

CMx01D232H Series



CE Report

RoHS



FEATURES

- Operating ambient temperature range: -40°C to +85°C
- Meets EIA/TIA-232-F standard
- Isolation voltage: 3000 VDC
- Integrated isolated DC/DC converter
- High baud rate of up to 115200bps
- Enhanced EMC performance with recommended external circuit

APPLICATIONS

- Industrial communication
- Power monitoring
- Coal mining industry
- Building automation

DESCRIPTION

The CMx01D232H series of isolated single high speed 232 transceivers are all-in-one modules with isolated power supply, isolated signal and RS232 transceiver chip integrated in one RS232 interface solution. The main products function is to switch from logic level to 232 protocols level and achieving signal isolation and the product features a constant-voltage source isolated power supply which with stands a test voltage of 3000 VDC. The products also can easily be embedded in the user's end equipment, to achieve fully functional RS232 protocols network connections.

SELECTION GUIDE

Product Model	Voltage Range (VDC)	Quiescent Current (mA, Typ)	Max. Operating Current (mA)	Transmission Baud Rate (kbps)
CM301D232H	3.3 (3.15~3.45)	50	75	115200
CM501D232H	5 (4.75~5.25)	35	65	115200

RS-232 Transceiver Module

INPUT CHARACTERISTICS

Parameter	Symbol	Model	Min.	Typ.	Max.	Units
Input voltage	VCC	CM301D232H	3.15	3.3	3.45	VDC
		CM501D232H	4.75	5	5.25	VDC
TXD logic level	High Level	CM301D232H	0.7Vcc	--	3.6	VDC
		CM501D232H	0.7Vcc	--	5.5	VDC
	Low Level	VIL	CM301D232H, CM501D232H	0	--	0.8
RXD logic level	High Level	CM301D232H	Vcc-0.4	3.1	--	VDC
		CM501D232H	Vcc-0.4	4.8	--	VDC
	Low Level	VOL	CM301D232H, CM501D232H	0	0.2	0.4
TXD Drive Current	IT	CM301D232H, CM501D232H	2	--	--	mA
RXD Output Current	IR	CM301D232H, CM501D232H	--	--	10	mA
Serial Interface	CM301D232H		Compatible with +3.3V UART interface only			
	CM501D232H		Compatible with +5V UART interface only			

OUTPUT CHARACTERISTICS

Parameter		Operating Conditions	Min.	Typ.	Max.	Units
Driver Output voltage	High-level	RL=3kΩ to GND	5	--	--	VDC
	Low-level	RL=3kΩ to GND	--	--	-5	VDC
Receiver input Voltage			-15	--	15	VDC
Bus Interface Protection			ESD protection			

ABSOLUTE MAXIMUM RATINGS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Input Surge Voltage (1sec. max.)	CM301D232H	-0.7	--	5	VDC
	CM501D232H	-0.7	--	7	VDC
Pin soldering temperature	Soldering spot 1.5mm away from case, 10s max.	--	--	300	°C

RS-232 Transceiver Module

TRANSMISSION CHARACTERISTICS

Parameter		Operating Conditions	Min.	Typ.	Max.	Units
Data Delay	TXD Transmitter Delay	tT	--	--	2	us
	RXD Receiver Delay	tR	--	--	2	us

TRUTH TABLE CHARACTERISTICS

Parameter	Input	Output
Send Status	TXD	T_OUT
	L	H
	H	L
Receive Status*	R_IN	RXD
	$\geq 2.4V$	L
	$\leq 0.8V$	H
	$0.8V \leq RXD \leq 2.4V$	Undefined state

Note: *The receiving threshold voltage will vary slightly with Vcc.

GENERAL CHARACTERISTICS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Isolation Test	Electric strength test for 1 minute, leakage current $< 1mA$	--	--	3000	VDC
Insulation Resistance	At 500VDC	--	1000	--	MΩ
Working Temperature		-40	--	+85	°C
Storage Temperature		-50	--	+105	°C
Storage humidity	Non-condensing	10	--	90	%
Safety Class		CLASS III			

PHYSICAL CHARACTERISTICS

Parameter	Operating Conditions
Overall Dimensions	20.00 × 17.00 × 7.00 mm
Weight	4.0g (Nominal)
Cooling method	Natural air cooling

EMC CHARACTERISTICS

Parameter	Category	Content	
EMI	CE	CISPR32/EN55032	CLASS A (see Fig. 2-(A))
	RE	CISPR32/EN55032	CLASS A
EMS	ESD	IEC/EN61000-4-2	Contact ±4kV perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	±1kV (Signal port) perf. Criteria B
	Surge	IEC/EN61000-4-5	±4kV (line to line, Signal port, see Fig. 2-(B)) perf. Criteria B
		IEC/EN61000-4-5	±6kV (line to ground, Signal port, see Fig. 2-(B)) perf. Criteria B
	CS	IEC/EN61000-4-6	3Vr.m.s perf. Criteria A

CIRCUIT DESIGN AND APPLICATION

Typical Application Circuit

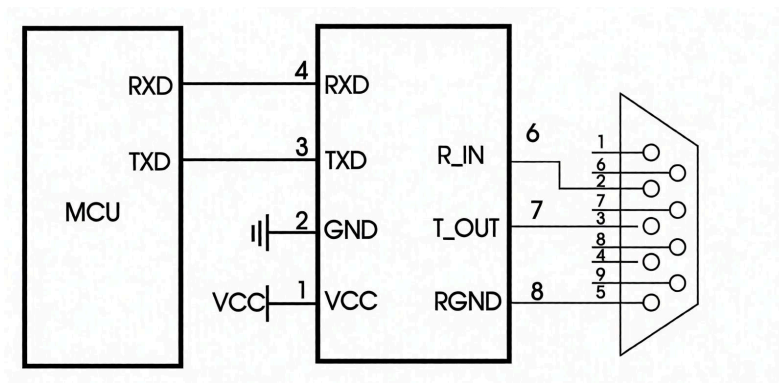


Fig.1 Application Circuit

Note: There are two connection modes of DB9 interface connection: direct line and cross line, which are selected according to the actual application.

RS-232 Transceiver Module

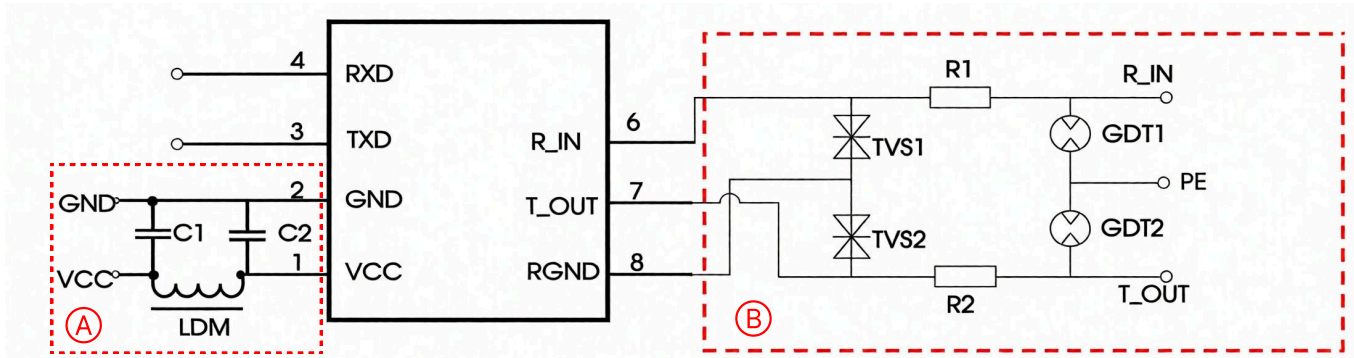
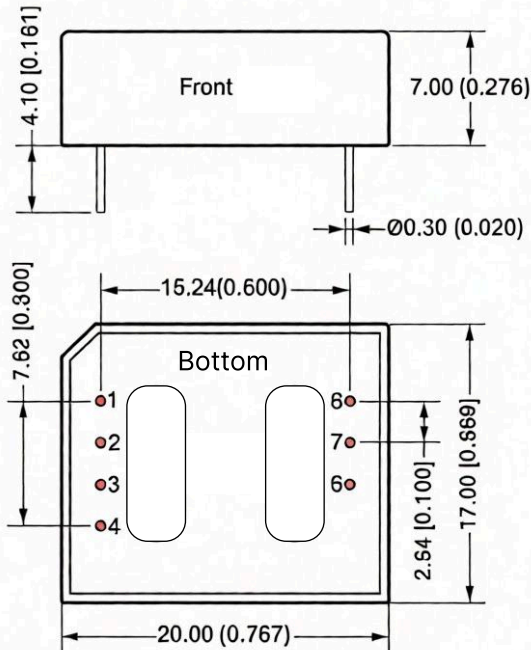


Fig. 2 Recommended port protection circuit

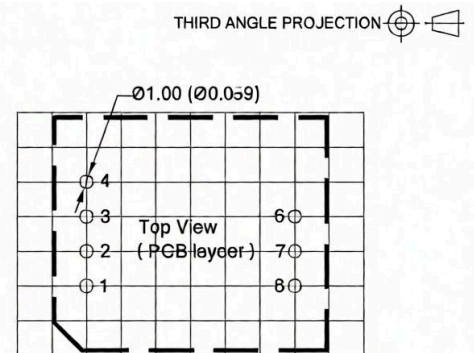
Table 1 : Recommended components and values

Model	CM301D232H	CM501D232H
C1, C2	1uF/16V	
LDM	CD43-12uH	
TVS1, TVS2	SMCJ10CA	
R1, R2	12Ω/2W(Wire-wound resistor)	
GDT1, GDT2	S30-A90X	

OVERALL DIMENSIONS AND PIN FUNCTIONS



Note:
Unit: mm(inch)
Pin diameter tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$



Note: Grid 2.54*2.54mm

Table 2: Pin Function Table

Pin	Mark	Function
1	VCC	Input Power+
2	GND	GND
3	TXD	Sending Pin
4	RXD	Receiving Pin
6	R_IN	RS-232 Input
7	T_OUT	RS-232 Output
8	RGND	Isolation Power Output RGND

NOTES

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at $T_a=25^{\circ}\text{C}$, humidity $<75\%\text{RH}$, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;
6. RHENXV reserves the right to make changes to the product at any time without notice.