Isolated Transceiver Module
RS485-XXHSAVC Series

Product Typical Feature

- ◆ High baud rate up to 500Kbps
- ◆ Integrated isolated DC-DC converter
- ◆ Bus Protection
- ◆ Two-port isolation test voltage 3000VAC
- ◆ Operating ambient temperature range: -40℃to +85℃
- ◆ The bus supports maximum 128 nodes
- ◆ Automatic send and receive data function

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

RS485-3V3HSAVCC/ RS485-05HSAVCC Series are transceiver isolation module with integrated power isolation, electrical isolation, and RS485 interface bus protector; It has the function of connecting to the RS485 network, and bus rate is up to 500Kbps. Besides, this product has added the function of automatically switching the receiving and sending status, no need to control the CON pin for additional control, which can further simplify the customer's circuit design and facilitate the embedding of user equipment.

Typical Product List

Part No	Input Voltage Range (VDC)
RS485-3V3HSAVC	3.15V-3.45V
RS485-05HSAVC	4.75V-5.25V

Input Specification

Item		Operating Condition		Value
Power Input	Static Current	Products Powered on, no communication	RS485-3V3HSAVC	≤50mA
			RS485-05HSAVC	≤40mA
	Send Current	500Kbps square wave communication	RS485-3V3HSAVC	≤100mA
			RS485-05HSAVC	≤80mA
Signal Input	Series Interface	RS485-3V3HSAVC		Compatible with +3.3V UART interface
		RS485-05HSAVC		Compatible with +5V UART interface
TXD pin Drive Current		MCU work normally		≥2mA
RXD pin Output Current		MCU work normally		≤10mA

Output Specification

Item	Conditions	Value		
Output	RS485 Bus interface	Standard RS485 interface, A, B bus built-in 47KΩ pull up and down resistor (can be adjusted according to requirements)		
Output isolated voltage	Output isolated power pin	3.2Vdc(Min.)	3.3Vdc(Typ.)	3.6Vdc(Max.)
		4.7Vdc(Min.)	5.0Vdc(Typ.)	5.3Vdc(Max.)

Transmission Specifications

Transmission Rate	500Kbps Max			
Number of Nodes	The bus supports maximum 128 nodes			
Transceiver Control	Contrary to common RS485 transceiver control level			
Send Status	Input	Output		
	TXD	A	B	Line State
	1	1	0	Normal
	0	0	1	Normal
Receive Status	Input voltage difference	Output voltage level		
	V A -V B	RXD		
	≥0	1		
	≤-200mV	0		
Automatic send and receipt switching delay	Conditions	Time		
	500Kbps	⩽40ns		

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 60S	3000VAC
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 photo 2-①)
	RE	CISPR22/EN55032	CLASS A (see photo 2-①)
EMS	ESD	IEC/EN61000-4-2	Contact ±4KV Perf.Criteria B

	EFT	IEC/EN61000-4-4	Power supply port ±2KV (see photo 2-②, A,B terminal) Perf.Criteria B
	Surge	IEC/EN61000-4-5	±2KV(line to line) /±4KV(line to ground) (see photo 2-②, A,B terminal) Perf.Criteria B

Design Reference

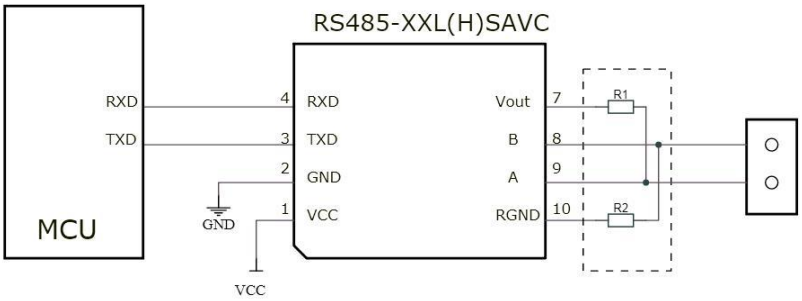
1.Typical Application:

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

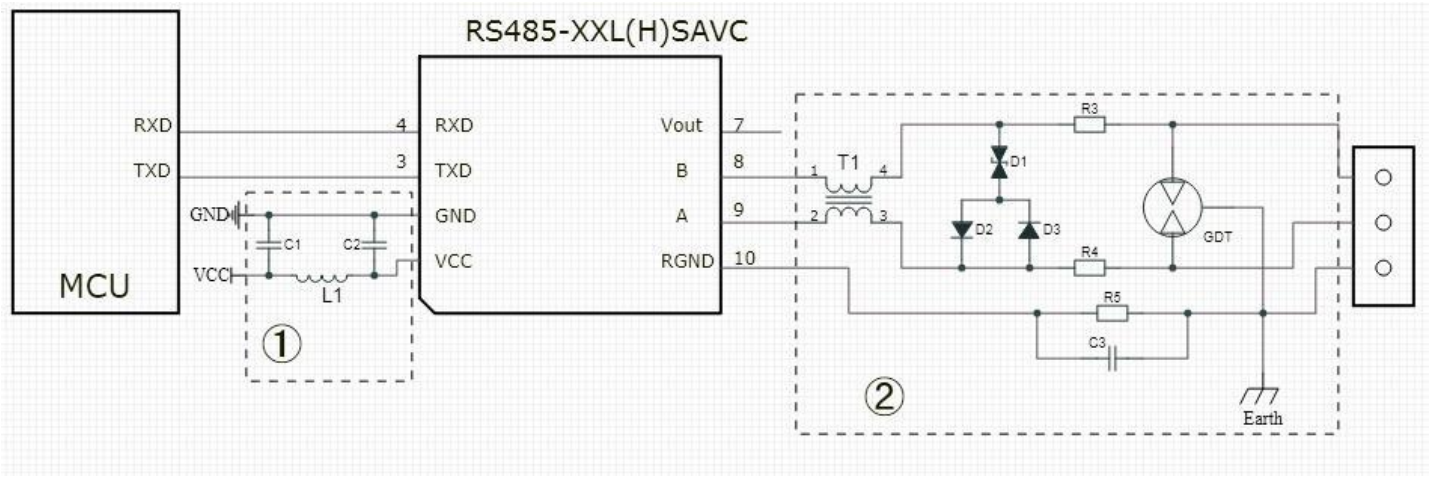
RS485-05HSAVC module need to use the 5V power supply, the matching level is 5V, not be suitable for 3.3V system level;

RS485-3V3HSAVC 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 47K pull up and pull-down resistor, R1, R2 are external pull-up and pull-down resistors, please select the appropriate resistance value according to the actual situation.



2.Recommended Circuit(Photo 2):



Recommended Parameter:

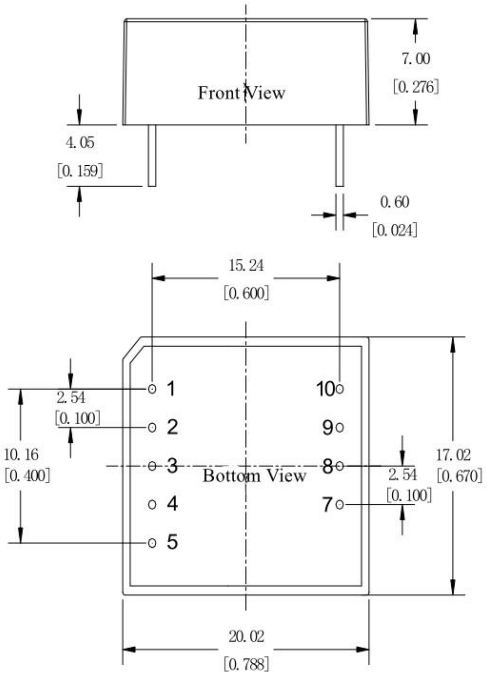
Component	Model
C1, C2	1 μ F, 25V
L1	CD43/12 μH
T1	B82793S0513N201
R3/R4	2.7Ω/2W
R5	1MΩ
C3	1nF/2KV
D1	SMBJ8.5CA
D2, D3	1N4007
GDT	3RL090M-5-S / B3D090L

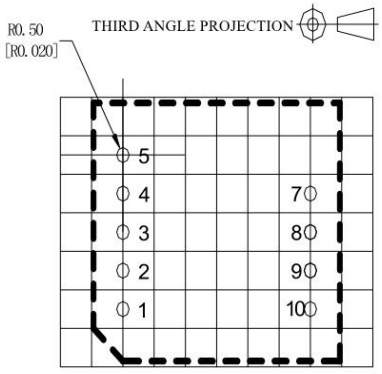
Note:

Since the A and B terminals of the product are equipped with 47kΩ pull-up and pull-down resistors and ESD protection devices, it is generally not necessary to add ESD protection devices when used in a good environment, as shown in Figure 1.Typical connection circuit diagram shown.

However, if the application environment is relatively harsh (such as high-voltage power, lightning, etc.), it is recommended that users must add TVS tubes, common-mode inductor, lightning protection tube, shielded twisted-pair cable or single-point connection to the earth in the same network to the A and B ends of the module. As shown in the recommended circuit in Photo 2, the parameter values are for reference only. Please determine the pieces and parameters of device in the circuit diagram according to the actual situation.

Dimension





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

Pin-Out		
Pin	Name	Function
1	VCC	Input Power
2	GND	GND
3	TXD	Send Pin
4	RXD	Receiving Pin
5	NP	No Pin
7	VOUT	Isolation Power Output
8	B	Signal Pin B
9	A	Signal Pin A
10	RGND	Isolation Power RGND

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

Design Reference

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. RS485-05HSAVC will not support 3.3V levels, RS485-3V3HSAVC 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; The isolated power supply of this product is for internal use only, and no external output load is allowed;
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 Ta=25℃, 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.

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