T232L-01D Series

DESCRIPTIONS

Single high speed RS232 isolated transceiver

RoHS

Report Report

EN62368-1 BS EN62368-1

FEATURES

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

APPLICATIONS

- Industrial control
- Home appliances
- Instrumentation
- Communication
- Civil applications

Selection Guide

Certification	Part No.	Power Input (VDC)	Baud Rate (bps)	Static Current (mA)	Max. Operating Current (mA)
EN	T232L301D	3.15-3.45	115200	50	75
	T232L501D	4.75-5.25	115200	35	65

Absolute Limits

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (1sec.max.)	3.3V series	-0.7	--	5	VDC
	5.0V series	-0.7	--	7	
Pin Soldering Temperature	Soldering spot 1.5mm away from case, 10s max.	--	--	300	℃

3.3V Input Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Power Supply Input Voltage		VCC	3.15	3.3	3.45	VDC
TXD Logic Level	High-level	V_{IH}	0.7Vcc	--	3.6	
	Low-level	V_{IL}	0	--	0.8	
RXD Logic Level	High-level	V_{OH}	Vcc-0.4	3.1	--	
	Low-level	V_{OL}	0	0.2	0.4	
TXD Drive Current		I_T	2	--	--	mA
RXD Output Current		I_R	--	--	10	
Serial Interface		Compatible with + 3.3 V UART interface only				

5.0V Input Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Power Supply Input Voltage		VCC	4.75	5	5.25	VDC
TXD Logic Level	High-level	V_{IH}	0.7Vcc	--	5.5	
	Low-level	V_{IL}	0	--	0.8	
RXD Logic Level	High-level	V_{OH}	Vcc-0.4	4.8	--	
	Low-level	V_{OL}	0	0.2	0.4	
TXD Drive Current		I_T	2	--	--	mA
RXD Output Current		I_R	--	--	10	
Serial Interface		Compatible with + 5 V UART interface only				

Transmission Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Data Delay	TXD Transmitter Delay	t_T	--	--	2	us
	RXD Receiver Delay	t_R	--	--	2	

Output Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Driver Output voltage	High-level	R_L=3k Ωto GND	5	--	--	VDC
	Low-level	R_L=3k Ωto GND	--	--	-5	
Receiver input Voltage			-15	--	15	
Bus Interface Protection			ESD protection			

Truth Table Specifications

Transceiver Control	Input	Output
Send Status	TXD	T_OUT
	L	H
	H	L
Receive Status①	R_IN	RXD
	≥2.4V	L
	≤0.8V	H
	0.8V≤RXD≤2.4V	Undefined state

Note: ①The receiving threshold voltage will vary slighty with Vcc

General Specifications

Item	Operating Conditions	Value
Isolation Test	Electric strength test for 1 minute, leakage current <1mA	3000VDC
Insulation Resistance	At 500VDC	1000M Ω(Input-output)
Operating Temperature		-40℃to +85℃
Transportation and Storage Temperature		-50℃to +105℃
Operating Humidity	Non-condensing	10% - 90%
Safety Standard	Only 3.3V series	Meet UL62368-1 & EN62368-1
Safety Class		CLASS III

Mechanical Specifications

Dimensions	DIP8; Dimension 20.00 x 17.00 x 7.00 mm
Weight	4.0g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A (see Fig. 2-①)	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN 61000-4-2	Contact ±4kV	Perf. Criteria B
	RS	IEC/EN 61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4	±1kV (Signal port)	Perf. Criteria B
	Surge	IEC/EN 61000-4-5	±4kV (line to line, Signal port, see Fig. 2-②)	Perf. Criteria B
		IEC/EN 61000-4-5	±6kV (line to ground, Signal port, see Fig. 2-②)	Perf. Criteria B
	CS	IEC/EN61000-4-6	3Vr.m.s	Perf. Criteria A

Application Precautions

1. Carefully read and follow the instructions before use; contact our technical support if you have any question;
2. Do not use the product in hazardous areas;
3. Use only DC power supply source for this product. 220VAC power supply is prohibited;
4. Hot-swap is not supported;
5. If the external input of TXD is insufficient, the pull-up resistor should be added according to the situation;
6. It is strictly forbidden to disassemble the product privately in order to avoid product failure or malfunction.

After-sales service

1.Factory inspection and quality control are strictly enforced before shipping any product; please contact your local representative or our technical support if you experience any abnormal operation or possible failure of the module;

2.The products have a 3-year warranty period, from the date of shipment. The product will be repaired or exchanged free of charge within the warranty period for any quality problem that occurs under normal use.

Applied circuit

See Application Notes for Isolated Transmitter for details.

Design Reference

1. Typical application circuit

T232L3(5)01D

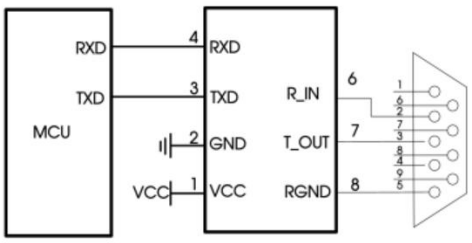


Fig.1

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

2. Recommended port protection circuit

T232L3(5)01D

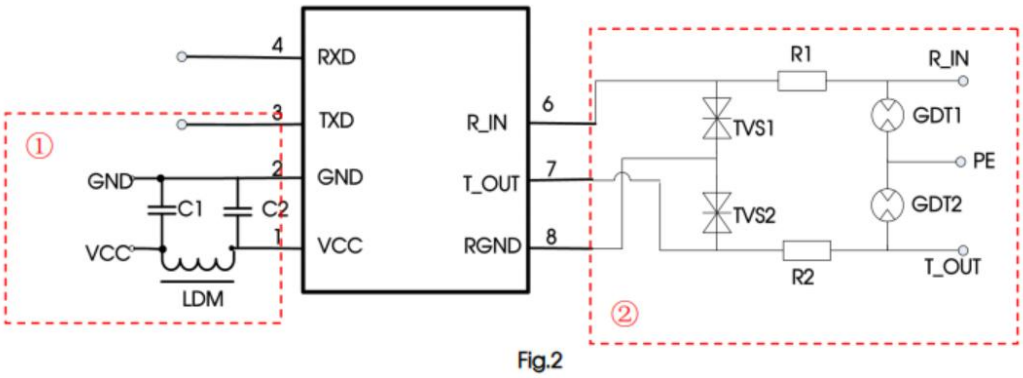


Fig.2

Recommended components and values:

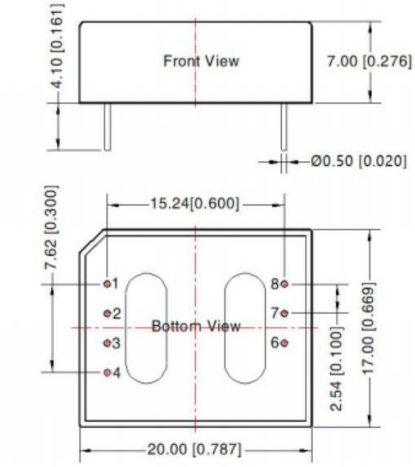
Model	T232L301D	T232L501D
C1, C2	1uF/16V	
LDM	CD43-12uH	
TVS1,TVS2	SMCJ10CA	
R1, R2	12Ω/2W(Wire-wound resistor)	
GDT1, GDT2	S30-A90X	

3. Precautions

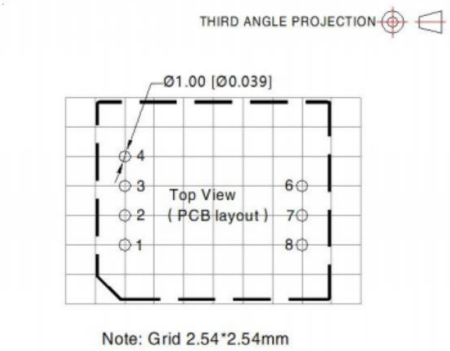
(1) T232L501D is for 5V TTL level only (not compatible with 3.3VTTL level); T232L301D is for 3.3V TTL level only (not compatible with 5V).

4. For additional information, please contact CLAF POWER

Dimensions and Recommended Layout



Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]



Note: Grid 2.54*2.54mm

Pin-Out		
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. For additional information on Product Packaging please contact CLAF POWER

2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;

3. All index testing methods in this datasheet are based on company corporate standards;

4. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;

5.We can provide product customization service, please contact our technicians directly for specific information;

6. Products are related to laws and regulations: see "Features" and "EMC";

7.Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.