Evaluation Board for the **ADM2486** High Speed, Half-Duplex *i*Coupler Isolated RS-485 Transceiver

**FEATURES**
- Half-duplex, isolated RS-485 transceiver
- PROFIBUS compliant
- Suitable for 5 V or 3 V operation on VDD1
- Suitable for 5 V operation on VDD2
- 20 Mbps data rate
- 50 nodes on bus
- V_{FORM} = 560 V peak

**ADM2486 APPLICATIONS**
- Isolated RS-485/RS-422 interfaces
- PROFIBUS networks
- Industrial field networks
- Multipoint data transmission systems

**GENERAL DESCRIPTION**

The EVAL-ADM2486EBZ allows the isolated **ADM2486** RS-485 transceivers to be easily and quickly evaluated. The evaluation board allows all of the input and output functions to be exercised without the need for external components.

The **ADM2486** differential bus transceiver is an integrated, galvanically isolated component designed for bidirectional data communication on multipoint bus transmission lines.

The device employs Analog Devices, Inc., *i*Coupler® technology to combine a 3-channel isolator, a three-state differential line driver, and a differential input receiver into a single package. The logic side of the device is powered with either a 5 V or a 3 V supply, and the bus side uses an isolated 5 V supply.

**EVALUATION KIT CONTENTS**

EVAL–ADM2486EBZ

**EVALUATION BOARD DIGITAL PHOTOGRAPH**

Figure 1.
TABLE OF CONTENTS

Features .............................................................................................. 1
ADM2486 Applications ................................................................... 1
Evaluation Kit Contents................................................................... 1
General Description ......................................................................... 1
Evaluation Board Digital Photograph............................................ 1
Revision History ............................................................................... 2

Evaluation Board Configurations ...................................................3
Setting Up the Evaluation Board......................................................3
Evaluation Board Schematic and Artwork.......................................4
Ordering Information ......................................................................6
Bill of Materials .............................................................................6
Related Links ...................................................................................6

REVISION HISTORY

6/11—Revision 0: Initial Version
EVALUATION BOARD CONFIGURATIONS

SETTING UP THE EVALUATION BOARD

The EVAL-ADM2486EBZ allows the isolated ADM2486 RS-485 transceivers to be easily and quickly evaluated. The evaluation board allows all of the input and output functions to be exercised without the need for external components.

A termination resistor, RT, is fitted on the receiver inputs; this can be changed or removed if necessary. The value of the termination resistor should be equal to the characteristic impedance of the cable used. The 220 Ω resistor fitted is for standard PROFIBUS® operation. Remove RT if the board is connected to a bus that is already terminated at both ends.

The logic side is suitable for 5 V or 3 V operation on VDD1. There is a 0.1 μF decoupling capacitor, C1, fitted between VDD1 and GND1. The bus side is suitable for 5 V operation on VDD2. There is a 0.1 μF decoupling capacitor, C2, fitted between VDD2 and GND2.

Bus biasing resistors, R1 and R2, are fitted on the receiver inputs with 390 Ω resistors for a standard PROFIBUS biasing network. If additional EVAL-ADM2486EBZ boards are connected together, remove these resistors from all but one board.

EVALUATION BOARD SCHEMATIC AND ARTWORK

Figure 2. EVAL-ADM2486EBZ Evaluation Board Circuit Diagram

Figure 3. EVAL-ADM2486EBZ Evaluation Board Silkscreen

Figure 4. EVAL-ADM2486EBZ Evaluation Board Component Side
Figure 5. EVAL-ADM2486EBZ Evaluation Board Solder Side
ORDERING INFORMATION

BILL OF MATERIALS

Table 1.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Reference Designator</th>
<th>Description</th>
<th>Supplier/Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>R1, R2</td>
<td>Resistor, 390 Ω, 0805</td>
<td>Vishay Dale/CRCW0805390RJNEA</td>
</tr>
<tr>
<td>1</td>
<td>RT</td>
<td>Resistor, 220 Ω, 0805</td>
<td>Yageo/RC0805JR-07220RL</td>
</tr>
<tr>
<td>2</td>
<td>C1, C2</td>
<td>Capacitor, Size 0805, 100 nF</td>
<td>AVX Corp./0805C104KAT2A</td>
</tr>
<tr>
<td>2</td>
<td>J1, J2</td>
<td>CON/POWER, 2-pin terminal block (5 mm pitch)</td>
<td>Lumberg/KRM 02</td>
</tr>
<tr>
<td>1</td>
<td>J3</td>
<td>CON/POWER, terminal block, PCB, 3-way</td>
<td>Lumberg/KRM 03</td>
</tr>
<tr>
<td>1</td>
<td>J4</td>
<td>CON/POWER4, 4-pin terminal block</td>
<td>Lumberg/KRM 04</td>
</tr>
<tr>
<td>1</td>
<td>LK1</td>
<td>Board-to-board connector header, 4-way, 2-row and Jumper ×2</td>
<td>SPC Technology/SPC20499</td>
</tr>
<tr>
<td>1</td>
<td>U3</td>
<td>SO16WB</td>
<td>Analog Devices/ADM2486BRWZ</td>
</tr>
<tr>
<td>2</td>
<td>GND1, GND2</td>
<td>Test point, black</td>
<td>Vero Technologies/20-2137</td>
</tr>
<tr>
<td>2</td>
<td>VDD1, VDD2</td>
<td>Test point, red</td>
<td>Vero Technologies/20-313137</td>
</tr>
<tr>
<td>2</td>
<td>A, B</td>
<td>Test point, green</td>
<td>Vero Technologies/20-313138</td>
</tr>
<tr>
<td>7</td>
<td>RXD, DE, RE, PV, TXD, PV1, DE/RTS</td>
<td>Test point, yellow</td>
<td>Vero Technologies/20-313140</td>
</tr>
</tbody>
</table>

RELATED LINKS

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADM2486</td>
<td>Product Page, 2.5 kV Signal Isolated, High Speed (20 Mbps), Half Duplex RS-485 Transceiver</td>
</tr>
<tr>
<td>AN-960</td>
<td>RS-485/RS-422 Circuit Implementation Guide</td>
</tr>
</tbody>
</table>
NOTES

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.

Legal Terms and Conditions

By using the evaluation board discussed herein (together with any tools, components documentation or support materials, the “Evaluation Board”), you are agreeing to be bound by the terms and conditions set forth below ("Agreement") unless you have purchased the Evaluation Board, in which case the Analog Devices Standard Terms and Conditions of Sale shall govern. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement.

By using the Evaluation Board discussed herein (together with any tools, components documentation or support materials, the “Evaluation Board”), you are agreeing to be bound by the terms and conditions set forth below ("Agreement") unless you have purchased the Evaluation Board, in which case the Analog Devices Standard Terms and Conditions of Sale shall govern. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement.

Customer may not disassemble, decompile or reverse engineer chips in the Evaluation Board. Customer shall inform ADI of any occurred damages or any modifications or alterations it makes to the Evaluation Board, including but not limited to soldering or any other activity that affects the material content of the Evaluation Board. Modifications to the Evaluation Board must comply with applicable law, including but not limited to the RoHS Directive. TERMINATION. ADI may terminate this Agreement at any time upon giving written notice to Customer. Customer agrees to return to ADI the Evaluation Board at that time. LIMITATION OF LIABILITY. THE EVALUATION BOARD PROVIDED HEREUNDER IS PROVIDED "AS IS" AND ADI MAKES NO WARRANTIES OR REPRESENTATIONS OF ANY KIND WITH RESPECT TO IT. ADI SPECIFICALLY DISCLAIMS ANY REPRESENTATIONS, ENDORSEMENTS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, RELATED TO THE EVALUATION BOARD INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT WILL ADI AND ITS LICENSORS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM CUSTOMER'S POSSESSION OR USE OF THE EVALUATION BOARD, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DELAY COSTS, LABOR COSTS OR LOSS OF GOODWILL. ADI'S TOTAL LIABILITY FROM ANY AND ALL CAUSES SHALL BE LIMITED TO THE AMOUNT OF ONE HUNDRED US DOLLARS ($100.00). EXPORT. Customer agrees that it will not directly or indirectly export the Evaluation Board to another country, and that it will comply with all applicable United States federal laws and regulations relating to exports. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the substantive laws of the Commonwealth of Massachusetts (excluding conflict of law rules). Any legal action regarding this Agreement will be heard in the state or federal courts having jurisdiction in Suffolk County, Massachusetts, and Customer hereby submits to the personal jurisdiction and venue of such courts. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement and is expressly disclaimed.