

user's guide to

GAMING shield

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.



mikromedia

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.

A handwritten signature in white ink, appearing to read 'N. Matic', is positioned above the name and title. The signature is fluid and cursive.

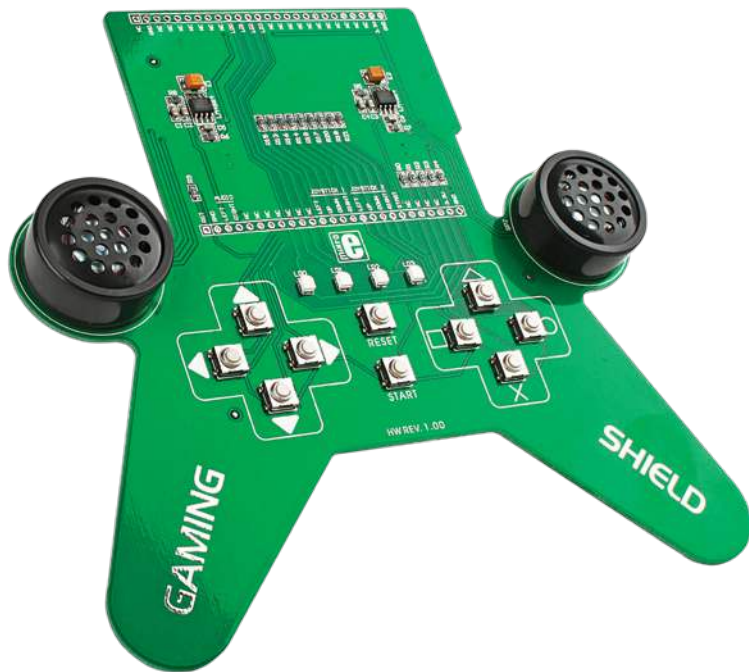
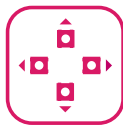
Nebojsa Matic
General Manager

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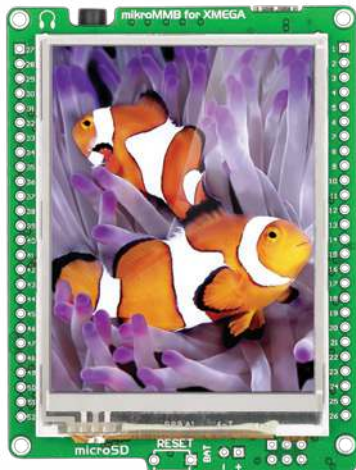
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Introduction to mikromedia GAMING shield

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.



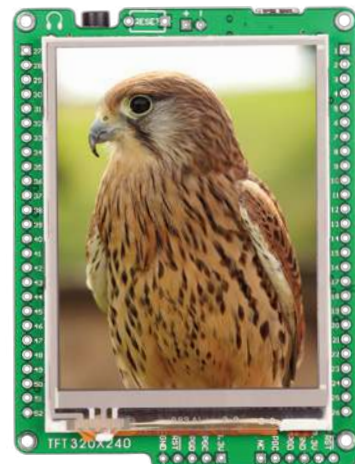
Mikromedia compatibility



mikromedia for XMEGA



mikromedia for dsPIC33

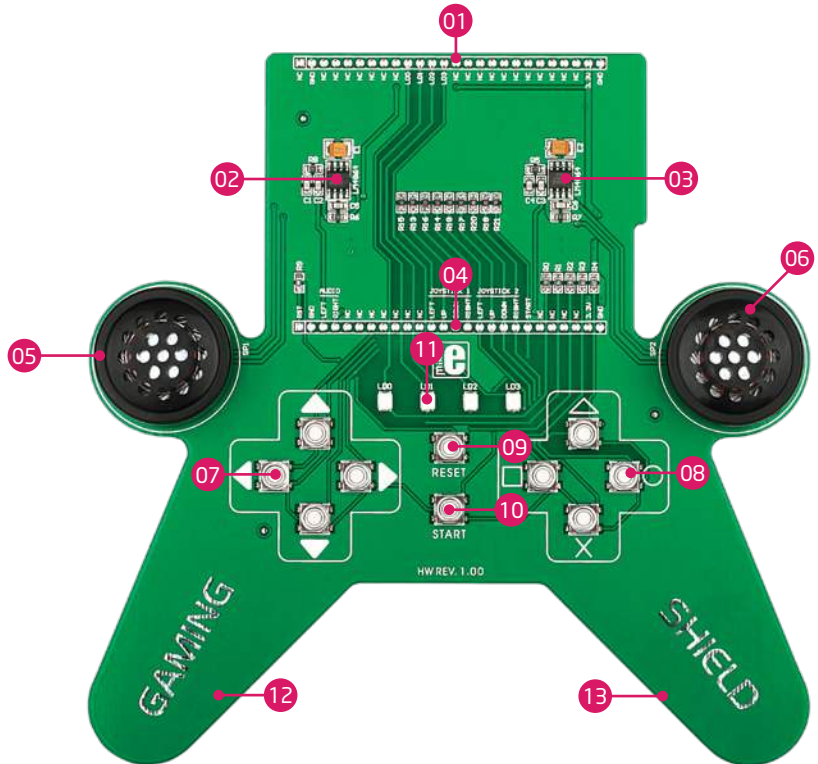


mikromedia for PIC18FJ

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

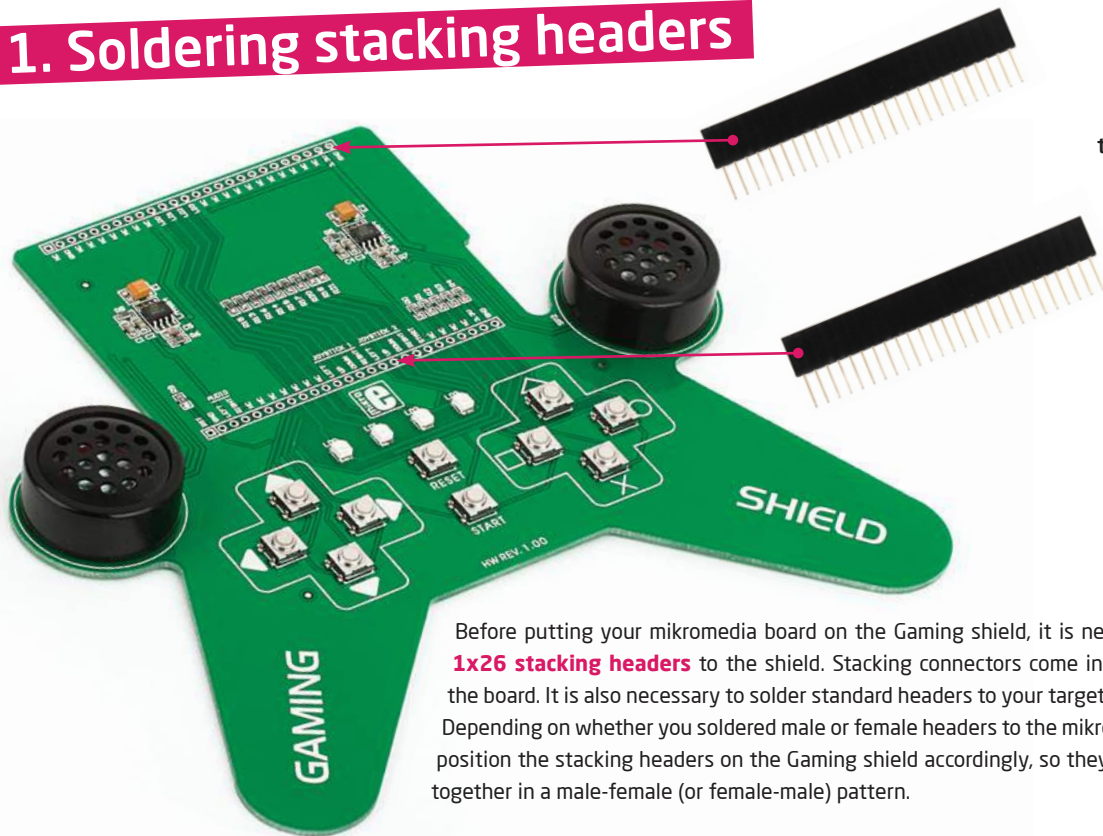


Figure 1-1:
Positioning
the stacking
headers

Before putting your mikromedia board on the Gaming shield, it is necessary 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.

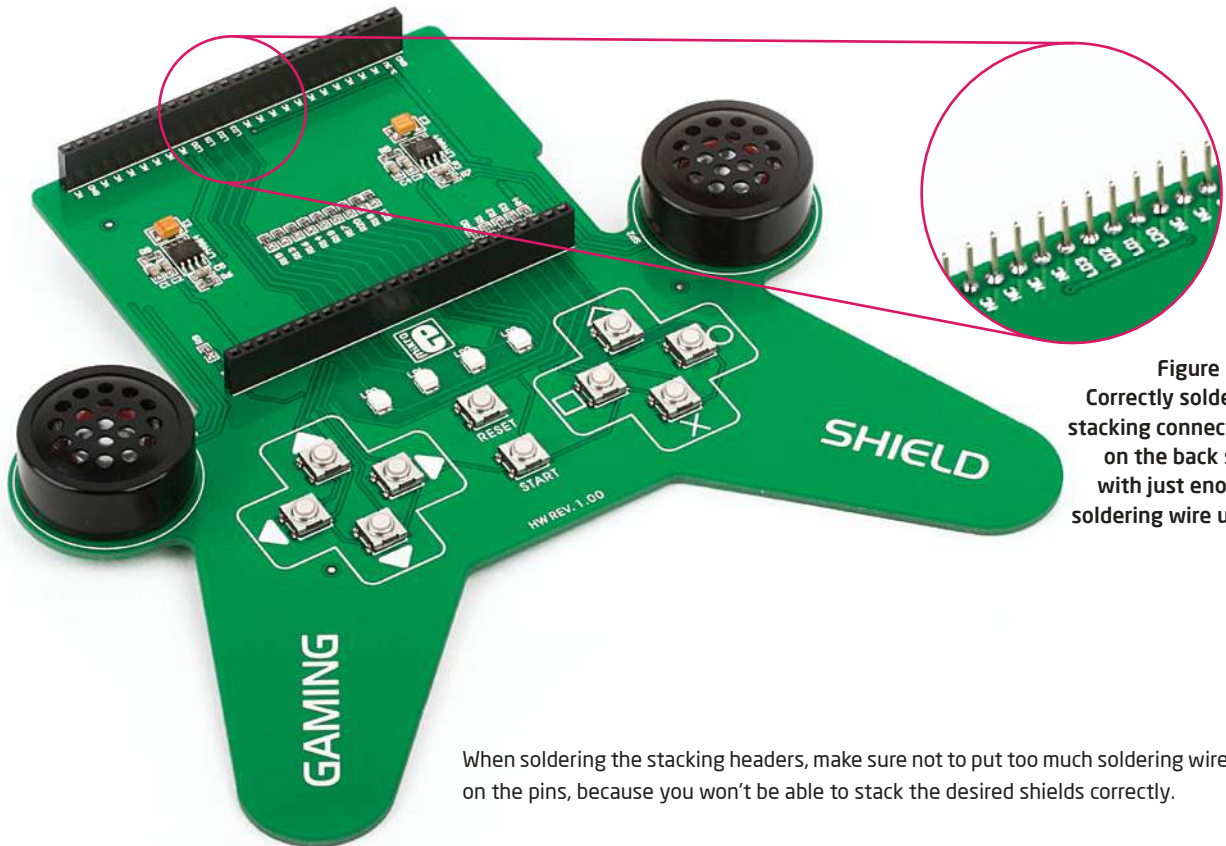


Figure 1-2:
Correctly soldered
stacking connectors
on the back side
with just enough
soldering wire used

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.

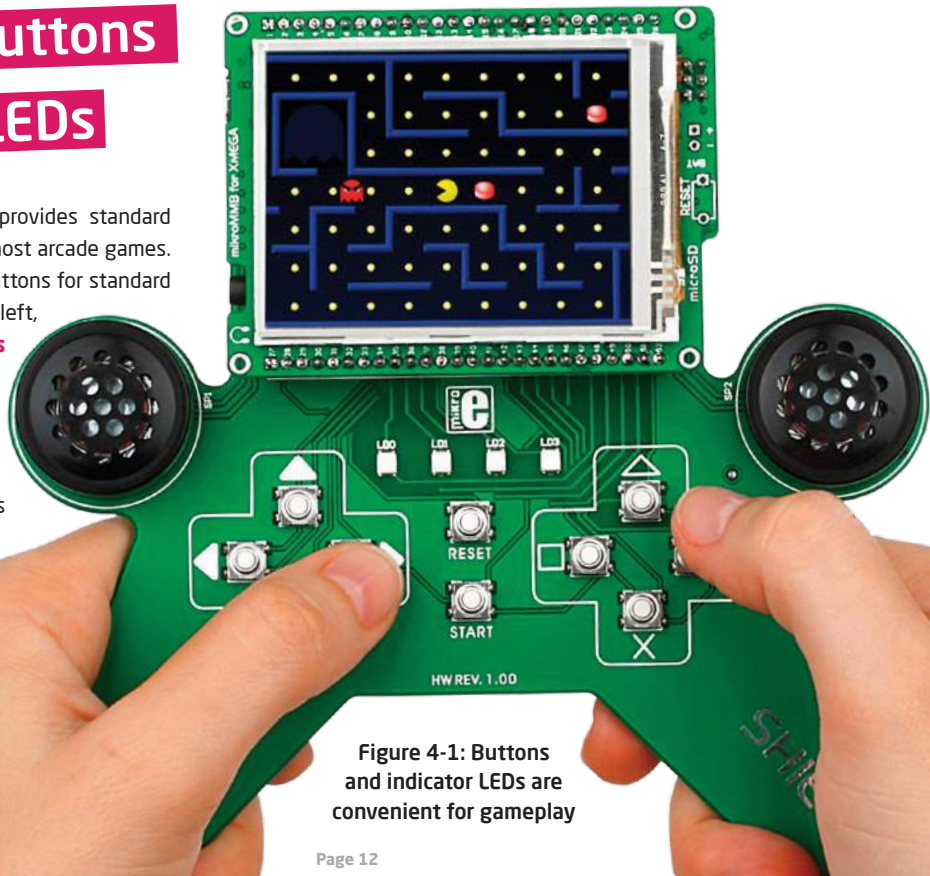


Figure 4-1: Buttons and indicator LEDs are convenient for gameplay

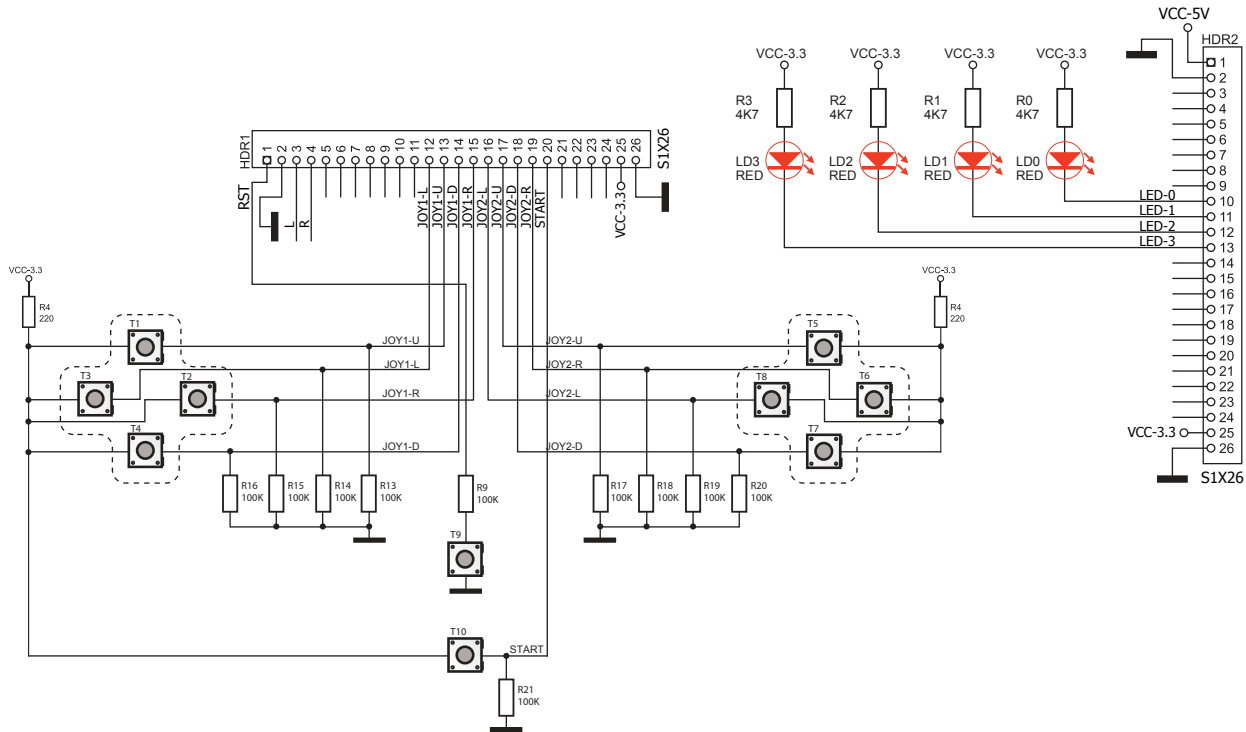


Figure 4-2: Schematics of button and LED connections

5. Audio module

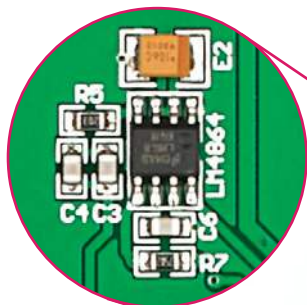
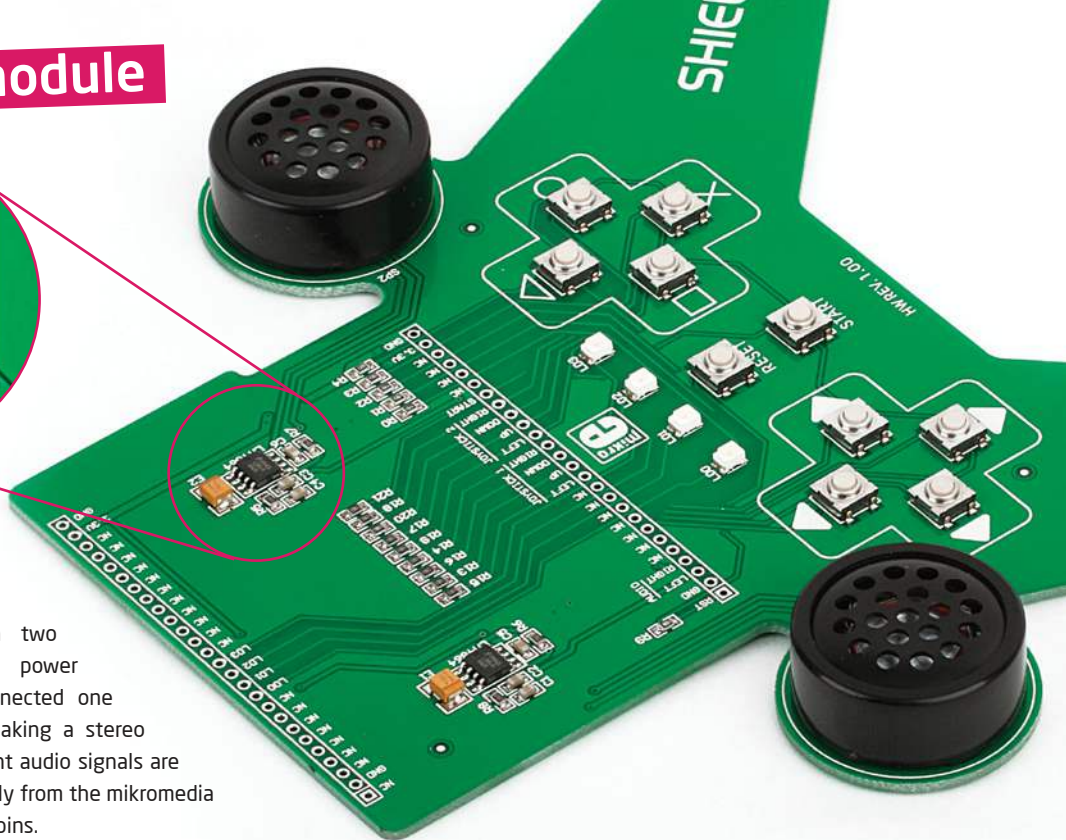


Figure 5-1:
LM4864 audio
amplifier circuit

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.



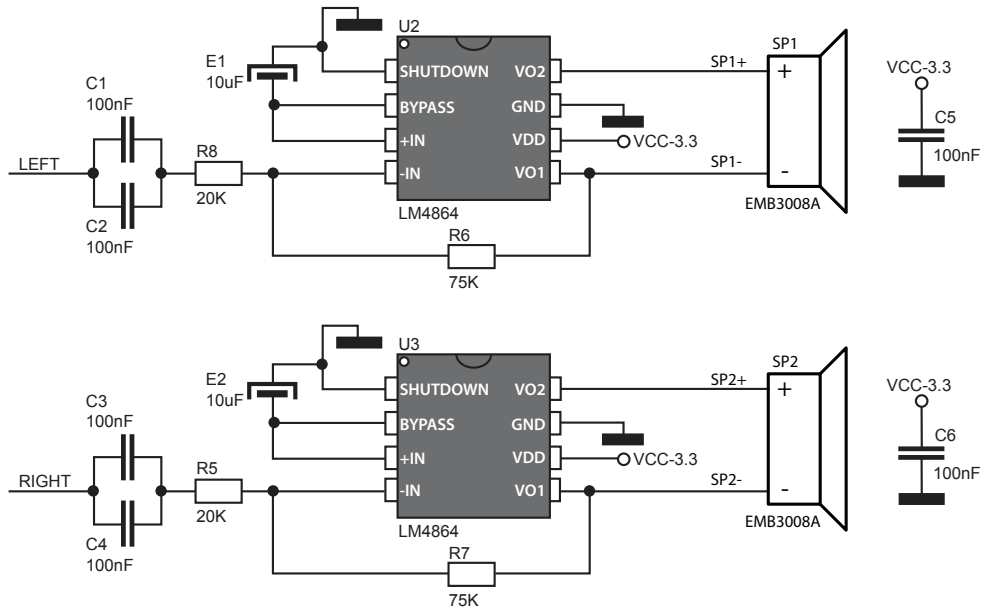


Figure 5-2: Left and right audio amplifier circuit schematics

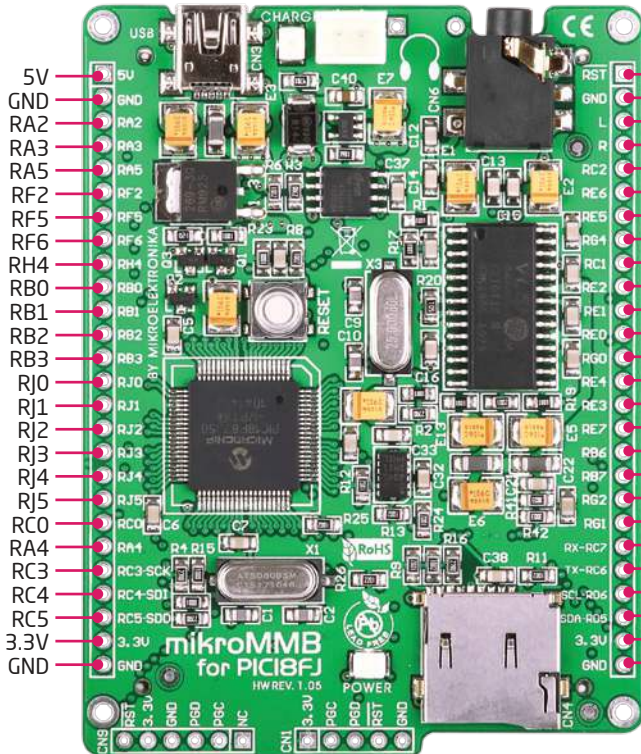
Gaming pinout on mikromedia for PIC18FJ

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 shield functions

LEDS

NC — 5V
 GND — GND
 NC — RA2
 NC — RA3
 NC — RA5
 NC — RF2
 NC — RF5
 NC — RF6
 NC — RH4
 LD0 — RB0
 LD1 — RB1
 LD2 — RB2
 LD3 — RB3
 NC — RJ0
 NC — RJ1
 NC — RJ2
 NC — RJ3
 NC — RJ4
 NC — RJ5
 NC — RC0
 NC — RA4
 NC — RC3
 NC — RC4
 NC — RC5
 3.3V — 3.3V
 GND — GND

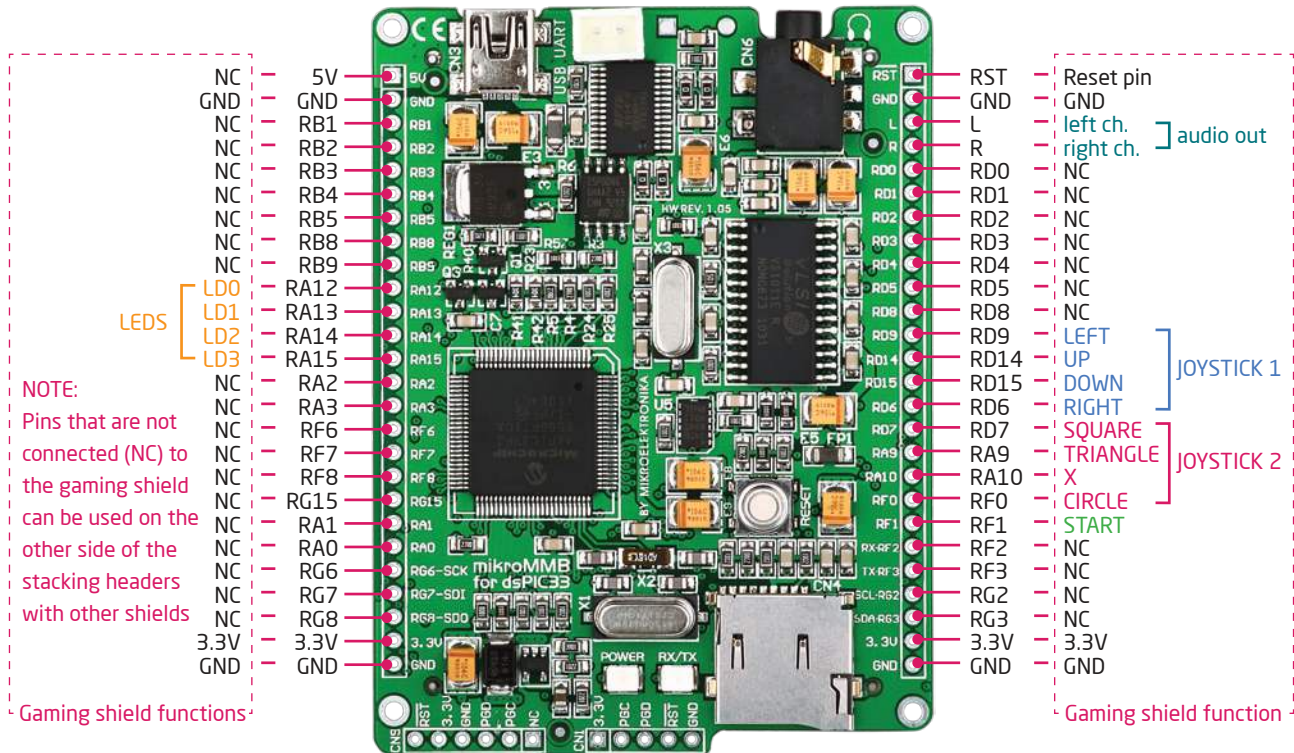


RST — RST
 GND — GND
 L — L
 R — R
 RC2 — RC2
 RE6 — RE6
 RE5 — RE5
 RB4 — RB4
 NC — RC1
 RE2 — RE2
 RE1 — RE1
 NC — RE0
 RG0 — RG0
 RE4 — RE4
 RE3 — RE3
 RE7 — RE7
 RB6 — RB6
 RB7 — RB7
 RG2 — RG2
 RB1 — RB1
 RG1 — RG1
 RC7 — RC7
 NC — RC6
 RD6 — RD6
 NC — RD5
 3.3V — 3.3V
 GND — GND

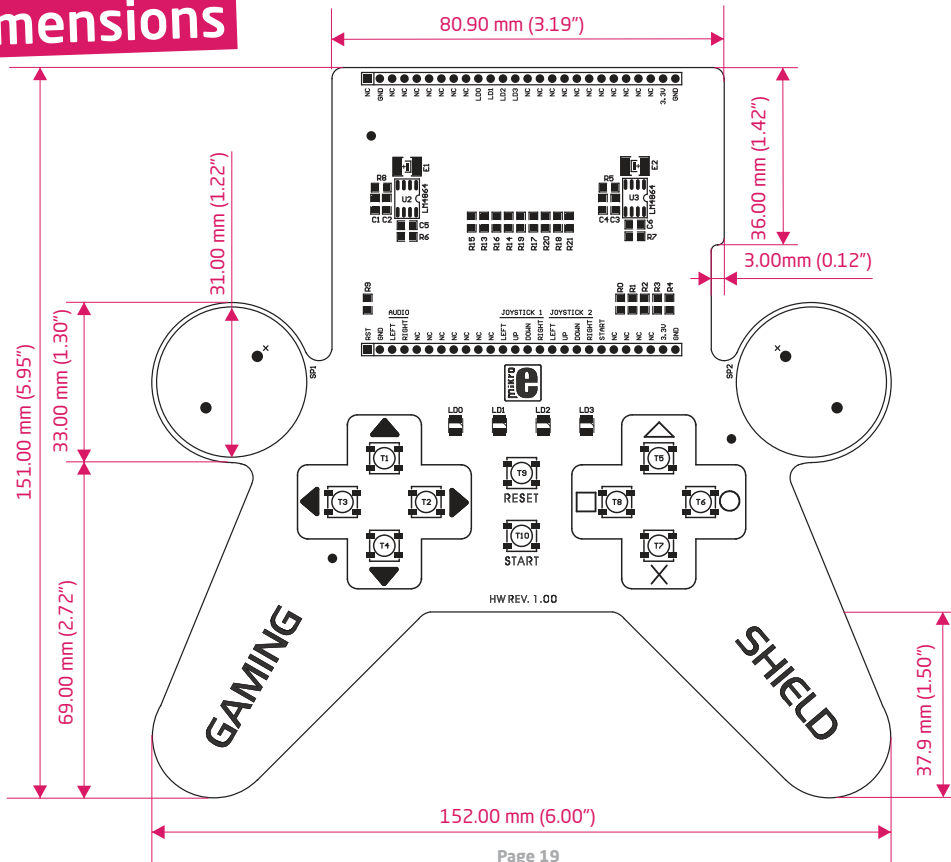
Reset pin
 GND
 left ch.
 right ch.] audio out
 NC
 NC
 NC
 NC
 NC
 NC
 LEFT
 UP
 DOWN
 RIGHT] JOYSTICK 1
 SQUARE
 TRIANGLE] JOYSTICK 2
 X
 CIRCLE
 START
 NC
 NC
 NC
 NC
 3.3V
 GND

Gaming shield function

Gaming pinout on mikromedia for dsPIC33



7. Dimensions



Notes:

Notes:

Notes:

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