

# MIC24045 click

PID: MIKROE-2574



**MIC24045 click** carries MIC24045 I2C-programmable, high-efficiency, wide input range, 5A synchronous step-down regulator from Microchip. The click is designed to run on either 3.3V or 5V power supply. It communicates with the target microcontroller over I2C interface with additional functionality provided by the following pins on the mikroBUS™ line: RST, INT.

## **MIC24045 regulator features**

The MIC24045 is a digitally programmable, 5A valley current-mode controlled regulator featuring an input voltage range from 4.5V to 19V.

The MIC24045 is perfectly suited for multiple voltage rail application environments, typically found in computing and telecommunication systems.

## **Thermal Warning and Thermal Shutdown**

The MIC24045 has a thermal shutdown protection that prevents operation at excessive temperature. The thermal shutdown threshold is typically set at +160°C with a hysteresis of +25°C.

The MIC24045 features a Thermal Warning flag that is readable through the I2C interface (register polling is needed). The Thermal Warning flag signals the approaching of thermal shutdown, so that appropriate system-level countermeasures can be undertaken.

## Key features

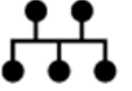
- MIC24045 regulator
  - 4.5V to 19V Input Voltage Range
  - 5A (maximum) Output Current
  - Switching Frequency: 310 kHz, 400 kHz, 500 kHz, 570 kHz, 660 kHz, 780 kHz, 1 MHz, 1.2 MHz
  - Supports Safe Start-Up with Pre-Biased Output
- I2C interface
- 3.3V or 5V power supply

## Specification

Product Type	Buck
Applications	Servers, Data Storage, Routers and Base Stations, FPGAs, DSP and Low-Voltage ASIC Power
MCU	MIC24045 regulator
Key Features	4.5V to 19V Input Voltage Range, 5A (maximum) Output Current, Switching Frequency: 310 kHz, 400 kHz, 500 kHz, 570 kHz, 660 kHz, 780 kHz, 1 MHz, 1.2 MHz
Interface	I2C
Power Supply	3.3V or 5V
Compatibility	mikroBUS
Click board size	M (42.9 x 25.4 mm)

## Pinout diagram

This table shows how the pinout on **MIC24045 click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	 mikroBUS™				Pin	Notes
Not connected	NC	1	AN	PWM	16	NC	Not connected
Precision Enable Input Pin	<b>ENABLE</b>	2	RST	INT	15	<b>PG</b>	Power Good Open-Drain Output Pin
Not connected	NC	3	CS	TX	14	NC	Not connected
Not connected	NC	4	SCK	RX	13	NC	Not connected
Not connected	NC	5	MISO	SCL	12	<b>I2C SCL</b>	I2C Clock Input Pin
Not connected	NC	6	MOSI	SDA	11	<b>I2C SDA</b>	I2C Data Input/Output Pin
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

## Maximum ratings

Description	Min	Typ	Max	Unit
Input Range	4.5		19	V
Externally Applied Analog and Drivers Supply Voltage	4.5		5.5	V
Enable Voltage (VEN)		VDDA		V
Power-Good (PG) Pull-up Voltage (VPU_PG)	0		5.5	V
Output Current		5		A
Junction Temperature	-40		120	°C

## Programming

Code examples for MIC24045 click, written for MikroElektronika hardware and compilers are available on Libstock.

### *Code snippet*

The following code snippet calls initialization functions, and then slowly decrements the voltage from maximum value down to the minimum.

```
01 void main()
02 {
03     system_init();
04     mic_24045_init(0x50);
05     Delay_ms (100);
06     i = 21;
07     while (i)
08     {
09         write_1 = i*0.25;
10         mic_24045_write_vout (write_1);
11         GPIOC_ODR = 0x04;          /* Sets EN pin to 1 */
12         Delay_ms (1000);
13
14         read_2 = mic_24045_read_vout ();
15         FloatToStr (read_2, &uart_text);
16
17         if (read_2 > 1)
18             uart_text [5] = 0;
19
20         UART_Write_Text ("rn");
21         UART_Write_Text (uart_text);
22
23         GPIOC_ODR = 0x00;
24         Delay_ms (1000);
25         i--;
26     }
27 }
```