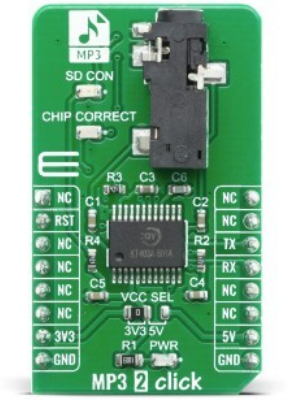
MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

MP3 2 Click



PID: MIKROE-4159

MP3 2 Click is an audio decoder expansion board with on-board microSD card slot, that enables you to create your personal audio playback system. It holds the KT403A,a SOC chip solution with intergraded MCU, hardware audio MP3/WAV decoder and DSP, from Shenzhen Qianle Microelectronics Technology Co. Ltd. All the mentioned integrated hardware components enable the MP3 2 Click board to guarantee good stability and tone quality. You are able to use UART serial communication to control this board and do diverse operations with music files from microSD card such as Play, Pause, Volume Up/Down, any many more. These features make MP3 2 Click the ideal solution for audio device, in any application that demands an Audio Playback Module for MP3, WAV.

MP3 2 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

The MP3 2 Click is equipped with the KT403A as a main integrated circuit, micro SD card connector, and 3.5mm Audio Jack connector. Basically, it is a complete solution for a DAP (digital audio player) on a Click board, which can be controlled over the UART communication interface, using RX and TX pins of the mikroBUS™ socket. The default baud rate is 9600bps and it is customizable.

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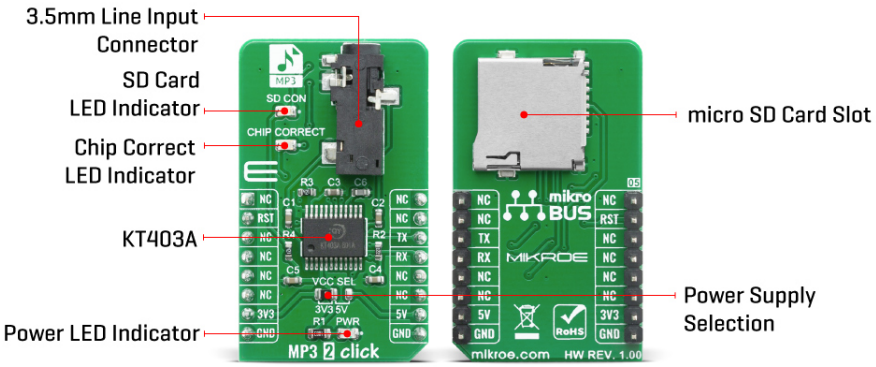

On the MP3 2 Click, KT403A serves as a brain. It is complete SOC, which integrates16-bit MCU, audio decoder, and a 24-bit DSP. It also integrates the complete SD card interface and therefore, this click board contains the connector onboard for an external micro SD card. Thanks to that, the user can insert a fair amount of memory if the long, continuous playback time is needed.

MP3 2 Click has two status indication LEDs, onboard. The first one is named “SD Card” and it serves as an indication that the SD Card is present in the slot. The other one is “Chip Correct” and it indicates that the SD Card is correct and that the communication between the KT403A and the SD Card sucseeded. Besides the indicatora, there is one 3.5mm headphone jack onboard, so that MP3 2 Click can be connected directly to the next stage of the music playback system, ie. audio amplifier.

Using the predefined command set, MP3 2 Click can be fully controlled. One can Play/Pause a song, play a specific track, change a Volume Up and Volume Down between 0% and 100%, play the next or the previous song, repeat the current song, and more. Besides that, several sound effects are also supported, mentioned for different types of music: Normal, Jazz, Classic, Pop, and Rock.

This Click board™ can be supplied and interfaced with both 3.3V and 5V without the need for any external components. The onboard SMD jumper labeled as VCC SEL allows voltage selection for supply IC, but this Click Board™ communication interface and is designed to be operated only with a 3.3V logic level.

Specifications

Type	MP3
Applications	Digital music players, camcorders, speakers, headphones, toys, and more.
On-board modules	KT403A serial MP3 module, from Shenzhen Qianle Microelectronics Technology Co. Ltd.
Key Features	MP3 Player, Streaming support for MP3 and WAV.
Interface	UART
Feature	No ClickID

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Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on MP3 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
Reset	**RST**	2	RST	INT	15	NC	
	NC	3	CS	RX	14	**TX**	UART TX
	NC	4	SCK	TX	13	**RX**	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Power Supply Voltage Selection: Left position 3V3, right position 5V
LD2	CHIP CORRECT	-	Chip correct LED indicator
LD3	SD CON	-	SD Card connect LED indicator

Software Support

We provide a library for the MP3 2 Click on our LibStock page, as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Library Description

The library covers all the necessary functions to control MP3 2 Click board. A library performs the communication with the KT403A chip which integrate 16-bit MCU, and audio decoder, a DSP especial for decoding via UART interface.

Key functions:

- void mp32_play_mode (void) - Play mode function.
- void mp32_play_next (void) - Play next function.
- void mp32_volume_up (void) - Volume up function.

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Examples description

The application is composed of three sections :

- System Initialization - Initializes UART, RST pin as output and begins to write log.
- Application Initialization - Initialization driver enables - UART, reset the device, set specify a device play tracks inside (SD Card), set volume lvl (50%), set equalizer to normal mode and set commmand for specifying a track to play.
- Application Task - (code snippet) This is an example which demonstrates the use of MP3 2 Click board. Waits for valid user input and executes functions based on set of valid commands. Results are being sent to the Usart Terminal where you can track their changes.
- Commands : 'c' - command list 'p' - play 'o' - pause 's' - stop 'n' - play next 'l' - play previous '+' - volume up '-' - volume down

Key functions:

- command_list( ) - Display the list of commands.

The full application code, and ready to use projects can be found on our LibStock page.

Other mikroE Libraries used in the example:

- UART

Additional notes and informations

Depending on the development board you are using, you may need USB UART click, USB UART 2 click or RS232 click to connect to your PC, for development systems with no UART to USB interface available on the board. The terminal available in all MikroElektronika compilers, or any other terminal application of your choice, can be used to read the message.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the LibStock and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

Downloads

MP3 2 click 2D and 3D files

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KT403A datasheet

MP3 2 click schematic

MP3 2 click example on Libstock

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