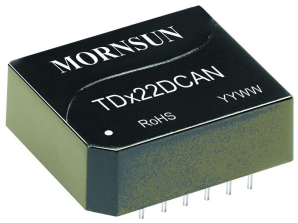
Duplex High Rate Isolation CAN Transceiver Module



RoHS CE 3 years Warranty

FEATURES

- Two- port isolation (2.5kVDC) / Channel isolation (1.5kVDC)
- High baud rate up to 1Mbps
- Operating temperature range: -40℃ to +105℃
- The bus is able to support 110 nodes at maximum
- Set isolation and ESD bus protection in one
- EN60950 approval

TD322DCAN / TD522DCAN, the main function is to convert the TTL / CMOS level to the CAN bus differential level, to achieve signal isolation; is a set of power isolation, signal isolation, CAN transceiver and bus protection in one CAN bus transceiver module, To achieve two-way output, channel isolation. Products can be easily embedded in the user equipment, so that equipment can easily achieve CAN bus network connectivity.

Selection Guide

Certification	Part No.	Power input (VDC)	Baud rate (bps)	Static Current (mA)	Maximum Operating Current(mA)	Bus Maximum Voltage(V)	Number of Nodes
CE	TD322DCAN	3.3	40k-1M	37	70	±58	110
	TD522DCAN	5	40k-1M	42	60	±58	110

Limit Specifications

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 Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	℃

Input Specifications(3.3V series)

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		Standard CAN controller interface for +3.3V				

Input Specifications(5.0V series)

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		Standard CAN controller interface for both +3.3V and +5.0V.				

Transmission Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Data Delay	TXD Transmit Delay	t_T	--	55	115	ns
	RXD Receive Delay	t_R	--	65	135	
	Cycle Delay	$t_{PRO(TXD-RXD)}$	--	120	250	

Output Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Dominant Level (Logic 0)	CANH	$V_{(OD)CANH}$	2.75	3.5	4.5	VDC
	CANL	$V_{(OD)CANL}$	0.5	1.5	2.25	
Recessive Level (Logic 1)	CANH	$V_{(OR)CANH}$	2	2.5	3	
	CANL	$V_{(OR)CANL}$	2	2.5	3	
Differential Level	Dominant Level (Logic 0)	$V_{diff(d)}$	1.5	2	3	
	Recessive Level (Logic 1)	$V_{diff(r)}$	-0.05	0	0.05	
Bus Pin Maximum Withstand Voltage		V_X	-58	--	+58	
Bus transient voltage		V_{trf} , Meet ISO7637-3 standard	-150	--	+100	
Bus Pin Leakage Current		(VCC=0V, $V_{CANH/L}$=5V)	-5	--	5	uA
Differential load resistance		R_L	45	60	65	Ω
Differential Input Impedance		R_{diff}	19	30	52	kΩ
CAN Bus Interface		Meet ISO/DIS 11898 standard Twisted-pair output				

General Specifications

Item	Operating Conditions	Value
Isolation Voltage	Testing for 1 minute, leakage current <1mA,	Input-output: 2.5kVDC
		output-output: 1.5kVDC
Insulation Resistance	Isolation voltage 500VDC	1000MΩ
Operating Temperature		-40℃ to +105℃
Transportation and Storage Temperature		-50℃ to +125℃
Operating Humidity	Non-condensing	10%-90%
Maximum temperature of the product	Ta=25℃, Free air convection	≤65℃
Safety Standard		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

Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)
Dimensions	20.0*17.0*7.0 mm
Weight	2g(Typ.)
Cooling Method	Free air convection

EMC Specifications

EMS	ESD	IEC/EN 61000-4-2	Contact ±4kV/Air ±8kV (Bare component, Signal port)	Perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m (Bare component)	Perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2kV (Bare component, Signal port)	Perf. Criteria B
	Surge	IEC/EN 61000-4-5	±2kV (Bare component, Signal port)	Perf. Criteria A
	CS	IEC/EN 61000-4-6	3Vr.m.s (Bare component)	Perf. Criteria A

Application Precautions

1. Please read the instructions carefully before use; contact our technical support if you have any problem;
2. Do not use the product in hazardous areas;
3. Use DC power supply for the product and 220V AC power supply is prohibited;
4. Do not dismount and assemble the product without permission to avoid failure or malfunction of equipment;

After-sales service

1. Ex-factory inspection and quality control have been strictly conducted for the product; if there occurs abnormal operation or possibility of failure of internal module, please contact the local representative or our technical support;
2. The warranty period for the product is 3 years as calculated from the date of delivery. If any quality problem occurs under normal use within the warranty period, the product can be repaired or changed for free.

Applied circuit

Refer to the CAN Industrial Bus Interface Isolating Module Application Manual.

Design Reference

1. Typical application circuit

TD5(3)22DCAN

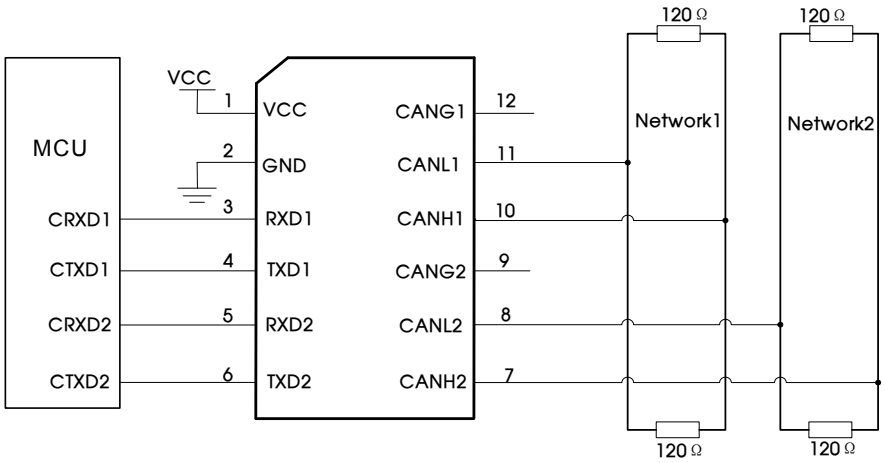


Fig.1

In general, the module, which is properly connected to the power supply, CAN controller and CAN bus network interface, can be used directly by customers without adding peripheral circuits. Figure 1 shows a typical application circuit connection for a module.

Notes: The CAN controller logic level should be compatible with TD5(3)22DCAN isolated CAN transceiver module.

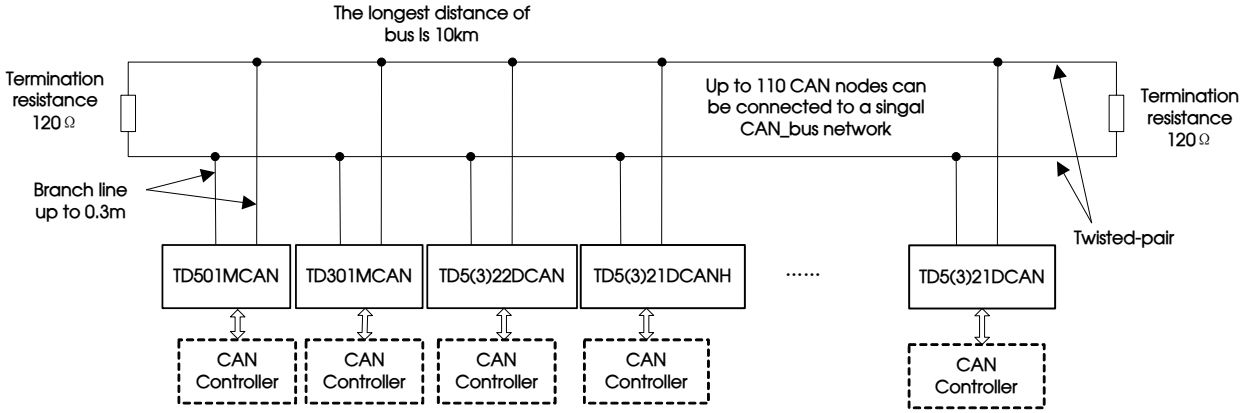


Fig.2

As shown in Figure 2, a single CAN-bus network can connect up to 110 single-channel TD_CAN isolated CAN transceiver modules. The universal type module can support a max. communication distance of 10km while the high-speed type module can support a max communication distance of 1km with baud rate beyond 40kbps. If looking to access more nodes or longer communication distance, it can be achieved by using CAN repeaters or other expansion equipment.

Notes: The communication distance of the bus is related to the communication speed and field application. It can be designed according to the actual application and reference standard. The communication cable is recommended to twisted pair or shielded twisted pair and should stay away from the interference source. For long-distance communication, the terminal resistance value needs to be selected according to the communication distance and the cable impedance and the number of nodes. If the use of dual-channel TD5(3)22DCAN, any channel CAN-bus typical network can refer to Figure 2.

2. Recommended port protection circuit

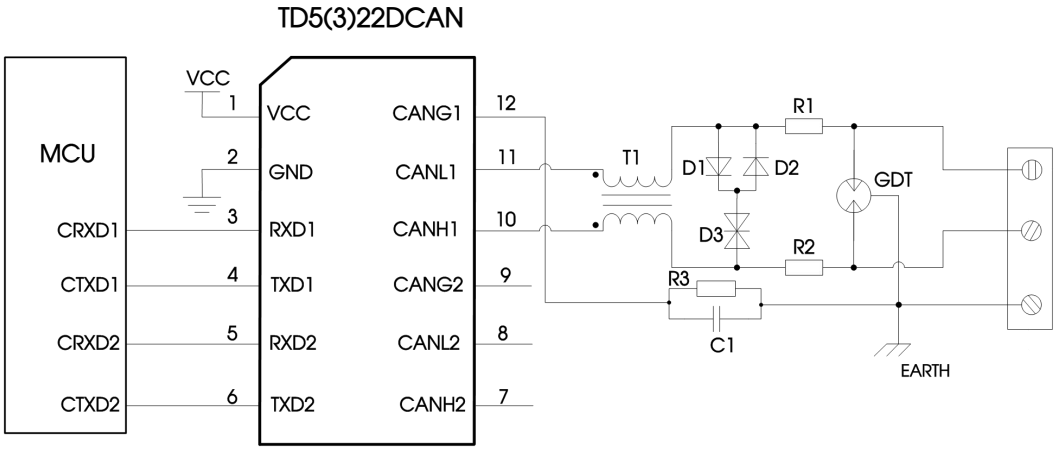


Fig.3

Notes:Twisted pair shield grounded reliably.

Parameter declaration:

Components	Recommended parameters	Components	Recommended parameters
R3	1MΩ	R1、R2	2.7Ω/2W
C1	102,2kV	D1、D2	1N4007
T1	ACM2520-301-2P	D3	SMBJ15CA
GDT	B3D090L		

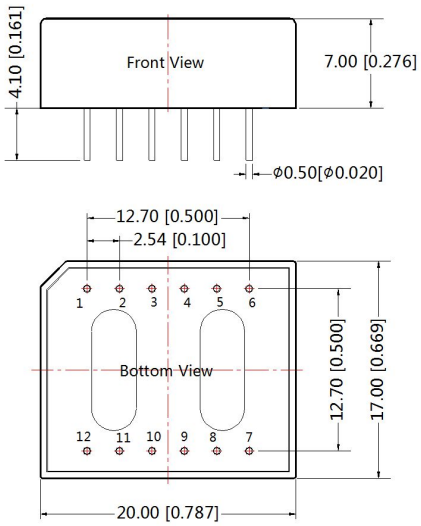
When the module is used in harsh field environment, it is susceptible to large energy of lightning strike. In this case, it is necessary to add protection circuit to the CAN signal port to protect the module from damage and ensurethe reliability of bus communication. Figure 2 provides a recommended protection circuit design for high-energy lightning surges, with a degree of protection related to the selected protection device. Parameter description lists a set of recommended circuit parameters, which can be adjusted according to the actual application situation. Also, when using the shielded cable, the reliable single-point grounding of the shield must be achieved.

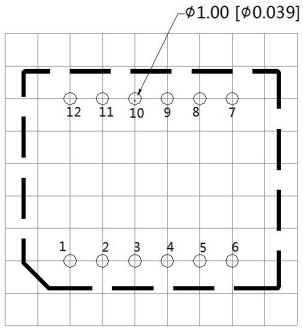
Notes: This recommended parameter is only the recommended value, which is subject to the actual application.
Recommended R1, R2 use PTC, D1, D2 use fast recovery diodes.

3. For more information, please find the application note on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm

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

Pin-Out		
Pin	Designation	Function
1	VCC	Input Power +
2	GND	GND
3	RXD1	Receiving Pin
4	TXD1	Send Pin
5	RXD2	Receiving Pin
6	TXD2	Send Pin
7	CANH2	CANH Pin
8	CANL2	CANL Pin
9	CANG2	Isolation Power Output
10	CANH1	Send Pin
11	CANL1	CANL Pin
12	CANG1	Isolation Power Output

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58040014;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25℃, humidity<75% when inputting nominal voltage and outputting rated load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance indexes of the product models listed in this datasheet are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice;
7. Our products shall be classified and stored after being scrapped, and shall be handled by qualified units.

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