

### Product Typical Feature

- ◆ High baud rate of up to 500Kbps
- ◆ Integrated isolated DC-DC converter
- ◆ Bus Protection
- ◆ Two-port isolation test voltage 4000Vdc
- ◆ Operating ambient temperature range: -40℃ to +85℃
- ◆ The bus supports maximum 256 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℃.

### Application Field

RS485-3V3HSSV/ RS485-05HSSV 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)
RS485-3V3HSSV	3.15V-3.45V
RS485-05HSSV	4.75V-5.25V

### Input Specification

Item		Operating Condition		Value
Power Input	Static Current	Products Powered on, no communication	RS485-3V3HSSV	≤40mA
			RS485-05HSSV	≤50mA
	Send Current	500Kbps square wave communication	RS485-3V3HSSV	≤130mA
			RS485-05HSSV	≤130mA
Single Input	Series Interface	RS485-3V3HSSV		Compatible with +3.3V UART interface only
		RS485-05HSSV		Compatible with +5V UART interface only
	Pin Current			I <sub>TXD</sub> ≤2mA; I <sub>RXD</sub> ≤2mA; I <sub>CON</sub> ≤2mA

### Bus Interface

Item		Value	
Output	RS485Bus interface	Standard RS485 interface, A、B bus built in 5.1KΩ of the pull-down resistor	
Output isolated voltage	Output isolated power pin	3.3Vdc	3.2-3.6Vdc (only for external pull-down resistor, not recommended for other usage)
		5Vdc	4.9-5.3Vdc (only for external pull-down resistor, not recommended for other usage)

### Transmission Specifications

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Transmission Rate	500Kbps Max				
Handoff Delay	≤30us				
Number of Nodes	The bus supports maximum 256 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≤0.5mA, humidity≤95%, Test for 60S	4000Vdc
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)

	Surge	IEC/EN61000-4-4	Signal supply port $\pm 1\text{KV}$ (see recommended circuit photo 1)	Perf.Criteria B (see recommended circuit photo 1)
		IEC/EN61000-4-5	Power supply port $\pm 1\text{KV}$ (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)	

### Design Reference

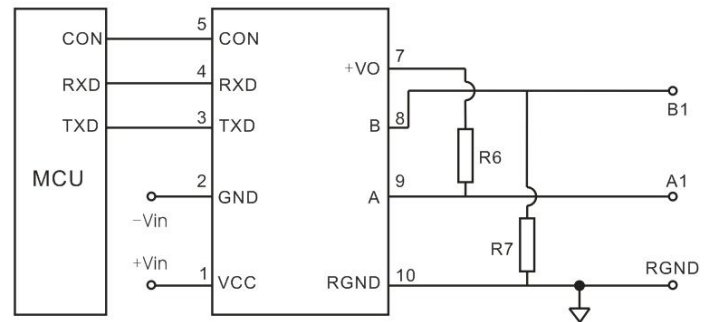
#### 1. Typical Application :

Typical Application RS485 isolated transceiver module is as shown in the photo;

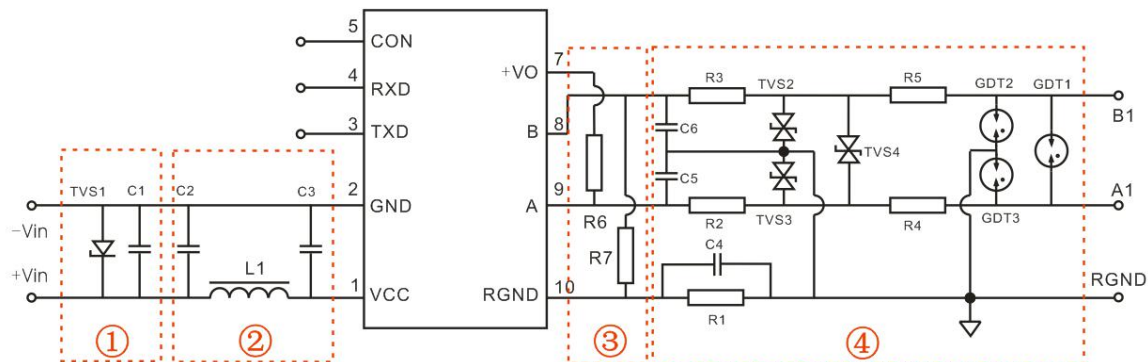
RS485-05HSSV module need to use the 5V power supply, the matching level is 5V, not be suitable for 3.3V system level;

RS485-3V3HSSV module need to use the 3.3V power supply, the matching level is 3.3V, not be suitable for 5V system level;

RS485 transceiver module built-in 5.1K pull-down resistance, R6, R7 is external pull-up resistance, please select the appropriate resistance value according to the actual situation.



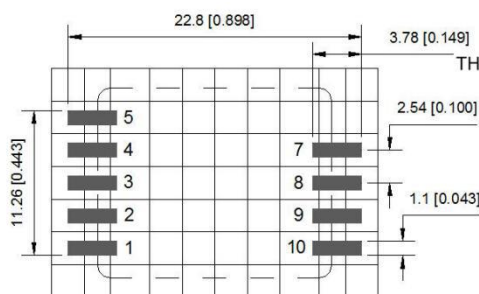
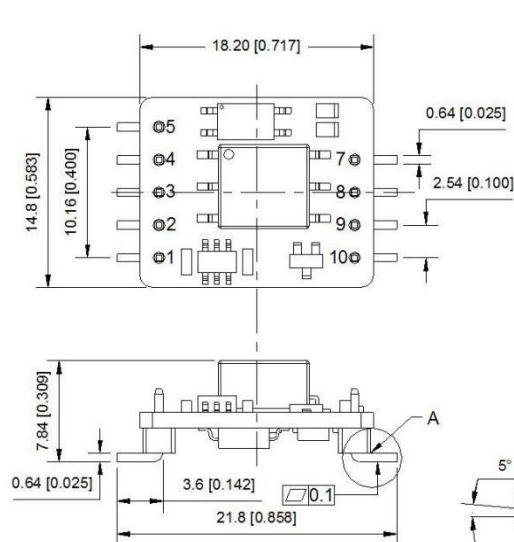
### 2.Recommended Circuit:



### Recommended Parameter:

Component	RS485-3V3HSSV		RS485-05HSSV		
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				
R6/R7	please select the appropriate resistance value according to the actual situation				
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

### Dimension



Note: Grid: 2.54\*2.54mm

Note:

Unit:mm[inch]

Pin section tolerances:  $\pm 0.10\text{mm}[\pm 0.004\text{ inch}]$

General tolerances:  $\pm 1.00\text{mm}[\pm 0.039\text{ inch}]$

THIRD ANGLE PROJECTION

Pin-Out		
Pin	Name	Function
1	VCC	Input Power +
2	GND	GND
3	TXD	Send Pin
4	RXD	Receiving Pin
5	CON	Send&Receiving Control Pin
7	+Vo	Positive Isolation Power Output
8	B	RS485H B Pin
9	A	RS485H A Pin
10	RGND	Isolation Power RGND

Package Code

21.8X14.8X7.2mm

0.858X0.583X0.309inch

### Design Reference

1. The product should be used under the specification range, hot swap is not supported, otherwise it will cause permanent damage to it;
2. RS485-05HSSV will not support 3.3V system levels, RS485-3V3HSSV will not support 5V level;
3. Pin-7 is only provided to connect with the pull-up resistor, and when not in use, it should be suspended;
4. 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;
5. Unless otherwise specified, data in this datasheet should be tested under conditions of  $T_a=25^\circ\text{C}$ , humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
6. All index testing methods in this datasheet are based on our Company's corporate standards;
7. We can provide customized product service;
8. The product specification may be changed at any time without prior notice.