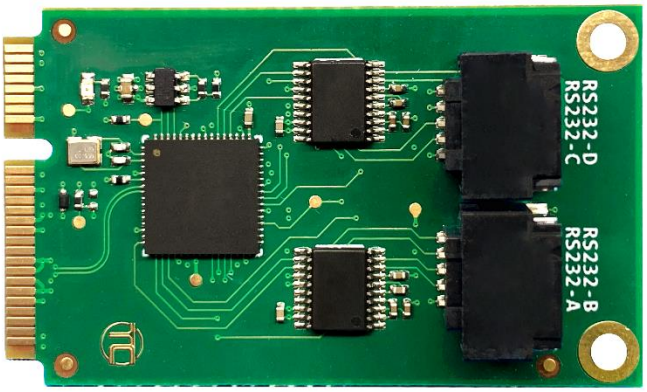
4-Port RS-232 PCIe Mini Card

Features

- 4 Independent RS-232 Serial Ports
- Supports RTS/CTS Hardware Flow Control
- USB 2.0 High Speed Upstream Interface
- Positive-Locking Serial Port Connector
- Baud Rates up to 1 Mbit/s
- 2 kB FIFO Transmit Buffer per Channel
- 2 kB FIFO Receive Buffer per Channel
- FTDI Chipset with Royalty Free Drivers
- Internal 5kΩ Receiver Termination
- ESD Protection ±15 kV on all RS-232 Signals
- Receiver Input Voltage Range: ±25 V
- Supports Low Power USB Suspend Mode
- -40°C to 85°C Operating Temperature
- Lead-Free and RoHS Compliant
- Made in the USA



Description

TC-004-01 is a rugged, high performance full size PCIe Mini Card which adds 4 independent RS-232 serial ports to any embedded system or computer. Supporting baud rates up to 1Mbit/s and large 2 kilobyte transmit and receive buffers on each channel, this card is designed for reliable, high speed serial communication. Each channel supports RTS/CST hardware flow control and has standard 5kΩ termination on the receiver inputs.

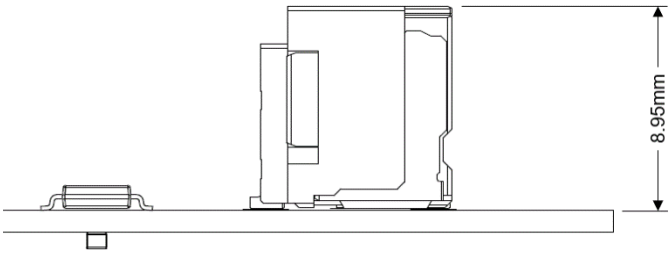
TC-004-01 exceeds TIA/EIA-232-F electrical specifications, utilizing one of the highest performance transceivers on the market. Robust ESD protection on all communication signals and receiver input voltage range of ±25V ensures operation in harsh electrical environments. The Molex Micro-Lock Plus connector provides the highest reliability in cable retention and sets the TC-004-01 apart from other products in its class. An audible positive-locking connector and large metal solder tabs ensure a solid, reliable connection in high vibration and industrial temperature environments.

Designed with a high performance USB bridge from FTDI, the TC-004-01 can integrate into any embedded system with minimal software or firmware effort. Plug-and-Play drivers for both Windows and Linux are available and supported by FTDI, the proven industry standard for USB-Serial bridge chipsets.

PCIe Mini Card Height

TC-004-01 is a standard 30.00mm x 50.95mm full size PCIe Mini Card. It is designed with bottom-side clearance of less than 1.35mm to ensure compatibility with any full size PCIe Mini Card slot. The top-side of the card features a Molex Micro-Lock Plus connector. This connector has a height of 8.95mm and should be accounted for in the mechanical system design.

Contact Tracer Circuits for product customization information, including single-row connector and low-profile connector options.



Specifications

General

PARAMETER	VALUE
Upstream Interface	USB 2.0 High Speed (480 Mbit/s)
Supported Serial Baud Rates	183 bit/s - 1 Mbit/s
TX FIFO Buffer	2 kB
RX FIFO Buffer	2 kB
Flow Control	Hardware (RTS/CTS), Software (Xon/Xoff)
Data Bits	7,8
Stop Bits	1,2
Parity	Odd/Even/Mark/Space/None
USB Silicon Chipset	FTDI FT4232H

Electrical

PARAMETER	MIN	TYP	MAX	UNIT
Power				
PCIe Mini Card Input Voltage		3.3		V
Operating Power: USB Suspend Mode		2		mW
Operating Power: 4 Active Channels, No Load		260		mW
Operating Power: 4 Active Channels, 5 kΩ Loaded		330		mW
Receivers				
RX Input Voltage	-25		25	V
RX Input Hysteresis		0.5		V
RX Termination Resistance		5		kΩ
Drivers				
TX Driver Output Voltage (3 kΩ Load)		±5.4		V
TX Driver Slew Rate	8		150	V/µs

Note: Typical operating power measured at 25°C

Mechanical

PARAMETER	VALUE	UNIT
Dimensions	30.00 x 50.95	mm
Weight	0.21	oz
Board Connector	Molex 5054482071	
Mating Connector Housing	Molex 5054322001	
Mating Crimp Terminals (Tin-Bismuth Plating)	Molex 5054311000	

Environmental

PARAMETER	MIN	TYP	MAX	UNIT
Operating Temperature	-40		85	°C
Relative Humidity (non-condensing)	5		95	%
Electrostatic Discharge Rating (Human Body Model)		±15		kV
Electrostatic Discharge Rating (IEC 61000-4-2 Contact Discharge)		±8		kV
Electrostatic Discharge Rating (IEC 61000-4-2 Air-Gap Discharge)		±15		kV

Pin Configuration and Functions

CONNECTOR	CHANNEL	PIN	I/O	SIGNAL DESCRIPTION
J1	D	1	Input	RS-232 Channel-D Receive Data (RD)
		2	Input	RS-232 Channel-D Clear To Send (CTS)
		3	Output	RS-232 Channel-D Transmit Data (TD)
		4	Output	RS-232 Channel-D Request To Send (RTS)
		5	GND	Ground
	C	6	GND	Ground
		7	Input	RS-232 Channel-C Receive Data (RD)
		8	Input	RS-232 Channel-C Clear To Send (CTS)
		9	Output	RS-232 Channel-C Transmit Data (TD)
		10	Output	RS-232 Channel-C Request To Send (RTS)
	B	11	Input	RS-232 Channel-B Receive Data (RD)
		12	Input	RS-232 Channel-B Clear To Send (CTS)
		13	Output	RS-232 Channel-B Transmit Data (TD)
		14	Output	RS-232 Channel-B Request To Send (RTS)
		15	GND	Ground
	A	16	GND	Ground
		17	Input	RS-232 Channel-A Receive Data (RD)
		18	Input	RS-232 Channel-A Clear To Send (CTS)
		19	Output	RS-232 Channel-A Transmit Data (TD)
		20	Output	RS-232 Channel-A Request To Send (RTS)

Hardware Reset Configuration

Following PCIe Electrical Specifications, the TC-004-01 uses the PERST# signal to hold all card functions in reset until the PCIe power rails have reached their nominal voltage levels. This signal can be pulled low at any time to reset all card functions and registers. Because the TC-004-01 uses a USB 2.0 upstream interface and does not use a PCIe link, the PERST# can be electrically disconnected with a resistor modification, if required.

Contact Tracer Circuits for product customization information, including factory loaded resistor options.