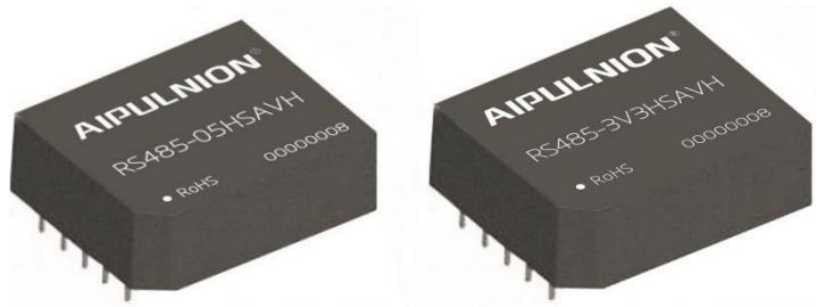


Product Typical Feature

- ◆ High baud rate of up to 500Kbps
- ◆ Integrated isolated DC-DC converter
- ◆ Bus Protection
- ◆ Two-port isolation test voltage 4000VAC
- ◆ Operating ambient temperature range: -40°C to +85°C
- ◆ The same network 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°C.

Application Field

RS485-3V3HSAVH/ RS485-05HSAVH Series are transceiver isolation module with integrated power isolation, electrical isolation, and RS485 interface whole line 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)	Output Voltage Range (VDC)
RS485-3V3HSAVH	3.15V-3.45V	4.7~5.3V
RS485-05HSAVH	4.75V-5.25V	4.7~5.3V

Input Specification

Item	Operating Condition		Value
Input	Quiescent Current	Products Powered on, no communication	RS485-3V3HSAVH ≤40mA
			RS485-05HSAVH ≤50mA
	Working current	500Kbps square wave communication	RS485-3V3HSAVH ≤50mA
			RS485-05HSAVH ≤60mA
Single Input	Series Interface	RS485-3V3HSAVH	+3.3V standard UART interface
		RS485-05HSAVH	+5V standard UART interface
CON pin level	High level enable transmission status		≥2.7V
	Low level enable receiving status		≤1.8V
CON pin switching delay	High level enable transmission status		≤200ns
	Low level enable receiving status		≤1us
TXD pin drive current	Normal communication		≥2mA
RXD pin output current	Normal communication		≤10mA



Bus Interface

Item	Condition	Value
Output	RS485Bus interface	Standard RS485 interface, A、B bus built in5.1KΩ of the pull-down resistor
A/B line differential voltage	Output high level [1]	$\geq -20\text{mV}$
	Output low level [0]	$\leq -200\text{mV}$
	Uncertain state (abnormal)	$> -200\text{mV}$ and $< -20\text{mV}$

Transmission Specifications

Transmission Rate	500Kbps Max				
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
	1	1	1	0	Normal
	1	0	0	1	Normal
Receive Status	Control	Input	Output		
	CON	A-B differential pressure	RXD		
	1	$\geq -20\text{mV}$	1		
	1	$\leq -200\text{mV}$	0		

General Specifications

Item	Operating Conditions	Value
Electric Isolation		Two-terminal isolation(input and output are mutually isolated)
Isolation Voltage	Lead current $\leq 0.5\text{mA}$, humidity $\leq 95\%$, Test for 60S	4000VAC
Operating Temperature		-40°C to $+85^{\circ}\text{C}$
Transportation and Shortage Temperature		-55°C to $+105^{\circ}\text{C}$
Operating Humidity		10% - 90%
Max.Operating Temperature for Casing		25°C (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	CISPR32/EN55032	CLASS A (see recommended circuit photo 2-①)
	RE	CISPR32/EN55032	CLASS A (see recommended circuit photo 2-①)
EMS	ESD	IEC/EN61000-4-2	Contact $\pm 4\text{KV}$ Perf.Criteria B
	EFT	IEC/EN61000-4-4	Power supply port $\pm 2\text{KV}$ (see recommended circuit photo 图 2-② A, B port) Perf.Criteria B
	Surge	IEC/EN61000-4-5	$\pm 2\text{KV}$ (line to line)/ $\pm 4\text{KV}$ (line to ground) [see Figure 2-②, A, B ports] Perf.Criteria B

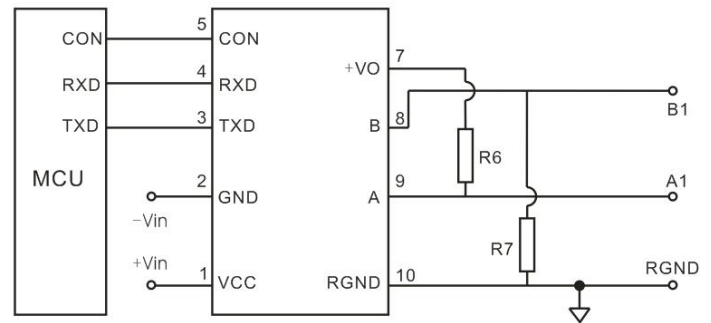
Design Reference

1. Typical Application :

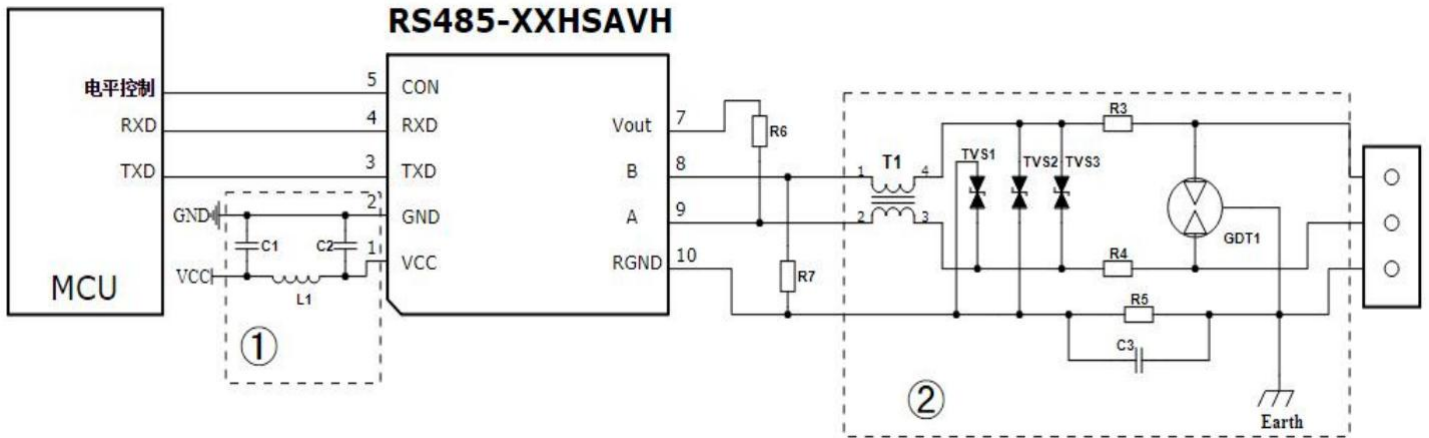
The typical application of RS485 isolated transceiver module is shown on the right;

RS485-05HSAVH module must use 5V power supply, matching level is 5V, 3.3V system level is not supported; RS485-3V3HSAVH module must use 3.3V power supply, matching level is 3.3 V, 5V system level is not supported.

RS485 isolated transceiver module has built-in 100K pull-up and pull-down resistors. R6 and R7 are external pull-up and pull-down resistors. Please select a suitable resistance value according to the actual situation.



2.Recommended Circuit:



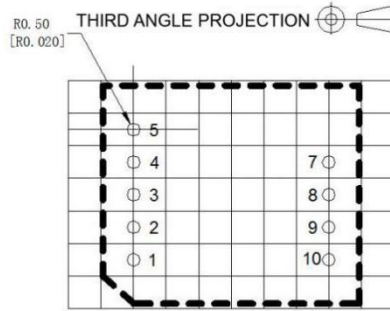
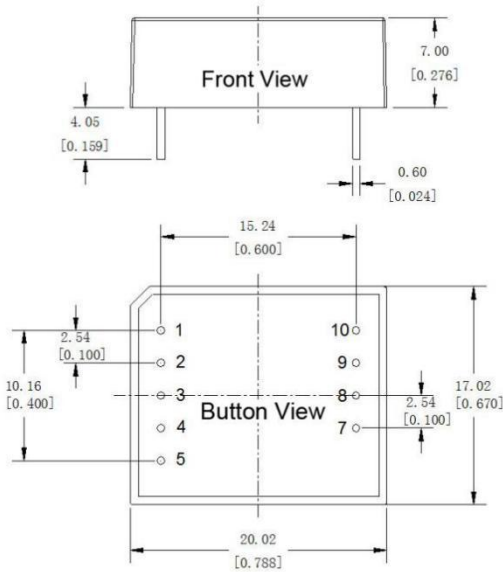
Recommended Parameter:

Component	RS485-XXHSAVH
C1,C2	1uF/25V
L1	CD43/10uH
T1	ACM2520-301-2P
TVS1,TVS2	SMBJ6.5CA
TVS3	SMBJ12CA
R3,R4	Wire wound resistance 2.7Ω/2W
R5	1MΩ
C3	1nF/2KV
R6/R7	Choose the appropriate resistance matching network
GDT1	3RL090M-5-S

Note:

As the product has built-in 100k Ω pull-up and pull-down resistors and ESD protection devices on the A and B terminals, it is generally not necessary to add ESD protection devices when used in a good environment. Refer to the typical connection circuit diagram shown in Figure 1. But if the application environment is harsh (such as high-voltage power, lightning, etc.), it is recommended that users must add TVS tubes, common mode inductors, anti-detonators, shielded twisted pairs or the same network to the ground at the A and B ends of the module. And other protective measures. As shown in the recommended circuit in Figure 2, the parameter values are for reference only. Please determine the devices and parameters in the circuit diagram according to the actual situation.

Dimension



Note: Grid: 2.54*2.54mm

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

Pin-Out		
Pin	Name	Function
1	+Vin	Input Power +
2	-Vin	Input Power -
3	TXD	Send Pin
4	RXD	Receiving Pin
5	CON	Send&Receiving Control Pin
7	+Vo	Isolation Power Output +
8	B	RS485H B Pin
9	A	RS485H A Pin
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 swap is not supported, otherwise it will cause permanent damage to it;
2. RS485-05HSAVH will not support 3.3V system levels, RS485-3V3HSAVH 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.