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MCP25625
PICtail™ Plus
Daughter Board
User's Guide

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Object of Declaration: MCP25625 PICtail™ Plus Daughter Board

EU Declaration of Conformity

Manufacturer: Microchip Technology Inc.
                        2355 W. Chandler Blvd.
                        Chandler, Arizona, 85224-6199
                        USA

This declaration of conformity is issued by the manufacturer.

The development/evaluation tool is designed to be used for research and development in a laboratory environment. This development/evaluation tool is not a Finished Appliance, nor is it intended for incorporation into Finished Appliances that are made commercially available as single functional units to end users under EU EMC Directive 2004/108/EC and as supported by the European Commission's Guide for the EMC Directive 2004/108/EC (8th February 2010).

This development/evaluation tool complies with EU RoHS2 Directive 2011/65/EU.

This development/evaluation tool, when incorporating wireless and radio-telecom functionality, is in compliance with the essential requirement and other relevant provisions of the R&TTE Directive 1999/5/EC and the FCC rules as stated in the declaration of conformity provided in the module datasheet and the module product page available at www.microchip.com.

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Signed for and on behalf of Microchip Technology Inc. at Chandler, Arizona, USA

Derek Carlson   *12-Sep-14*

Derek Carlson   Date
VP Development Tools

Table of Contents

Preface

NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site (www.microchip.com) to obtain the latest documentation available.

Documents are identified with a "DS" number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is "DSXXXXXXXXA", where "XXXXXXXX" is the document number and "A" is the revision level of the document.

INTRODUCTION

This chapter contains general information that will be useful to know before using the MCP25625 PICtail™ Plus Daughter Board. Items discussed in this chapter include:

• Document Layout
• Conventions Used in this Guide
• Recommended Reading
• The Microchip Web Site
• Customer Support
• Document Revision History

DOCUMENT LAYOUT

This document describes how to use the MCP25625 PICtail Plus Daughter Board. The manual layout is as follows:

• **Chapter 1. "Product Overview"** – Important information about the MCP25625 PICtail Plus Daughter Board.
• **Chapter 2. "Installation and Operation"** – This chapter includes a detailed description of each function of the demo board and instructions for how to begin using the board.
• **Appendix A. "Schematic and Layouts"** – Shows the schematic and layout diagrams for the MCP25625 PICtail Plus Daughter Board.
• **Appendix B. "Bill Of Materials (BOM)"** – Lists the parts used to build the MCP25625 PICtail Plus Daughter Board.

CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

Description	Represents	Examples
Arial font:		
Italic characters	Referenced books	*MPLAB® IDE User's Guide*
	Emphasized text	...is the *only* compiler...
Initial caps	A window	the Output window
	A dialog	the Settings dialog
	A menu selection	select Enable Programmer
Quotes	A field name in a window or dialog	"Save project before build"
Underlined, italic text with right angle bracket	A menu path	*File>Save*
Bold characters	A dialog button	Click **OK**
	A tab	Click the **Power** tab
N'Rnnnn	A number in verilog format, where N is the total number of digits, R is the radix and n is a digit.	4'b0010, 2'hF1
Text in angle brackets < >	A key on the keyboard	Press <Enter>, <F1>
Courier New font:		
Plain Courier New	Sample source code	`#define START`
	Filenames	`autoexec.bat`
	File paths	`c:\mcc18\h`
	Keywords	`_asm, _endasm, static`
	Command-line options	`-Opa+, -Opa-`
	Bit values	`0, 1`
	Constants	`0xFF, 'A'`
Italic Courier New	A variable argument	`file`.o, where `file` can be any valid filename
Square brackets [ ]	Optional arguments	`mcc18 [options] file [options]`
Ellipses...	Replaces repeated text	`var_name [, var_name...]`
	Represents code supplied by user	`void main (void) { ... }`

RECOMMENDED READING

This user's guide describes how to use the MCP25625 PICtail Plus Daughter Board. The following Microchip documents are available and recommended as supplemental reference resources:

- **MCP25625 Data Sheet** – *"CAN Controller with Integrated Transceiver"* **(DS20005282)**

This data sheet provides detailed information regarding the MCP25625 Product Family.

- **Explorer 16 User's Guide –**"*Explorer 16 Development Board User's Guide*" **(DS50001589)**

This user's guide provides detailed information regarding the Explorer 16 Development Board and its functionality.

- **PICkit™ Serial Analyzer User's Guide – "***PICkit™ Serial Analyzer User's Guide***" (DS51647)**

This user's guide provides detailed information regarding PICkit Serial Analyzer functionality.

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- Technical Support
- Development Systems Information Line

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Technical support is available through the web site at:

http://www.microchip.com/support.

DOCUMENT REVISION HISTORY

Revision A (October 2015)

- Initial release of this document.

Chapter 1. Product Overview

1.1 OVERVIEW

This chapter provides an overview of the MCP25625 PICtail Plus Daughter Board and covers the following topics:

- Overview
- What is the MCP25625 PICtail Plus Daughter Board?
- What the MCP25625 PICtail Plus Daughter Board kit includes.

1.2 WHAT IS THE MCP25625 PICTAIL PLUS DAUGHTER BOARD?

The MCP25625 PICtail Plus Daughter Board is a simple Controller Area Network (CAN) board designed to be used with boards containing the PICtail Plus connector. The board also has the PICkit Serial connector for interfacing to the PICkit Serial Analyzer tool.

The single-chip solution CAN node consists of the MCP25625 CAN Controller with Integrated Transceiver. The PICkit Plus and PICkit Serial connectors allow the board to be interfaced to a variety of PIC® microcontrollers so that the user can develop a CAN node.

The board also contains headers or test points for most of the MCP25625 pins to allow the external functions to be monitored/evaluated. Additionally, there are multiple external components and jumper configurations for added flexibility.

FIGURE 1-1: **MCP25625 PICTAIL™ PLUS DAUGHTER BOARD**
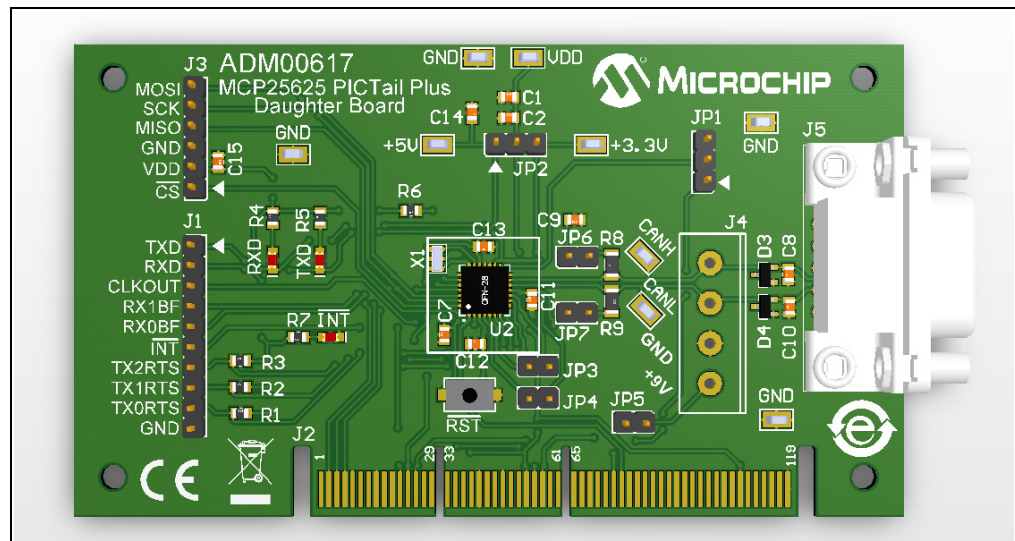
1.3 WHAT THE MCP25625 PICTAIL PLUS DAUGHTER BOARD KIT INCLUDES

The MCP25625 PICtail Plus Daughter Board kit includes:

- MCP25625 PICtail Plus Daughter Board (02-10350)
- Information Sheet

NOTES:

Chapter 2. Installation and Operation

2.1   HARDWARE OVERVIEW

The MCP25625 PICtail Plus Daughter Board can be connected to either a PIC micro-controller or a development board with the PICkit Plus connector or the PICkit Serial connector. Figure 2-1 below shows the connections to the Explorer 16 Development Board (DM240001).

2.2   JUMPER SETTINGS

Table 2-1 briefly describes the functions of all the board's jumpers.

TABLE 2-1:   JUMPER DESCRIPTIONS

Index	Description
JP1	• Drives the STBY pin of the transceiver to GND manually or via the Explorer 16 demo board when used as PICTail™ daughter board (plugged into the Explorer 16). • Short-circuit pins 1 and 2 (top and middle) to connect to GND, or pins 2 and 3 (middle and bottom) to connect to the Explorer 16. Default configuration: pins 1 and 2 (top and middle) short-circuited.
JP2	• Powers-up the CAN Controller with 5V or 3.3V. It also feeds the VIO of the transceiver; this voltage is determined by the MCU that the user implements (5V or 3.3V). • Short-circuit pins 1 and 2 (left-hand side) to select 5V, or pins 2 and 3 (right-hand side) to select 3.3V. Default configuration selects 5V operation mode.
JP3[1]	When disconnected, separates the RXD of the transceiver from the RXCAN of the controller.
JP4[1]	When disconnected, separates the TXD of the transceiver from the TXCAN of the controller.
JP5[1]	When connected, enables access to the 9V supply from the Explorer 16.
JP6[1]	When connected, implements a capacitor with the jumper JP7 enabled 120Ω termination resistor.
JP7[1]	When connected, implements the 120Ω termination resistor.
Note 1:	Jumpers JP3, JP4, JP5, JP6 and JP7 are not populated, however, they are short-circuited on the bottom layer (back) of the board. The traces can be cut in order to disconnect them.

Figure 2-1 indicates the default settings for the jumpers.

FIGURE 2-1: **DEFAULT JUMPER CONFIGURATIONS**

Legend:

⬭ = pins connected with jumper header

— = jumper short circuited on bottom layer (back side) of the board
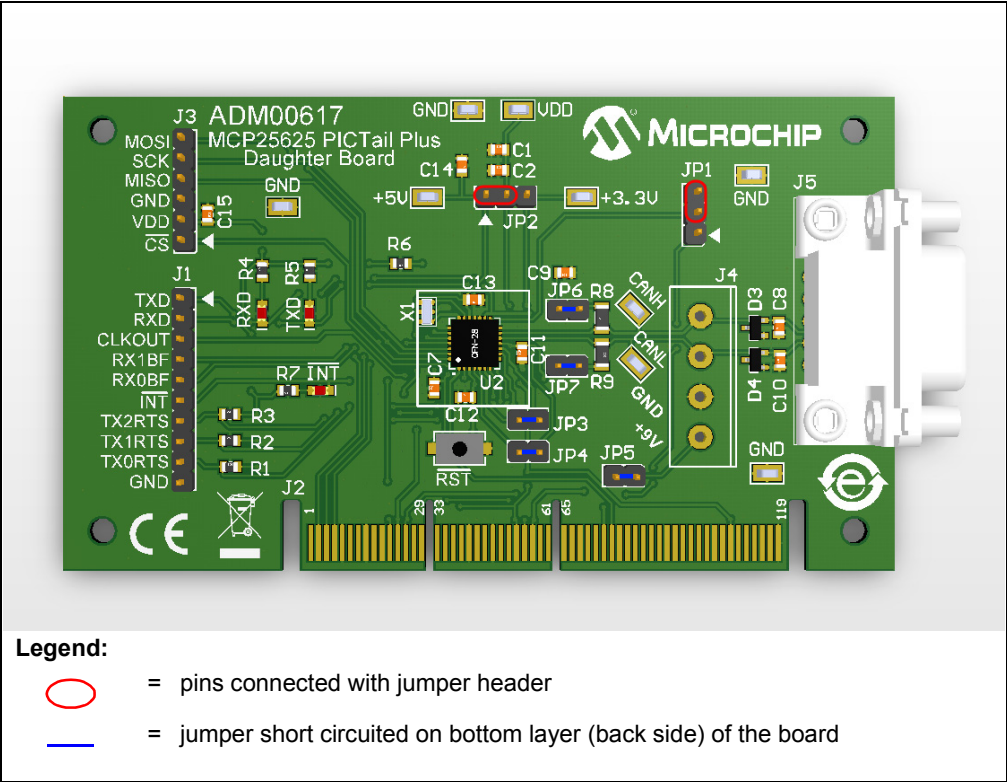
2.3 CONNECTING THE BOARD

FIGURE 2-2: **HARDWARE OVERVIEW**

Explorer 16 Board (DM240001)
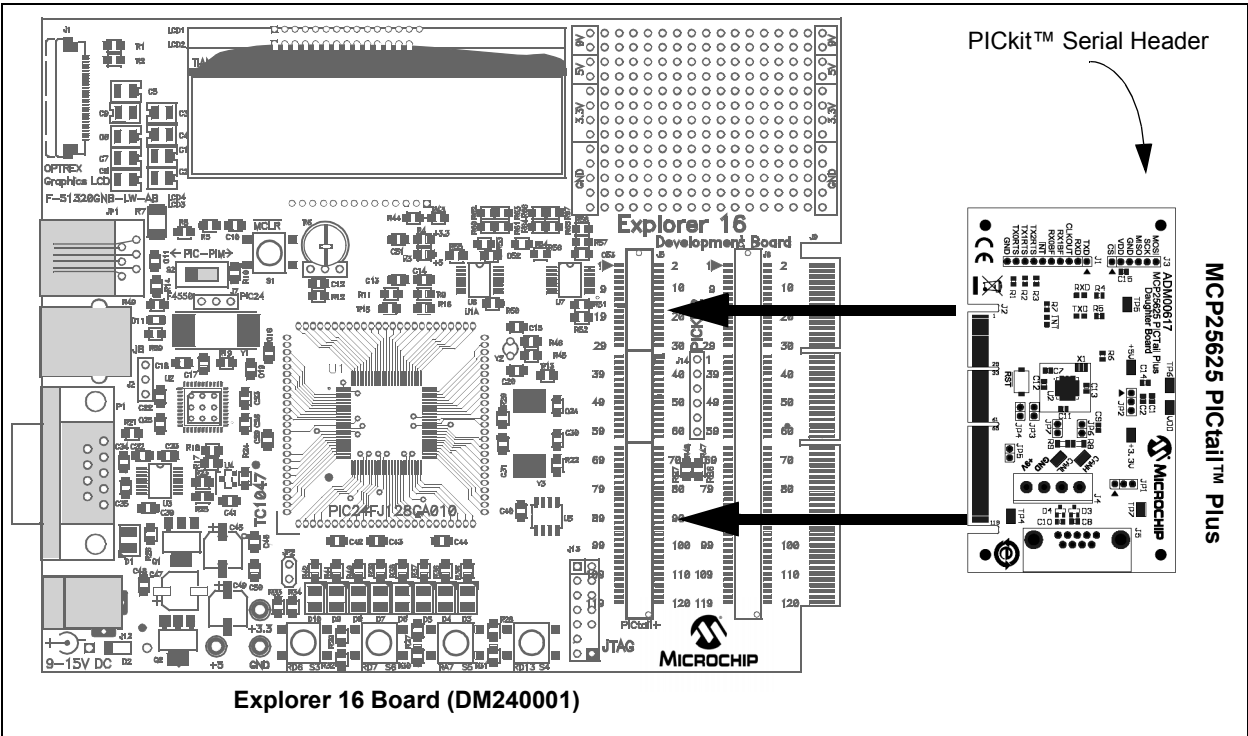
2.4 OPERATION

The user can write firmware for the MCP25625 PICtail Plus Daughter Board in order to create a custom CAN node. Check the Explorer 16 and PICkit Serial Analyzer web pages for the latest firmware and/or software supporting the MCP25625 or general SPI interfaces.

NOTES:

Appendix A. Schematic and Layouts

A.1 INTRODUCTION

This appendix contains the following schematics and layouts for the MCP25625 PICtail Plus Daughter Board:

- Board – Schematic
- Board – Top Silk
- Board – Top Copper and Silk
- Board – Top Copper
- Board – Bottom Copper
- Board – Bottom Copper and Silk
- Board – Bottom Silk

A.2 BOARD – SCHEMATIC
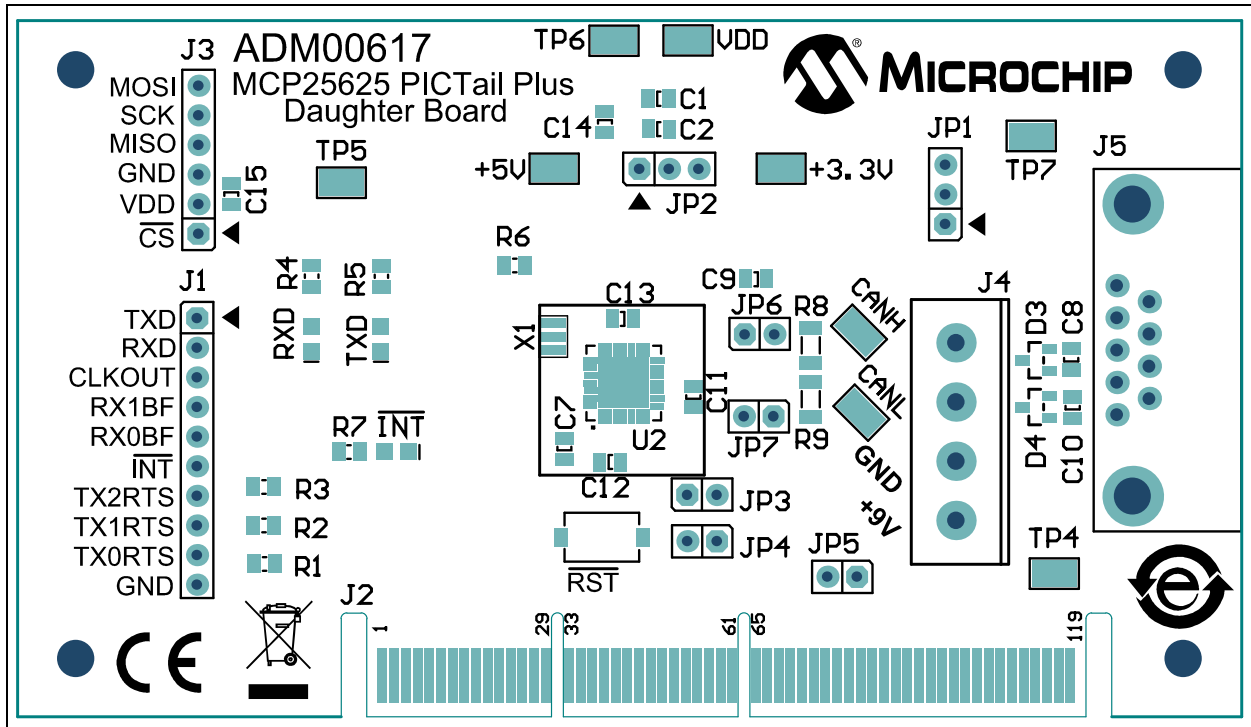
MCP25625 PICtail™ Plus Daughter Board User's Guide

A.3   BOARD – TOP SILK

A.4   BOARD – TOP COPPER AND SILK

A.5   BOARD – TOP COPPER

A.6   BOARD – BOTTOM COPPER
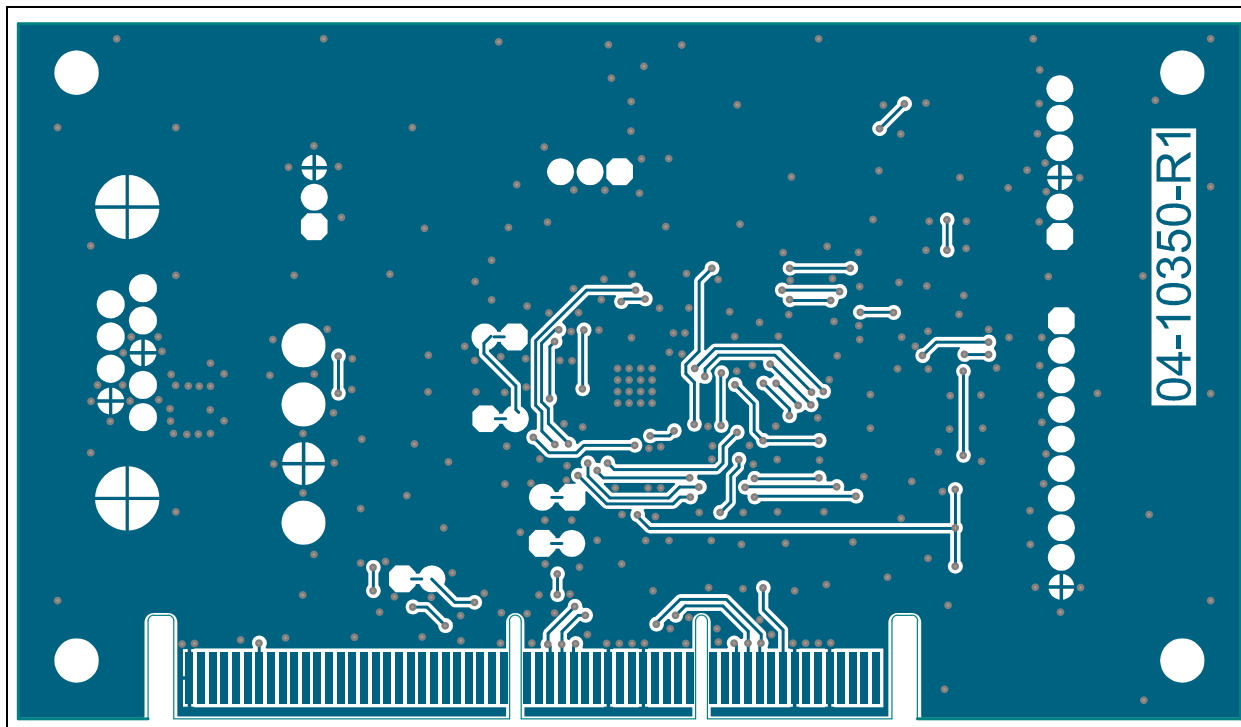
A.7   BOARD – BOTTOM COPPER AND SILK
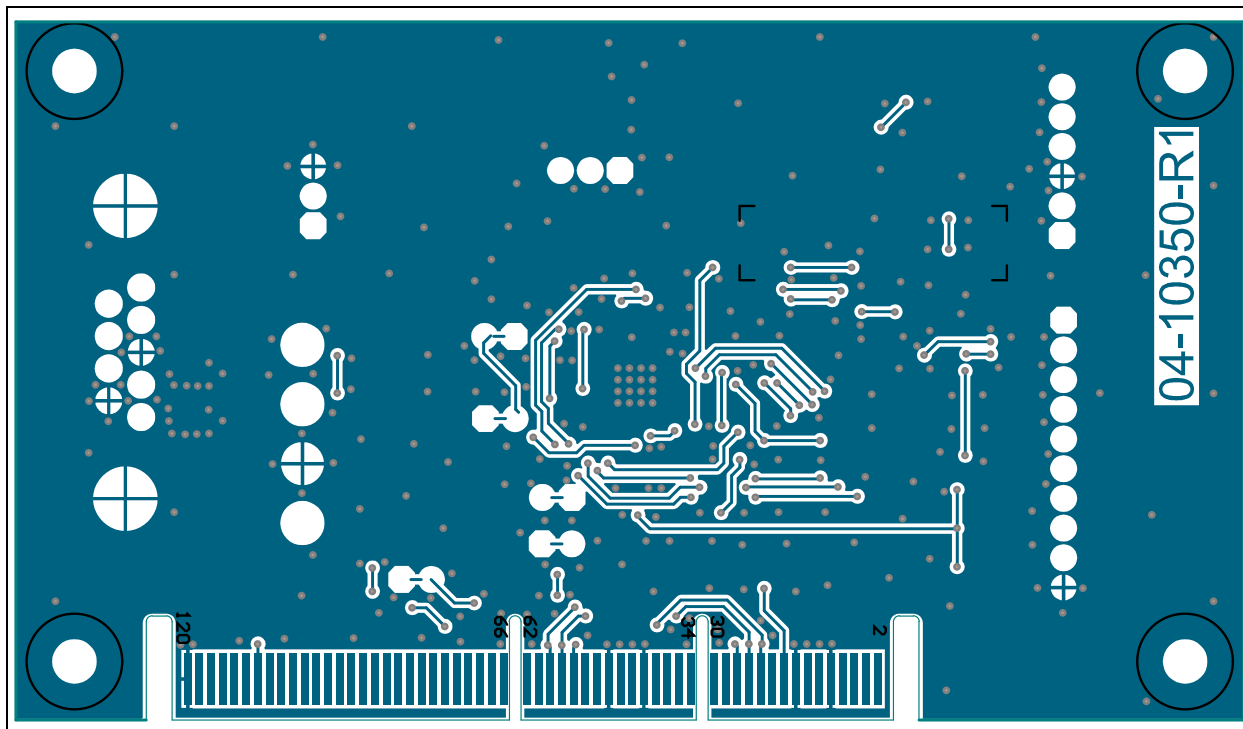
A.8   BOARD – BOTTOM SILK
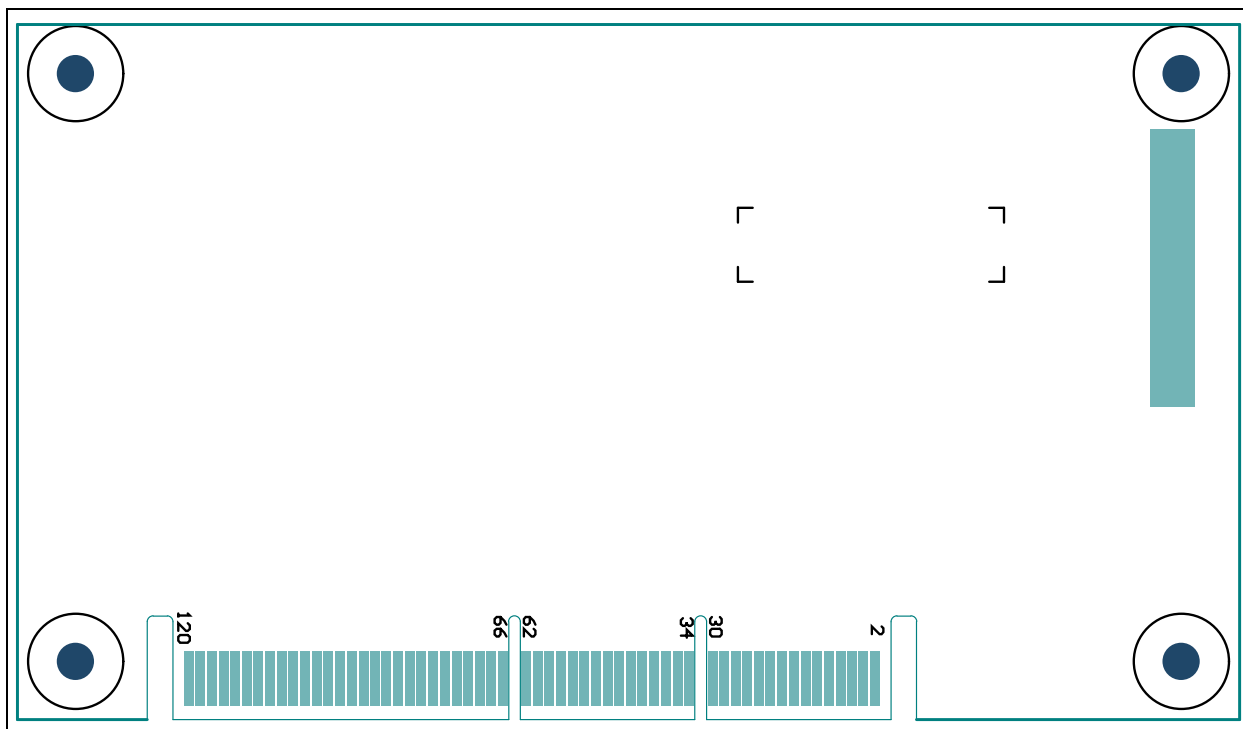
NOTES:

Appendix B. Bill Of Materials (BOM)

TABLE B-1: **BILL OF MATERIALS**

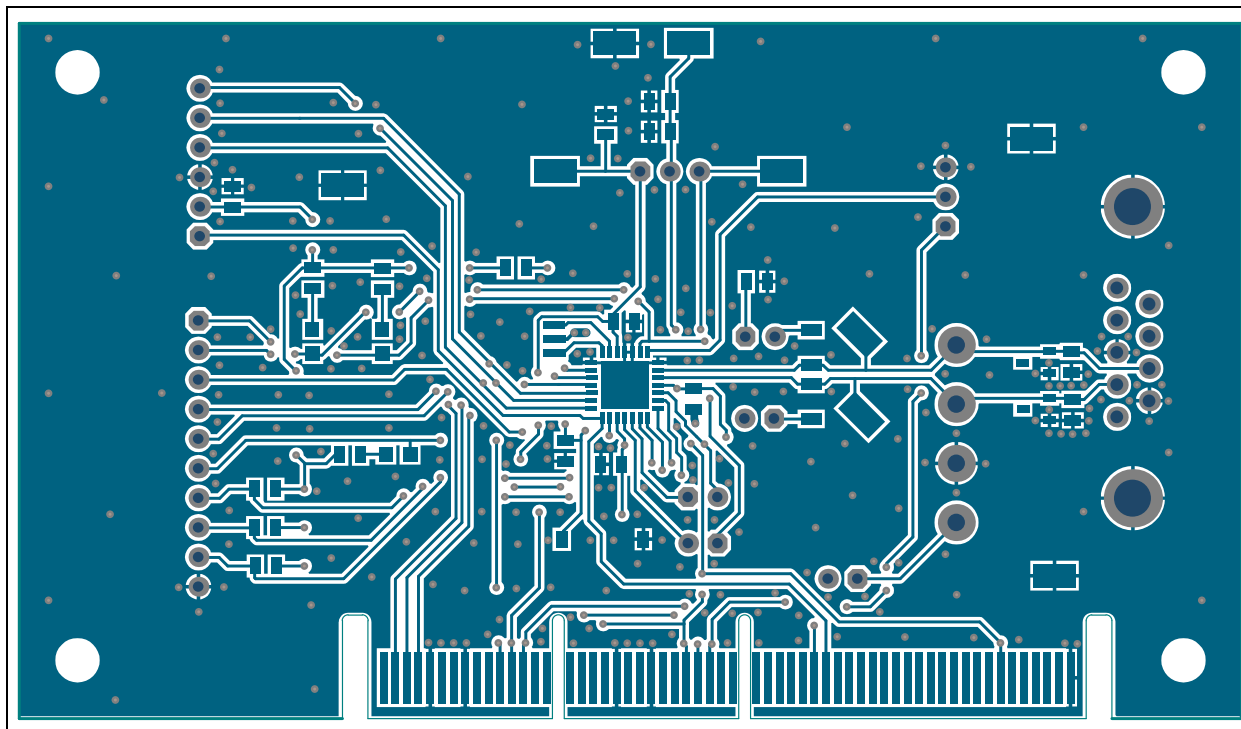| Qty.	Reference	Description	Manufacturer	Part Number
9	+3.3V, +5V, CANH, CANL, TP4, TP5, TP6, TP7, VDD	Conn. TP Loop Tin SMD	Harwin Plc.	S1751-46R
2	C1, C14	Cap. ceramic 10 µF 6.3V 10% X5R SMD 0805	KEMET®	C0805C106K9PACTU
6	C2, C7, C11, C12, C13, C15	Cap. ceramic 0.1 µF 25V 10% X7R SMD 0805	Murata Electronics®	GRM21BR71E104KA01L
2	C8, C10	Cap. ceramic 47 pF 200V 5% C0G, NP0 SMD 0805	KEMET	C0805C470J2GACTU
1	C9	Cap. ceramic 4700 pF 100V 10% X7R SMD 0805	TDK Corporation	C2012X7R2A472K
2	D3, D4	Diode TVS MMBZ27VCLT1G 22V 40W SOT-23-3	ON Semiconductor®	MMBZ27VCLT1G
3	INT, RXD, TXD	Diode LED red 1.7V 20 mA 11.7mcd Diffuse SMD 0805	CML Technologies GmbH & Co. KG	7012X1
1	J1	Conn. header-2.54 male 1x10 Gold 5.84MH TH vert.	Samtec, Inc.	TSW-110-07-L-S
1	J3	Conn. header-2.54 male 1x6 Tin 5.84MH TH vert.	Sullins Connector Solutions	PEC06SAAN
1	J5	Conn. DSUB DE-9 male TH R/A	FCI	10090097-P094VLF
2	JP1, JP2	Conn. header-2.54 male 1x3 Tin 5.84MH TH vert.	Samtec, Inc.	TSW-103-07-T-S
2	JP1_shunt, JP2_shunt	Mech. HW Jumper 2.54 mm 1x2 Handle Gold	TE Connectivity	881545-2
5	JP3, JP4, JP5, JP6, JP7	Conn. header-2.54 male 1x2 Tin 6.10MH TH vert.	Molex®	0022284020
4	PAD1, PAD2, PAD3, PAD4	Mech. HW Rubber pad Cylindrical D7.9 H5.3 black	3M	SJ61A11
1	PCB	RoHS Compliant Bare PCB, MCP25625 PICtail™ Plus Daughter Board	Microchip Technology Inc.	104-10350
4	R1, R2, R3, R6	Res. TKF 10 kΩ 1% 1/8W SMD 0805	Panasonic® – ECG	ERJ-6ENF1002V
3	R4, R5, R7	Res. TKF 470R 1% 1/16W SMD 0805	Stackpole Electronics, Inc.	RMCF0805FT470R
2	R8, R9	Res. TKF 60.4R 1% 1/4W SMD 1206	Yageo Corporation	RC1206FR-0760R4L
1	SW1	Switch Tact. SPST 32V 50 mA KSR231GLFS SMD	C&K Components	KSR231GLFS
1	U2	MCHP Interface CAN MCP25625-E/ML QFN-28	Microchip Technology Inc.	**MCP25625T-E/SO**
1	X1	Resonator 20M Hz 0.1% SMD CSTCE	Murata Electronics	CSTCE20M0V13L99-R0

Note: The components listed in this Bill of Materials are representative of the PCB assembly. The released BOM used in manufacturing uses all RoHS-compliant components.

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