



MICROCHIP

MCP1642B/D
Two-Cell to USB Power
Evaluation Board
User's Guide

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights.

Trademarks

The Microchip name and logo, the Microchip logo, dsPIC, FlashFlex, flexPWR, JukeBlox, KEELOQ, KEELOQ logo, Kleer, LANCheck, MediaLB, MOST, MOST logo, MPLAB, OptoLyzer, PIC, PICSTART, PIC³² logo, RightTouch, SpyNIC, SST, SST Logo, SuperFlash and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

The Embedded Control Solutions Company and mTouch are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, BodyCom, chipKIT, chipKIT logo, CodeGuard, dsPICDEM, dsPICDEM.net, ECAN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, KleerNet, KleerNet logo, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, RightTouch logo, REAL ICE, SQI, Serial Quad I/O, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

Silicon Storage Technology is a registered trademark of Microchip Technology Inc. in other countries.

GestIC is a registered trademarks of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2014, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN: 978-1-63276-904-6

**QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
= ISO/TS 16949 =**

Microchip received ISO/TS-16949:2009 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC[®] MCUs and dsPIC[®] DSCs, KEELOQ[®] code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

Object of Declaration: MCP1642B/D Two-Cell to USB Power Evaluation 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.

For information regarding the exclusive, limited warranties applicable to Microchip products, please see Microchip's standard terms and conditions of sale, which are printed on our sales documentation and available at www.microchip.com.

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


Derek Carlson
VP Development Tools

12-Sep-14
Date

MCP1642B/D Two-Cell to USB Power Evaluation Board User's Guide

NOTES:

Table of Contents

Preface	7
Introduction.....	7
Document Layout	7
Conventions Used in this Guide	8
Recommended Reading.....	9
The Microchip Web Site	9
Customer Support	9
Document Revision History	9
 Chapter 1. Product Overview	
1.1 Introduction	11
1.2 MCP1642B/D Short Overview	11
1.3 What is the MCP1642B/D Two-Cells to USB Power Evaluation Board?	12
1.4 What the MCP1642B/D Two-Cells to USB Power Evaluation Board Contains	12
 Chapter 2. Installation and Operation	
2.1 Introduction	13
2.2 Getting Started	16
 Appendix A. Schematic and Layouts	
A.1 Introduction	19
A.2 Board – Schematic	20
A.3 Board – Top Silk and Pads	21
A.4 Board – Top Copper and Silk	21
A.5 Board – Top Copper	22
A.6 Board – Bottom Copper	22
 Appendix B. Bill of Materials (BOM).....	23
 Worldwide Sales and Service	24

MCP1642B/D Two-Cell to USB Power Evaluation Board User's Guide

NOTES:



MCP1642B/D TWO-CELL TO USB POWER EVALUATION BOARD USER'S GUIDE

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.

For the most up-to-date information on development tools, see the MPLAB® IDE online help. Select the Help menu, and then Topics to open a list of available online help files.

INTRODUCTION

This chapter contains general information that will be useful to know before using the MCP1642B/D Two-Cell to USB Power Evaluation 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 MCP1642B/D Two-Cell to USB Power Evaluation Board as a development tool. The manual layout is as follows:

- **Chapter 1. “Product Overview”** – Important information about the MCP1642B/D Two-Cell to USB Power Evaluation Board.
- **Chapter 2. “Installation and Operation”** – Includes instructions on how to get started with this user’s guide and a description of the user’s guide.
- **Appendix A. “Schematic and Layouts”** – Shows the schematic and layout diagrams for the MCP1642B/D Two-Cell to USB Power Evaluation Board.
- **Appendix B. “Bill of Materials (BOM)”** – Lists the parts used to build the MCP1642B/D Two-Cell to USB Power Evaluation Board.

CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

Description	Represents	Examples
Arial font:		
Italic characters	Referenced books	<i>MPLAB[®] IDE User's Guide</i>
	Emphasized text	...is the <i>only</i> 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	<u><i>File>Save</i></u>
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	<i>file.o</i> , where <i>file</i> can be any valid filename
Square brackets []	Optional arguments	mcc18 [options] <i>file</i> [options]
Curly brackets and pipe character: { }	Choice of mutually exclusive arguments; an OR selection	errorlevel {0 1}
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 MCP1642B/D Two-Cell to USB Power Evaluation Board. Other useful documents are listed below. The following Microchip documents are available and recommended as supplemental reference resources.

- **MCP1642B/D Data Sheet – “1.8A Input Current Switch, 1 MHz Low-Voltage Start-up Synchronous Boost Regulator” (DS20005253)**
- **AN1311, Single Cell Input Boost Converter Design (DS01311)**

This application note details how to use the MCP1642B/D device in specific applications.

THE MICROCHIP WEB SITE

Microchip provides online support via our web site at www.microchip.com. This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at:
<http://www.microchip.com/support>.

DOCUMENT REVISION HISTORY

Revision A (December 2014)

- Initial Release of this Document.

NOTES:

Chapter 1. Product Overview

1.1 INTRODUCTION

This chapter provides an overview of the MCP1642B/D Two-Cells to USB Power Evaluation Board and covers the following topics:

- MCP1642B/D Short Overview
- What is the MCP1642B/D Two-Cells to USB Power Evaluation Board?
- What the MCP1642B/D Two-Cells to USB Power Evaluation Board Contains

1.2 MCP1642B/D SHORT OVERVIEW

The MCP1642B/D are compact, high-efficiency, fixed-frequency, step-up DC-DC converters. These products provide an easy-to-use power supply solution, with a minimum number of external components for applications powered by one-cell, two-cell, or three-cell alkaline, Ni-Cd, Ni-MH, one-cell Li-Ion or Li-Polymer batteries.

The MCP1642B/D devices operate in Pulse-Width Modulation (PWM), at a fixed 1 MHz switching frequency, featuring Internal Compensation, Overtemperature Protection and Power Good Open-Drain Output. The device has 1.8V start-up voltage at 5V output and 1 mA load current.

There are two shutdown options for the MCP1642B/D family:

- True Output Disconnect mode (MCP1642B/D)
- Input-to-Output Bypass mode (MCP1642D)

For the fixed-output voltage option of the MCP1642B/D devices, the V_{FB} pin is not connected. The output voltage is set by an internal feedback divider. The fixed values are: 1.8V, 3.0V, 3.3V, 5.0V (see [Table 1-1](#)).

On the MCP1642B/D Two-Cells to USB Power Evaluation Board, the fixed output voltage version (MCP1642B/D-50) is used.

The goal of the MCP1642B/D Two-Cells to USB Power Evaluation Board is to demonstrate the higher output current capabilities of the MCP1642B/D, supplied from two AA batteries.

TABLE 1-1: PART NUMBER SELECTION BY SHUTDOWN OPTIONS

Part Number	True Output Disconnect	Input-to-Output Bypass
MCP1642B-ADJ (or -18; 30; 33; 50)	X	—
MCP1642D-ADJ (or -18; 30; 33; 50)	—	X

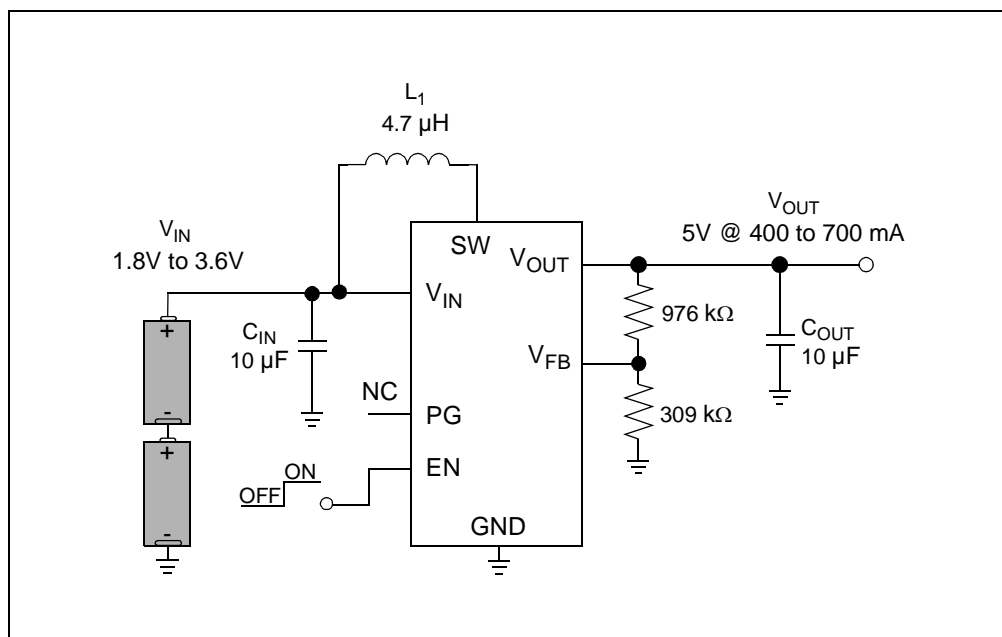


FIGURE 1-1: Typical MCP1642B/D-ADJ Boost Converter Two Cells Battery Input.

1.3 WHAT IS THE MCP1642B/D TWO-CELLS TO USB POWER EVALUATION BOARD?

The MCP1642B/D Two-Cells to USB Power Evaluation Board is used to evaluate and demonstrate Microchip Technology's MCP1642B/D/D Switching Boost Regulator. This board demonstrates the MCP1642B/D capabilities in a boost-converter application supplied from two AA batteries or from an external voltage source. A USB cable can be connected to the output of MCP1642B/D Two-Cells to USB Power Evaluation Board and used to provide power to portable electronic devices when necessary. It can be used to evaluate the MSOP-8 package. The MCP1642B/D Two-Cells to USB Power Evaluation Board was developed to help engineers reduce the product design cycle time.

On the MCP1642B/D Two-Cells to USB Power Evaluation Board, the output voltage has the value of 5.0V (the fixed value MCP1642B/D-50 device is used), resulting in a simple and compact application. The footprints for RT and RB (resistor divider connected to the FB pin) are not populated and will only be used if MCP1642B/D-ADJ, the adjustable option, will be tested.

An enable (EN Switch selection) is used to enable and disable the converter. When enabled, the MCP1642B/D will regulate the output voltage; when disabled, the MCP1642B/D will disconnect the path from input to output for "true-disconnect".

1.4 WHAT THE MCP1642B/D TWO-CELLS TO USB POWER EVALUATION BOARD CONTAINS

This MCP1642B/D Two-Cells to USB Power Evaluation Board kit includes:

- MCP1642B/D Two-Cells to USB Power Evaluation Board (ADM00556)
- Important Information Sheet

Chapter 2. Installation and Operation

2.1 INTRODUCTION

The MCP1642B/D has been developed for applications that require higher output current capabilities (see [Figure 2-1](#)) and low output ripple. It is a compact, synchronous, fixed-frequency step-up DC-DC converter. The regulated output voltage (V_{OUT}) should be greater than the input voltage (V_{IN}). Another important feature is that the device integrates the compensation and protection circuitry, such that the final solution requires a minimum number of additional components. The device can be disabled using the EN switch. The true disconnect option, MCP1642B/D, removes the normal boost topology path from input to output.

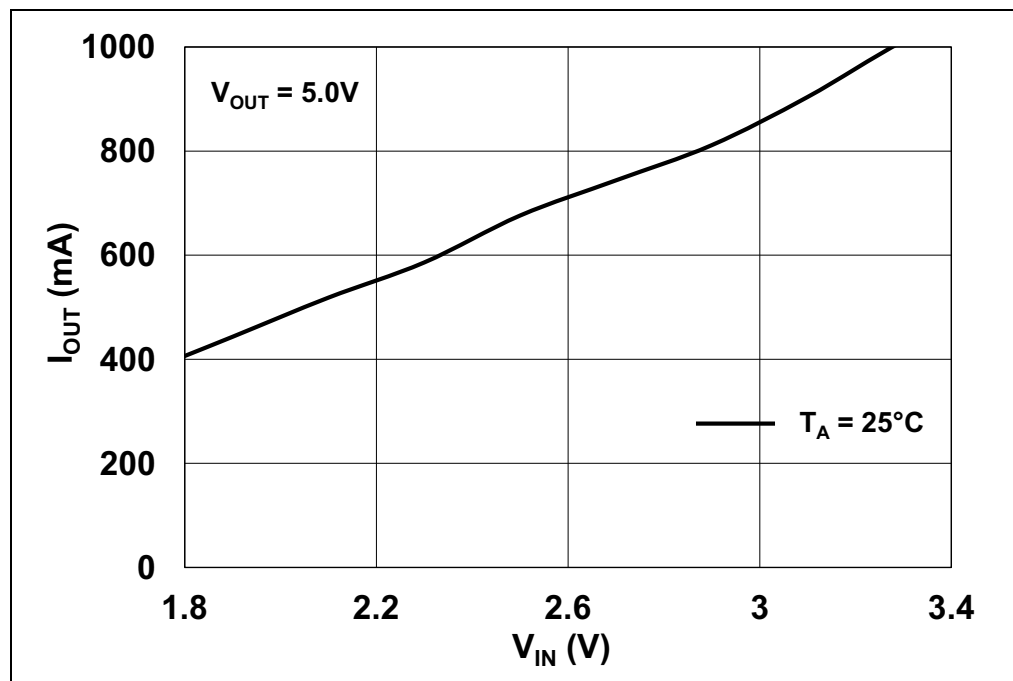


FIGURE 2-1: MCP1642B/D - 5.0 V_{OUT} Maximum I_{OUT} vs. V_{IN} Using Power Supply.

2.1.1 Battery Considerations

When considering a power solution for a design, the battery needs to be carefully selected. Alkaline batteries are a commonly available option that deliver good performance in a variety of applications. Energizer® Ultimate Lithium batteries are an alternative power solution that provides superior performance high drains and allows designers to utilize the full power range of the MCP1642B/D without sacrificing size or runtime.

Energizer Ultimate Lithium batteries utilize a primary cell chemistry that contains higher energy than alkaline batteries, and has much better high-drain performance. Ultimate Lithium batteries produce a high, flat voltage profile that enables them to provide a high-energy capacity even at high drains. Additionally, Ultimate Lithium batteries have a very low internal resistance, allowing them to maintain a high voltage at very high loads.

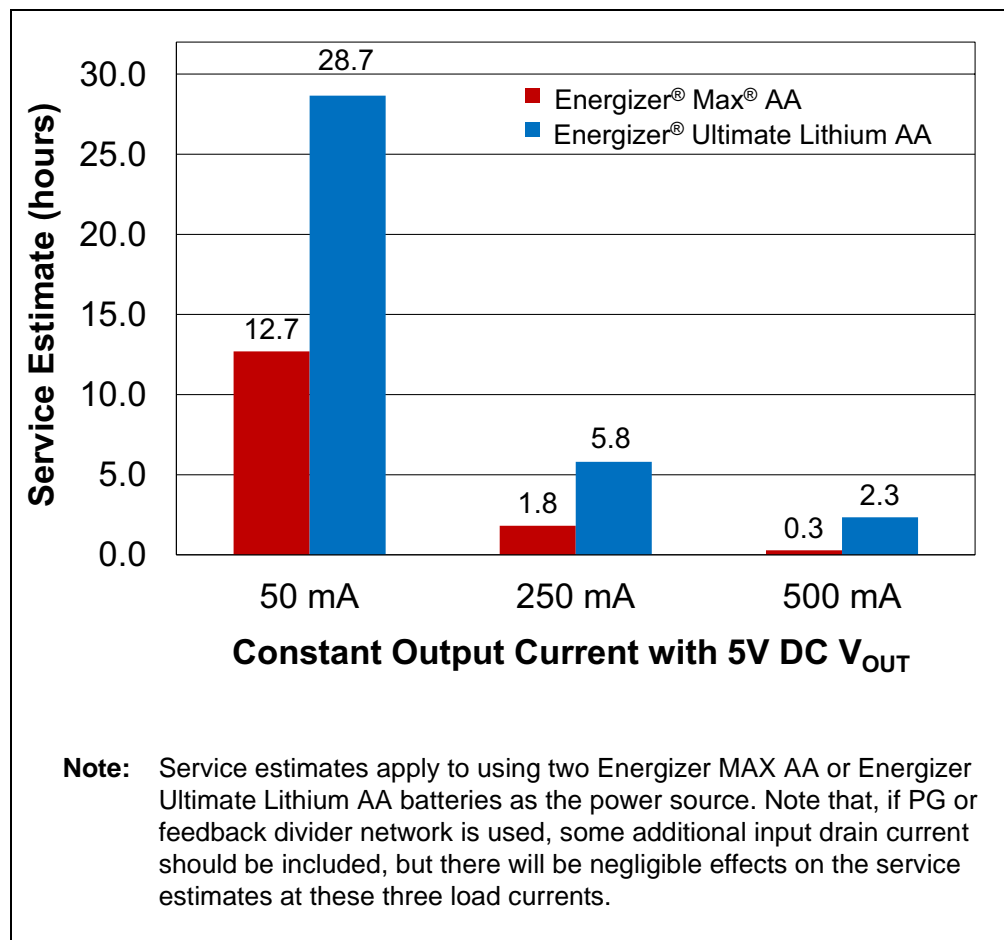


FIGURE 2-2: MCP1642B/D Run Time Estimate Using Two Energizer MAX AA or Energizer Ultimate Lithium at Different Loads.

2.1.2 MCP1642B/D Two-Cells to USB Power Evaluation Board Features

The MCP1642B/D Two-Cells to USB Power Evaluation Board has the following features:

- It can be powered by two AA batteries or external power supply
- Input voltage range (V_{IN}): 1.8V to 5.5V, with $V_{IN} \leq V_{OUT}$
- Minimum start-up voltage: 1.8V at $V_{OUT} = 5.0V$ and $I_{OUT} = 1$ mA, resistive load
- Output voltage: 5.0V
- Output current: typical 700 mA @ 5V output, 2.8V input
- PWM operation
- PWM switching frequency: 1 MHz
- Power Good indicator 2 mA LED
- Enable state selectable using EN switch
- Peak input current limit of 1.8A
- Overtemperature protection (if the die temperature exceeds +150°C, with 35°C hysteresis)
- USB A output connector

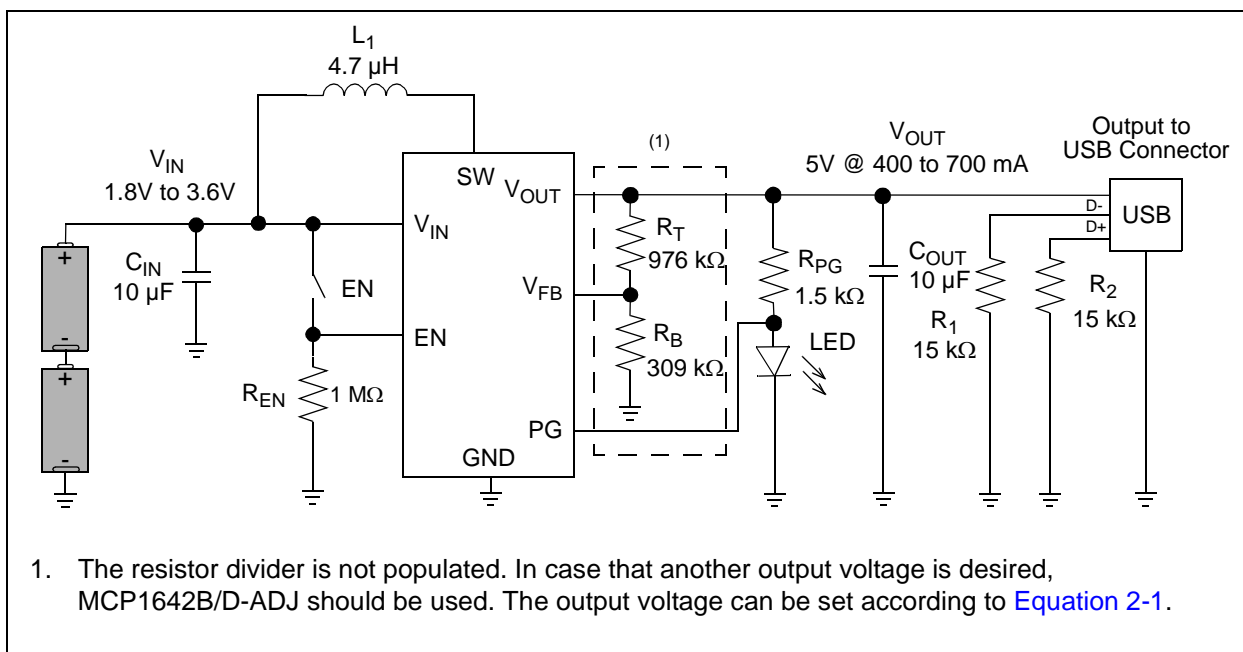


FIGURE 2-3: Two Cells to 5.0V Synchronous Boost MSOP-8 Application.

2.2 GETTING STARTED

The MCP1642B/D Two-Cells to USB Power Evaluation Board is fully assembled and tested to evaluate and demonstrate the MCP1642B/D Switching Boost Regulator in a real world application. For in-depth evaluation, this board requires the use of external laboratory supplies and load.

2.2.1 Power Input and Output Connection

2.2.1.1 POWERING MCP1642B/D TWO-CELLS TO USB POWER EVALUATION BOARD

Two AA battery holder and soldered test points are available for input voltage connections. The maximum input voltage should not exceed 5.5V. The output voltage will not remain in regulation for input voltages that are greater than or equal to the output voltage.

The MCP1642B/D Two-Cells to USB Power Evaluation Board was designed to be used in the evaluation of the device. The package selected is MSOP-8.

USB A connector or soldered test points are available to connect a load. The switch peak current limit will provide a safe maximum current value. The maximum output current for the converter will vary with input and output voltages; refer to [Figure 2-1](#) or the MCP1642B/D data sheet for more information on the maximum output current.

2.2.1.2 BOARD POWER-UP PROCEDURE:

2. Connect input supply as shown in [Figure 2-4](#) or connect two AA batteries in the battery holder on the bottom side of the board.
3. Connect system load to V_{OUT} and GND terminals; maximum load varies with input and output voltage; see the MCP1642B/D data sheet for more information on the maximum load. Typically, the MCP1642B/D can supply a 5V output with 700 mA from a 2.8V input source at room temperature. Connect the (+) side of the load to V_{OUT} and the negative (-) load to ground (GND).
4. Turn the device ON/OFF using the EN switch.
5. When EN is ON or high, the converter is enabled, the Power Good Indicator PG LED is turned ON and V_{OUT} can be measured on the V_{OUT} and GND terminals. When EN is low, the converter is disabled, the PG indicator turns OFF, and V_{OUT} is floating and is disconnected from the input.

Additional test points are available to visualize different signals (SW, PG, EN). The MCP1642B/D Two-Cells to USB Power Evaluation Board is also equipped with a USB A connector at the output. Using a USB B - micro/mini USB cable, the board can be connected to portable electronic devices and used as an alternative power supply when needed.

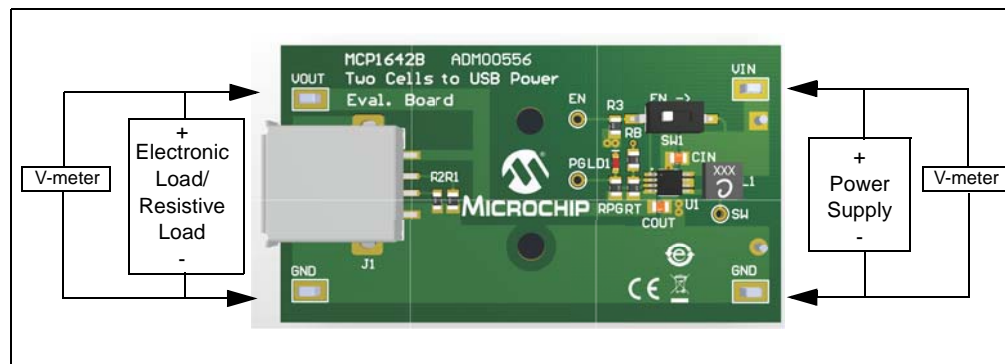


FIGURE 2-4: MCP1642B/D Two-Cells to USB Power Evaluation Board Setup.

2.2.1.3 ADJUSTABLE V_{OUT} SETTING

The board comes with the fixed output value MCP1642B/D-50 option (V_{OUT} internally set to 5.0V). If a different output voltage is desired, the MCP1642B/D-ADJ adjustable option can be used. In this case, the resistor divider consisting of R_T and R_B is used to set the converter output voltage. The value of the resistors can be calculated using [Equation 2-1](#).

EQUATION 2-1:

$$R_T = R_B \times \left[\left(\frac{V_{OUT}}{V_{FB}} \right) - 1 \right]$$

Where: $V_{FB} = 1.21V$ for MCP1642B/D-ADJ

MCP1642B/D Two-Cell to USB Power Evaluation Board User's Guide

NOTES:



MCP1642B/D TWO-CELL TO USB POWER EVALUATION BOARD USER'S GUIDE

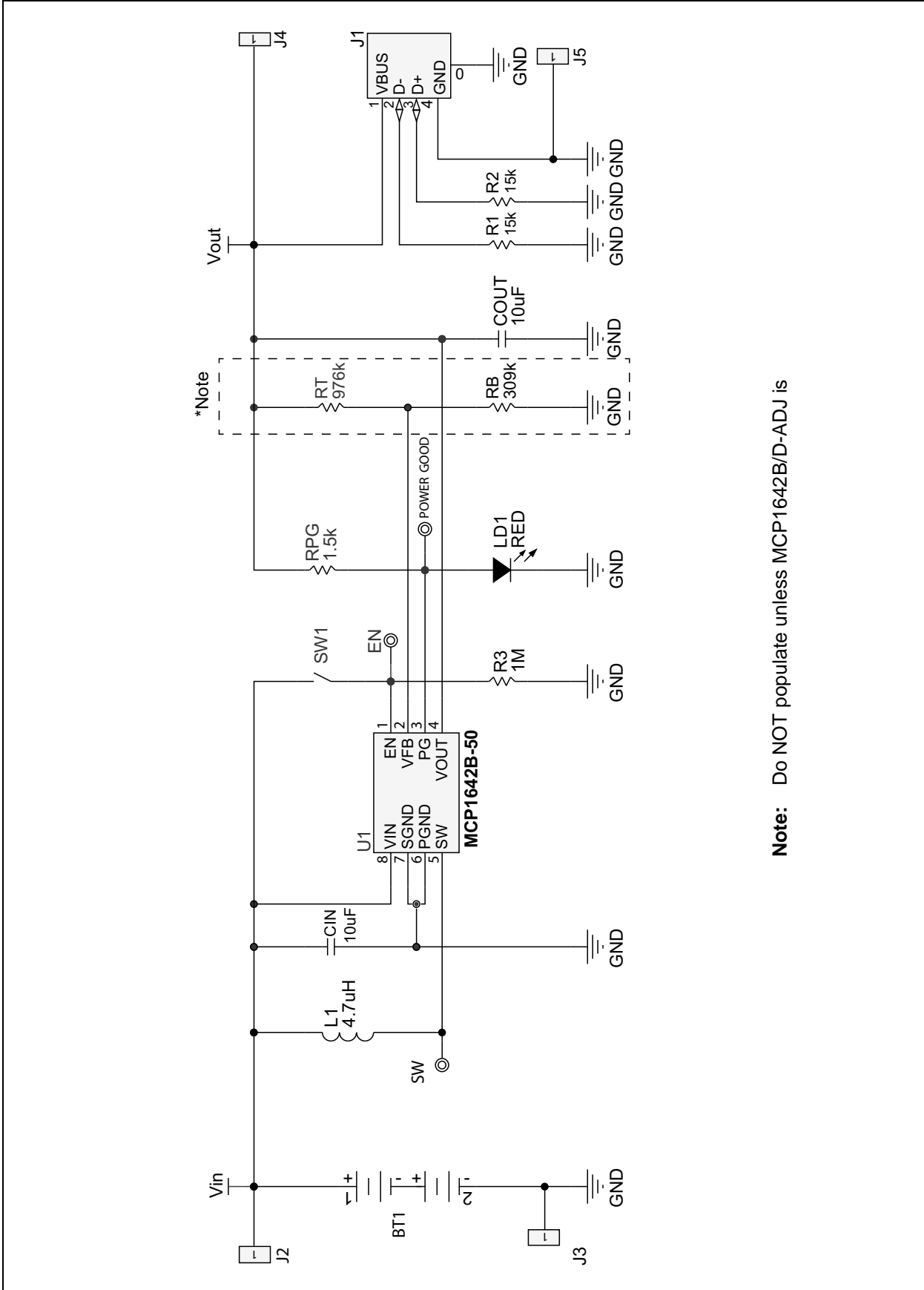
Appendix A. Schematic and Layouts

A.1 INTRODUCTION

This appendix contains the following schematics and layouts for the MCP1642B/D Two-Cell to USB Power Evaluation Board User's Guide:

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

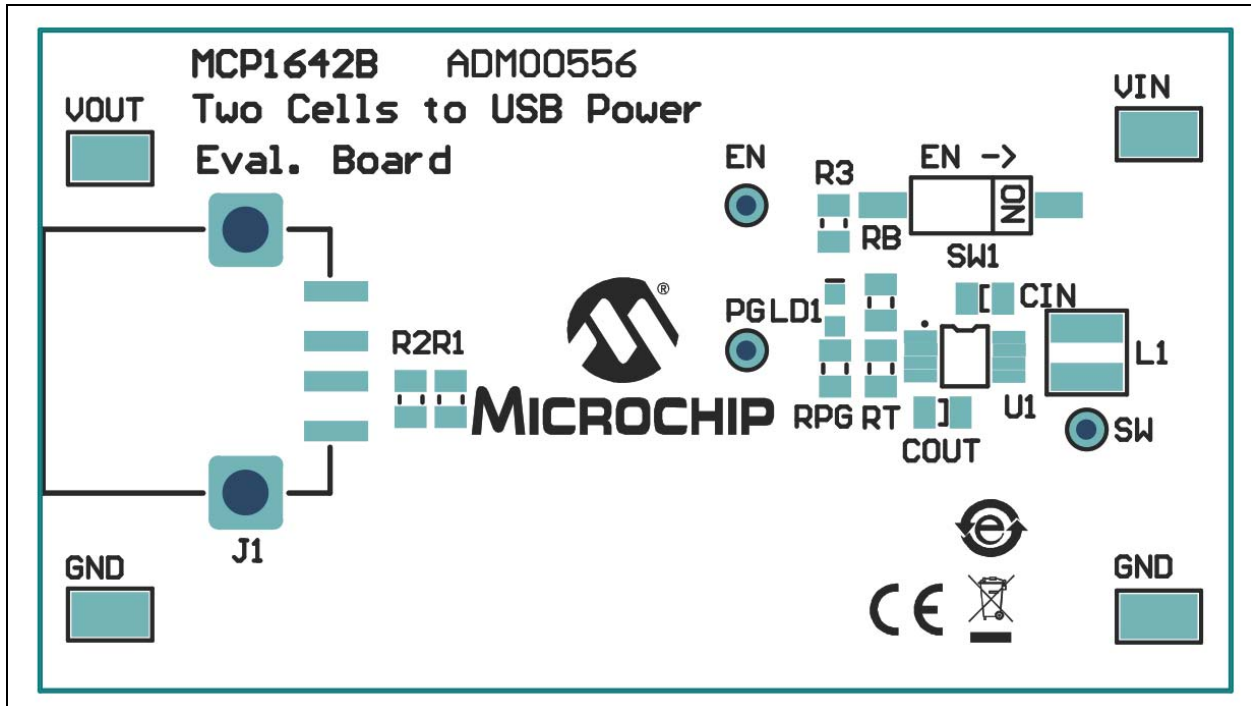
A.2 BOARD – SCHEMATIC



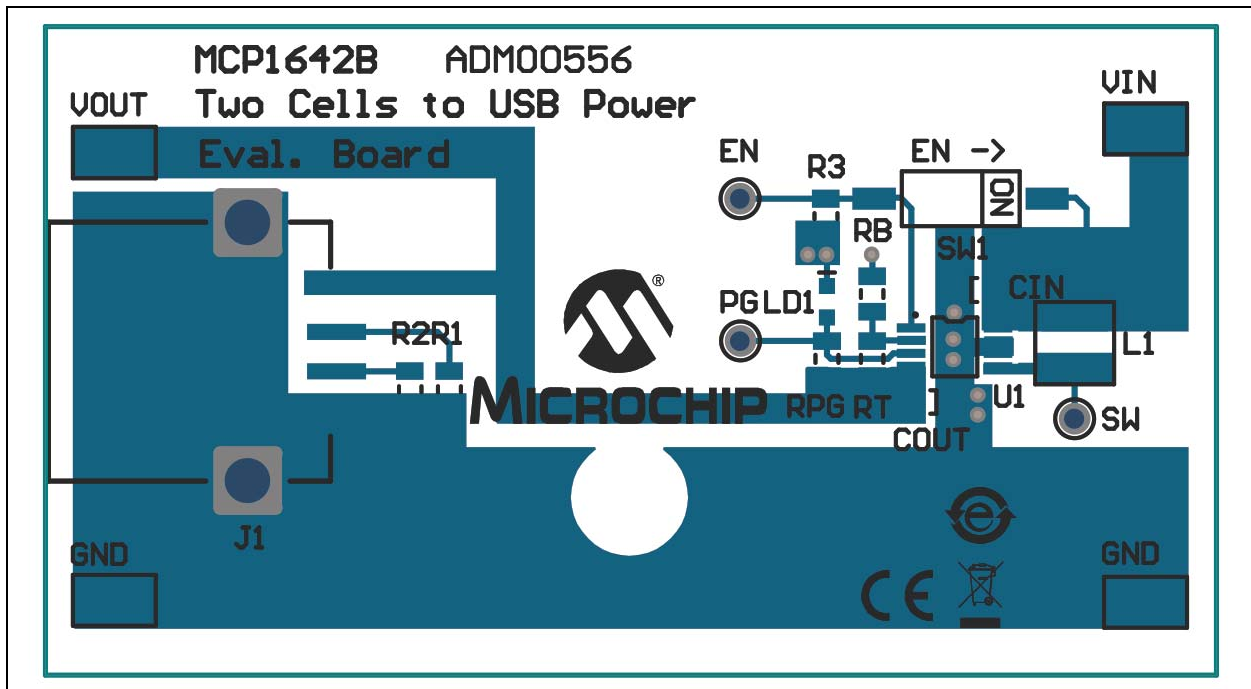
Note: Do NOT populate unless MCP1642B/D-ADJ is

Schematic and Layouts

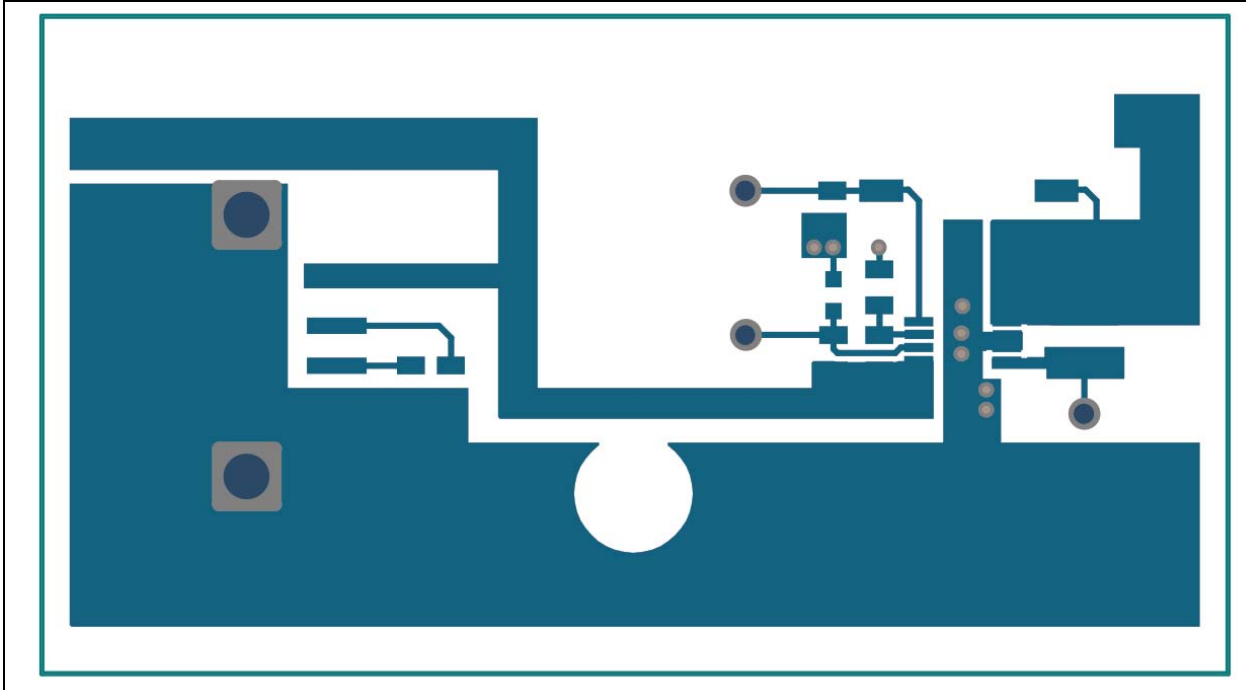
A.3 BOARD – TOP SILK AND PADS



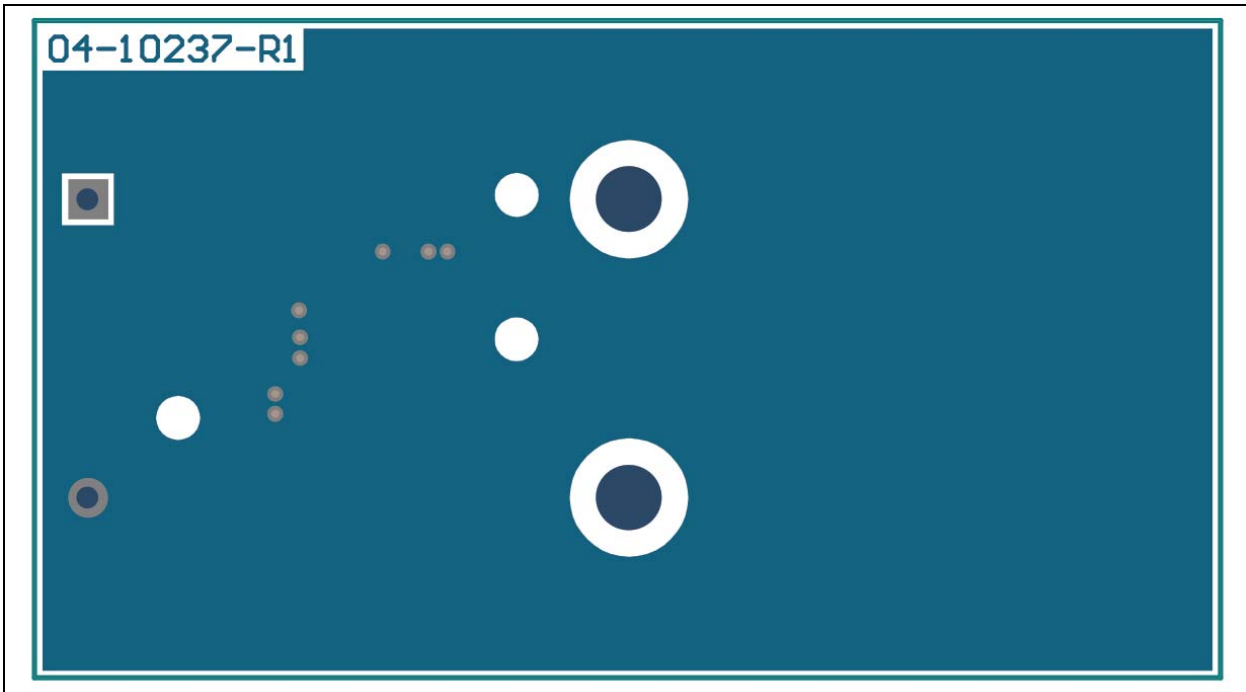
A.4 BOARD – TOP COPPER AND SILK



A.5 BOARD – TOP COPPER



A.6 BOARD – BOTTOM COPPER



Appendix B. Bill of Materials (BOM)

TABLE B-1: BILL OF MATERIALS (BOM)

Qty.	Reference	Description	Manufacturer	Part Number
1	U1	IC conv. DC-DC stepup sync. MSOP-8	Microchip Technology Inc.	MCP1642B-50I/MS
1		Tape VHB white 3/4" low surface	3M	3/4-5-4932
1	BT1	Holder battery 2-cell AA PC mount	Keystone Electronics Corp.	2462
2	CIN, COUT	Cap. ceramic 10 μ F 6.3V 10% X7R SMD 0805	TDK Corporation	CGA4J1X7R0J106K125AC
1	J1	Conn. rcpt. USB Type A R/A SMD	Würth Elektronik Group	62900416021
4	J2, J3, J4, J5	Conn. TP loop tin SMD	Harwin Plc.	S1751-46R
1	L1	Inductor 4.7 μ H 2A 20% SMD XFL4020	Coilcraft	XFL4020-472MEB
1	LD1	Diode LED red 2V 30 mA SMD 0603	Würth Elektronik Group	150060RS75000
0	PCB	Printed Circuit Board – MCP1642B/D Two-Cell to USB Power Evaluation Board	Microchip Technology Inc.	104-00556
2	R1,R2	Res. 15k 1% 1/8W SMD 0805	Samsung	RC2012F153CS
1	R3	Res. 1M 1% 1/8W SMD 0805	Vishay/Dale	CRCW08051M00FKEA
1	RPG	Res. 1.5k 1% 1/8W SMD 0805	Vishay/Dale	CRCW08051K50FKEA
1	SW1	Switch spst. 24V 25 mA 418121270801 SMD	Würth Elektronik Group	418121270801
1	RB	DO NOT POPULATE Res. 309k 1% 1/8W SMD 0805	Panasonic®	ERJ-6ENF3093V
1	RT	DO NOT POPULATE Res. 976k 1% 1/8W SMD 0805	Panasonic®	ERJ-6ENF9763V

Note 1: 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.



MICROCHIP

Worldwide Sales and Service

AMERICAS

Corporate Office

2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support:
<http://www.microchip.com/support>
Web Address:
www.microchip.com

Atlanta

Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Austin, TX

Tel: 512-257-3370

Boston

Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago

Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Cleveland

Independence, OH
Tel: 216-447-0464
Fax: 216-447-0643

Dallas

Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit

Novi, MI
Tel: 248-848-4000

Houston, TX

Tel: 281-894-5983

Indianapolis

Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453

Los Angeles

Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608

New York, NY

Tel: 631-435-6000

San Jose, CA

Tel: 408-735-9110

Canada - Toronto

Tel: 905-673-0699
Fax: 905-673-6509

ASIA/PACIFIC

Asia Pacific Office

Suites 3707-14, 37th Floor
Tower 6, The Gateway
Harbour City, Kowloon
Hong Kong
Tel: 852-2943-5100
Fax: 852-2401-3431

Australia - Sydney

Tel: 61-2-9868-6733
Fax: 61-2-9868-6755

China - Beijing

Tel: 86-10-8569-7000
Fax: 86-10-8528-2104

China - Chengdu

Tel: 86-28-8665-5511
Fax: 86-28-8665-7889

China - Chongqing

Tel: 86-23-8980-9588
Fax: 86-23-8980-9500

China - Hangzhou

Tel: 86-571-8792-8115
Fax: 86-571-8792-8116

China - Hong Kong SAR

Tel: 852-2943-5100
Fax: 852-2401-3431

China - Nanjing

Tel: 86-25-8473-2460
Fax: 86-25-8473-2470

China - Qingdao

Tel: 86-532-8502-7355
Fax: 86-532-8502-7205

China - Shanghai

Tel: 86-21-5407-5533
Fax: 86-21-5407-5066

China - Shenyang

Tel: 86-24-2334-2829
Fax: 86-24-2334-2393

China - Shenzhen

Tel: 86-755-8864-2200
Fax: 86-755-8203-1760

China - Wuhan

Tel: 86-27-5980-5300
Fax: 86-27-5980-5118

China - Xian

Tel: 86-29-8833-7252
Fax: 86-29-8833-7256

China - Xiamen

Tel: 86-592-2388138
Fax: 86-592-2388130

China - Zhuhai

Tel: 86-756-3210040
Fax: 86-756-3210049

ASIA/PACIFIC

India - Bangalore

Tel: 91-80-3090-4444
Fax: 91-80-3090-4123

India - New Delhi

Tel: 91-11-4160-8631
Fax: 91-11-4160-8632

India - Pune

Tel: 91-20-3019-1500

Japan - Osaka

Tel: 81-6-6152-7160
Fax: 81-6-6152-9310

Japan - Tokyo

Tel: 81-3-6880-3770
Fax: 81-3-6880-3771

Korea - Daegu

Tel: 82-53-744-4301
Fax: 82-53-744-4302

Korea - Seoul

Tel: 82-2-554-7200
Fax: 82-2-558-5932 or
82-2-558-5934

Malaysia - Kuala Lumpur

Tel: 60-3-6201-9857
Fax: 60-3-6201-9859

Malaysia - Penang

Tel: 60-4-227-8870
Fax: 60-4-227-4068

Philippines - Manila

Tel: 63-2-634-9065
Fax: 63-2-634-9069

Singapore

Tel: 65-6334-8870
Fax: 65-6334-8850

Taiwan - Hsin Chu

Tel: 886-3-5778-366
Fax: 886-3-5770-955

Taiwan - Kaohsiung

Tel: 886-7-213-7830

Taiwan - Taipei

Tel: 886-2-2508-8600
Fax: 886-2-2508-0102

Thailand - Bangkok

Tel: 66-2-694-1351
Fax: 66-2-694-1350

EUROPE

Austria - Wels

Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen

Tel: 45-4450-2828
Fax: 45-4485-2829

France - Paris

Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany - Dusseldorf

Tel: 49-2129-3766400

Germany - Munich

Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Germany - Pforzheim

Tel: 49-7231-424750

Italy - Milan

Tel: 39-0331-742611
Fax: 39-0331-466781

Italy - Venice

Tel: 39-049-7625286

Netherlands - Drunen

Tel: 31-416-690399
Fax: 31-416-690340

Poland - Warsaw

Tel: 48-22-3325737

Spain - Madrid

Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

Sweden - Stockholm

Tel: 46-8-5090-4654

UK - Wokingham

Tel: 44-118-921-5800
Fax: 44-118-921-5820

03/25/14

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9