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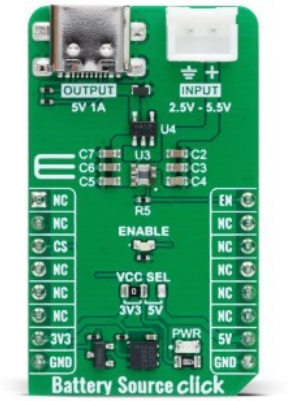
Battery Source Click



PID: MIKROE-6090

Battery Source Click is a compact add-on board designed to boost power from a battery for portable applications. This board features the TPS81256, a high-efficiency step-up converter from Texas Instruments. The board boosts input voltage (2.5V to 5.5V) to 5V/1A on a USB Type-C connector. It operates at a 4MHz switching frequency, enters Power-Save mode at light loads, and reduces supply current to 43µA during light load operation. The board supports over 3W output power and has an input current of less than 1µA in shutdown mode, maximizing battery life. The output-enable function via the MAX40200 and a red LED indicator ensures easy control and monitoring. This Click board™ is ideal for low-power, battery-powered portable applications requiring efficient power management.

How does it work?

Battery Source Click is based on the TPS81256, a high-efficiency step-up converter in a MicroSiP™ package from Texas Instruments. The TPS81256 features a high-frequency synchronous step-up DC/DC converter optimized for battery-powered portable applications. It boosts power from a connected battery (input range from 2.5V to 5.5V) and delivers it via a USB Type-C connector as 5V/1A. The TPS81256 includes a switching regulator, inductor, and input/output capacitors operating at a regulated 4MHz switching frequency. It enters Power-Save mode at light load currents, maintaining high efficiency across the entire load range. The PFM mode reduces the supply current to 43µA (typical) during light load operation, extending battery life. Additionally, it supports more than 3W output power over a full Li-Ion battery voltage range and has an input current of less than 1µA (typical) in shutdown mode, maximizing battery life. It is ideal for low-power applications that require efficient power management.

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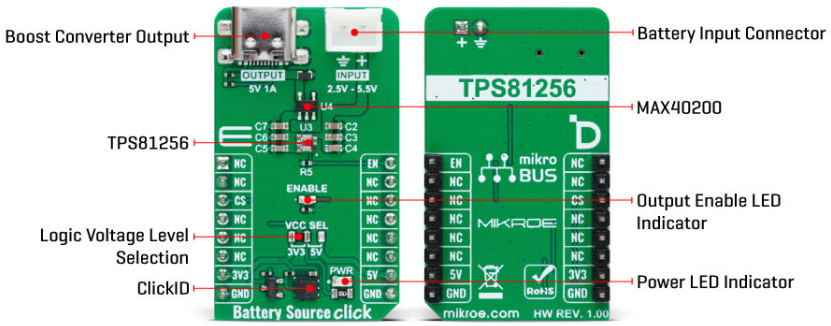

This board also features an output enable function implemented via the MAX40200, allowing users to control the power delivery on the USB-C output connector digitally. This control is achieved through the EN pin of the mikroBUS™ socket, enabling precise power flow management. Additionally, the board includes a red LED indicator labeled ENABLE, which provides a clear visual indication of active output. This allows for easy and convenient monitoring of the board's status and ensures that users can quickly verify when the output is active.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	Boost
Applications	Ideal for low-power, battery-powered portable applications requiring efficient power management
On-board modules	TPS81256 - step-up converter in MicroSiP™ package from Texas Instruments
Key Features	High efficiency, operates at a regulated 4MHz switching frequency, integrated switching regulator, inductor, and input/output capacitors, Power-Save and PFM mode to maintain high efficiency and extend battery life, typical supply current of 43µA during light load operation, input current of less than 1µA in shutdown mode, digital control of power delivery, red LED indicator for visual confirmation of active output, supports both 3.3V and 5V logic voltage levels, and more
Interface	GPIO
Feature	ClickID
Compatibility	mikroBUS™

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Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V,External

Pinout diagram

This table shows how the pinout on Battery Source 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	**EN**	Output Enable
	NC	2	RST	INT	15	NC	
ID COMM	**CS**	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	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	ENABLE	-	Output Enable LED Indicator
JP1	VCC SEL	Left	Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

Battery Source Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
External Power Supply	2.5	-	5.5	V
Output Voltage	-	5	-	V
Output Current	-	1	-	A

Software Support

We provide a library for the Battery Source Click as well as a demo application (example), developed using MIKROE compilers. The demo can run on all the main MIKROE development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended), downloaded from our LibStock™ or found on MIKROE github account.

Library Description

This library contains API for Battery Source Click driver.

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Key functions

- batterysource_set_output This function is used to set output state of Battery Source click board.

Example Description

This example demonstrates the use of Battery Source Click board™, by changing state of the output.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended), downloaded from our LibStock™ or found on MIKROE github account.

Other MIKROE Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.BatterySource

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. UART terminal is available in all MIKROE compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MIKROE 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™

ClickID

Downloads

MAX40200 datasheet

Battery Source click example on Libstock

Battery Source click schematic v100

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Battery Source click 2D and 3D files v100

TPS81256 datasheet

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