

| Typical Feature |
|---|
| ◆ High baud rate up to 100Kbps |
| ◆ Integrated isolated DC-DC converter |
| ◆ Bus Protection |
| ◆ Two-port isolation test voltage 3.75kVAC |
| ◆ Operating ambient temperature range: -40°C to +85°C |
| ◆ The bus supports maximum 32 nodes |



Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25°C.

Application Field

RS485-3V3LSA/RS485-05LSA Series are transceiver isolation module with integrated power isolation, electrical isolation, and RS485 interface bus protector; The traditional isolation RS485 circuit uses a piece of power isolation module and RS485 transceiver chip to realize the application. Now only a RS485 transceiver module could 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.

Typical Product List

| Part No | Input Voltage Range (VDC) |
|--------------|---------------------------|
| RS485-3V3LSA | 3.17V-3.45V |
| RS485-05LSA | 4.75V-5.25V |

Input Specification

| Item | | Operating Condition | | Value |
|--------------|------------------|---------------------------------------|---|---|
| Power Input | Static Current | Products Powered on, no communication | RS485-3V3LSA | ≤50mA |
| | | | RS485-05LSA | ≤40mA |
| | Send Current | 100Kbps in communication | RS485-3V3LSA | ≤100mA |
| | | | RS485-05LSA | ≤80mA |
| Single Input | Series Interface | RS485-3V3LSA | Compatible with +3.3V UART interface only | |
| | | RS485-05LSA | Compatible with +5V UART interface only | |
| | Pin Current | | | I _{TXD} ≤2mA; I _{RXD} ≤2mA; I _{CON} ≤2mA |

Bus Interface

| Item | Value |
|--------|---|
| Output | Standard RS485 interface, A,B bus built in 5.1KΩ of the pull-up, pull-down resistor |

Transmission Specifications

| Item | Value |
|-------------------|-------------|
| Transmission Rate | 100Kbps Max |

| | | | | | |
|---------------------|--|--------|--------|---|------------|
| Handoff Delay | ≤30us | | | | |
| Number of Nodes | The bus supports maximum 32 nodes | | | | |
| Transceiver Control | Contrary to common RS485 transceiver control level | | | | |
| Send Status | Control | Input | Output | | |
| | CON | TXD | A | B | Line State |
| | 0 | 1 | 1 | 0 | Normal |
| | 0 | 0 | 0 | 1 | Normal |
| Receive 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) |
| Isolation Voltage | Lead current≤5mA, humidity≤95%, Test for 1Min | 3.75kVAC |
| Operating Temperature | | -40℃ to +85℃ |
| Transportation and Shortage Temperature | | -55℃ to +105℃ |
| Operating Humidity | | 10% - 90% |
| Max.Operating Temperature for Casing | | 25℃(Typ.) |
| Safety Class | | EN60950 |
| Safety Certification | | EN60950 |
| Safety Class | | CLASS III |
| Application Environment | | The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product |

EMC Specifications

| Item | Sub | Test Certification | Class |
|------|-------|--------------------|---|
| EMI | CE | CISPR22/EN55032 | CLASS A (see recommended circuit photo ②) |
| | RE | CISPR22/EN55032 | CLASS A (see recommended circuit photo ②) |
| EMS | ESD | IEC/EN61000-4-2 | Contact ±4KV Perf.Criteria B |
| | EFT | IEC/EN61000-4-4 | Power supply port ±2KV Perf.Criteria B (see recommended circuit photo 1) |
| | | IEC/EN61000-4-4 | Signal supply port ±1KV Perf.Criteria B (see recommended circuit photo 1) |
| | Surge | IEC/EN61000-4-5 | Power supply port ±1KV(line to line) (see recommended circuit photo 2) |

Signal supply port $\pm 0.25\text{KV}$ (line to line) / $\pm 0.5\text{KV}$ (line to ground) (see recommended circuit photo 1)

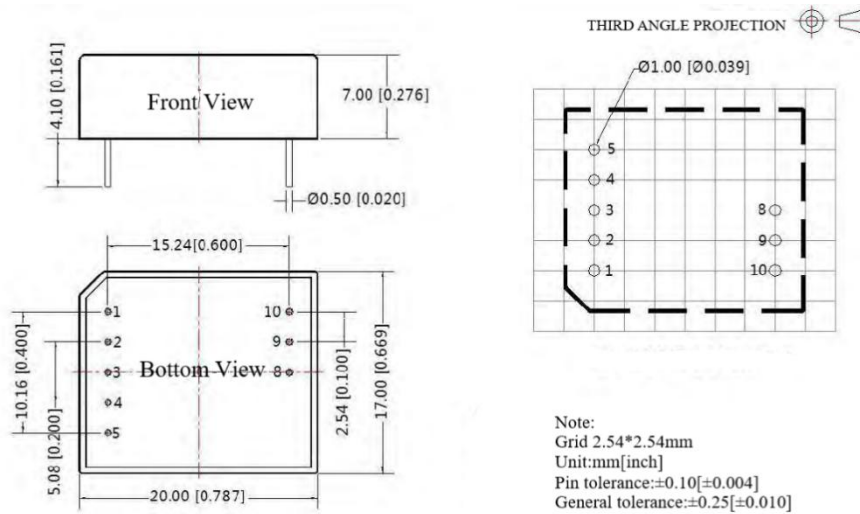
Signal supply port $\pm 0.5\text{KV}$ (line to line) / $\pm 1\text{KV}$ (line to ground) (see recommended circuit photo 1)

Signal supply port $\pm 1\text{KV}$ (line to line) / $\pm 2\text{KV}$ (line to ground) (see recommended circuit photo 1)

Signal supply port $\pm 2\text{KV}$ (line to line) / $\pm 4\text{KV}$ (line to ground) (see recommended circuit photo 1)

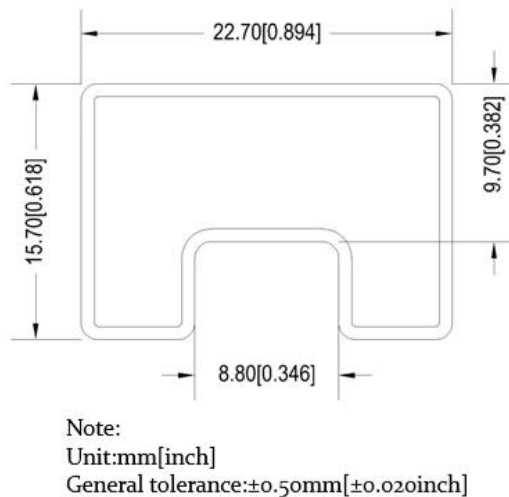
Signal supply port $\pm 4\text{KV}$ (line to line) / $\pm 6\text{KV}$ (line to ground) (see recommended circuit photo 1)

Dimension



| Pin-Out | | |
|---------|------|------------------------------|
| Pin | Name | Function |
| 1 | VCC | Input Power + |
| 2 | GND | GND |
| 3 | TXD | TD_D485 Send Pin |
| 4 | RXD | TD_D485 Receiving Pin |
| 5 | CON | Send & Receiving Control Pin |
| 8 | B | TD_D485 B Pin |
| 9 | A | TD_D485 A Pin |
| 10 | RGND | Isolation Power RGND |

Packing Dimension



| | | |
|--------------|-----------|-----------------------|
| Package Code | 20X17X7mm | 0.787X0.669X0.276inch |
|--------------|-----------|-----------------------|

Design Reference

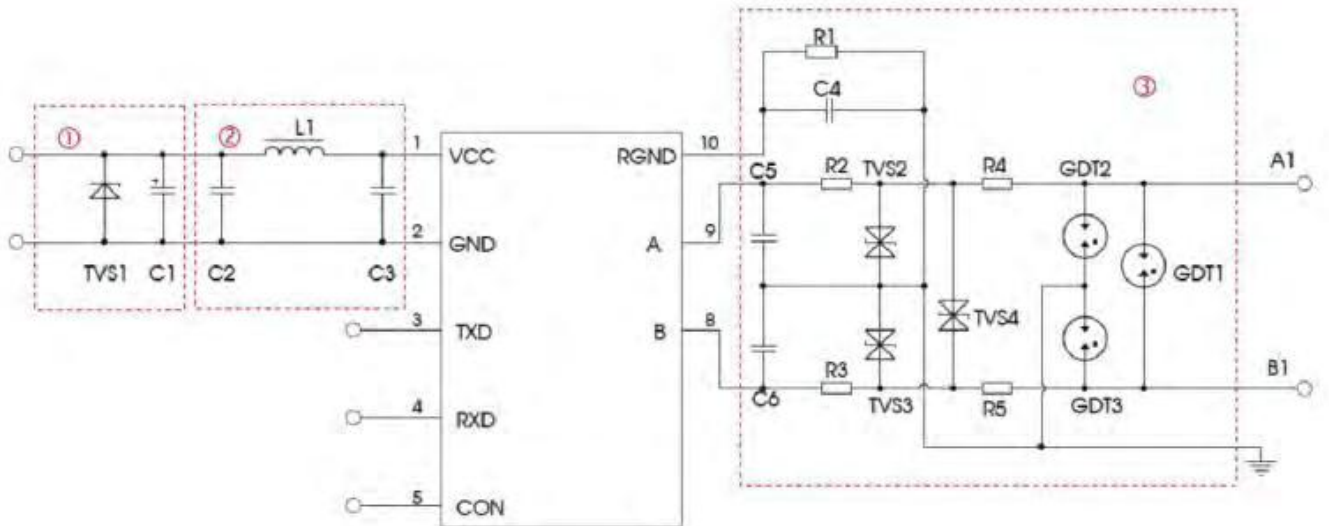


Photo 2

| Component | RS485-3V3HSA | | RS485-05HSA | | |
|----------------|----------------------------|-----------------------------------|----------------------------|----------|----------|
| | C1 | 220uF/10V(Electrolytic capacitor) | | | |
| TVS1 | SMCJ5.0A | | SMCJ6.5A | | |
| C2, C3 | 1uF/50V | | | | |
| L | 10uH | | | | |
| C5/C6 | 100pF/100V | | | | |
| C4 | 1nF/2KW | | | | |
| R1 | 1MΩ | | | | |
| TVS2,TVS3,TVS4 | SMBJ15CA | | | | |
| R4/R5 | / | | Wire-wound resistor 10Ω/2W | | |
| R2/R3 | Wire-wound resistor 10Ω/1W | Wire-wound resistor 10Ω/2W | / | | |
| GDT1/GDT2/GDT3 | / | | G30-A90X | S30-A90X | S50-A90X |

1. The product should be used under the specification range, hot Hot-swap is not supported, otherwise it will cause permanent damage to it;
2. RS485-05LSA will not support 3.3V system levels, RS485-3V3LSA will not support 5V level;
3. If the product worked beyond the load range or below the minimum load, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
4. Unless otherwise specified, data in this datasheet should be tested under conditions of Ta=25°C, humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. We can provide customized product service;
7. The product specification may be changed at any time without prior notice.

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