

# **BM63 Evaluation Board (EVB) User's Guide**

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# **BM63 EVB USER'S GUIDE**

Object of Declaration BM63 Evaluation Board

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 (8<sup>th</sup> 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

1 Carlon Derek Carlson

12-Sep-14 Date

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# BM63 EVB USER'S GUIDE

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# **BM63 EVB 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 "DSXXXXXXA", where "XXXXXXX" 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<sup>®</sup> X 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 BM63 Evaluation Board (EVB). Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- Recommended Reading
- The Microchip Web Site
- Development Systems Customer Change Notification Service
- Customer Support
- Document Revision History

#### **DOCUMENT LAYOUT**

This document describes how to use the BM63 EVB, as a development tool to emulate and debug firmware on a target board. This user's guide is composed of the following chapters:

- Chapter 1. "Introduction" provides an overview of the BM63 EVB and its features.
- Chapter 2. "Hardware" provides hardware details of the BM63 EVB.
- Chapter 3. "Getting Started" provides information about how to establish a Bluetooth<sup>®</sup> connection using the BM63 EVB and how to configure the BM63 module by using various tools.
- Appendix A. "Schematics" provides the BM63 EVB reference schematics.

### **CONVENTIONS USED IN THIS GUIDE**

This manual uses the following documentation conventions:

#### **DOCUMENTATION CONVENTIONS**

Description	Represents	Examples
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 <b>Power</b> tab
Text in angle brackets < >	A key on the keyboard	Press <enter>, <f1></f1></enter>
Plain Courier New	Sample source code	#define START
	Filenames	autoexec.bat
	File paths	c:\mcc18\h
	Keywords	_asm, _endasm, static
	Command-line options	-0pa+, -0pa-
	Bit values	0, 1
	Constants	OxFF, `A'
Italic Courier New	A variable argument	<pre>file.o, where file can be any valid filename</pre>
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	<pre>var_name [, var_name]</pre>
	Represents code supplied by user	<pre>void main (void) { }</pre>
Notes	A Note presents information that we want to re-emphasize, either to help you avoid a common pitfall or to make you aware of operating differences between some device family members. A Note can be in a box, or when used in a table or figure, it is located at the bottom of the table or figure.	Note: This is a standard note box. CAUTION This is a caution note. Note 1: This is a note used in a table.

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#### **RECOMMENDED READING**

This user's guide describes how to use the BM63 EVB. The following Microchip document is available and recommended as supplemental reference resources.

#### BM63 Data Sheet (DS60001431)

Refer to this document for a detailed information on the BM63 module. Reference information found in this data sheet includes:

- Features and pin configurations
- Electrical Specifications
- Reference Circuits

#### THE MICROCHIP WEB SITE

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- General Technical Support Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listings
- Business of Microchip Product selector and ordering guides, latest Microchip press releases, listings of seminars and events; and listings of Microchip sales offices, distributors and factory representatives

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- Compilers The latest information on Microchip C compilers and other language tools
- Emulators The latest information on the Microchip in-circuit emulator, MPLAB REAL ICE™
- In-Circuit Debuggers The latest information on the Microchip in-circuit debugger, MPLAB ICD 3
- MPLAB X IDE The latest information on Microchip MPLAB X IDE, the Windows<sup>®</sup> Integrated Development Environment for development systems tools
- **Programmers** The latest information on Microchip programmers including the PICkit<sup>™</sup> 3 development programmer

### **CUSTOMER SUPPORT**

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- 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://support.microchip.com.

### DOCUMENT REVISION HISTORY

### Revision A (July 2016)

This is the initial released version of this document.

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# **BM63 EVB USER'S GUIDE**

# **Chapter 1. Introduction**

Thank you for purchasing a Microchip Technology BM63 Evaluation Board (EVB). This document provides a detailed information about the BM63 EVB.

The BM63 EVB enables the user to evaluate and demonstrate the functionality of the BM63 module. The BM63 EVB includes status LEDs and an integrated configuration and programming interface for plug-and-play capability, which enable rapid prototyping and faster time to market.

Along with the BM63 EVB, software tools and applications are provided to demonstrate the Bluetooth connections to the on-board BM63 module with options to configure or program it.

This chapter includes the following topics:

1.1 "Kit Contents"

#### 1.2 "BM63 EVB Features"

### 1.1 KIT CONTENTS

The BM63 EVB kit contains the following items, as illustrated in Figure 1-1.

- One BM63 EVB, which contains the BM63SPKA1MC2 module
- One micro-USB cable
- One 15V DC power adapter
- · Two speaker cables



#### FIGURE 1-1: BM63 EVB KIT CONTENTS

**Note:** If you are missing any part of the BM63 EVB kit, contact a Microchip sales office for assistance. A list of Microchip offices for sales and service is provided on the back page of this document.

### 1.2 BM63 EVB FEATURES

The following are key features of the BM63 EVB:

- The BM63 EVB includes a BM63 module, qualified for Bluetooth 4.2 specifications
- On-board MCU (PIC18F85J10) and DSP (YDA174) for easy operation and feature demonstration
- On-board keypad matrix that is controlled by MCU, which makes it easy for playback control
- Built-in Near Field Communication (NFC)
- RoHS compliant

Figure 1-2 illustrates the top view of the BM63 EVB with the following components:

- 1. BM63SPKA1MC2 module
- 2. Three status LEDs
- 3. NFC tag
- 4. Mode switch (SW9)
- 5. USB connector (P9)
- 6. USB to UART converter (MCP2200)
- 7. UART port over USB connector (P3)
- 8. On board MCU (PIC18F85J10)
- 9. ICSP header (J5)
- 10. Audio control buttons, Multi-Function Button (MFB) and pairing mode button
- 11. 15V adapter jack (P2)
- 12. Internal/external MCU selection switch (SW46)
- 13. Internal/external DSP audio amplifier selection switch (SW47)
- 14. On-board DSP (YDA174) with built-in audio amplifier
- 15. Audio connector (CN1 and CN2)
- 16. External MCU/DSP header (J6)
- 17. Auxiliary input 3.5 mm jack (P8)
- 18. Microphone input 3.5 mm jack (P6)
- 19. Speaker output 3.5 mm jack (P7)
- 20. Reset button for the BM63 module (SW10)
- 21. Reset button for MCU (SW1)

For additional information on the features, refer to Chapter 2. "Hardware".

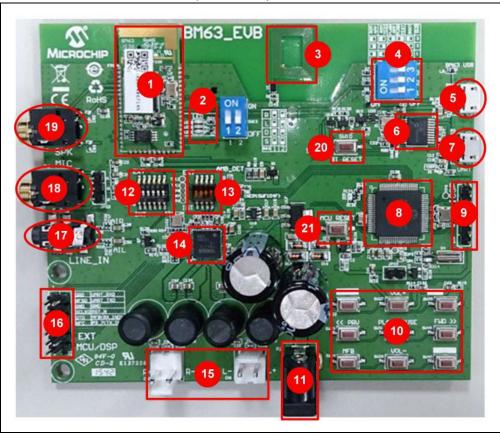


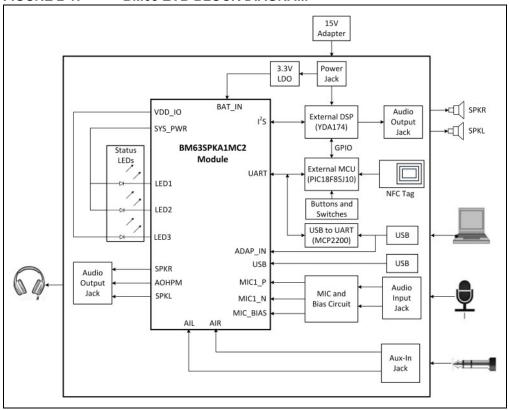
FIGURE 1-2: BM63 EVB (TOP VIEW)



# **BM63 EVB USER'S GUIDE**

# Chapter 2. Hardware

This chapter describes the hardware features of the BM63 EVB. The BM63 EVB includes a range of peripheral components, see Figure 2-1.



#### FIGURE 2-1: BM63 EVB BLOCK DIAGRAM

#### 2.1 HARDWARE FEATURES

The following list provides the details of each component in the BM63 EVB. For detailed information about the location of these components, refer to Figure 1-2.

#### 2.1.1 Power Supply

The 15V DC power adapter for supplying power to the BM63 EVB.

#### 2.1.2 USB connectivity

The BM63 EVB has the following two USB ports that can be connected to the host PC using a micro-USB cable:

- Debug or program port (P3), where the USB signals are converted to/from the UART by the MCP2200
- USB port (P9), where USB signals are directly connected to the BM63 module

#### 2.1.3 Switches and Push buttons

The functions of the switches and push buttons on the BM63 EVB are:

- SW1 Reset button for MCU
- SW9 Mode switch
- SW10 Reset button for BM63 module
- SW23 Skip the audio track backward
- SW24 (MFB) Push to turn on/off the BM63 module
- SW27 Increase volume
- SW28 Decrease volume
- SW31 Play or pause the audio playback
- SW40 Button to enter into pairing mode
- SW45 Skip the audio track forward

Table 2-1 provides the settings of Mode switch SW9 to configure the BM63 module in various operating modes.

Mode	Switch Positions	Pin Definition
Write Flash	ON 1 2 3	1: ON (P2_0: LOW) 2: ON (P2_4: LOW) 3: ON (EAN: HIGH)
Test Mode	ON 1 2 3.	1: ON (P2_0: LOW) 2: OFF (P2_4: HIGH) 3: OFF (EAN: LOW)
Flash Application Mode	ON 1 2 3	1: OFF (P2_0: HIGH) 2: OFF (P2_4: HIGH) 3: OFF (EAN: LOW)

TABLE 2-1: SWITCH SW9 DETAILS

**Note:** By default switch SW9 will be in Application mode.

Table 2-2 details the signals and button connections of the SW46/SW47 switch to the BM64 module and the external MCU/DSP.

Mode	SW46/SW47 Switch position	Pin Definition
On-board MCU (PIC18F85J10) and DSP audio amplifier (YDA174) signals connection to the BM63 module (default)		SW46 1: ON (NFC trigger to MCU) 2: OFF (TXIND to MCU) 3: ON (RST_N to MCU) 4: ON (HCI_TXD to MCU) 5: ON (HCI_RXD to MCU) 6: ON (MFB controlled by MCU) SW47 1: ON (DT0 to DSP) 2: ON (SCLK0 to DSP) 3: ON (RFS0 to DSP) 4: ON (NC)
External MCU and DSP audio amplifier connection		SW46 1: OFF (NFC trigger) 2: OFF (TXIND) 3: OFF (RST_N) 4: OFF (HCI_TXD) 5: OFF (HCI_RXD) 6: OFF (HCI_RXD) 6: OFF (MFB) SW47 1: OFF (DT0) 2: OFF (SCLK0) 3: OFF (RFS0) 4: OFF (NC)

TABLE 2-2: SWITCH SW46/SW47 DETAILS

### 2.1.4 LEDs

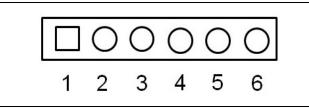
The functions of three LEDs are listed as follows:

- LED1 Indicates the Bluetooth connection status (UI configuration dependent)
- LED2 Indicates the Bluetooth connection status (UI configuration dependent)
- LED3 Charging indication LED (default setting is disabled)

#### 2.1.5 Headers

The following three headers (J5, J6, JP23) are available on the BM63 EVB. The ICSP header J5 provides the programming/debugging interface for the BM63 EVB on-board MCU (PIC18F85J10). Figure 2-2 illustrates the ICSP header J5 and Table 2-3 provides the pin details and description.

FIGURE 2-2: ICSP HEADER J5



#### TABLE 2-3: ICSP HEADER J5

Part Number	Pin	Description
J5	1	Reset
	2	ICD3 power
	3	GND
	4	PGD
	5	PGC
	6	NC

The external MCU/DSP header J6 provides the interface to connect an external MCU/DSP to the BM63 EVB. Figure 2-3 illustrates the external MCU/DSP header J6 and Table 2-4 provides the pin details and description.

FIGURE 2-3: EXTERNAL MCU/DSP HEADER J6

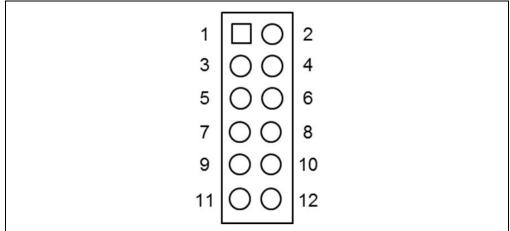


TABLE 2-4: EXTERNAL MCU/DSP HEADER J6

Part Number	Pin	Description
J6	1	I2S_DR
	2	UART_RXD
	3	I2S_RFS
	4	UART_TXD
	5	GND
	6	GND
	7	I2S_SCLK
	8	RST_N
	9	I2S_DT
	10	RX_IND
	11	NFC
	12	TX_IND

The MIC header JP23 is used for connecting a microphone to the BM63 EVB. Figure 2-4 illustrates the MIC header JP23 and Table 2-5 provides the pin details and description.

#### FIGURE 2-4: MIC HEADER JP23

[		0	0			
	1	2	3			

#### TABLE 2-5: MIC HEADER JP23

Part Number	Pin	Description
JP23	1	MIC_P1
	2	AGND
	3	MIC_N1



# **BM63 EVB USER'S GUIDE**

# **Chapter 3. Getting Started**

This chapter describes how to establish a Bluetooth connection between the BM63 EVB and a host device. It also demonstrates the process of updating the parameters using various tools.

This chapter includes the following topics:

- 3.1 "Requirements"
- 3.2 "Getting Started with BM63 EVB"
- 3.3 "Application Demonstration"
- 3.4 "Configuring BM63 Module"
- 3.5 "Updating EEPROM Parameters"
- 3.7 "Updating MCU Parameters"

#### 3.1 REQUIREMENTS

The following hardware and software components are required for getting started with the BM63 EVB.

#### 3.1.1 Hardware Requirements

- BM63 EVB
- Bluetooth enabled smartphone:
  - Android<sup>™</sup> device running Android 4.3 or later version
  - iOS: iPhone<sup>®</sup> 4S or later version
- · Windows host PC with USB port
- · Speaker, microphone, or headset
- Micro-USB cable
- MPLAB REAL ICE/MPLAB ICD 3/PICkit<sup>™</sup> 3

#### 3.1.2 Software Requirements

Download the latest firmware and corresponding tools for the following applications from the Microchip web site at: www.microchip.com/BM63.

- User Interface (UI) tool
- DSP tool
- Mass Production EEPROM Tool (MPET)
- · Flash update tool
- · Flash code
- EEPROM tool
- MPLAB Integrated Development Environment (MPLAB X IDE)

**Note:** MPLAB X IDE is available for download from the Microchip web site at: www.microchip.com/mplab/mplab-x-ide.

### 3.2 GETTING STARTED WITH BM63 EVB

To establish a Bluetooth connection between the BM63 EVB and a host device, perform the following actions:

1. Set switch SW9 to Flash Application mode, see Figure 3-1.



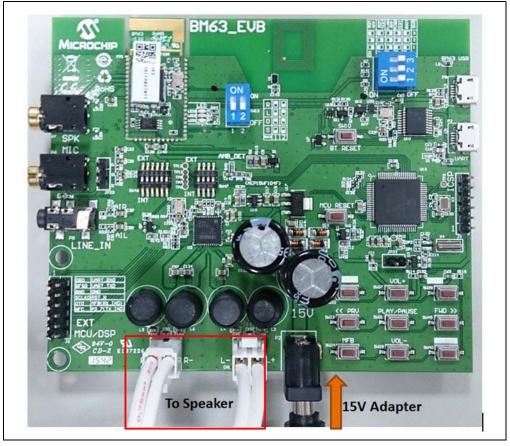


- 2. Connect the speaker line to the amplifier output connector (CN1 and CN2).
- 3. Connect 15V adapter to P2, as illustrated in Figure 3-2.

**Note:** Do not plug-in the USB cable.

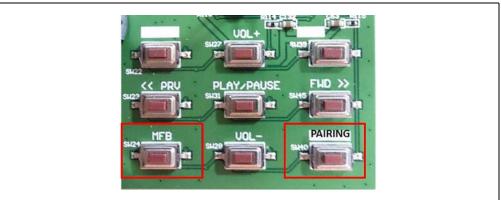
FIGURE 3-2:

USING EVALUATION BOARD



- Figure 3-3 illustrates the various push buttons on the BM63 EVB. To turn the Bluetooth on, long press SW24 (MFB), then LED1 (blue) and LED2 (red) will blink.
- 5. Long press SW40 to enter the pairing mode (depending on the UART command settings from the MCU to the Bluetooth module). LED1 (blue) and the LED2 (red) will blink alternatively to indicate that the BM63 EVB is discoverable.

FIGURE 3-3: SW24 AND SW40



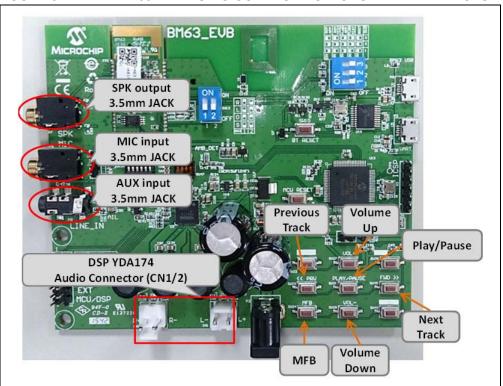
- Turn on the host device Bluetooth (PC or smartphone) and it displays a list of discoverable Bluetooth devices. The BM63 EVB is displayed as "Dual\_SPK" or "LE\_Dual\_SPK", select the device to establish the connection.
- 7. Once the BM63 EVB is connected, LED1 (blue) starts blinking fast. This indicates that the BM63 EVB is in pairing mode.
- When the BM63 EVB is paired with the host device, LED1 (blue) blinks twice at regular intervals. With the default settings, the BM63 module enables Advanced Audio Distribution Profile (A2DP) for audio playback and Audio Video Remote Control Profile (AVRCP) for player control.

### 3.3 APPLICATION DEMONSTRATION

#### 3.3.1 Speaker Audio Demonstration

In this demonstration, users can stream audios on the BM63 EVB using a host device (PC or smartphone). Perform the following actions for the audio demonstration, see Figure 3-4.

- Establish the connection between the BM63 EVB and a host device, refer to 3.2 "Getting Started with BM63 EVB".
- Once the connection between the BM63 EVB and the host device is established, open the audio source on the host device. Microchip recommends using a media player (for example: Windows<sup>®</sup> Media Player, iTunes<sup>®</sup>, and Android<sup>™</sup>).
- 3. Start the audio stream on the media player, then LED1 (blue) and LED2 (red) will blink once at regular intervals.
  - The audio control buttons are used to:
  - Control the audio output volume (long press the VOL+ or VOL- button)
  - Go to the previous track (short press << PRV button)
  - Go to the next track (short press FWD >> button)
  - Start/stop playing the current track (short press **PLAY/PAUSE** button)



#### FIGURE 3-4: BM63 EVB AUDIO CONTROL BUTTONS AND INTERFACES

#### 3.3.2 HSP/HFP Demonstration

In this demonstration, the user can explore the Headset Profile (HSP) or Hands-Free Profile (HFP) setting to receive an incoming voice call from a paired smartphone. Perform the following steps for demonstration, see Figure 3-4.

- 1. Establish the connection between the BM63 EVB and a host device using the procedure listed in **3.2** "Getting Started with BM63 EVB".
- 2. Connect the speaker to the audio out connector (CN1 and CN2) and a microphone to the MIC input (P6) on the BM63 EVB.
- 3. Initiate a call from another phone to the smartphone, that is paired with the BM63 EVB. The A2DP stream pauses and the ringtone is played on the speaker. LED1 (blue) blinks three times at regular intervals.
- 4. Press the SW24 (MFB) button on the BM63 EVB to accept the incoming call. LED1 (blue) and LED2 (red) will blink three times at regular intervals.

### 3.4 CONFIGURING BM63 MODULE

#### 3.4.1 UI Tool Configuration

The User Interface (UI) tool is a configuration tool which enables the user to change the BM63 module parameters. To configure the UI parameters, perform the following actions:

1. Open the UI configuration tool and click **OK** to configure the UI parameters, see Figure 3-5.

**Note:** Download and install the UI tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration UITool\_IS206x\_012\_DualModeSPK1.1\_v1.03 is used.



E_Set	
Welcome to use M	licrochip Bluetooth UI Setting Tool!
	ОК

2. In the UI configuration tool, click Load, see Figure 3-6.

#### FIGURE 3-6: UI CONFIGURATION TOOL

└ Version & Devi	се		1
Project:		<b>~</b>	
IC Package:	IS2062	-	
Customer Versio	on:		
Save	Export.	PICS Generator	?
Load	Edit	Exit	ĺ.

3. From the Open window, select the default UI parameter text file (provided with the UI tool) for the BM63 module, and then click **Open**, see Figure 3-7.

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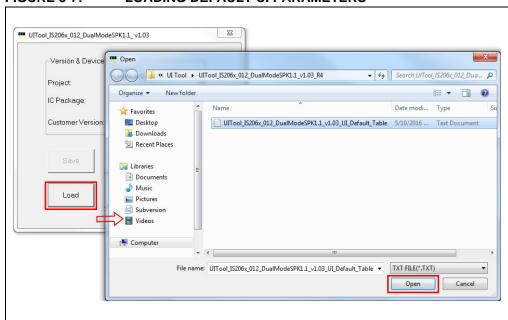


FIGURE 3-7: LOADING DEFAULT UI PARAMETERS

4. After loading the UI parameters, select "BM63" from the **IC Package** drop-down list and then click **Edit**, see Figure 3-8.

#### FIGURE 3-8: EDIT UI PARAMETERS

└Version & De∨	ice —			
Project:		IS206XGM_	012_DUAL_5_	
IC Package:		BM63	•	
Customer Versi	ion:	2016-05-09		
Save		Export.	PICS Generator	
Load		Edit	Exit	

- 5. In the Main Feature dialog, the user can enable/disable the **Supported Profile** and audio line-in function **Button** and set the following parameters, as illustrated in Figure 3-9.
  - a) Select the "UART Command" check box, which allows the module to be controlled by the MCU through the UART interface.
  - b) Select the "Ind.1" check box to enable the external audio amplifier.
  - c) Click Next.



Supported Profile —		1.000	
F HFP/HSP	A2DP	AVRCP	SPP
		AVRCP Cor	
		AVRCP Tar	get
Button			
Btn0(MFB)	Btn1(P0_2)	Btn2(P2_7)	Btn3(P0_5)
✓ Btn4(P3_3)	✓ Btn5(P3_1)		
Function Enable			
🗖 Slide Switch	AUX Line In	🗆 🗆 🗆 🗆	er
NFC Detect	VART Comma	nd <b>a</b> 🗆 12S	
	L RXIND		
	🔽 Tx IND		
	an a		
Function GPIO Ass	•	5 P0 3 P2 0	D2 4 D2 7
Slide SW		5 FU_5 F2_0	FZ_4 F3_1
NFC			
Ind.1		Ъ	
Ind.2		<b>-</b>	
Buzzer		ГГ	
	Г		V
Tx IND			
Tx IND CHG/AUX-IN Ind.			
All the second second second second			c Next

**Note:** The audio output will be routed to the speaker if  $I^2S$  is not selected.

 The System and Functional Settings dialog with various options (tabs) is displayed to configure the parameters. In the Sys. Setup2 tab, from Indication 1 Setting section, enable External Amplifier Indication, as illustrated in Figure 3-10. Click Help to get more detailed information.

ol_IS206x_012_DualModeSPK1.1_v1.03_UI_Defau	It_Table.txt - UITool_IS206x_012_DualModeSPK1.1_ v1.03
Button Setup PMU Se Svs. Setup1 Sys. Setup2 Sys	Device Name
Sys. Setup1 Sys. Setup2 Sys	s. Setup3 LED Setup1 LED Setup Modification
Name Frag Segment	
Name Fragment Dual_SPK	(32 Char) Help
ITool IS206x 012 DualModeSPK1.1 v1.03 UI De	fault_Table.txt - UITool_IS206x_012_DualModeSPK1.1_ v1.03
Button Setup PMU Sys. Setup1 Sys. Setup2 Sys. Setup2	Setup         CODEC Setup         BLE Setup           Sys. Setup3         LED Setup1         LED Setup2         Tone Setup
Indication Function	Help
-Indication 1 Setting	
Indicate Pin1 Polarity (P1_5)	High Active
Audio(SBC) Indication	Disable 🔻
Voice(SCO) Indication	Disable *
Ring Tone Indication	Disable External audio
Incoming Call Indication	Disable amplifier enable
External Amplifier Indication	Enable
	Disable
HF Link Indication	
A2DP Link Indication	Disable _
Button Event Trigger Indication	Disable
-Indication 2 Setting Indicator Pin2 Polarity (P0 3)	High Active
Audio(SBC) Indication	Disable
Voice(SCO) Indication	Disable *

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 In Sys. Setup1 tab, from the UART Setting section, enable Power On by "Power On" Command, see Figure 3-11. The module will power-on by UART command and not by the MFB key.

Button Setu	p	PMU Setup	CODEC	Setup	BLE S	etup
Sys. Setup1	Sys. Setup2	Sys. Setup3	LED Setup1	LED Set	up2 To	ne Setup
Uart Setting						
Enable HCI	Uart	E	Enable	Y	He	elp
UART Baud	drate	Γα	x07: 19200	•		
CPU Idle M	lode	Γ	Disable	<b>~</b>		
Wake Up D	elay Time	3	<sup>30</sup> (0~254; 0: di	sable; unit:0.31	25 ms )	
CLIP Name	or Number	1	lame Priority	-		
Power On I	oy "Power On" Co	mmand E	Enable	<u> </u>		
UART Prote	ocol Tx Padding	E	Enable	•		
NEC Catting						
NFC Setting	tion Enable	ſ	Disable		He	elp
		, ,		-	<u></u>	
NFC Stable	e Time	1	4 (0~254 unit:8	80ms )		
-Link Quality S	ettina					
Link Quality			Disable	•	He	elp
_ User MMI Dat	a Setting					
	Data D	isahla	-		He	In

#### FIGURE 3-11: UART COMMAND SETTING

8. After setting up the parameters, click **Finish**. A notification is displayed to check the EEPROM size on the system. Click **OK**, see Figure 3-12.

Button Setup PMU	Setup CODEC Setup BLE Set	etup
Sys. Setup1 Sys. Setup2	Sys. Setup3 LED Setup1 LED Setup2 Tor	ne Setup
Piezo PWM Frequency	2700 ( 50-20000 unit Hz )	
Uart Setting		
Enable HCI Uart	Enable - He	elp
UART Baudrate	0x03: 115200 ▼	
CPU Idle Mode Notification		
Wake Up Delay	ms )	
CLID Name or Current E2Prom	size is 4096 bytes!!	
CLIP Name or I Current E2Prom The Suggested E		
CLIP Name or The Suggested E Power On by "I	size is 4096 bytes!! EPROM must be equal to or greater than 24C32	
CLIP Name or I Current E2Prom The Suggested E	size is 4096 bytes!!	
CLIP Name or Current E2Prom The Suggested E Power On by "I UART Protocol	size is 4096 bytes!! EPROM must be equal to or greater than 24C32	
CLIP Name or The Suggested E	size is 4096 bytes!! EPROM must be equal to or greater than 24C32	
CLIP Name or The Suggested E Power On by "I UART Protocol	size is 4096 bytes!! EPROM must be equal to or greater than 24C32	-lp
CLIP Name or Power On by "I UART Protocol NFC Setting NFC Detection Enable	size is 4096 bytes!! EPROM must be equal to or greater than 24C32 ОК Disable	lp
CLIP Name or Power On by "I UART Protocol NFC Setting NFC Detection Enable	size is 4096 bytes!! EPROM must be equal to or greater than 24C32 OK Disable 4 (0~254 unit:80ms )	
CLIP Name or The Suggested E     The	size is 4096 bytes!! EPROM must be equal to or greater than 24C32 ОК Disable	

#### FIGURE 3-12: EEPROM NOTIFICATION

9. Click **Save** to save these UI parameters as a .txt file, see Figure 3-13.

Version & Device	J		
Project:	IS206XGM	_012_DUAL_5	
IC Package:	BM63	•	
Customer Version	: 2016-05-09		
Save	Export.	PICS Generator	?
Load	Edit	Exit	

10. From the Save As window, select the file location, and then click **Save**, see Figure 3-14.

#### FIGURE 3-14: SAVE AS WINDOW

Г

Version & Devic	Save As	001 ►	UITool_IS206x_012_DualModeSPK1.1_v1.03_R4	- + + + + 5€	earch UlTool_IS	206x 012	Dua.
Project:		folder			-		
IC Package:	Downloads		Name	Date modified	Туре	Siz	
Customer Version	🖳 Recent Places		UITool_IS206x_012_DualModeSPK1.1_v1.0	5/10/2016 9:47 AM	Text Docum	nent	1
Save	<ul> <li>Libraries</li> <li>Documents</li> <li>Music</li> <li>Pictures</li> <li>Subversion</li> <li>Videos</li> </ul>						
	🖳 Computer						
	•			ш			_
	File name:   Save as type: T	XT FILE	(*.TXT)				
	Alide Folders				Save	Ca	ncel

11. After saving the UI parameters, click Exit.

٦

#### 3.4.2 DSP Tool Configuration

The DSP configuration tool provides the visual interface to configure the DSP parameters for the voice and the audio signal processing functions. To configure the DSP parameters, perform the following actions:

- 1. Open the DSP tool and a dialog displays with various options (tabs) to configure the parameters, see Figure 3-15.
- Note: Download and install the DSP tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration DSPTool\_IS206x\_012\_DualModeSPK1.1\_v1.03 is used.



Main Function	Voice Function Au	dio Function   12S/I	PCM		
		odeSPK1.1_v1.03 IC Version		on Tool 1.03 2_DualModeSPł	<1.1_v1.03 •
創傑科	支股份有限公式 Chnologies Cor	3			
Load					DSP Parameter DSP Default
	-71				

2. In the **Voice Function** tab, set the parameters as illustrated in Figure 3-16.

Main Function	Voice Function A	udio Function  12S/P	СМ		
CVSD Encoder 🕇	Digital Gain/Comfort Noise	Equalizer (EQ)	ion - AEC	Filter	MIC (Codec Gain)
	CVSD Decoder		ualizer EQ) → Filter	DAC (Speake Gain)	er 🔶 🔶
Filter NR	EQ SpkGain	MIC Gain/ComfortN	oise AEC/AES		
		Cutoff Freq: 300	Hz 🔻		
Speaker -	- HighPass Filter	Cuton ried. Jor			
	- HighPass Filter JhPass Filter	Cutoff Freq: 210			
	-				
	-				
	-				DSP Parameter

FIGURE 3-16: DSP VOICE FUNCTION SETTING

3. In the **Audio Function** tab, set the parameters as illustrated in Figure 3-17.

Main Fun	SBC	AAC coder		r	Audi Effec	io et	Equa (EC	lizer		DAC beaker bain)	►Ű	1			
	stom ær G ¥	ain -38dB 0xa2 -14dB	in S	etting -35dB 0×a5	X X X	Num of -32dB 0xc2	X Y X	els [] -29dB 0xc5 -5dB 0xf7	¥	→ C6dB 0xe2 -2dB 0xfa	¥	t Gain ( -23dB 0xe5 -1dB 0xfb	D×OC x x x	-20dB 0xe8 0dB	ж ж 16
Lo	ad ve	D	efau	lt.txt									_	SP Para DSP De Exit	fault

FIGURE 3-17: DSP AUDIO FUNCTION SETTING

4. Click **Save** to save these DSP parameters as .txt file, see Figure 3-18.

lain Funct	ion Voice Fun	ction Audio F	unction I2S/PCM			
	BC/AAC Decoder	Audio		AC eaker		
	E2PROM Table	e File:	-		×	
	Save in:	DSPTool_IS2	206x_012_DualModeSPK1.1_v1	- 🧿 👂 📴 -		
	C.	Name	·	Date modified	Туре	
ineln S © Cus Speak 01 Mute 0×00 -17dB 0×eb	Recent Places Desktop Libraries Computer	Default		5/9/2016 9:46 AM	Text Docu	
		•	III		• 6	
	Network	File name:	Default.bt	-	Save	
		Save as type:	TXT Files (*.bd)	•	Cancel	
		_				
Load	i				DSP Parameter	
Save	Defau				Exit	_

## FIGURE 3-18: SAVING DSP PARAMETERS

5. After saving the DSP parameters, from the notification pop up, click **OK**, see Figure 3-19. Click **Exit** to exit the DSP tool settings.

Main Function Voice	Function Audio Function 12S/PCM
SBC/AAC Decoder	$ \begin{array}{c} Audio \\ Effect \end{array} \rightarrow \begin{array}{c} Equalizer \\ (EQ) \end{array} \rightarrow \begin{array}{c} DAC \\ (Speaker \\ Gain) \end{array} \rightarrow \begin{array}{c} \end{array} $
	LineIn - Audio Input
Lineln SPK Gain Sc	aund Effect EQ
Customized G     Speaker Gain     O1     Mute ★ -38dE     0×00 ▼ 0×a2     -17dB ★ -14dE	DSPTool_IS206x_012_DualModeSPK1.1_v1.03  F:\BM6x Tools\DSPTool_IS206x_012_DualModeSPK1.1_v1.03\Default.txt is saved successfully!  20dB  x xe8  C OK 0dB
0xeb ▼ 0xee	jxfc ▼ 16
	DSP Parameter
Load	DSP Default

## FIGURE 3-19: SAVE NOTIFICATION

## 3.4.3 MPET Tool Configuration

The MPET tool is used to merge the UI and the DSP parameters and generate a patch file (.ipf) or binary file (.bin). To generate a patch file using the MPET tool, perform the following actions:

- 1. Open the MPET tool and then click **Next** to continue with the configuration settings, see Figure 3-20.
- **Note:** Download and install the MPET tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration MP\_V2.1.29.4797 is used.



#### FIGURE 3-20: MPET TOOL SETTING

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2. Select **UI Patch Only** to merge the UI and the DSP parameters and then click **Next**, as illustrated in Figure 3-21.

Note: For the UI parameter settings, refer to 3.4.1 "UI Tool Configuration", and for the DSP parameter settings, refer to 3.4.2 "DSP Tool Configuration".

FIGURE 3-21:	MERGE UI AND DSP PARAMETERS
--------------	-----------------------------

Type of Merged Output Select EEPROM output against the item in MPBT.	ISS
Discours doors the file format of anona tool and the disk on Name	
Please choose the file format of merge tool output, then click on Next.	
O Default (Full EEPROM, *.bin)	
Select Default to generate full EEPROM binary image for MPBT #500 Write EEPR	OM.
The option is recommended while preparing production of a whole new model.	
Customers create a completed EEPROM content by merging the ISSC default an	d all
related customized UI, RF, PMU, (or Audio) parameters.	
UI Patch Only (Customized UI Updates, *.ipf) 1	
Select UI Patch Only, only the customized UI updates are outputted for MPBT #	
EEPROM Patch. This opton is used while customer modify UI behavior against the	e
samples which have passed mass-production PCBA test.	
2	
Back (B) Next (N	() Cancel

3. Click **Browse** to load the default .bin file (provided with the MPET tool). From the Open window, select the .bin file and then click **Open**, see Figure 3-22.

biowse 135C deiadu	ault as a base			issc			
Please choose the de	fault bin file		Browse				
∎ Open Goor v 📕 → Comp	outer 🕨 New Vo	lume (F:) → BM6x Tools → I	EPROM table	• +	Search EEPI	ROM table	
Organize 🔻 New f	older					)= • 🔳	
★ Favorites ► Desktop ► Downloads ► Recent Places ► Libraries	Name	- 206X_012_DUALMODESPK1.1_	Date mo E1.0.0.2_0 5/18/201	455028	Type VLC media fil	Size e (.bin)	129 K
<ul> <li>Documents</li> <li>Music</li> <li>Pictures</li> <li>Subversion</li> <li>Videos</li> </ul>							

FIGURE 3-22: LOADING DEFAULT BIN FILE

4. The bin file description is displayed, click **Next**, see Figure 3-23.

Please choose the default bin file F:\BM6x Tools\EEPROM table\IS206X_012_DUALMODESPK1.1_E1.0.0.2_0FCD.t Browse BIN file description: Format Version : 4 Solution Name : IS206X_012_DUALMODESPK1.1_E1.0_BETA EEPROM Version : 1.0.0.2 Company Name : ISSC Project Name : IS206X_012_DUALMODESPK1.1_E1.0 TXT Files : IPF Files :	elect latest ISSC Default Browse ISSC default as a base	is
BIN file description: Format Version : 4 Solution Name : IS206X_012_DUALMODESPK1.1_E1.0_BETA EEPROM Version : 1.0.0.2 Company Name : ISSC Project Name : IS206X_012_DUALMODESPK1.1_E1.0 TXT Files :	Please choose the default bin file	
Format Version : 4 Solution Name : IS206X_012_DUALMODESPK1.1_E1.0_BETA EEPROM Version : 1.0.0.2 Company Name : ISSC Project Name : IS206X_012_DUALMODESPK1.1_E1.0 TXT Files :	F:\BM6x Tools\EEPROM table\IS206X_012_DUALMODESPK1.1_	E1.0.0.2_0FCD.t Browse
	Format Version : 4 Solution Name : IS206X_012_DUALMODESPK1.1_E1.0_BETA EEPROM Version : 1.0.0.2 Company Name : ISSC Project Name : IS206X_012_DUALMODESPK1.1_E1.0 TXT Files :	

## FIGURE 3-23: DEFAULT BIN FILE SETTING

5. Click the "+" button to load the UI and the DSP parameters (.txt file) into the MPET tool to merge with the EEPROM table and then click **Next**, as illustrated in Figure 3-24.

oad Customized Parameter Browse and include the files				iss
Customized settings in select	ed BIN			
FileName		Version	Brief	
				_
•	III		1	•
Merge List			00	0
FileName 2				
F: \BM6x Tools \UI Tool \L	JITool_IS206x_012_DualMode	and the second se		
F: \BM6x Tools \DSP tool	DSPTool_IS206x_012_DualM	odeSPK1.1_v1.	03\test_Default.tx	t
				•
•	III			
•			3	

FIGURE 3-24: CUSTOMIZED SETTINGS TO MERGE

6. Select an output file path to create the merged EEPROM table (.ipf file), and then click **Next**, see Figure 3-25.

FIGURE 3-23: SELECTING OUTPUT FILE NAME AND PATE	FIGURE 3-25:	SELECTING OUTPUT FILE NAME AND PATH
--	--------------	-------------------------------------

Select Destination to Save Output Assign output name and path		iss
Please select output file name and pa	th	1
F:\BM6x Tools\Beta_MP_V2.1.29.47		1.1.ipf Output File

7. Click Generate to generate the EEPROM table (.ipf file), see Figure 3-26.

FIGURE 3-26: GENEI	RATE EEPROM TABLE
--------------------	-------------------

	rate Binary Output the selections		isso
Click Generati	e to continue, or click Back if yo	ou want to review or change set	ting.
Solution (IC) IS206X_ Output File: F:\BM6x Merge Files: F:\BM6x	Only (Customized UI Update, ): 012_DUALMODESPK1.1_E1.0_ Tools\Beta_MP_V2.1.29.4797 Tools\UI Tool\UITool_IS206x_		4\test_UITool_IS20
	m		-

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8. The calibration parameters included in the UI patch file can be selected or ignored and then click **Next**, see Figure 3-27.

**Note:** If the items are selected, the calibration parameters of the . ipf file will over write the parameters in the device.



	isso
Click the check box, the parameters will be decided by following the UI Patch file.	
SYS:RUN-TIME] Device List 1	
SYS:RUN-TIME] Device List 2	
SYS:RUN-TIME] Device List 3	
SYS:RUN-TIME] Device List 4	
SYS:RUN-TIME] Device List 5	
[SYS:RUN-TIME] Device List 6	
SYS:RUN-TIME] Device List 7	
SYS:RUN-TIME] Device List 8	
SYS:RUN-TIME] Device Link priority	
SYS:RUN-TIME] Device A2DP Index	
	Cancel

9. After generating the merged EEPROM table (.ipf file), click **Finish** to exit the wizard, see Figure 3-28.

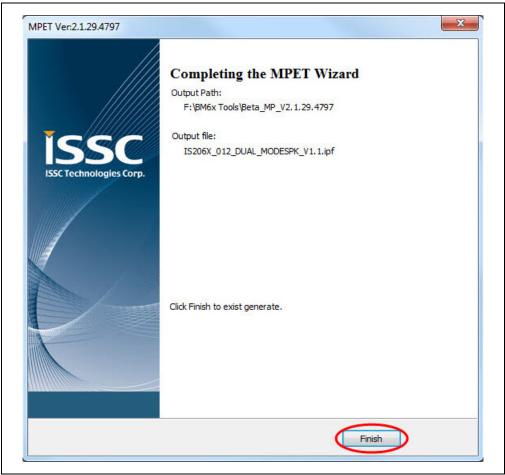


FIGURE 3-28: MERGED EEPROM TABLE

## 3.5 UPDATING EEPROM PARAMETERS

Perform the following actions to update the EEPROM parameters:

1. Set switch SW9 to Test mode, see Figure 3-29.

## FIGURE 3-29: SWITCH SW9 IN TEST MODE



Connect the BM63 UART Connector (P3) port to a host PC using the micro-USB cable, see Figure 3-30. The default LED behavior in Test mode is: LED1 (blue) and LED2 (red) will be ON.

# <image>

## FIGURE 3-30: EEPROM PARAMETER SETUP

**Note:** Download and install the EEPROM tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration EEPROM\_Tool\_V2.1.29.4800 is used.

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3. Open the EEPROM tool and a window displays, see Figure 3-31.

EEPROM_Tool Ver:2.1.29.4800	
	Міскоснір
INTERFACE	
COM Port COM7 -	
IC/Module Identify MPSE Name:	
WRITE EEPROM	
File Path	Write
	Exit

FIGURE 3-31: EEPROM TOOL

4. Specify the COM Port and click IC/Module Identify, see Figure 3-32.

EPROM_Tool Ver:2.1.29.4800	
	Міскоснір
INTERFACE 1 COM Port COM7 -	2
IC/Module Identify MPSE Name: 15205X 012 DUALN	AL_SPK_V1.1 HODESPK1.1_E1.0_BETA
WRITE EEPROM	
File Path	Write
	Exit
	Exit

## FIGURE 3-32: EEPROM TOOL SETTINGS

5. Click **Browse** and select the generated patch file (.ipf) to write to the EEPROM parameter table on the BM63 EVB, see Figure 3-33.

**Note:** The patch file (.ipf) is generated using the MPET tool. For information on generating the patch file, refer to **3.4.3** "**MPET Tool Configuration**".

FIGURE 3-33: LOADING GENERATED PATCH FILE

	MICROCHI	IP
INTERFACE	Æ	
COM Port	t COM7 -	
IC/Modu	Is206XGM_012_DUAL_SPK_V1.1           IS206X_012_DUALMODESPK1.1_E1.0_BETA	
WRITE EEP		
WRITE EEP File Path	F:\BM6x Tools\Beta_MP_V2.1.29.4797\JS206X_012_DAULMODESPK1.1_FULL_CLS2_J2S(BM	
	F:\BM6x Tools\Beta_MP_V2.1.29.4797\JS206X_012_DAULMODESPK1.1_FULL_CLS2_J2S(BM	

 Click Write to program the EEPROM parameters on the BM63 EVB. After programming the EEPROM parameters, a message is displayed. Click OK as illustrated in Figure 3-34.

	MICROCHIP
INTERFACE COM Port COM7 -	
IC/Module Identify MPSE Name: IS206XC Iteoney Messag	
WRITE EEPROM	Write Finish
File Path F:\BM6x Tools\Beta_MP_	OK DESPK1.1_FULL_CLS2_J2S(BM
	Exit

FIGURE 3-34: WRITE EEPROM

7. Click **Exit** and remove the micro-USB cable. Then set switch SW9 to Flash Application mode (see Figure 3-35) and reboot.

### FIGURE 3-35: SWITCH SW9 IN FLASH APPLICATION MODE



## 3.6 UPDATING FLASH CODE

Flash programming is required to update the firmware with a newer version or a specific version. To update the flash code, perform the following actions:

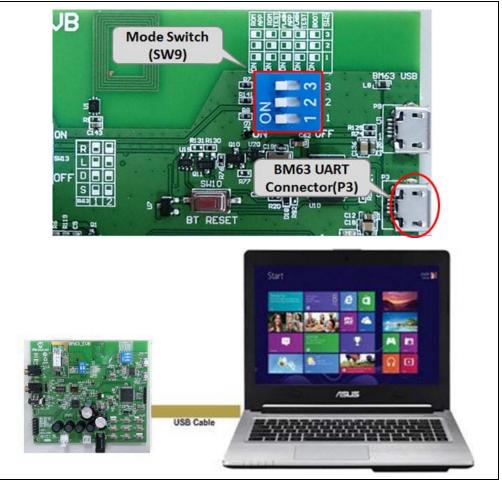
1. Set switch SW9 to Write Flash mode, see Figure 3-36.

FIGURE 3-36: SWITCH SW9 IN WRITE FLASH MODE



Connect the BM63 UART connector (P3) port to a host PC using a micro-USB cable, as illustrated in Figure 3-37. The default LED behavior in Write Flash mode is: LED1 (blue) and LED2 (red) will blink.



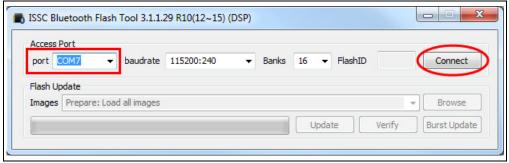


**Note:** Download and install the isbtflash.exe firmware update tool, which is available on the Microchip web site: www.microchip.com/BM63. For this demonstration, flash code Dual Spk V1\_1 svn version 6158 is used.

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3. Open the isbtflash.exe firmware update tool on a host PC. Specify the COM Port and then click Connect, as illustrated in Figure 3-38.

#### FIGURE 3-38: ISBTFLASH TOOL



4. Click **Browse** to select the Flash code files (.hex), downloaded from the Microchip web site, see Figure 3-39.

·	rate 115200:240 - Banks 16 - FlashI	D 1CDA Disconnec	t	
Flash Update Images Prepare: Load all ima	ages	- Browse		
Open	and the second se	methy from and		<u> </u>
	Is  Firmware  Dual Spk V1_1 svn version 6158	•	<b>€</b> ∳ Search Du	al Spk V1_1 svn vers
Organize 👻 New folde	r			= • 🔳 🌘
☆ Favorites	Name	Date modified	Туре	Size
E Desktop	BT5506_SHS_FLASH.H00	5/5/2016 11:42 AM	H00 File	181 KB
📕 Downloads	BT5506_SHS_FLASH.H01	5/5/2016 11:42 AM	H01 File	181 KB
E Recent Places	BT5506_SHS_FLASH.H02	5/5/2016 11:42 AM	H02 File	161 KB
	BT5506_SHS_FLASH.H03	5/5/2016 11:42 AM	H03 File	183 KB
🥽 Libraries	BT5506_SHS_FLASH.H04	5/5/2016 11:42 AM	H04 File	156 KB
Documents	BT5506_SHS_FLASH.H05	5/5/2016 11:42 AM	H05 File	150 KB
👌 Music	BT5506_SHS_FLASH.H06	5/5/2016 11:42 AM	H06 File	172 KB
E Pictures	BT5506_SHS_FLASH.H07	5/5/2016 11:42 AM	H07 File	181 KB
Subversion	BT5506_SHS_FLASH.H08	5/5/2016 11:42 AM	H08 File	171 KB
🛃 Videos	BT5506_SHS_FLASH.H09	5/5/2016 11:42 AM	H09 File	167 KB
	BT5506_SHS_FLASH.H10	5/5/2016 11:42 AM	H10 File	45 KB
🖳 Computer	BT5506_SHS_FLASH.H11	5/5/2016 11:42 AM	H11 File	105 KB
	BT5506_SHS_FLASH.H12	5/5/2016 11:42 AM	H12 File	112 KB
📬 Network	BT5506_SHS_FLASH.H13	5/5/2016 11:42 AM	H13 File	45 KB
	BT5506_SHS_FLASH.H14	5/5/2016 11:42 AM	H14 File	45 KB
	BT5506_SHS_FLASH.H15	5/5/2016 11:42 AM	H15 File	45 KB
	me: "BT5506_SHS_FLASH.H15" "BT5506_SHS_FLAS		- Eirmunro In	nage and DSP code 🔻

#### FIGURE 3-39: LOADING FLASH CODE FILES

5. Click **Update** to write the Flash code on the BM63 module, Figure 3-40.

**Note:** Alternately, the user can click **Burst Update** to write the Flash code which is faster than **Update**.

Access Port						
port COM	7 👻 baudrate	115200:240	Banks 1	6 - FlashID	1CDA	Disconnect
Flash Updat	e					
Images Pro	epare: Load all images	5			+	Browse
						1.2

FIGURE 3-40: UPDATING FLASH CODE

6. After the Flash code update, click **Disconnect** and then remove the micro-USB cable. Set SW9 to Flash Application mode (see Figure 3-35) and then reboot.

## 3.7 UPDATING MCU PARAMETERS

The on-board MCU is pre-programmed for dual-mode, and the MCU parameters needs to be changed for other applications. To update the MCU parameters, perform these actions:

- 1. Plug the 15V DC adapter into the P2 jack to supplying power to the MCU.
- 2. Connect the MPLAB REAL ICE/MPLAB ICD 3/PICkit 3 to ICSP header J5 and then connect it to a host PC using the USB cable.

**Note:** Download and install the MPLAB X IDE tool, which is available on the Microchip web site: www.microchip.com/mplab/mplab-x-ide.

3. Ensure that a jumper on JP33 is connected. Open the MPLAB X IDE tool and a window displays, see Figure 3-41.

	ngs Help				
Select Dev	ice and Tool			Results	
Family:	All Families		-		
Device:	PIC18F85J10		- Appl	y Pass Co	
		5. 1753b		Fail Co	
Tool:	ICD 3 S.No : Л	T153110575	• Conne		
-		Erece		Venfy	d av s av s
	Program	Erase	Read	Veniy	Blank Check
Source: P	lease click on brow	vse button to import a hex fil	le		Brows
SQTP: P	lease click on brow	vse button to import SQTP fi	le		Brows
0.0					± Less
					- 1000
tput					
6-01-14T	12:24:51+0800- C	ompleted loading IPE.			

FIGURE 3-41: MPLAB<sup>®</sup> X IDE TOOL

4. From Settings, select "Advanced Mode", see Figure 3-42.

		Help					
Sele		Advanced Mode			Results		
Far	~	Erase All before Program	-				
	~	Auto Download Firmware		<i>c</i>	Checksu	m: 7ABE	
De		Manual Download Firmware		Apply	Pass Cou	nt: 4	
To	0	Hold in Reset		Connect	Fail Cou	at: 1	
10		Release from Reset	•	Connect	Total Cou	nt: 5	
		Communication					
	3	Program 💆 Eras	e	Read	Verify	P B	llank Check
Sou	ce:	Please click on browse button to import	a hex file				Browse
	L	Please click on browse button to import					Brows
200		lease click on provise bollon to import	10 Q 11 110				DIOVA
							± Less
	_						
tput							
6-01	-141	12:24:51+0800- Completed loading IP	ΡĒ.				

FIGURE 3-42: ADVANCED MODE SETTINGS

5. The MPLAB X IDE tool displays a window with various options (tabs) to configure the parameters. Click **Power** tab, and then enable **Power Target Current from Tool**, as illustrated in Figure 3-43.

View Settings Help	Voltage Settings				
<ul> <li>Operate</li> </ul>					
😂 Power	VDD:	3.25	•]		
	VPP:	3.25	+	N/A	
Memory	VDD Nom:	3.25	•	N/A	
	VDD App:	3.25	+	N/A	
Environment					
• SQTP					Reset Voltages
Production Mode	ICSP Option	is oltage Program			
Settings		Target Circuit fi			☐ High Voltage on MCLF
Log out					

#### FIGURE 3-43: POWER TARGET CURRENT FROM TOOL

6. Select **Operate** tab, click **Connect** to connect with the MPLAB ICD3, as illustrated in Figure 3-44. Click **Browse** to load the dual-mode PIC18 code, and then click **Program** to program it.

e View Settings Help		
\varTheta Operate	Select Device and Tool Family: All Families	OFF Checksum: 7ABE
Power	Tool: ICD 3 S.No : JIT155110575  Connect 2	Pass Count         4           Fail Count         1           Total Count         5
Memory	4 Program ZErace Lead Ver	ify Blank Check
Environment	Source: Please click on browse button to import a hex file SQTP: Please click on browse button to import SQTP file	3 Browse
• SQTP	Output           2016-01-14T12:24-51+0800- Completed loading IPE.	
Production Mode		
<ul> <li>Settings</li> </ul>		

FIGURE 3-44: DEVICE AND TOOL SETTING

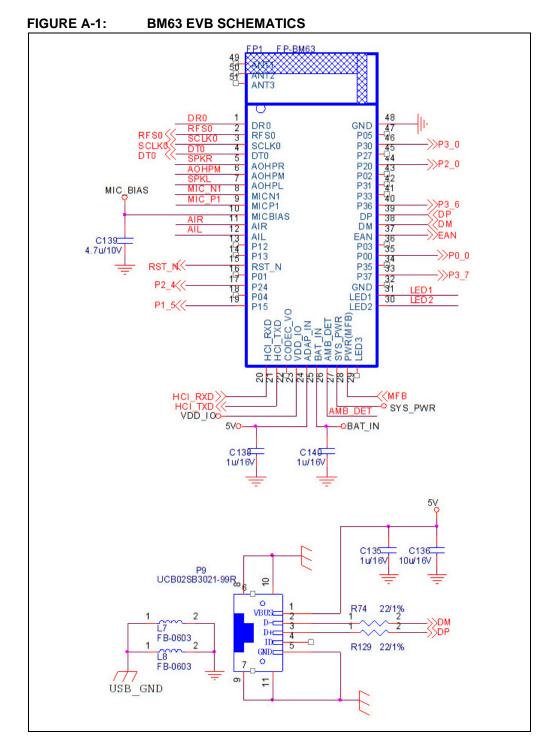
NOTES:



# **BM63 EVB USER'S GUIDE**

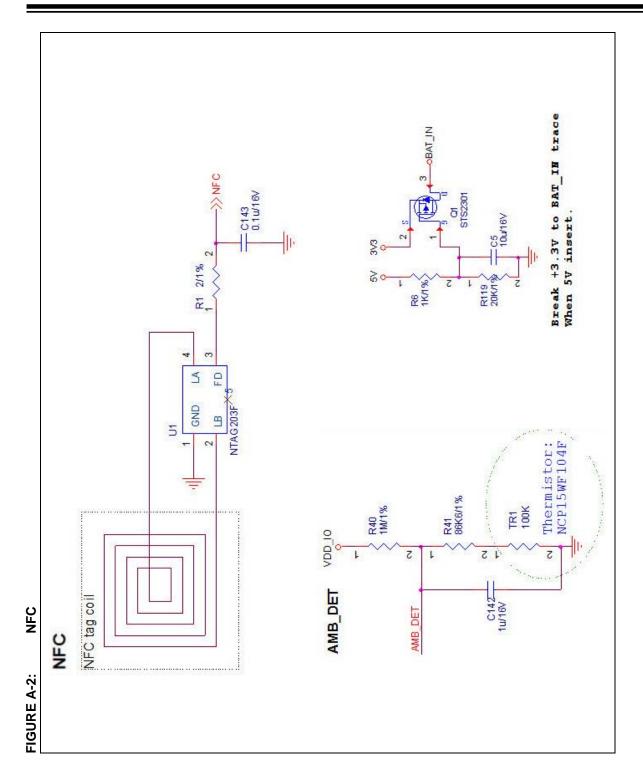
# **Appendix A. Schematics**

## A.1 REFERENCE SCHEMATICS

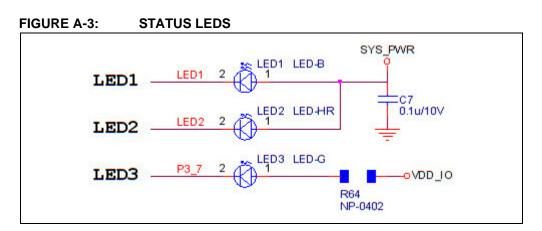


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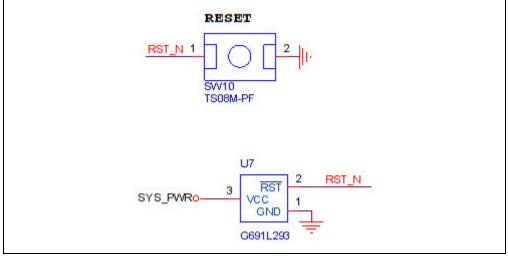
# BM63 EVB User's Guide



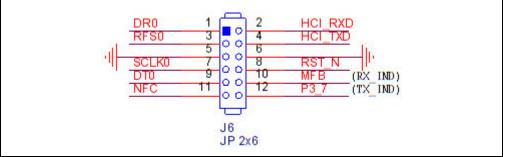
# **Schematics**

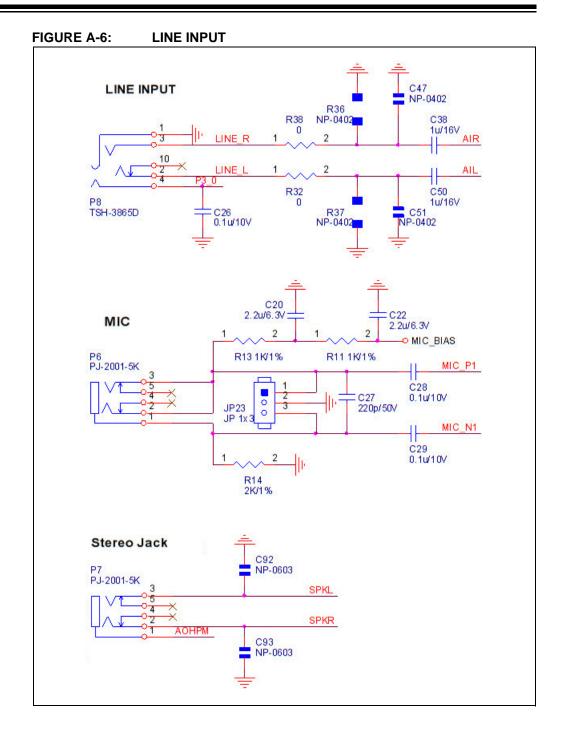


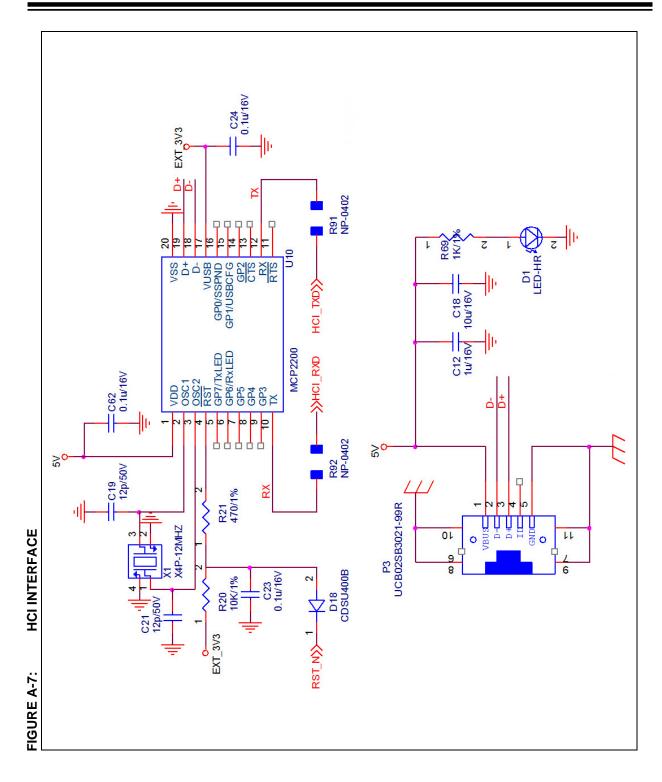


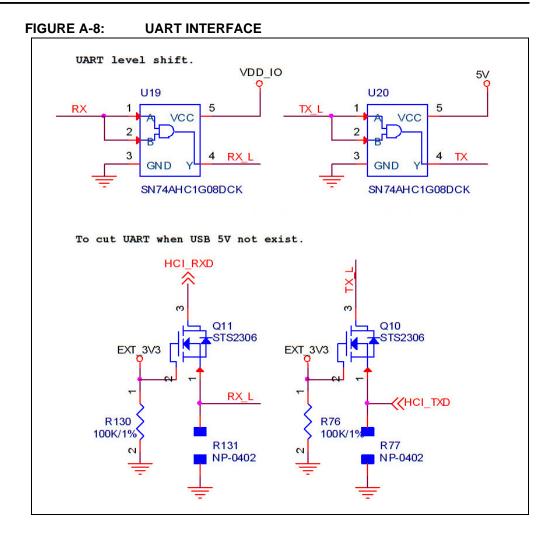




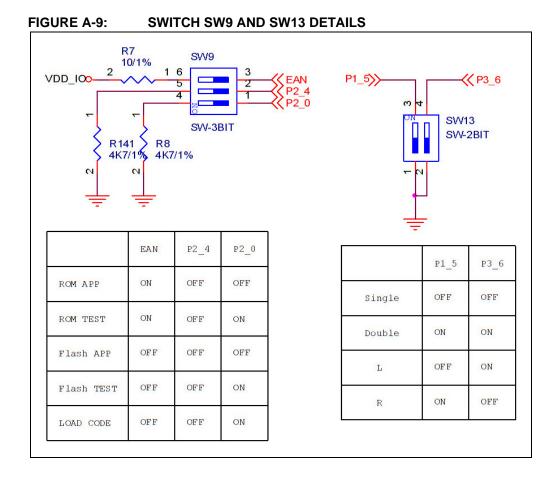






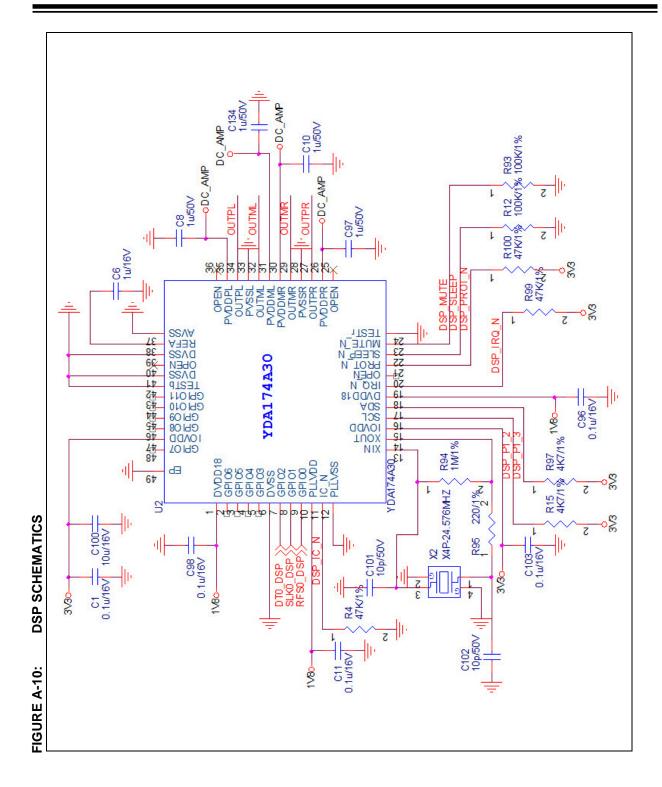


# **Schematics**



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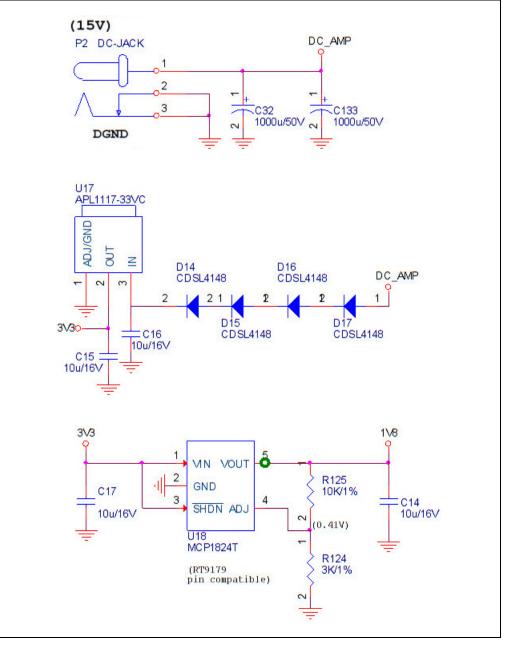


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#### FIGURE A-11: DSP/MCU INTERFACE

TP6 1 TP7 1	DSP_IC_N DSP_SLEEP	
TP9 1 TP10	DSP_IRQ_N DSP_IRQ_N DSP_PROT_N	
TP11 TP12	DSP_P1_3 DSP_P1_2	





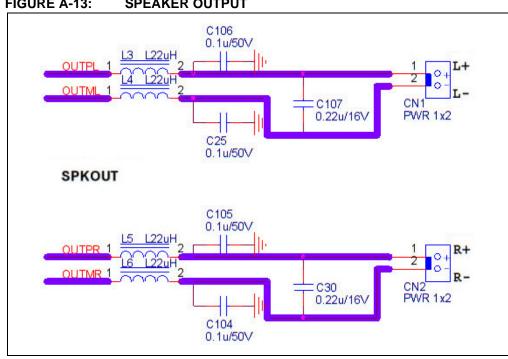
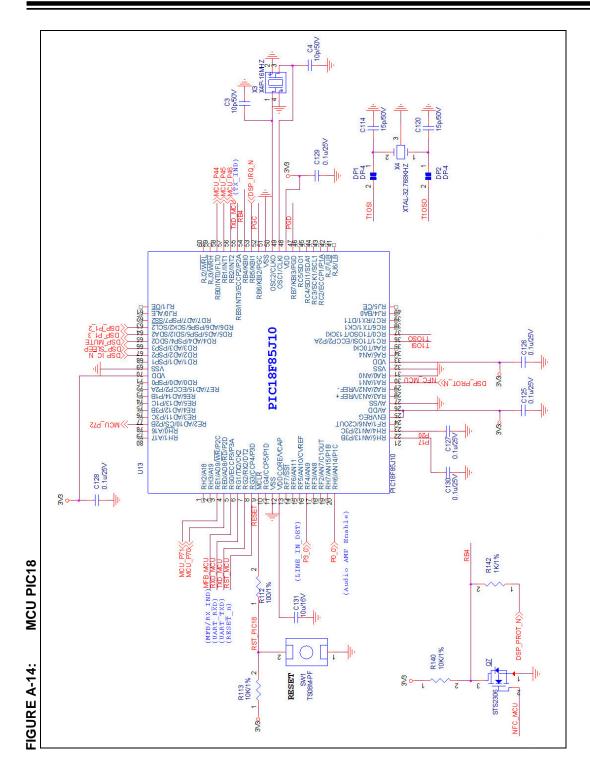
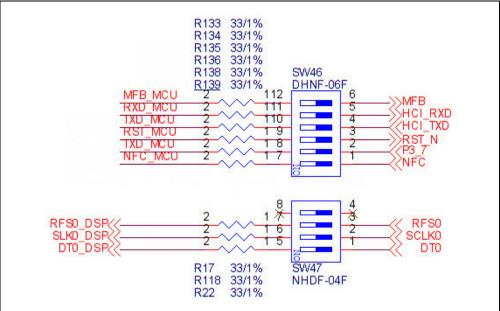
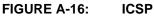


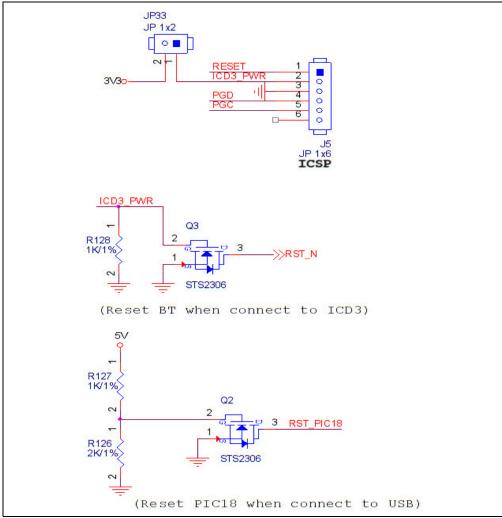
FIGURE A-13: SPEAKER OUTPUT





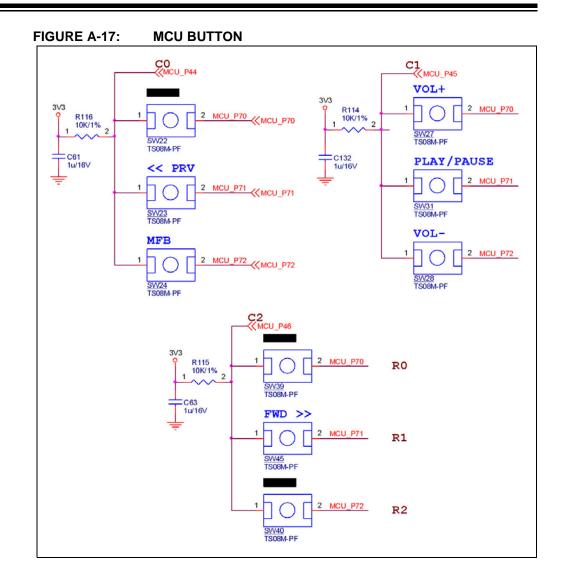






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# **Schematics**



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