Evaluation Board for the ADM3052 Isolated CAN Transceiver with Integrated High Voltage, Bus Side Linear Regulator

FEATURES
- Easy evaluation of the ADM3052
- Isolated, controller area network (CAN) transceiver
- Integrated bus side linear regulator (V+)
- Bus side powered by V+ and V−
- 11 V to 25 V operation on V+
- 5 V or 3.3 V operation on VDD1
- High speed data rates up to 1 Mbps
- Connect 110 or more nodes on the bus

APPLICATIONS
- CAN data buses
- Industrial field networks
- DeviceNet applications

EVALUATION KIT CONTENTS
- EVAL-ADM3052EBZ

GENERAL DESCRIPTION
The EVAL-ADM3052EBZ allows quick and easy evaluation of the ADM3052 isolated CAN transceiver. The evaluation board allows all the input and output functions of the ADM3052 to be exercised without the need for external components.

The ADM3052 is an isolated CAN, physical layer transceiver with a V+, integrated linear regulator. The ADM3052 complies with the ISO 11898 standard.

The device uses Analog Devices, Inc., iCoupler® technology to combine a 3-channel isolator, a CAN transceiver, and a linear regulator into a single, 16-lead, wide body SOIC package. The power is isolated between a single 3.3 V or 5 V supply on VDD1, the logic side, and a single 24 V supply provided on V+, the bus side.

The linear regulator takes the V+ bus power and regulates it down to 5 V. The linear regulator uses two regulation loops to share the power dissipation between the internal die and an external resistor (R1), which reduces the internal heat dissipation in the package. This 300 Ω external resistor should be capable of dissipating 750 mW of power and have a tolerance of 1%.

Full details on the ADM3052 are provided in the ADM3052 data sheet available from Analog Devices, Inc., which should be consulted in conjunction with this evaluation board user guide.
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REVISION HISTORY
10/13—Rev. 0 to Rev. A
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12/11—Revision 0: Initial Version
EVALUATION BOARD CONFIGURATION

SETTING UP THE EVALUATION BOARD

The EVAL-ADM3052EBZ allows the ADM3052 isolated CAN transceiver to be quickly and easily evaluated. The evaluation board allows all of the input and output functions to be exercised without the need for external components.

On the EVAL-ADM3052EBZ, the power is isolated between a single 3.3 V or 5 V supply on VDD1, the logic side, and a single 24 V supply provided on V+, the bus side.

R1, the 300 Ω external resistor, is used by the built-in linear regulator to share the power dissipation between R1 and the internal die to reduce the internal heat dissipation in the package.

The bus voltage sense pin (V+SENSE), detects when V+ is connected on the bus side. A low on V+SENSE indicates that power is available on the bus side, and a high on V+SENSE indicates that power is absent from the bus side.

VDD1 is the power supply of the logic side. A 22 µF decoupling capacitor, C5, is fitted between VDD1 and GND1. A capacitor of 1 µF is fitted on the CINT pin. A 100 nF capacitor, C6, is fitted between V+ and V−, and a 10 µF capacitor, C7, is fitted between V+R and V−.

An example operation of the EVAL-ADM3052EBZ is shown in Figure 3. Connect a signal generator on TXD and set up a 500 kHz square wave clock with output swing between 0 V and 5 V. Connect the scope probes to the CANH and CANL test points. A plot of the oscilloscope for TXD, CANH, and CANL is shown in Figure 2. Channel 1 shows the TXD signal, and Channel 2 and Channel 3 show the CANH and CANL signals, respectively.

Figure 2. TXD, CANH, and CANL Signals

Figure 3. Basic Isolated CAN Transceiver Evaluation Board Operation
EVALUATION BOARD SCHEMATIC AND LAYOUT

Figure 4. EVAL-ADM3052EBZ Schematic

Figure 5. EVAL-ADM3052EBZ Silkscreen

Figure 6. EVAL-ADM3052EBZ Component Side
## ORDERING INFORMATION

### BILL OF MATERIALS

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### RELATED LINKS

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<th>Resource</th>
<th>Description</th>
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<tr>
<td>ADM3052</td>
<td>Product Page, Isolated CAN Transceiver with Integrated High Voltage, Bus-Side, Linear Regulator</td>
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ESD Caution
ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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