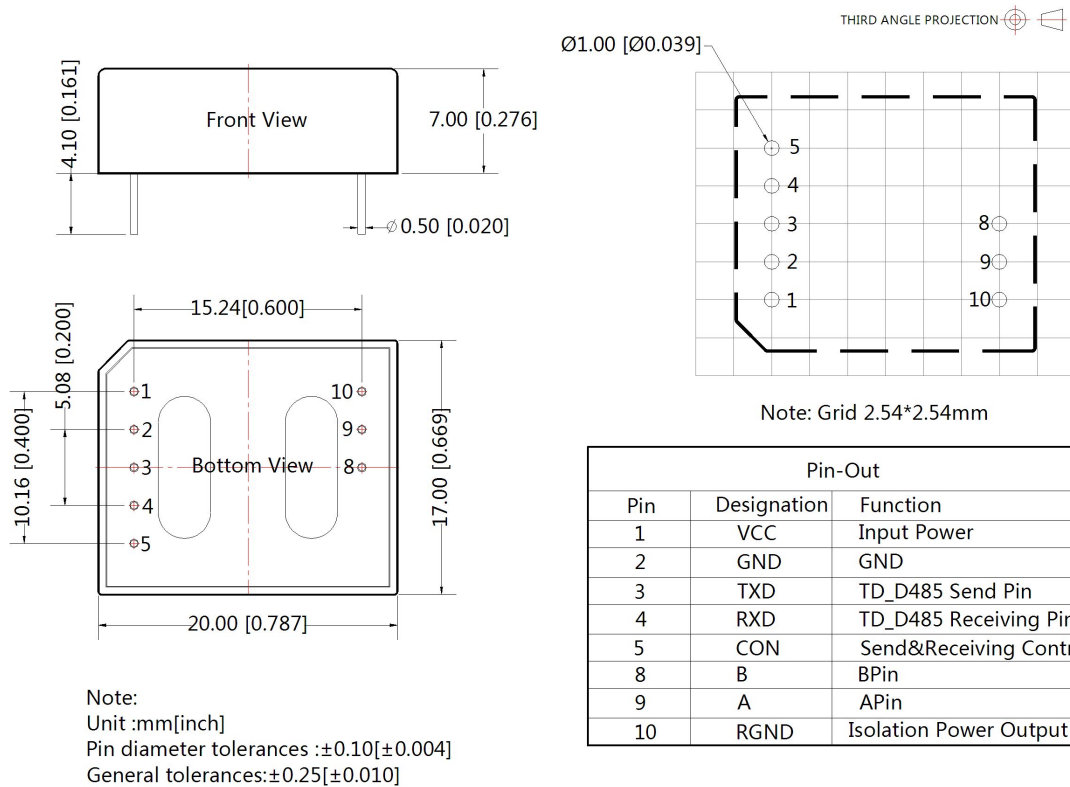
| Model | TD301D485/TD501D485 | | | | |
|----------------|--|-----------------------------|-----------------------------------|-----------------------------|-----------------------------|
| | ±0.25KV/±0.5KV | ±0.5KV/±1KV | ±1KV/±2KV | ±2KV/±4KV | ±4KV/±6KV |
| C1 | 220uF/10V(Electrolytic capacitor) | | 220uF/10V(Electrolytic capacitor) | | |
| TVS1 | SMC.J5.0A (TD301D485) / SMC.J6.5A(TD501D485) | | | | |
| 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 | | | | |
| 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:

- 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. It is not needed the component when parameter with the symbol of "--".
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3. For more information please find the application notes on 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 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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