Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

MikroElektronika
MIKROE-782

For any questions, you can email us directly:
sales@integrated-circuit.com

user's guide to

GAMING shield

mikromedia

Gaming shield is an extension board for your mikromedia that provides you with standard gaming buttons and audio speakers, so you can build and play your favorite arcade games.

MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

TO OUR VALUED CUSTOMERS

I want to express my thanks to you for being interested in our products and for having confidence in Mikroelektronika.

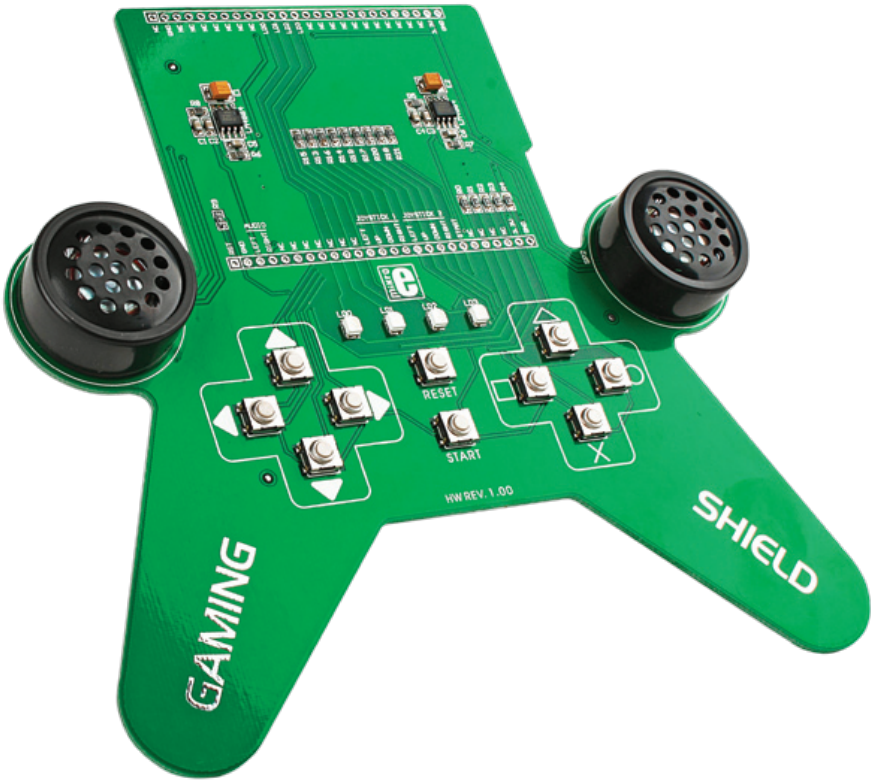
The primary aim of our company is to design and produce high quality electronic products and to constantly improve the performance thereof in order to better suit your needs.

Nebojsa Matic
General Manager

Table of Contents

Introduction to mikromedia GAMING shield

mikromedia GAMING shield is an extension board pin-compatible with several mikromedia boards from mikroElektronika that enables users to provide **button controls** and **audio interface** to your base mikromedia board, which is specially suitable for creating your own gaming console. GAMING Shield comes with convenient **stacking connectors,** so you can easily connect not only mikromedia, but other shields as well, such as **Battery boost shield**. It's carefully designed to fit perfectly into anyone's hands, and it has convenient holders which provide great stability when board is connected to mikromedia.



Mikromedia compatibility

mikromedia for XMEGA

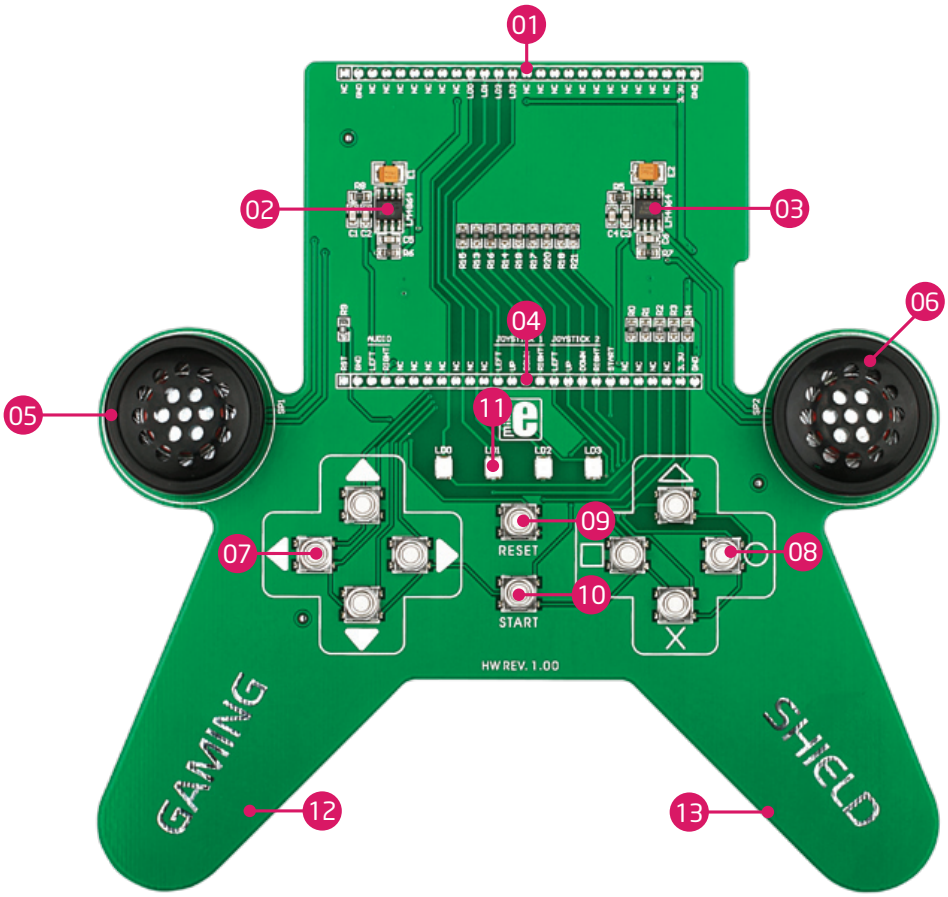
mikromedia for dsPIC33

mikromedia for PIC18FJ

Board is compatible with **mikromedia for PIC18FJ v105, mikromedia for dsPIC33 v105 & v106** and **mikromedia for XMEGA v110**. All of the mentioned boards can exploit the full potential of the Gaming Shield, including buttons, signal LEDs and audio speakers.

Key Features

01 Top connections pads
02 Left Audio Channel amplifier circuit
03 Right Audio Channel amplifier circuit
04 Bottom connections pads
05 Left Speaker
06 Right Speaker
07 Navigation Joystick
08 Action Joystick
09 Reset Button
10 Start Button
11 Indicator LEDs
12 Left hand grip
13 Right hand grip



System Specification

power supply
Over a USB cable (5V DC)

power consumption
50mA in idle state
(when on-board modules are off)

board dimensions
15.2 x 15.1cm (5.98" x 5.94")

weight
~74g (0.16 lbs)

1. Soldering stacking headers

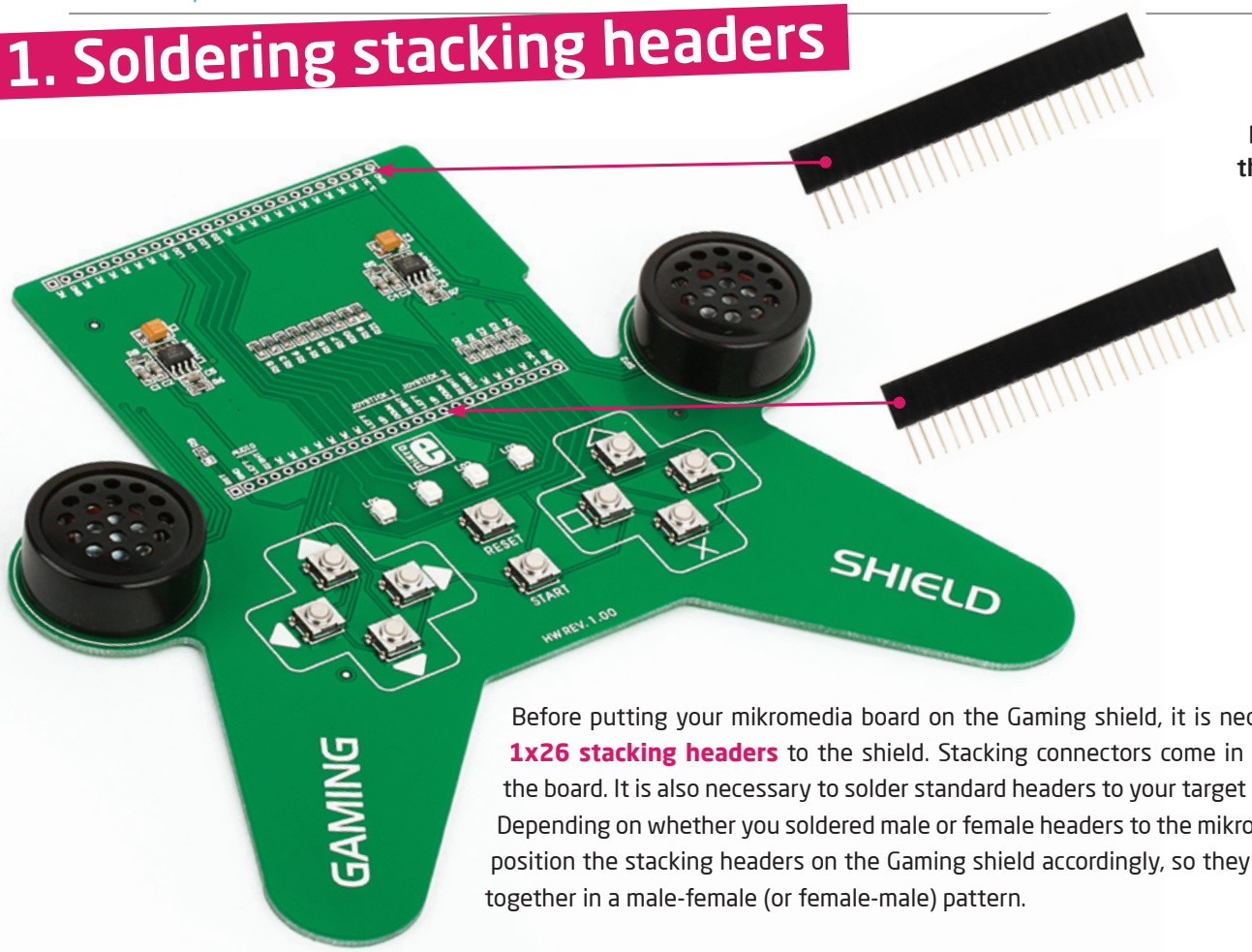


Figure 1-1: Positioning the stacking headers

Before putting your mikromedia board on the Gaming shield, it is neccessary to solder **1x26 stacking headers** to the shield. Stacking connectors come in the package with the board. It is also necessary to solder standard headers to your target mikromedia board. Depending on whether you soldered male or female headers to the mikromedia, you should position the stacking headers on the Gaming shield accordingly, so they can be connected together in a male-female (or female-male) pattern.

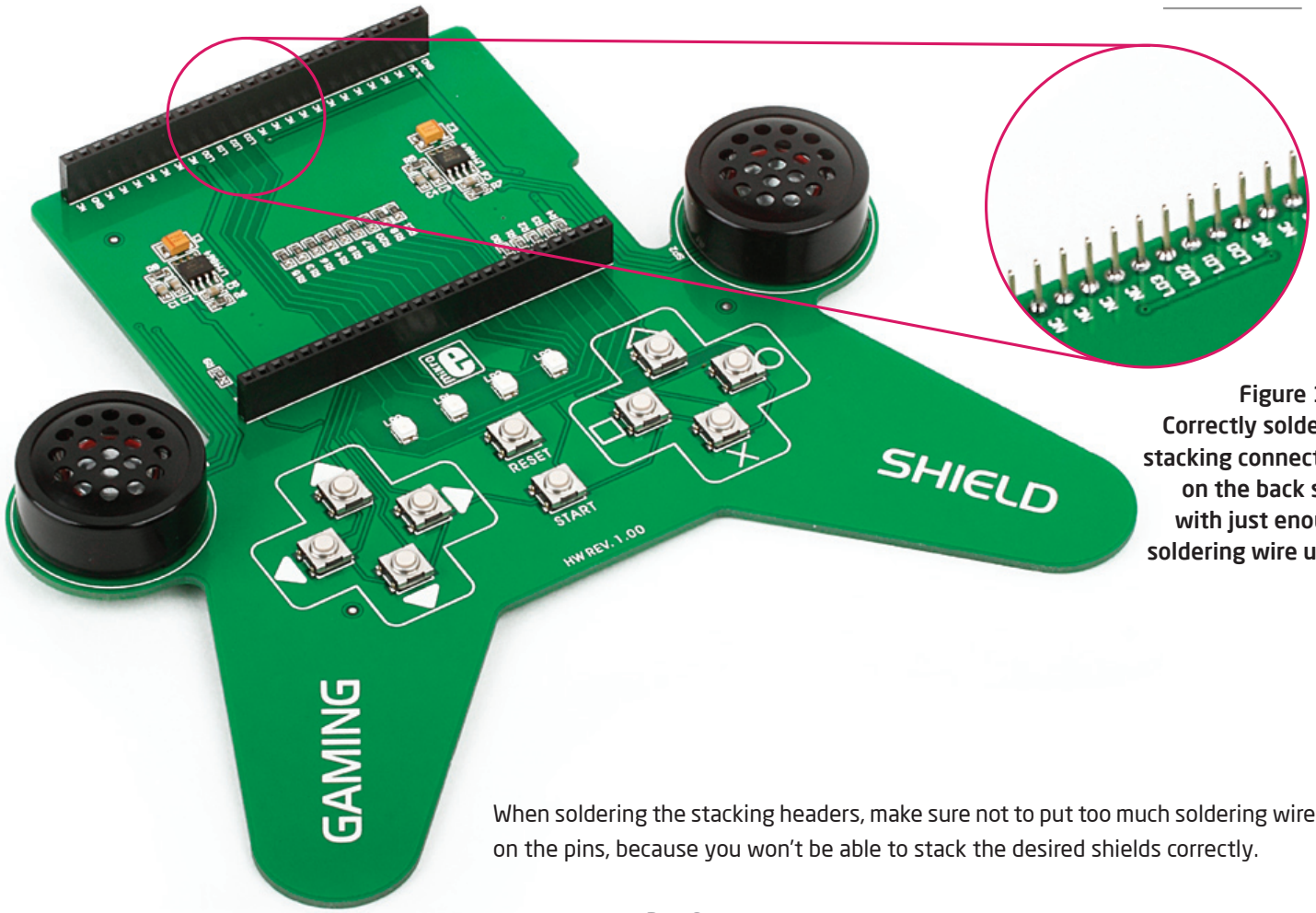


Figure 1-2: Correctly soldered stacking connectors on the back side with just enough soldering wire used

When soldering the stacking headers, make sure not to put too much soldering wire on the pins, because you won't be able to stack the desired shields correctly.

2. Connecting to mikromedias

Once you have soldered the stacking headers, you can connect your mikromedia to the gaming shield. Make sure to connect the boards so that the shapes of mikromedia and top of the gaming shields are aligned.

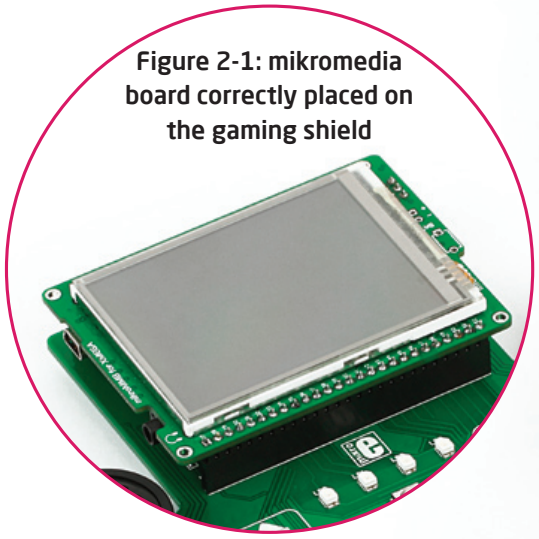


Figure 2-1: mikromedia board correctly placed on the gaming shield

3. Connecting to other shields

When front side is connected with mikromedia, the rear side of the board can be used for stacking other mikromedia shields, such as the **Battery Boost shield**. Make sure to solder the appropriate headers to this add-on shield, and make sure to match the board outlines when connecting them together.

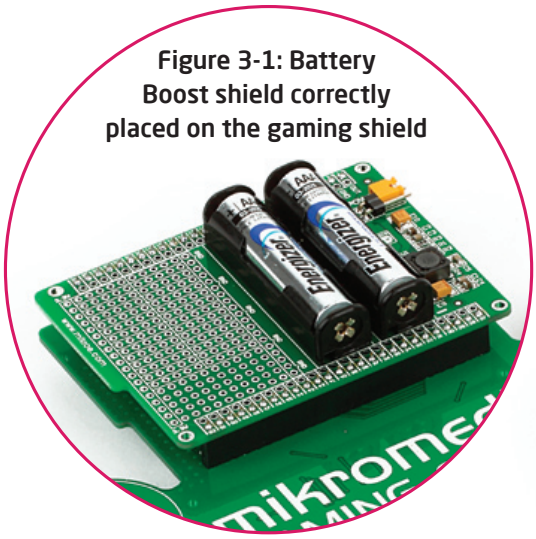


Figure 3-1: Battery Boost shield correctly placed on the gaming shield

4. Control Buttons and signal LEDs

mikromedia Gaming shield provides standard button controls required in most arcade games. There are two sections of buttons for standard gaming functions: **steering** (left, right, up, down), **actions** (triangle, square, x, and circle), but we also added **Start** and **Reset** buttons. Board features four signal LEDs which can be used as indicators of game status, or other activities.

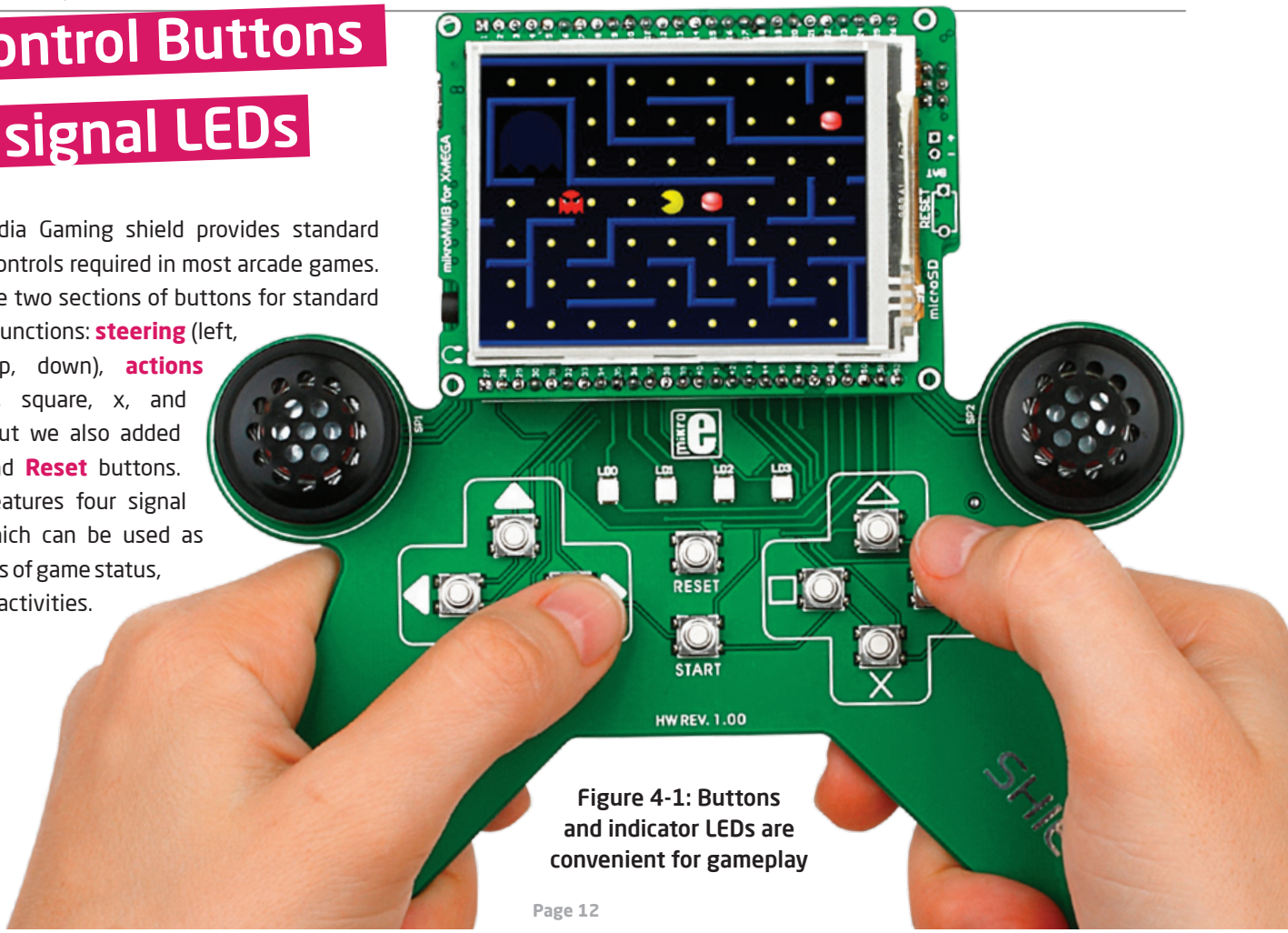


Figure 4-1: Buttons and indicator LEDs are convenient for gameplay

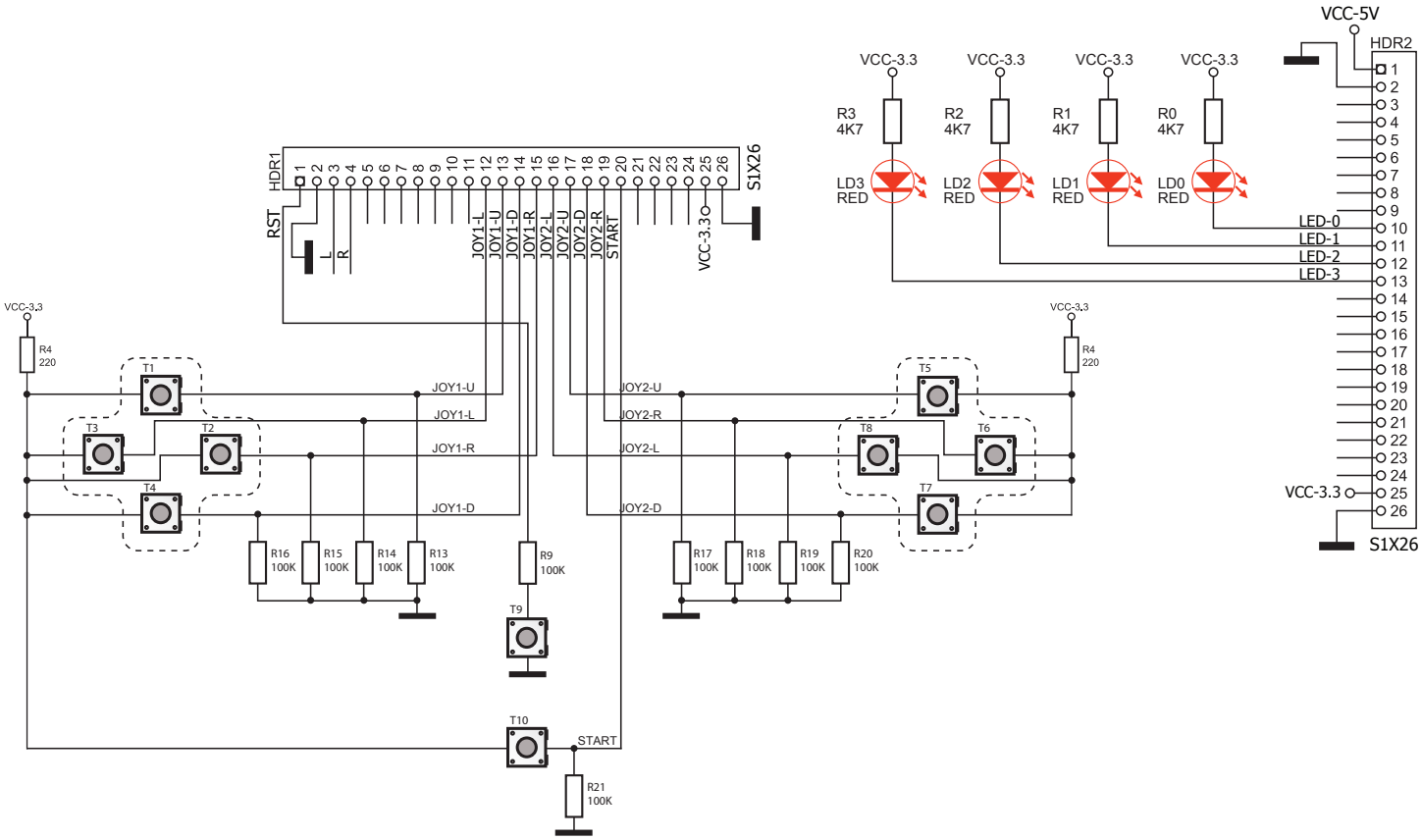


Figure 4-2: Schematics of button and LED connections

5. Audio module

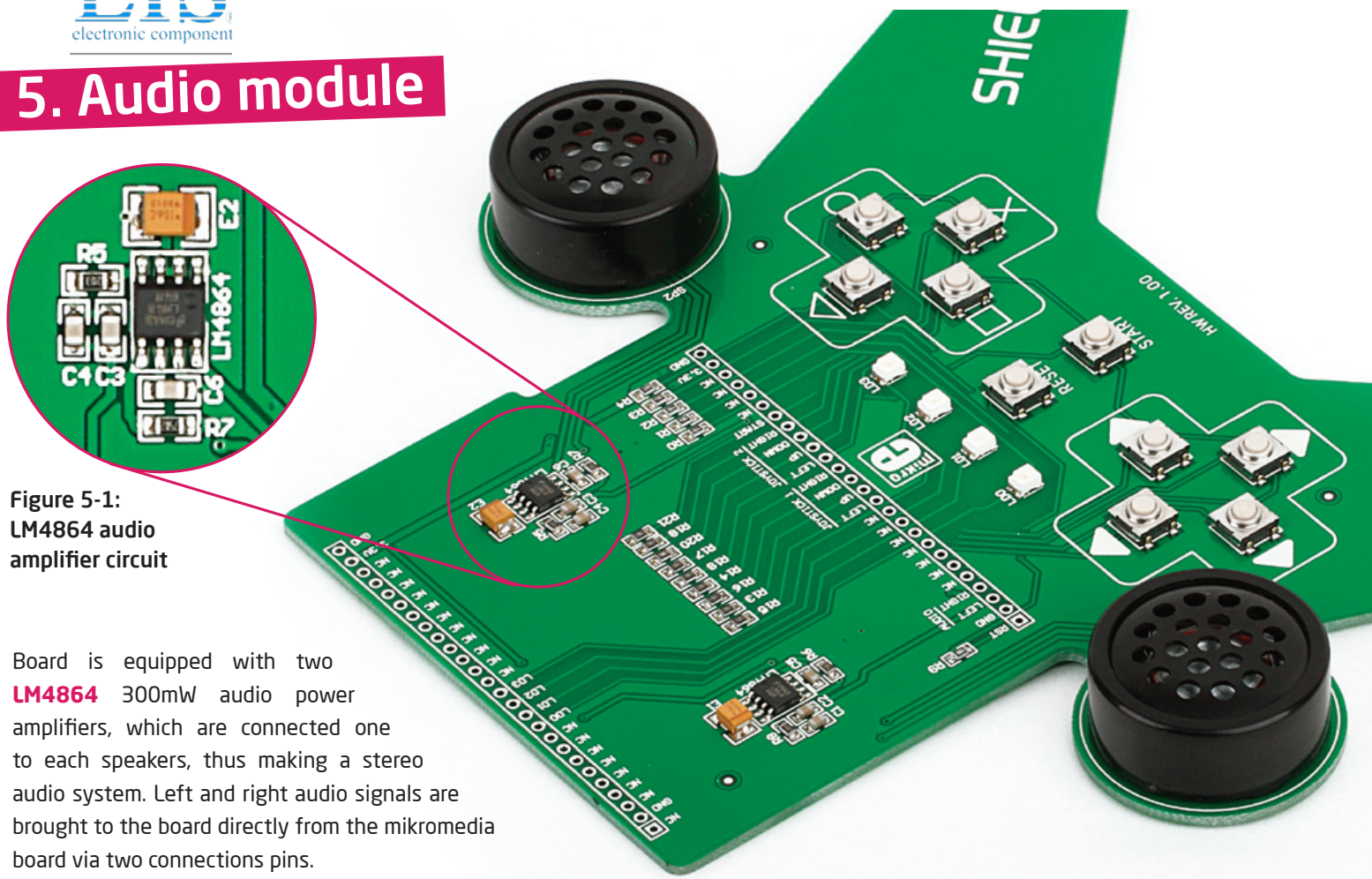


Figure 5-1: LM4864 audio amplifier circuit

Board is equipped with two **LM4864** 300mW audio power amplifiers, which are connected one to each speakers, thus making a stereo audio system. Left and right audio signals are brought to the board directly from the mikromedia board via two connections pins.

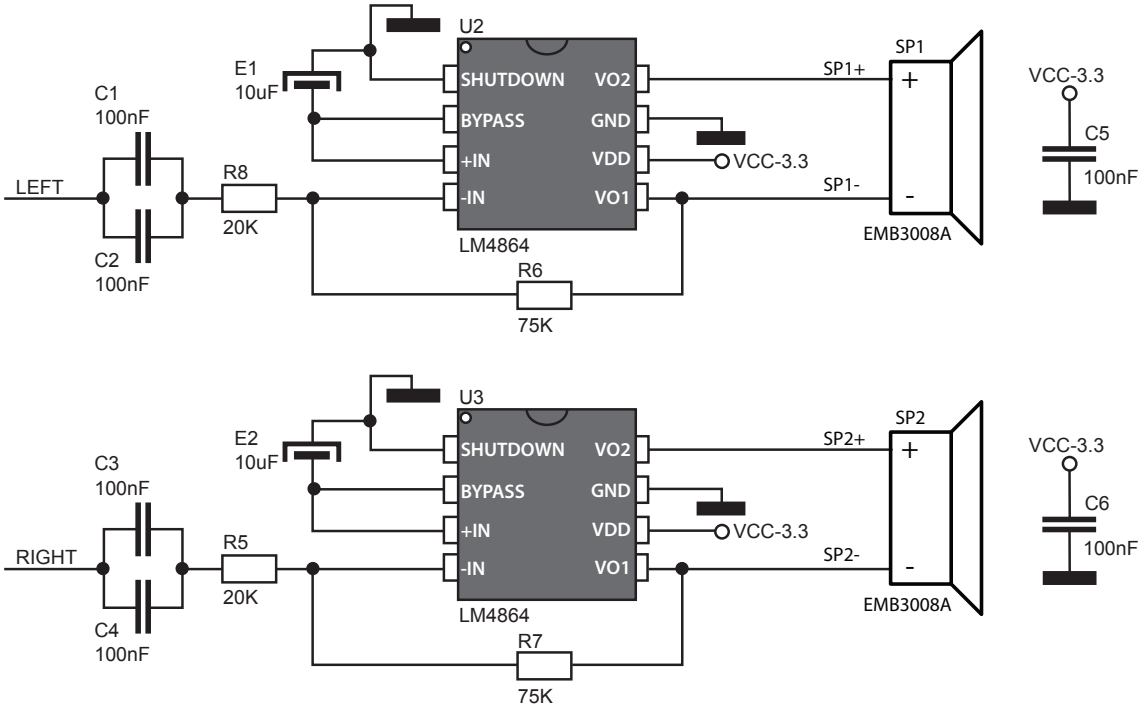
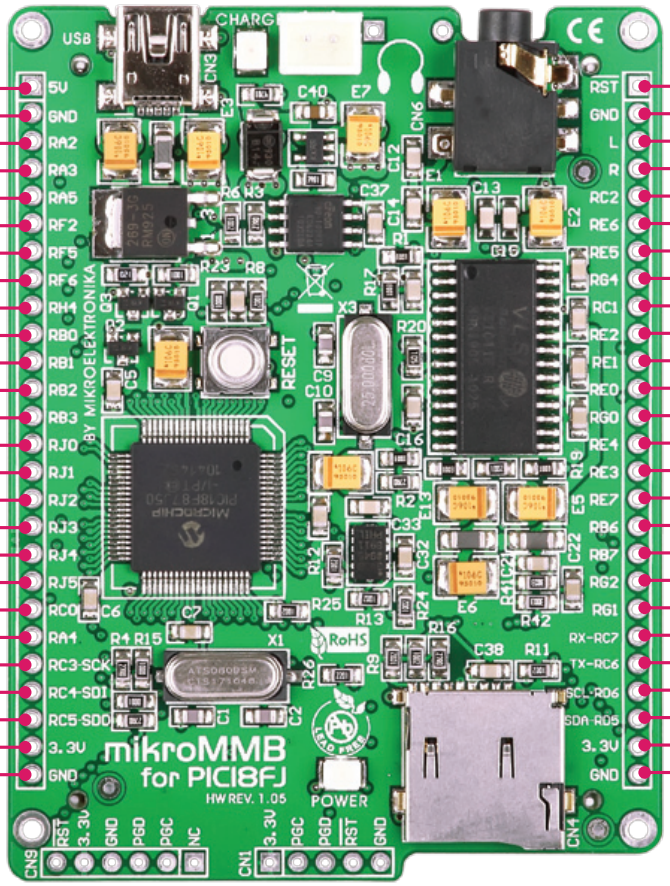


Figure 5-2: Left and right audio amplifier circuit schematics

Gaming pinout on mikromedia for PIC18FJ



Gaming shield functions				Gaming shield function
NC	5V	5V	RST	Reset pin
GND	GND	GND	GND	GND
NC	RA2	RA2	L	left ch.
NC	RA3	RA3	R	right ch.
NC	RA5	RA5	RC2	NC
NC	RF2	RF2	RE6	NC
NC	RF5	RF5	RE5	NC
NC	RF6	RF6	RB4	NC
NC	RH4	RH4	RC1	NC
LED0	RB0	RB0	RE2	NC
LED1	RB1	RB1	RE1	NC
LED2	RB2	RB2	RE0	LEFT
LED3	RB3	RB3	RG0	UP
NC	RJ0	RJ0	RE4	DOWN
NC	RJ1	RJ1	RE3	RIGHT
NC	RJ2	RJ2	RE7	SQUARE
NC	RJ3	RJ3	RB6	TRIANGLE
NC	RJ4	RJ4	RB7	X
NC	RJ5	RJ5	RG2	CIRCLE
NC	RC0	RC0	RG1	START
NC	RA4	RA4	RC7	NC
NC	RC3	RC3	RC6	NC
NC	RC4	RC4	RD6	NC
NC	RC5	RC5	RD5	NC
3.3V	3.3V	3.3V	3.3V	3.3V
GND	GND	GND	GND	GND

LEDS

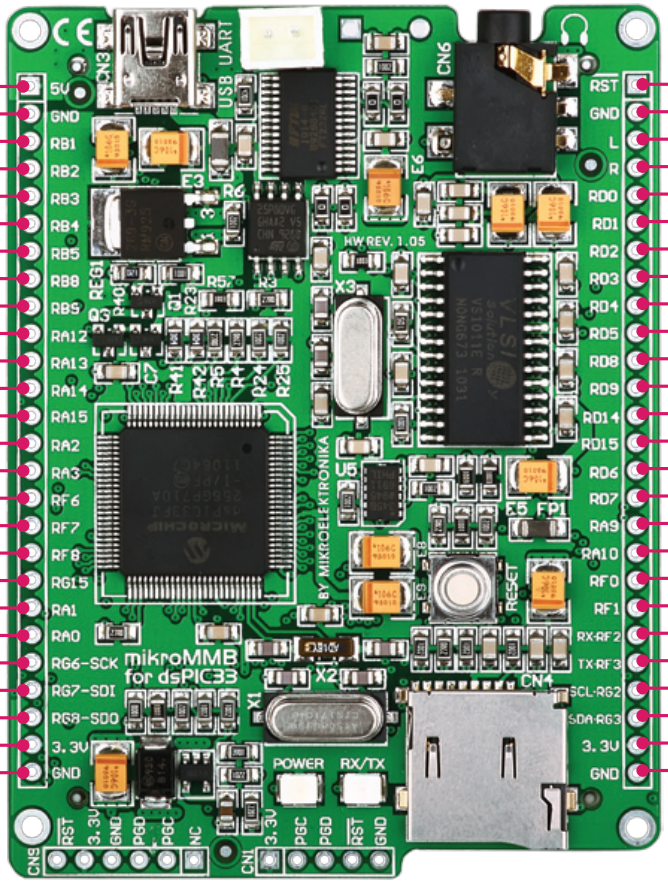
NOTE:
Pins that are not connected (NC) to the gaming shield can be used on the other side of the stacking headers with other shields

audio out

JOYSTICK 1

JOYSTICK 2

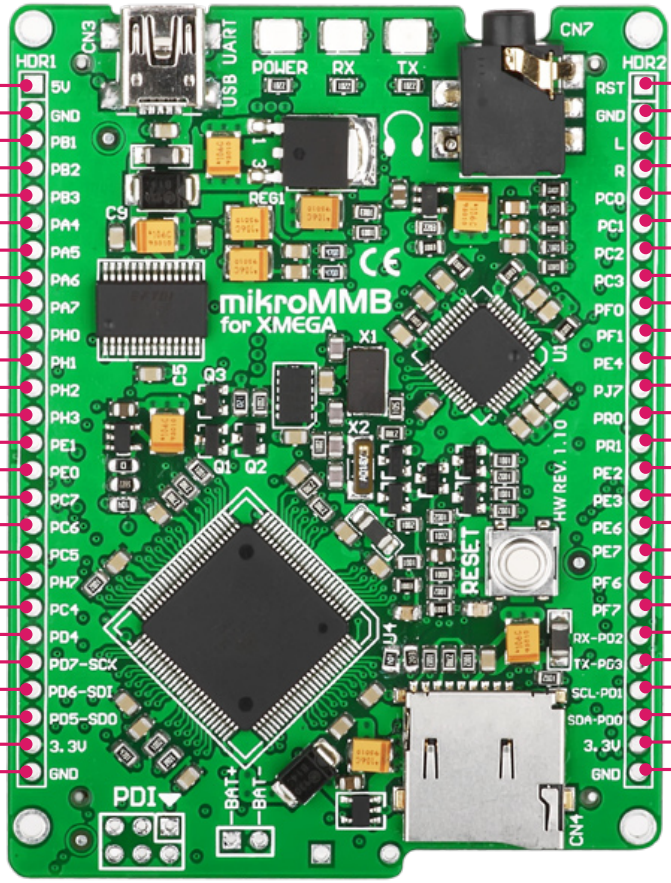
Gaming pinout on mikromedia for dsPIC33



Gaming shield functions			Gaming shield function	
NC	5V	RST	Reset pin	
GND	GND	GND	GND	
NC	RB1	L	left ch.	audio out
NC	RB2	R	right ch.	audio out
NC	RB3	RD0	NC	
NC	RB4	RD1	NC	
NC	RB5	RD2	NC	
NC	RB8	RD3	NC	
NC	RB9	RD4	NC	
LD0 (LEDS)	RA12	RD5	NC	
LD1 (LEDS)	RA13	RD8	NC	
LD2 (LEDS)	RA14	RD9	LEFT	JOYSTICK 1
LD3 (LEDS)	RA15	RD14	UP	JOYSTICK 1
NC	RA2	RD15	DOWN	JOYSTICK 1
NC	RA3	RD6	RIGHT	JOYSTICK 1
NC	RF6	RD7	SQUARE	JOYSTICK 2
NC	RF7	RA9	TRIANGLE	JOYSTICK 2
NC	RF8	RA10	X	JOYSTICK 2
NC	RG15	RF0	CIRCLE	JOYSTICK 2
NC	RA1	RF1	START	
NC	RA0	RF2	NC	
NC	RG6	RF3	NC	
NC	RG7	RG2	NC	
NC	RG8	RG3	NC	
3.3V	3.3V	3.3V	3.3V	
GND	GND	GND	GND	

NOTE:
Pins that are not connected (NC) to the gaming shield can be used on the other side of the stacking headers with other shields

Gaming pinout on mikromedia for XMEGA



Gaming shield functions				Gaming shield function
	NC	5V	RST	Reset pin
	GND	GND	GND	GND
	NC	PB1	L	left ch.
	NC	PB2	R	right ch.
	NC	PB3	PC0	NC
	NC	PA4	PC1	NC
	NC	PA5	PC2	NC
	NC	PA6	PC3	NC
	NC	PA7	PF0	NC
LEDS	LD0	PH0	PF1	NC
LEDS	LD1	PH1	PE4	NC
LEDS	LD2	PH2	PJ7	LEFT
LEDS	LD3	PH3	PR0	UP
	NC	PE1	PR1	DOWN
	NC	PE0	PE2	RIGHT
	NC	PC7	PE3	SQUARE
	NC	PC6	PE6	TRIANGLE
	NC	PC5	PE7	X
	NC	PH7	PF6	CIRCLE
	NC	PC4	PF7	START
	NC	PD4	PD2	NC
	NC	PD7	PG3	NC
	NC	PD6	PD1	NC
	NC	PD5	PD0	NC
	3.3V	3.3V	3.3V	3.3V
	GND	GND	GND	GND

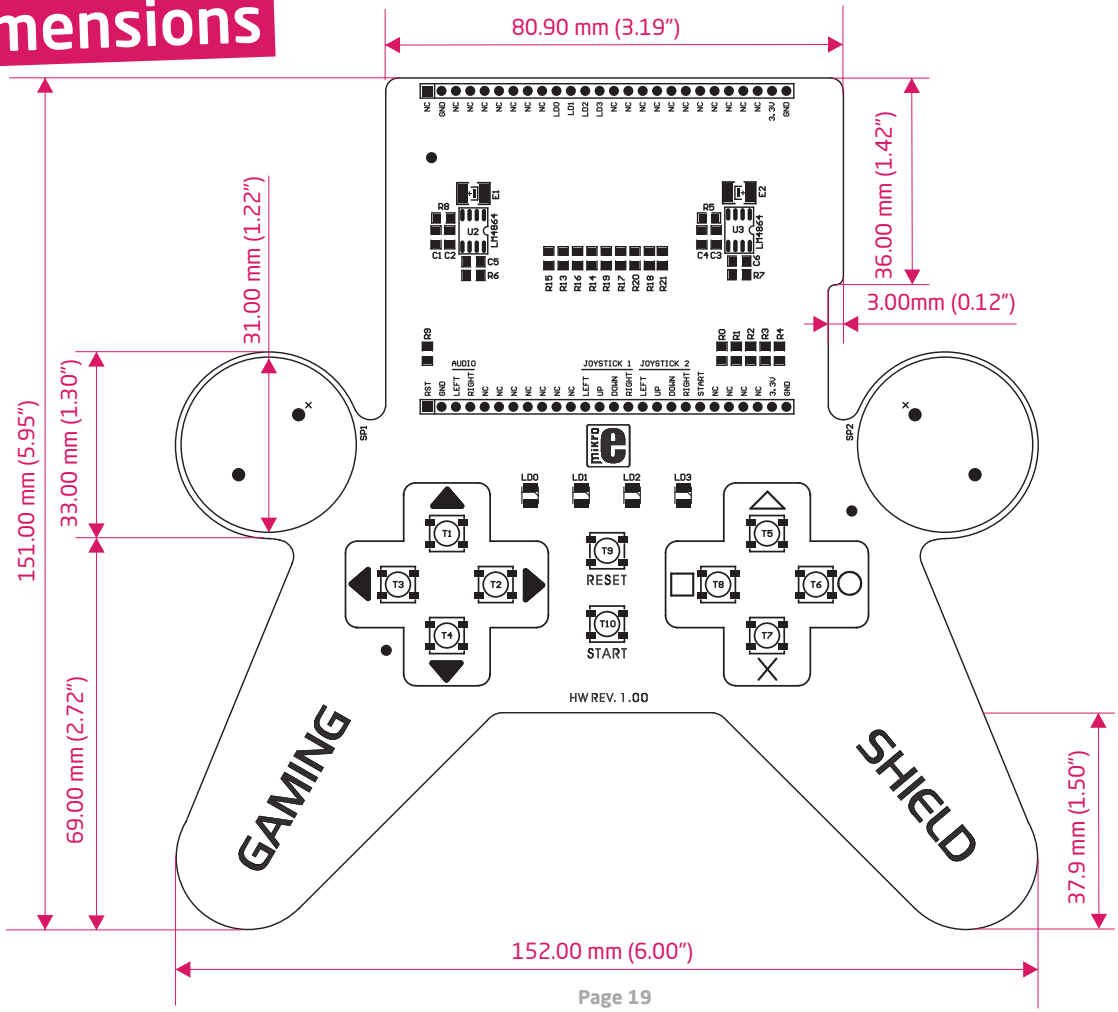
audio out

JOYSTICK 1

JOYSTICK 2

NOTE:
Pins that are not connected (NC) to the gaming shield can be used on the other side of the stacking headers with other shields

7. Dimensions



Notes:

Notes:

Notes:

DISCLAIMER

All the products owned by MikroElektronika are protected by copyright law and international copyright treaty. Therefore, this manual is to be treated as any other copyright material. No part of this manual, including product and software described herein, may be reproduced, stored in a retrieval system, translated or transmitted in any form or by any means, without the prior written permission of MikroElektronika. The manual PDF edition can be printed for private or local use, but not for distribution. Any modification of this manual is prohibited.
MikroElektronika provides this manual 'as is' without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties or conditions of merchantability or fitness for a particular purpose.
MikroElektronika shall assume no responsibility or liability for any errors, omissions and inaccuracies that may appear in this manual. In no event shall MikroElektronika, its directors, officers, employees or distributors be liable for any indirect, specific, incidental or consequential damages (including damages for loss of business profits and business information, business interruption or any other pecuniary loss) arising out of the use of this manual or product, even if MikroElektronika has been advised of the possibility of such damages. MikroElektronika reserves the right to change information contained in this manual at any time without prior notice, if necessary.

HIGH RISK ACTIVITIES

The products of MikroElektronika are not fault – tolerant nor designed, manufactured or intended for use or resale as on – line control equipment in hazardous environments requiring fail – safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines or weapons systems in which the failure of Software could lead directly to death, personal injury or severe physical or environmental damage ('High Risk Activities'). MikroElektronika and its suppliers specifically disclaim any expressed or implied warranty of fitness for High Risk Activities.

TRADEMARKS

The Mikroelektronika name and logo, the Mikroelektronika logo, mikroC, mikroC PRO, mikroBasic, mikroBasic PRO, mikroPascal, mikroPascal PRO, AVRflash, PICflash, dsPICprog, 18FJprog, PSOCprog, AVRprog, 8051prog, ARMflash, EasyPIC5, EasyPIC6, BigPIC5, BigPIC6, dsPIC PRO4, Easy8051B, EasyARM, EasyAVR5, EasyAVR6, BigAVR2, EasydsPIC4A, EasyPSoC4, EasyVR Stamp LV18FJ, LV24-33A, LV32MX, PIC32MX4 MultiMedia Board, PICPLC16, PICPLC8 PICPLC4, SmartGSM/GPRS, UNI-DS are trademarks of Mikroelektronika. All other trademarks mentioned herein are property of their respective companies.
All other product and corporate names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies, and are only used for identification or explanation and to the owners' benefit, with no intent to infringe.

If you want to learn more about our products, please visit our website at www.mikroe.com
If you are experiencing some problems with any of our products or just need additional information, please place your ticket at www.mikroe.com/en/support
If you have any questions, comments or business proposals, do not hesitate to contact us at office@mikroe.com