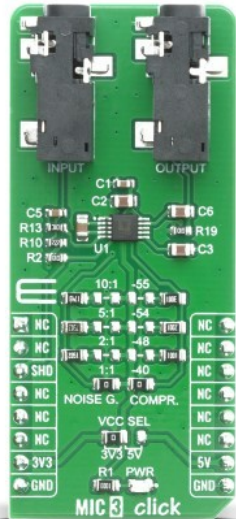


## MIC 3 Click



PID: MIKROE-4136

The **MIC 3 Click** is a Click board™ that features the [SSM2167-1RMZ-R7](#), a Microphone Preamplifier, from [Analog Device](#). This Click board™ is a low voltage Microphone preamplifier with Variable compression and noise gating. The MIC 3 Click is a very easy solution to work with it, which makes it an ideal solution for using it in desktop, portable or palmtop computers, telephone conferencing, communication headsets, two-way communication, surveillance system where the microphone is needed, stethoscope, karaoke and DJ mixers.

The MIC 3 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.

The MIC 3 Click based on the SSM2167-1RMZ-R7 from Analog Devices is a complete and flexible solution for conditioning microphone inputs in personal electronics and computer audio systems. The Click board™ is also excellent for improving vocal clarity in communications and public address systems. A low noise voltage-controlled amplifier (VCA) provides a gain that is dynamically adjusted by a control loop to maintain a set compression characteristic. The MIC 3 Click provides two operation settings, these settings are selectable with NOISE G. COMPR. jumpers.

### How does it work?

The MIC 3 Click provides four different preset values of the noise gate threshold. Experiment with these values by varying the gate. The noise gate threshold is a programmable point using an external resistor. The downward expansion threshold may be set between –40 dBV and –55 dBV, as shown in Table.

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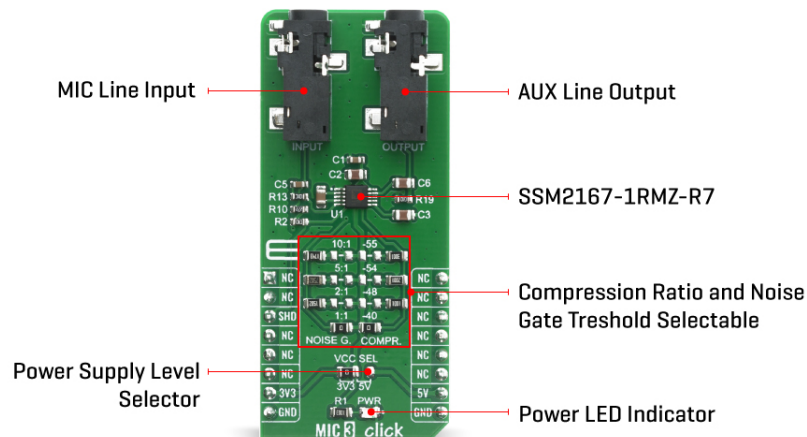


ISO 27001: 2013 certification of informational security management system.  
ISO 14001: 2015 certification of environmental management system.  
OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).

Noise Gate (dBV)	Value of RGATE
-40	0 $\Omega$
-48	1 $\Omega$
-54	2 $\Omega$
-55	3 $\Omega$



The Click board™ provides four different preset values of the compression ratio. Changing the scaling of the control signal fed to the VCA causes a change in the circuit compression ratio. Lowering RCOMP gives smaller compression ratios as indicated in Table. Automatic Gain Control (AGC) performance is achieved with compression ratios between 2:1 and 10:1, and is dependent on the application. Shorting RCOMP disables the AGC function, setting the compression equal to 1:1.

Compression Ratio	Value of RCOMP
1:1	0 $\Omega$
2:1	15 $\Omega$
5:1	75 $\Omega$
10:1	174 $\Omega$

The MIC 3 Click is designed to work with either 3.3V or 5V power supply. It communicates with the target MCU over GPIO pin on the mikroBUS™. The supply current of the SSM2167 can be reduced to under 10  $\mu$ A by applying an active low.

## Specifications

Type	Microphone
Applications	Karaoke and DJ mixers, Desktop, portable, or palmtop computers, Telephone conferencing.
On-board modules	SSM2167-1RMZ-R7, Low Voltage Microphone Preamplifier from Analog Device.
Key Features	Adjustable noise gate threshold, Adjustable compression ratio.
Interface	GPIO
Feature	No ClickID
Compatibility	mikroBUS™

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Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

## Pinout diagram

This table shows how the pinout on MIC 3 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
Shutdown	<b>SHD</b>	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	<b>5V</b>	Power Supply
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground

## Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
-	NOISE G. COMPR	1:1, -40	Select noise gate threshold and compression ratio.

## Software Support

We provide a library for the MIC 3 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

Library provides function for setting state of the pin, and function for GPIO mapping.

Key functions:

- void mic3\_set\_shd\_pin ( uint8\_t state ) - Function for setting shd pin state

### Examples description

The application is composed of three sections :

- System Initialization - Initialization of SHD to output and log module
- Application Initialization - Maps GPIO for mikroBUS 1, and sets SHD pin to HIGH state

The full application code, and ready to use projects can be found on our [LibStock](#) page.

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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

[MIC 3 click 2D and 3D files](#)

[MIC 3 click schematic](#)

[MIC 3 click example on Libstock](#)

[SSM2167 datasheet](#)

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