

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.



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 in the lower right quadrant of the page. The signature is fluid and cursive, with a large initial 'N' and 'M'.

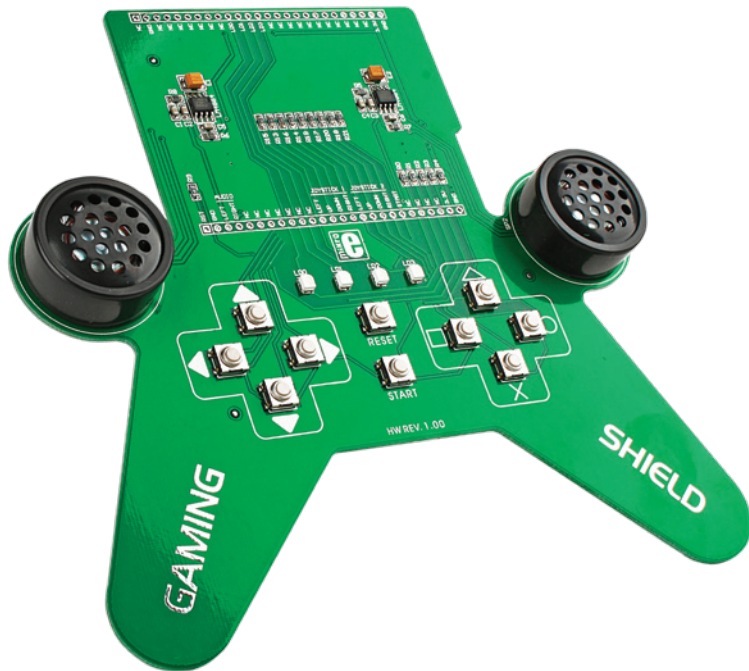
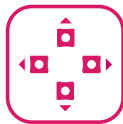
Nebojsa Matic
General Manager

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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

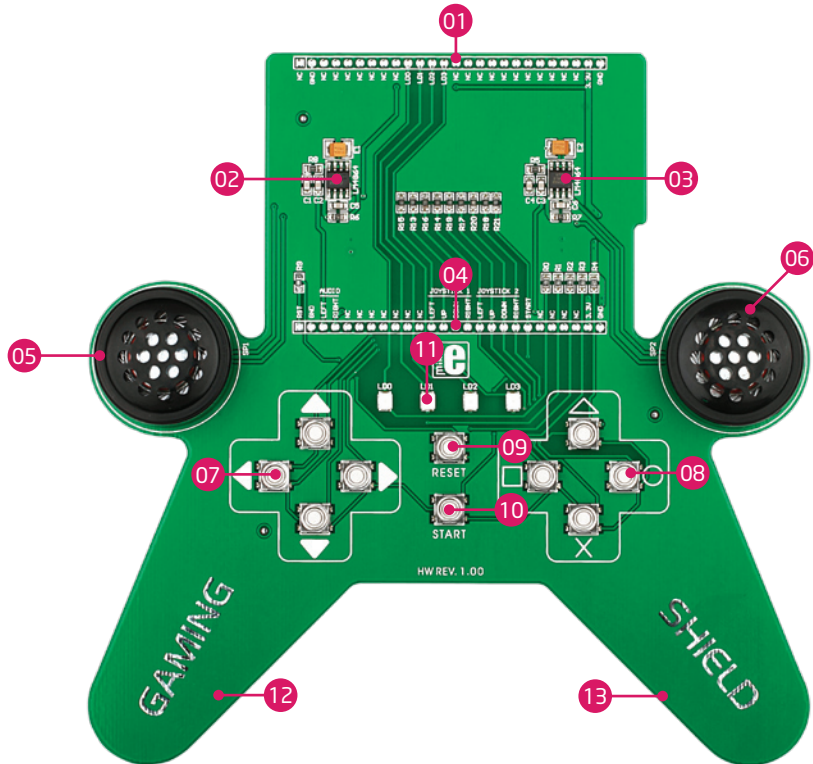


mikromedia for PIC18FJ

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

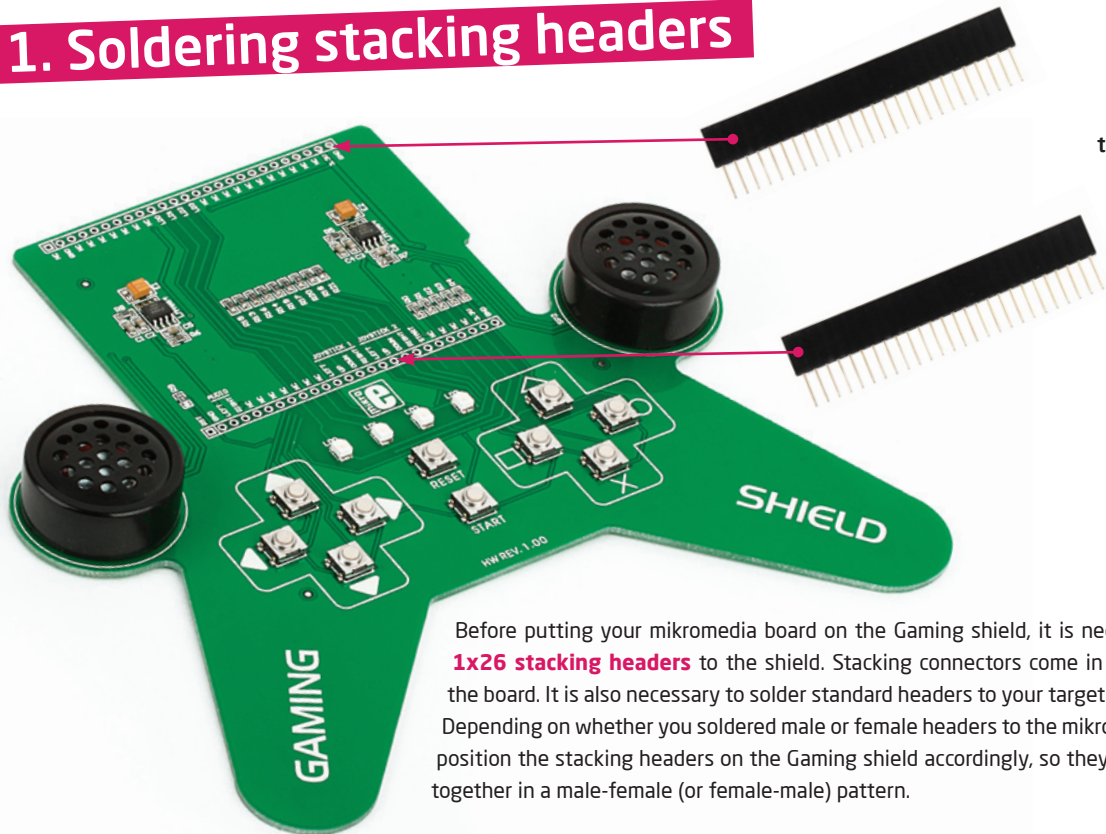


Figure 1-1:
Positioning
the stacking
headers

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.

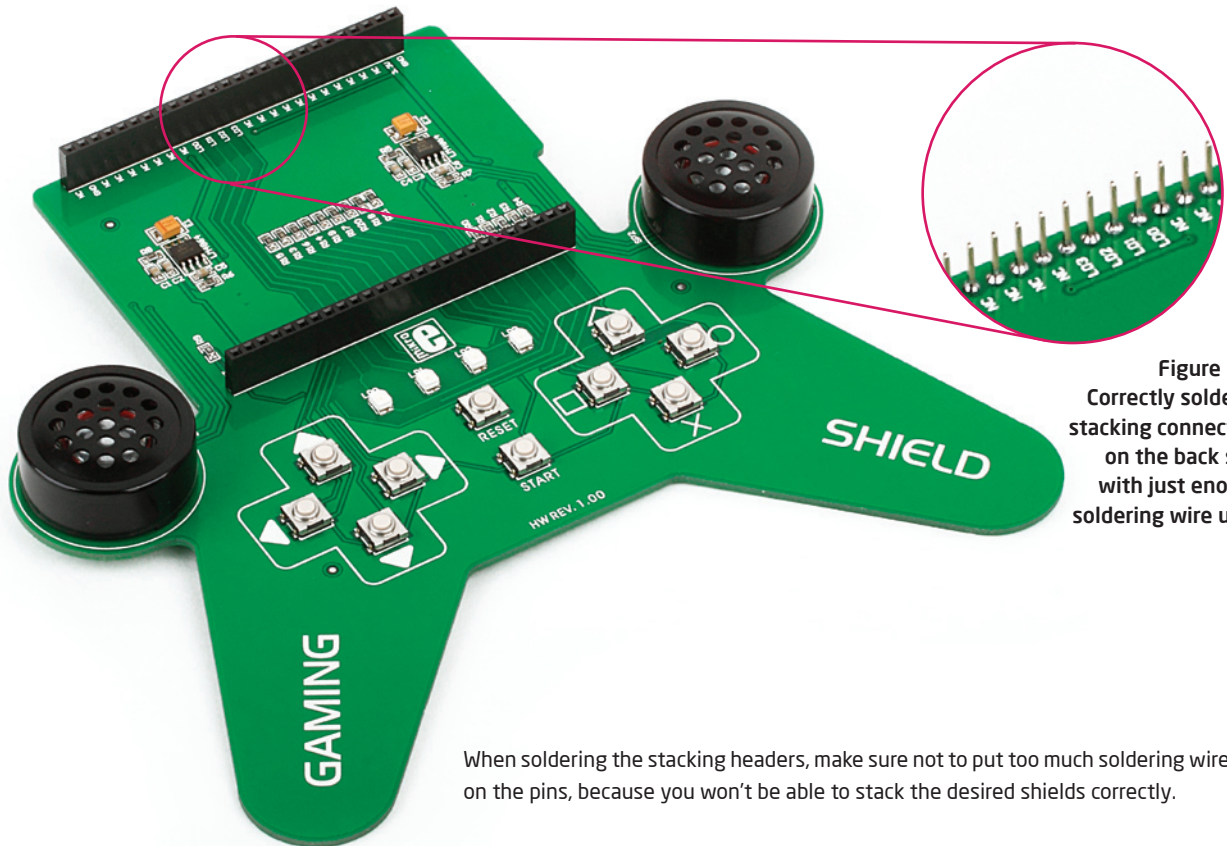


Figure 1-2:
Correctly soldered
stacking connectors
on the back side
with just enough
soldering wire used

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.

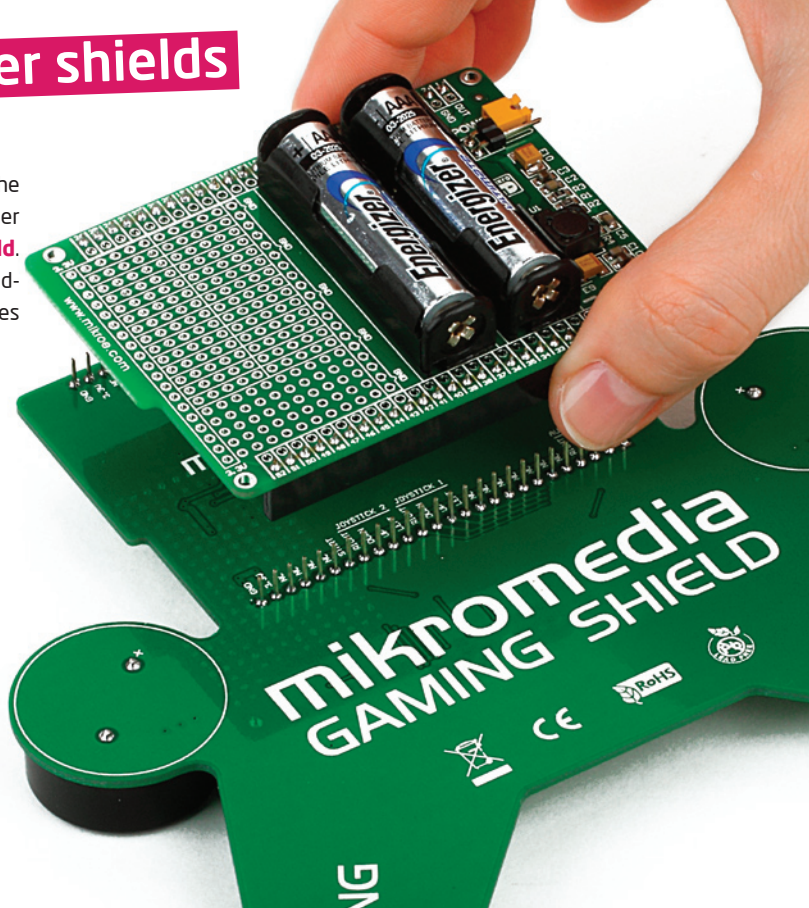
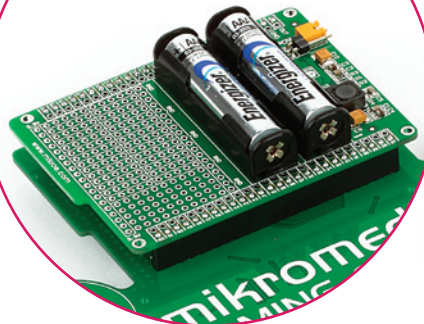
Figure 2-1: mikromedia board correctly placed on the gaming shield



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.

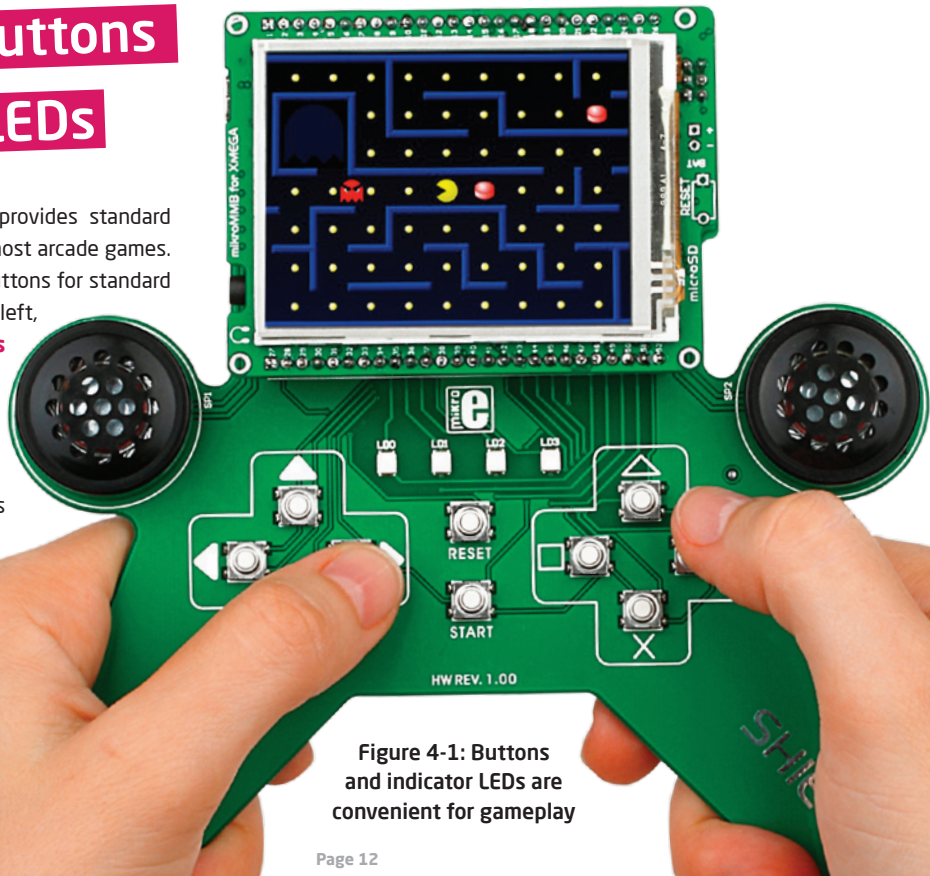


Figure 4-1: Buttons and indicator LEDs are convenient for gameplay

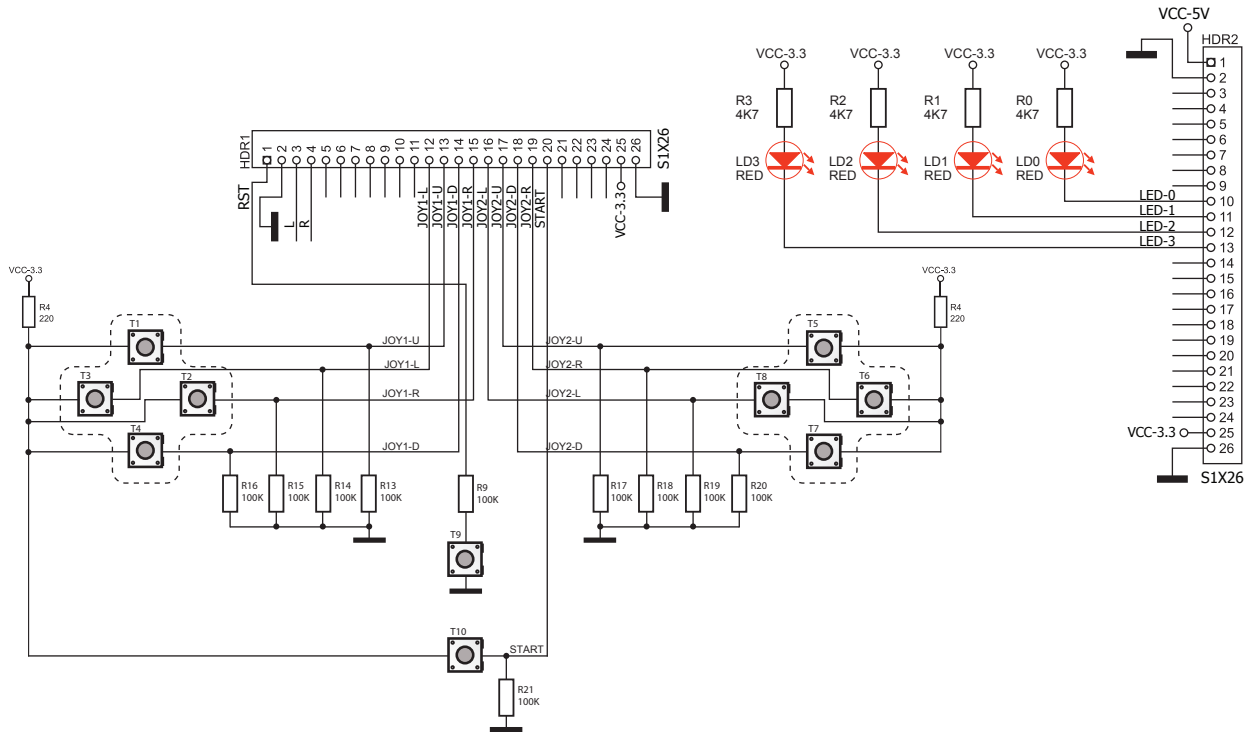


Figure 4-2: Schematics of button and LED connections

5. Audio module

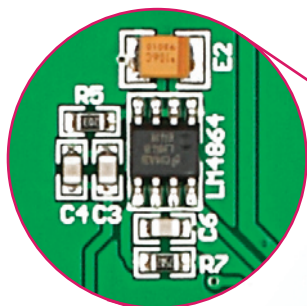
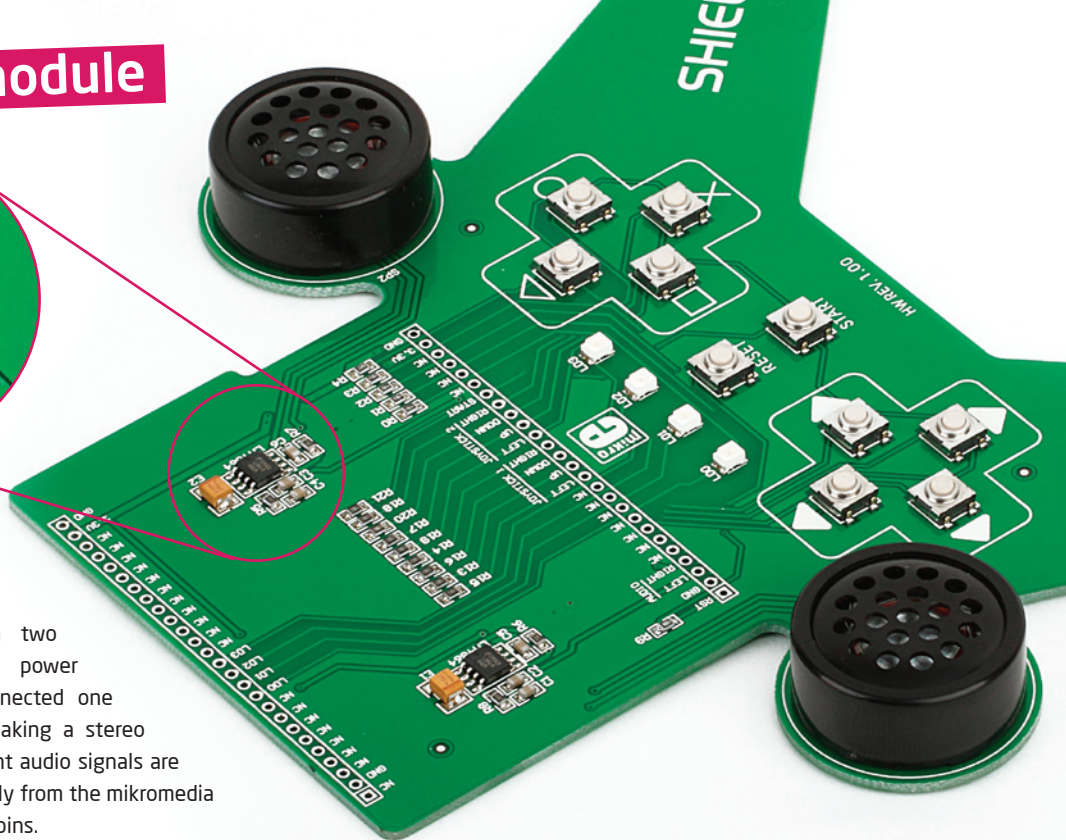


Figure 5-1:
LM4864 audio
amplifier circuit

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.



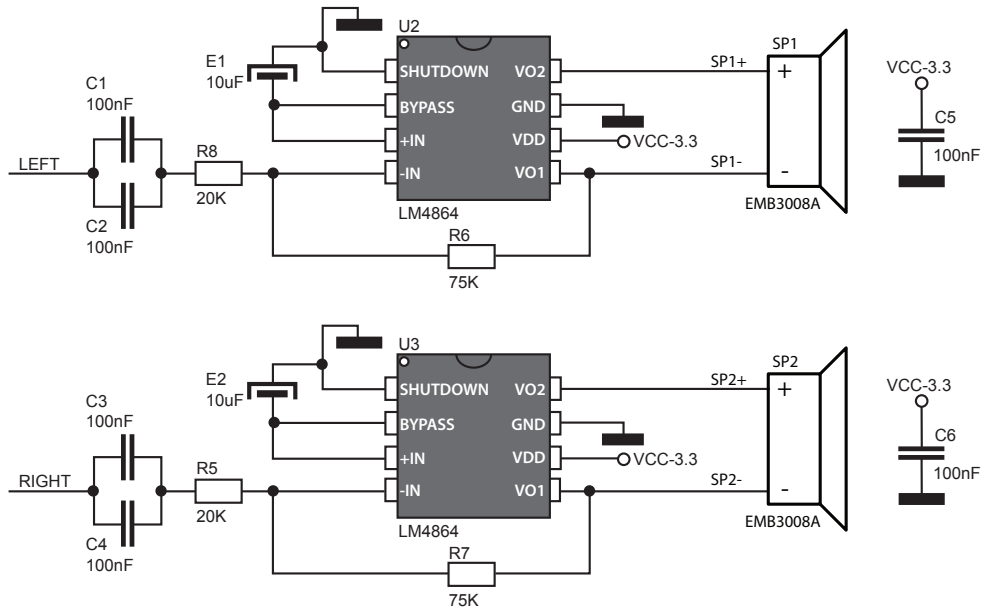


Figure 5-2: Left and right audio amplifier circuit schematics

Gaming pinout on mikromedia for PIC18FJ

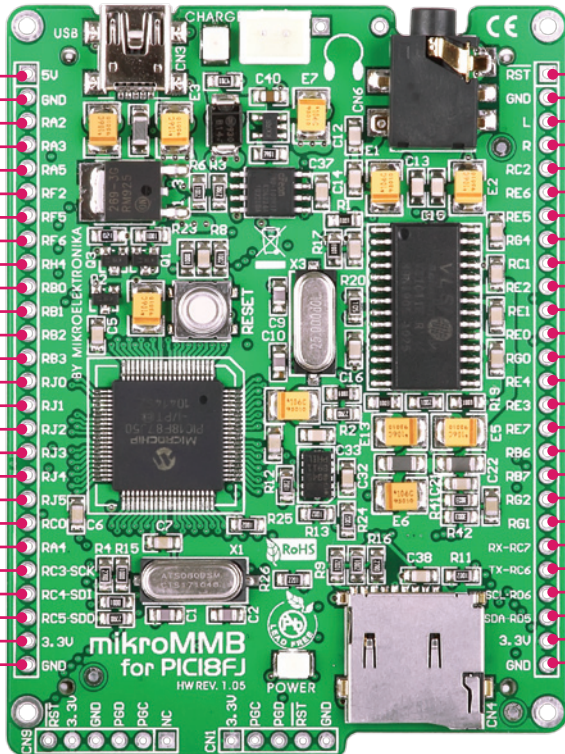
NOTE:
Pins that are not connected (NC) to the gaming shield can be used on the other side of the stacking headers with other shields

Gaming shield functions

LEDS

NC
GND
NC
NC
NC
NC
NC
NC
NC
NC
LD0
LD1
LD2
LD3
NC
NC
NC
NC
NC
NC
NC
NC
NC
NC
3.3V
GND

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

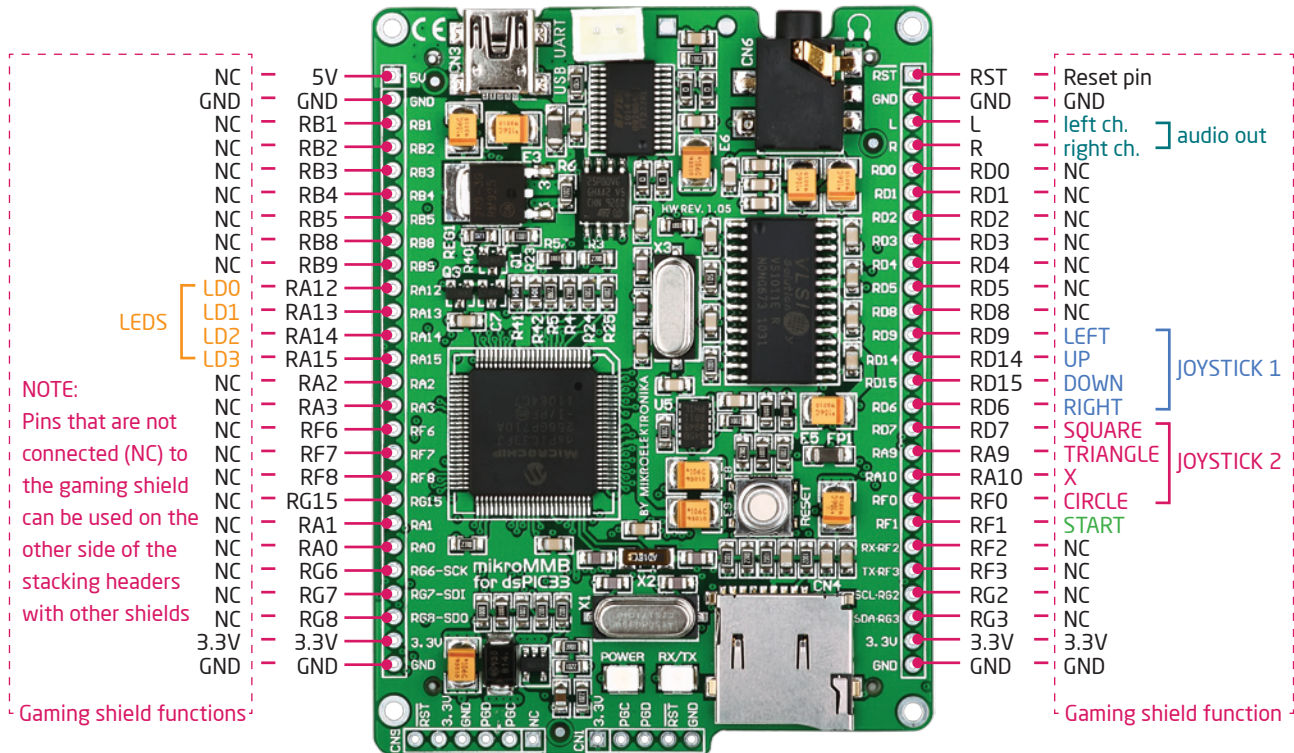


RST
GND
L
R
RC2
RE6
RE5
RB4
RC1
RE2
RE1
RE0
RG0
RE4
RE3
RE7
RB6
RB7
RG2
RG1
RC7
RC6
RD6
RD5
3.3V
GND

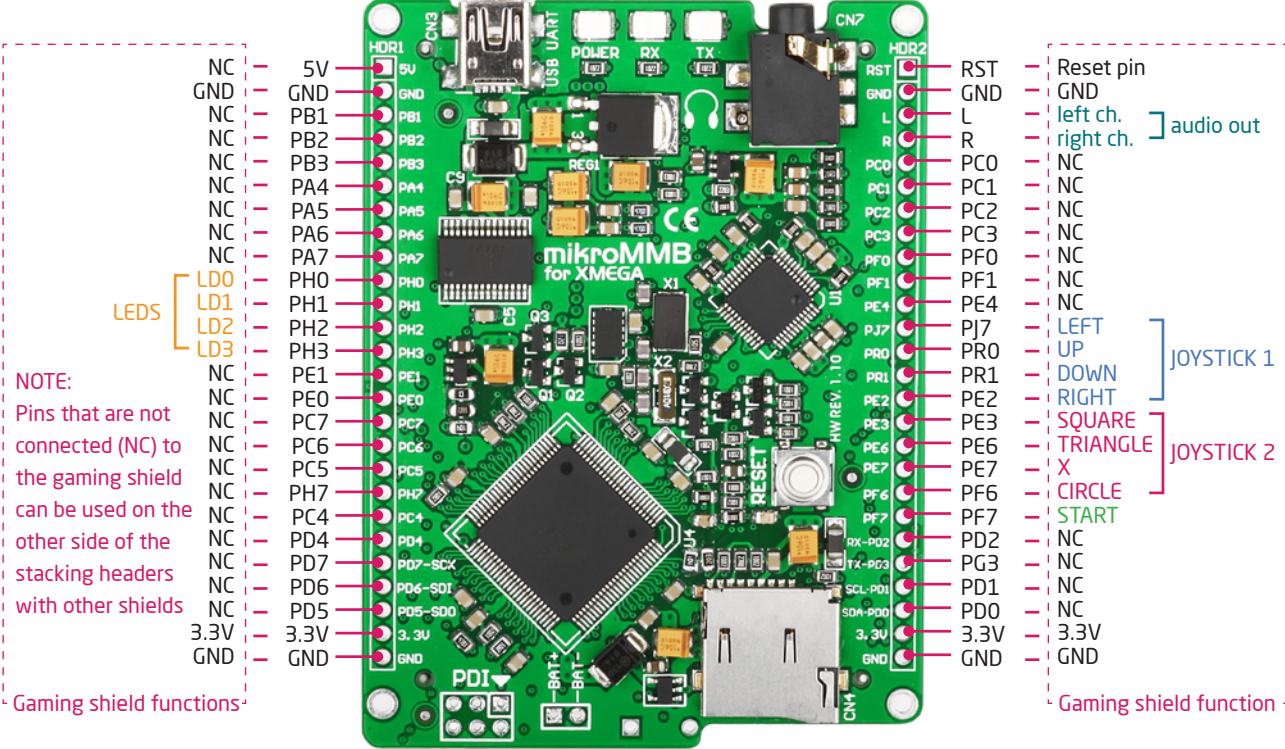
Reset pin
GND
left ch.
right ch. } audio out
NC
NC
NC
NC
NC
NC
LEFT
UP
DOWN
RIGHT
SQUARE
TRIANGLE } JOYSTICK 1
X
CIRCLE } JOYSTICK 2
START
NC
NC
NC
NC
3.3V
GND

Gaming shield function

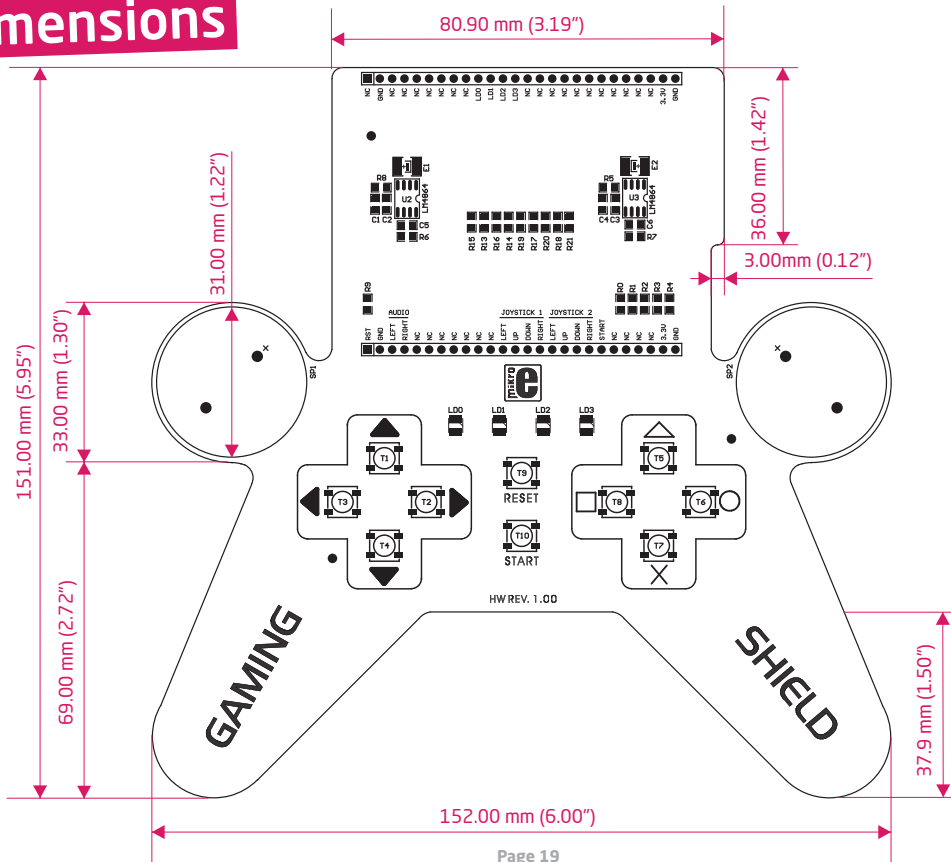
Gaming pinout on mikromedia for dsPIC33



Gaming pinout on mikromedia for XMEGA



7. Dimensions



Notes:

Notes:

Notes:

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