

Medical
electric
equipmentPower
Factor
Correction

World wide

Safety
Approvals

EMI

Inrush
current
limiting

OCP

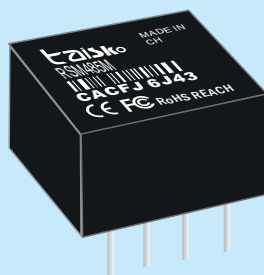


OVP

Remote
ON/OFFParallel
Operation

1U

RSM-series



Feature

DC-DC converters

Ideal for semiconductor,
analytical, medical,

and detector applications

Accuracy, reliability and stability

are critical for high voltage DC-DC

applications. manufacturers, with

over 20 years of experience providing
accurate and reliable compact solutions.

applications – allowing us to maximize
functionality in a compact environment

Safety agency approval

ENI 55032:2015/A1:2020

EN IEC 62368-1:2020+A11:2020

IEC 62321-1:2013 IEC 62321-2:2021 IEC 62321-3-1:2013,

Up to 5-year warranty (Refer to Instruction Manual)

CE marking

Low Voltage Directive

RoHS Directive

ROHS+REACH marking

Electrical Equipment Safety Regulations

RoHS Regulations

EMI

· PCA300F, PCA600F

Complies with FCC-B, CISPR32-B, EN55011-B, EN55032-B, VCCI-B

· PCA1000F, PCA1500F

Complies with FCC-A, CISPR32-A, EN55011-A, EN55032-A, VCCI-A

EMS Compliance : EN61204-3, EN61000-6-2

IEC60601-1-2 (2014), EN60601-1-2 (2015)

EN61000-4-2

EN61000-4-3

EN61000-4-4

EN61000-4-5

EN61000-4-6

EN61000-4-8

EN61000-4-11

Single channel high-speed small volume RS-485 isolated transceiver

Product Features:

Single input power supply
 Equipped with isolated output power pins
 Automatic data transmission and reception function
 Up to 64 nodes can be connected
 Electromagnetic radiation EMI is extremely low
 Working temperature range: -40 °C to +85 °C
 Integrated power isolation, signal isolation, and bus
 ESD protection functions

2 Product Description:

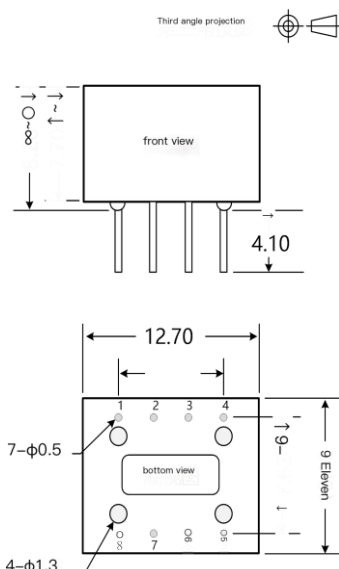
RSM485M, The main function will be to convert logical levels into differential levels of RS-485 protocol, achieving signal isolation; It is an RS-485 protocol transceiver module that uses IC integration technology to achieve power isolation, signal isolation, RS-485 communication, and bus protection. The product comes with a constant voltage isolation power supply, which can achieve 2500VDC electrical isolation. The product has automatic switching of transmission and reception functions, eliminating the need for transmission and reception control through control pins, which reduces the complexity of the design to a certain extent. The product can be easily embedded into user devices, enabling them to easily connect to RS485 protocol networks.

Scope of application:

Industrial communication, coal mining industry, power monitoring, building automation..

4. Appearance dimensions and pin specifications:

4.1 Appearance dimension diagram



Note:
 Dimension unit: mm
 Terminal diameter
 tolerance: ± 0.10
 Unmarked tolerance: ± 0.25

4.2 Suggested Printing Drawings

Note: The grid spacing is 2.54 * 2.54mm

4.3 Pin Definition

Pin		describe
Serial Number	name	
1	RXD	Data receiving foot
2	TXD	Data sending pin
3	GND	Power input ground
4	VCC	Positive power input
5	RGND	Isolation output power ground
6	A	RS-485 pin A
7	B	RS-485 B-pin
8	VO	Isolation output power supply positive

5 Product Model Table

PRODUCT MODEL	Power supply voltage range (VDC)	static current (mA, Typ)	maximum operating current (mA)	Transmission baud rate (kbps)	Nodes (pcs)	type
RSM485M	5 (3.15~5.25)	10	100	500	64	high speed

6 specification parameters

6.1 Maximum limit parameters

Using beyond the following limit values may cause permanent damage to the module,

project	condition	minimum value	Nominal value	Maximum value	unit
Input Voltage	RSM485M	-0.7	5	7	V dc
Pin soldering temperature resistance	Manual welding @ 3-5 seconds	--	370	--	°C
	Wave soldering @ 5-10 seconds	--	265	--	
hot plugging	--	Not Supported			

Note: This series of modules does not have input anti reverse connection function. It is strictly prohibited to input positive and negative connections in reverse, otherwise it will cause irreversible damage to the module.

6.2 Input Characteristics

project	symbol	condition	minimum value	Nominal value	Maximum value	unit
INPUT VOLTAGE	V_{CC}	RSM485M	3.15	3.3	5.25	V_{DC}
TXD logic level	high level	V_{IH}	$0.7V_{CC}$	--	$V_{CC}+0.5$	
	Low Level	V_{IL}	0	--	$0.3V_{CC}$	
RXD logic level	high level	V_{OH}	$I_{RXD}=-2mA$	--	--	
	Low Level	V_{OL}	$I_{RXD}=2mA$	--	0.8	mA
TXD driving current	I_{TXD}		--	--	2	
RXD output current	I_{RXD}		--	--	2	
serial interface		VCC:3.3V	3.3V standard UART interface			
		VCC:5V	5V standard UART interface			

6.3 Output Characteristics

project	symbol	condition	minimum value	Nominal value	Maximum value	unit
Built in isolated output power supply voltage	V _O	Rated input voltage	--	--	--	VDC
Differential output voltage (A-B)	V _{OD}	Nominal input voltage, differential load of 54 Ω	1.5	--	VO	
Differential output current (A-B)	I _{OD}		28	--	--	mA
Bus interface protection			ESD electrostatic protection			

6.4 Transmission Characteristics

project	symbol	condition	minimum value	Nominal value	Maximum value	unit
Built in pull-up and pull-down resistors			--	24	--	k Ω
Input impedance of transceiver		$-7V \leq V_{CM} \leq +12V$	96	--	--	
Data transmission delay			--	180	--	ns
Data reception delay			--	120	--	

6.5 Characteristics of Truth Table

project	input	output	
Sending function	TXD	A	B
	1	1	0
	0	0	1
Receiving function	$V_A - V_B$	RXD	
	$\geq -10\text{mV}$	1	
	$\leq -200\text{mV}$	0	
	$-200\text{mV} < V_A - V_B < -10\text{mV}$	uncertain state	

6.6 General Characteristics

project	condition	minimum value	Nominal value	Maximum value	unit
Electrical isolation		Isolation at both ends (input and output are isolated from each other)			
Isolation Voltage	Test time 1 minute, leakage current $<5\text{mA}$, humidity $<95\%$	--	2.5K	--	VDC
Working temperature range	Output as full load	-40	--	+85	$^{\circ}\text{C}$
storage temperature	--	-55	--	+105	$^{\circ}\text{C}$
Storage humidity	No condensation	--	--	95	%
Temperature rise of the casing during operation		--	20	--	$^{\circ}\text{C}$
Usage environment	The presence of dust, strong vibrations, impacts, and gases that corrode product components in the surrounding environment may cause damage to the product				

6.7 Physical Characteristics

project	condition
Housing material	Black flame retardant and heat-resistant plastic (UL94-V0)
Package Size	12.70*10.16*7.70mm
weight	2.0g (nominal)
Cooling method	Natural air cooling

6.8 EMC Characteristics

classification	project	parameter	grade
EMS	Electrostatic Discharge	IEC/EN 61000-4-2 Contact $\pm 4\text{KV}$ /Air $\pm 8\text{KV}$ (bare metal)	Perf.Criteria B
		IEC/EN 61000-4-2 Contact $\pm 8\text{KV}$ /Air $\pm 15\text{KV}$ (recommended circuit shown in Figure 3)	Perf.Criteria B
	Pulse group immunity	IEC/EN 61000-4-4 $\pm 2\text{KV}$	Perf.Criteria B
	Lightning surge immunity	IEC/EN 61000-4-5 common mode $\pm 2\text{KV}$ (bare metal)	Perf.Criteria B
		IEC/EN 61000-4-5 differential mode $\pm 2\text{KV}$, common mode $\pm 4\text{KV}$ (recommended circuit shown in Figure 3)	Perf.Criteria B
	Conducted disturbance immunity	IEC/EN 61000-4-6 3Vr.m.s	Perf.Criteria A

8 Product usage precautions

8.1 MCU IO port level matching

The TXD and RXD pin interfaces of RSM485M are matched with VCC power supply level.

8.2 Module RS485 A-B Bus Level Threshold Explanation

According to the characteristics of the truth table, the embedded isolated RS-485 transceiver module of this series has a high receiving level when the A/B line differential voltage is greater than or equal to +200mV; When the A/B line differential voltage is less than or equal to -200mV, the module's receiving level is low; When the differential voltage between A/B lines is greater than -200mV and less than +200mV, the module's receiving level is in an uncertain state, and the design should ensure that the module's receiving is not in this state. Therefore, when designing or applying RS-485 networks, users should decide whether to add a 120 Ω terminal resistor based on the actual situation. Usage principle: Regardless of whether the RS-485 network is in a static or dynamic state, it is necessary to ensure that the A/B line differential voltage is not between -200mV and +200mV, otherwise communication errors may occur.

8.3 Module Pin Description

When pins 5 and 8 are not in use, please suspend these pins.

8.4 Use of Shielded Wires

Please use shielded twisted pair cables for data transmission, and connect the shielding layer of the same network to the ground at a single point; If better anti-interference capability is required for the RS-485 network, double-layer shielded twisted pair cables can be used, with each node's RGND connected to the inner shielding layer and the outer shielding layer connected to the ground at a single point.

8.5 External pull-up and pull-down resistors

If the application environment is harsh (such as high voltage power, lightning strikes, etc.), ESD protection devices need to be added. Suitable pull-up and pull-down resistors and equivalent capacitors matched with ESD protection devices need to be externally connected to improve the waveform quality of communication signals.