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TEP0001 CAN FD TRM

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Revision: V21
Date: 09-Dec-2016 18:23

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Overview

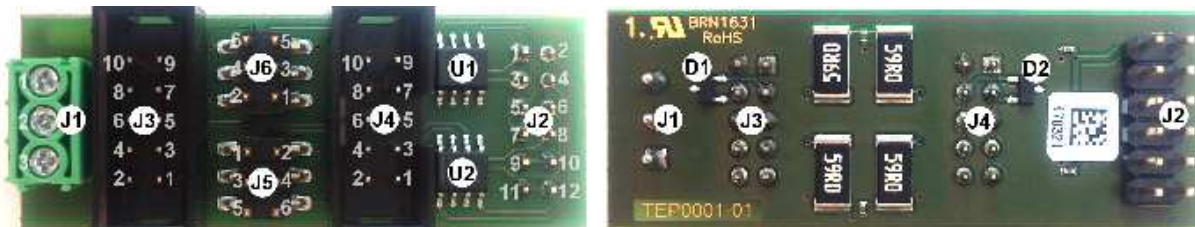
Refer to https://shop.trenz-electronic.de/de/Download/?path=Trenz_Electronic/PMOD/TEP0001 for online version of this manual and other documents available about the product.

The Trenz Electronic TEP0001 is an industrial-grade dual CAN FD transceiver with Pmod interface.


Features

- Diligent Pmod interface compatible
- Dual CAN FD PHY's (CAN0 and CAN1)
 - Texas Instruments TCAN337G
 - Up to 5Mbit data rate
 - Compatible with ISO 11898-2
 - Bus pin fault protection of ± 14 V
 - Integrated 12 kV IEC-61000-4-2 ESD contact discharge protection
 - 10 pin headers (IDC cable to DB9)
 - One CAN FD transceiver has extra 3-pin screw connector terminal
- Single 3.3V supply

Main Components



- J1. Screw connector terminal of CAN0 bus
- J2. 2.54mm pitch 2x6-pin header Pmod interface
- J3. 2.54mm pitch 2x5-pin box header, CAN0 bus
- J4. 2.54mm pitch 2x5-pin box header, CAN1 bus
- J5. 2.54mm pitch SMT 2x3-pin jumper block, can also be used as CAN1 bus connector
- J6. 2.54mm pitch SMT 2x3-pin jumper block, can also be used as CAN0 bus connector
- U1. Texas Instruments TCAN337G CAN FD transceiver, CAN0
- D1. Bourns CDSOT23-T24CAN CANbus Protector, CAN0
- U2. Texas Instruments TCAN337G CAN FD transceiver, CAN1
- D2. Bourns CDSOT23-T24CAN CANbus Protector, CAN1

 TEP0001 PMOD connector is mounted for Right Angle connection to PMOD Baseboard.

Interfaces and Pins

J1 Connector, CAN0 Bus

| Pin | Signal | Notes |
|-----|--------|----------------------------|
| 1 | CAN0_H | U1 high level CAN bus line |
| 2 | GND | U1 ground connection |
| 3 | CAN0_L | U1 low level CAN bus line |

J2 Connector, Pmod Interface

| Pin | Signal | Notes | Pin | Signal | Notes |
|-----|---------|---|-----|---------|---|
| 1 | CAN0_TX | U1 CAN0 transmit data input, integrated pull up | 2 | CAN1_TX | U2 CAN1 transmit data input, integrated pull up |
| 3 | CAN0_RX | U1 CAN0 receive data output, tri-state | 4 | CAN1_RX | U2 CAN1 receive data output, tri-state |
| 5 | CAN0_S | U1 silent mode, integrated pull down | 6 | CAN1_S | U2 silent mode, integrated pull down |
| 7 | CAN0_F | U1 open drain fault output | 8 | CAN1_F | U2 open drain fault output |
| 9 | GND | U1 ground connection | 10 | GND | U2 ground connection |
| 11 | 3.3V | U1 3.3V supply voltage | 12 | 3.3V | U2 3.3V supply voltage |

J3 Connector, CAN0 Bus

| Pin | Signal | Notes | Pin | Signal | Notes |
|-----|--------|---------------------------|-----|--------|----------------------------|
| 1 | N/A | - | 2 | GND | U1 ground connection |
| 3 | CAN0_L | U1 low level CAN bus line | 4 | CAN0_H | U1 high level CAN bus line |
| 5 | GND | U1 ground connection | 6 | N/A | - |
| 7 | N/A | - | 8 | N/A | - |
| 9 | N/A | - | 10 | N/A | - |

J4 Connector, CAN1 Bus

| Pin | Signal | Notes | Pin | Signal | Notes |
|-----|--------|---------------------------|-----|--------|----------------------------|
| 1 | N/A | - | 2 | GND | U2 ground connection |
| 3 | CAN1_L | U2 low level CAN bus line | 4 | CAN1_H | U2 high level CAN bus line |
| 5 | GND | U2 ground connection | 6 | N/A | - |
| 7 | N/A | - | 8 | N/A | - |

| Pin | Signal | Notes | Pin | Signal | Notes |
|-----|--------|-------|-----|--------|-------|
| 9 | N/A | - | 10 | N/A | - |

J5 Jumper Block/Connector CAN1 bus

Close pins 1-3 and 2-4 with jumpers to enable on-board terminator for CAN1 bus. J5 header can also be used as CAN1 bus connector, refer to the following table pin mapping.

| Pin | Signal | Note | Pin | Signal | Note |
|-----|--------|---------------------------|-----|--------|----------------------------|
| 3 | CAN1_L | U2 low level CAN bus line | 4 | CAN1_H | U2 high level CAN bus line |
| 5 | GND | U2 ground connection | 6 | GND | U2 ground connection |

J6 Jumper Block/Connector, CAN0 bus

Close pins 1-3 and 2-4 with jumpers to enable on-board terminator for CAN0 bus. J6 header can also be used as CAN0 bus connector, refer to the following table for pin mapping.

| Pin | Signal | Note | Pin | Signal | Note |
|-----|--------|---------------------------|-----|--------|----------------------------|
| 3 | CAN0_L | U1 low level CAN bus line | 4 | CAN0_H | U1 high level CAN bus line |
| 5 | GND | U1 ground connection | 6 | GND | U1 ground connection |


Operating Conditions, Ratings and Dimensions

Recommended Operating Conditions

| | Minimum | Maximum | Unit |
|----------------------------------|---------|---------|------|
| Supply voltage | 3 | 3.6 | V |
| Operational free-air temperature | -40 | 125 | °C |

Absolute Maximum Ratings

| Parameter | Minimum | Maximum | Unit |
|--|---------|---------|------|
| Supply voltage range | -0.3 | 5 | V |
| Voltage at any bus terminal (CANH or CANL) | -14 | 14 | V |
| Operating temperature range | -40 | 150 | °C |
| Storage temperature | - | 150 | °C |

 Refer to Texas Instruments [TCAN337G](#) product datasheet for additional information about conditions and ratings.

Power Requirements

3.3V supply voltage TBD* (180 mA max per one CAN FD transceiver in "Normal Mode", dominant state with bus fault as per TCAN337G datasheet).

* TBD - To Be Determined soon with reference design setup.

Physical Dimensions

- Module size: 54 mm × 20.5 mm.
- Mating height of the J2 connector from the PCB: 8mm
- PCB thickness: 1.6mm
- Highest parts on PCB are J1, J3 and J4 connectors, approximately 9.5mm from the PCB.

Revision History

Hardware Revision History

| Date | Revision | Notes | PCN |
|------------|----------|---------------|-----|
| 2016-08-22 | 01 | Initial batch | - |

Hardware revision number is printed on the PCB board next to the module model number separated by the dash.



Document Change History

| Date | Revision | Contributors | Description |
|------------|----------|--------------|-------------------|
| 2016-09-05 | V21 | Jan Kumann | Initial document. |

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