

# MORNSUN®

## DUAL LOW RATE RS485 ISOLATION TRANSCEIVER MODULE

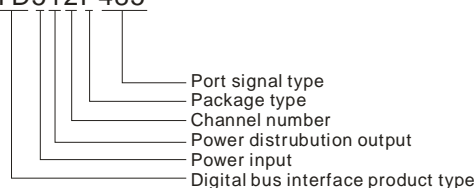
—TD312P485(3.3V Power supply)  
TD512P485(5.0V Power supply)



RoHS

### PART NUMBER SYSTEM

TD512P485



### FEATURES

- | Two-port electrical isolation input and output
- | Integrated isolated DC/DC converter
- | Bus protection
- | Isolation voltage 2.5KVDC
- | Operating temperature range:-40°C ~+85°C
- | Baud rate 9600bps
- | Connect up to 32 nodes on one bus
- | Low electromagnetic radiation
- | High electromagnetic immunity

### GENERAL DESCRIPTION

RS-485 interface power Integrated isolated module  
TD312P485/TD512P485 series are transceiver isolation module with integrated duplex power isolation, electrical isolation, and RS-485 interface bus protector. Products can be easily embedded in the user equipment, achieve function of RS-485 two-port network connection  
The isolation RS-485 circuits of using a piece of power isolation module, six light couplings and two RS-485 transceivers and device are only need to adopt a RS485 isolation module now. Simplify the customers on the isolation requirements of the design.

### SELECTION GUIDE

Model	Power Input
TD312P485	3.17V~3.45V
TD512P485	4.75V~5.25V

### ELECTRICAL CHARACTERISTICS

Power Input Parameters	Input Current(no Load)	TD512P485≤35 mA,TD312P485≤45mA
	Send current	TD512P485≤80 mA,TD312P485≤120mA
	Power dissipation	≤0.4W
Input Parameters	Serial interface	TD512P485Compatible with + 5 V UART Interface TD312P485 Compatible with + 3.3 V UART Interface
	Pin current	$I_{TXD} \leq 5mA$ ; $I_{RXD} \leq 3mA$ ; $I_{CON} \leq 5mA$
Output Parameters	485 Bus interface	Standard interface RS485, pull-up and pull-down resistor, whose value is 4.7K,have been set to A/B line.
	Isolation power output	Nominal 5V,≤0.15W

### TRANSMISSION CHARACTERISTICS

Transmission Rate	Maximum 9600bps					
Data Delay	The delay time from the receiving data switch to the send data : 30 μs(min), 100 μs(max).					
The Number of Nodes	Connect up to 32 nodes on one bus					
Transceiver control	Contrary to common 485 transceiver control level					
Truth Table	Sending Status	Control	Input	Output		
		CON	TXD	A	B	Line state
		0	1	1	0	Normal
		0	0	0	1	Normal
	Receiving Status	Control	Input	Output		
		CON	A-B	RXD		
		1	0.2V	1		
		1	-0.2V	0		

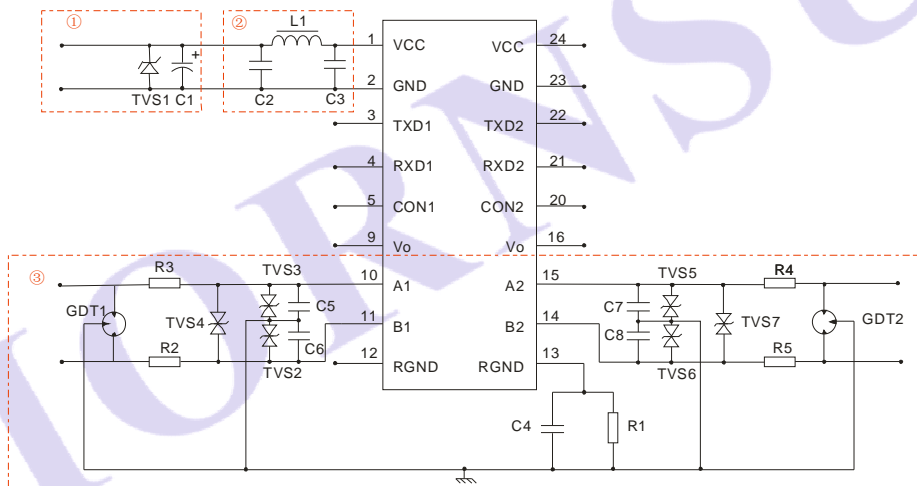
### ISOLATION CHARACTERISTICS

Galvanic Isolation	Two-port isolation(input and output)
Isolation Voltage	2.5KVDC(Tested for 1minute and leakage current < 5mA, humidity <95%)

EMC SPECIFICATIONS					
EMI	CE	CISPR22/EN55022	CLASS A	( External Circuit Refer to Figure 1-② )	
	RE	CISPR22/EN55022	CLASS A	( External Circuit Refer to Figure 1-② )	
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	Power Port ±2KV	perf. Criteria B	( External Circuit Refer to Figure 1-① )
IEC/EN61000-4-4		Signal Port ±1KV	perf. Criteria B	( External Circuit Refer to Figure 1-③ )	
EMS	Surge	IEC/EN61000-4-5	Power Port ±1KV/2KV	perf. Criteria B	( External Circuit Refer to Figure 1-① )
		IEC/EN61000-4-5	Signal Port ±4KV/6KV	perf. Criteria B	( External Circuit Refer to Figure 1-③ )
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A	

OTHER CHARACTERISTICS	
Ambient Temperature	Operating temperature: -40℃~+85℃
	Transport and Storage temperature:-50℃~+105℃
Operating Humidity	10%~90%
Size	31.8*20.3*9.5 (L*W*H) (Unit:mm)
Weight	Approx.10g
Application Environment	The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product
Note:1. All specifications measured at TA=25℃, humidity<75%, nominal input voltage and rated output load unless otherwise specified. 2. All specifications stated in this datasheet are subject to the above listed models only. For specifications of non-standard models, please contact our technical support team.	

### EMC RECOMMENDED CIRCUIT



(Figure 1)overall plan(detail parameter refer to item)  
(Table 1)

Model	TD312P485	TD512P485
C1	220uF/10V(Electrolytic capacitor)	
TVS1	SMCJ5.0A	SMCJ6.5A
C2,C3	1uF/25V	
L1	10μH	
C4	1nF /2KV	
R1	1MΩ	
C5,C6,C7,C8	100pF/100V	
TVS2,TVS3 TVS5,TVS6 TVS4,TVS7	SMBJ15CA	
R2,R3 R4,R5	10Ω/2W(Wire wound resistance)	
GDT1,GDT2	B3D090L-C	

## APPLICATION NOTICE

1. Please read the user manual carefully before using. If any question please contact our technical support department.
2. Please do not use this product in hazardous area.
3. To avoid invalid explosion protection function, or any failure, users disassemble this product is forbidden.

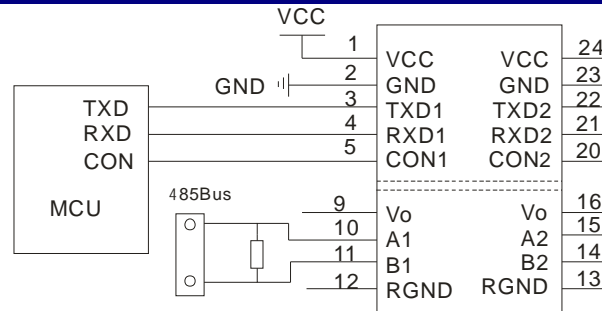
## AFTER-SALES SERVICE

1. Products are carefully inspected and quality control during production and before shipment. If they operated abnormally or there were anything wrong, please contact our agent where purchased or MORNSUN FAE as soon as possible.
2. MORNSUN warranty our product for 3 years from manufacturing date. During this period, MORNSUN will repair or replace the product if product was found to have manufacturing defect.

## APPLICATION GUIDE

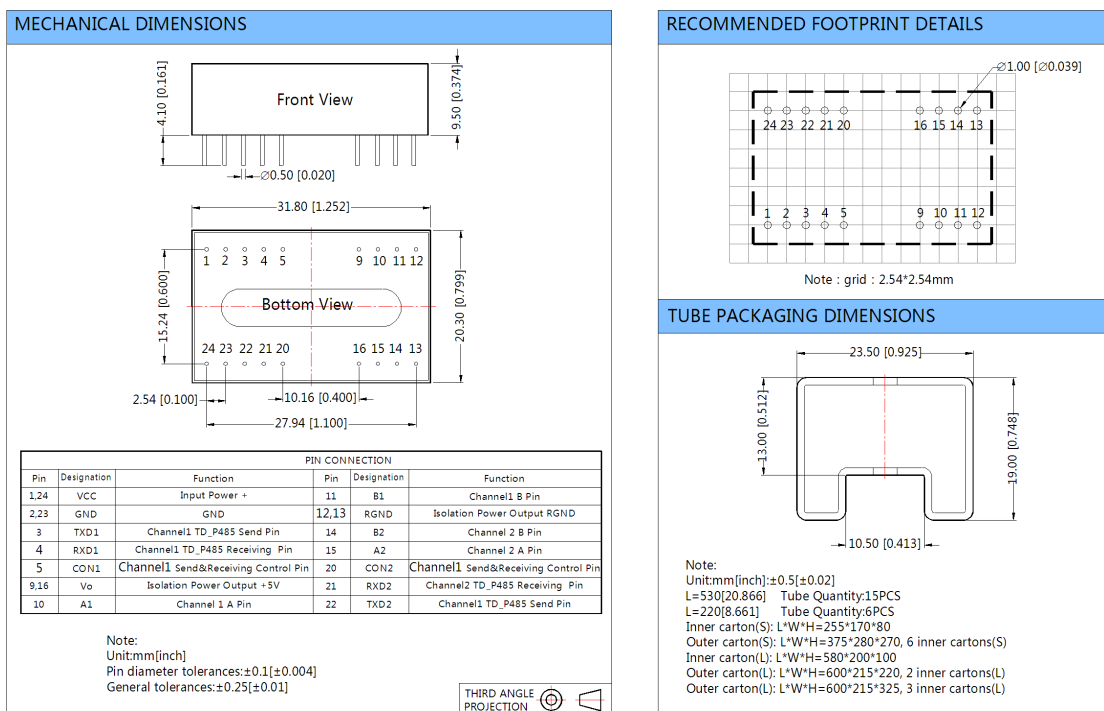
See the communication interface product application guide.

## TYPICAL APPLICATIONS CIRCUIT DIAGRAM



The connecting of 2 channel and 1 channel are the same  
Input/output power of 1 channel and 2 channel are internal connected

## OUTLINE DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING



Note:

1. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. In this datasheet, all the test setup and methods are based on our corporate standards.
3. All characteristics are meant for listed model, non-standard models may perform differently, you can contact MORNSUN FAE for more details.
4. Contact us for your specific requirement.
5. Specifications are subject to change without prior notice.

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