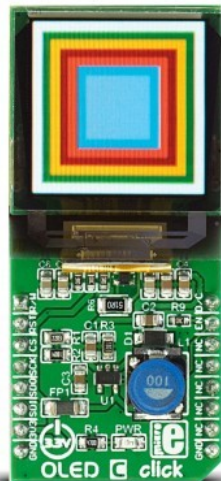


OLED C Click



PID: MIKROE-1585

OLED C Click is a compact add-on board that contains a small 96x96 high-color OLED display. This board features the [PSP27801](#), a full-color square OLED display from Shenzhen Boxing World Technology. The PSP27801 can display up to 65K/262K different colors and shades on a compact 1.12-inch size display. It provides a very good brightness-to-contrast ratio, a good angle of view, low power consumption, good picture quality, response times, and more. The display also comes with dimensions of 25x25mm (20.14x20.14mm active area) with an integrated OLED controller, the [SSD1351](#), accessible through the configurable SPI serial interface. This Click board™ is suitable for applications that require displaying some information on the screen in the form of a diagram, text, or a pie chart.

OLED C 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?

OLED C Click is based on the PSP27801, a 25x25mm 96x96px full-color square OLED display from Shenzhen Boxing World Technology. The graphics driver used on this OLED display is the SSD1351, the display driver IC from Solomon Systech. The graphics driver comes with the embedded 128x128x18-bit SRAM display buffer. It is designed to work with a common cathode type of OLED display and has both parallel (8080/6800) and serial interfaces for communication. The SSD1351 controller also has built-in functionalities like vertical and horizontal scrolling, programmable frame rate, row and column remapping, and color swapping, and supports two color modes: 65K (6:5:6) and 262K (6:6:6).

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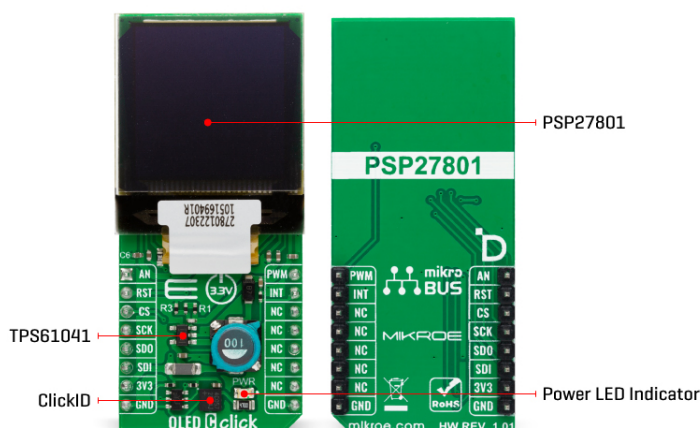
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The OLED C Click uses a standard 4-Wire SPI serial interface or parallel to communicate with the host MCU. It also occupies several other pins of the mikroBUS™ socket, such as the RST pin for resetting the OLED display, and the R/W pin of the mikroBUS™ socket is used only for parallel communication, which should be pulled to a LOW logic state when using serial communication as is the case here. The D/C is a data/command pin and is in a tight connection with the CS pin, as when the CS is at the LOW logic level, the display expects data or command.

In addition to the display's main power supply, taken from the 3.3V mikroBUS™ power rail, the PSP27801 has another power pin, more precisely, the power supply for its DC/DC converter circuit. For that reason, this Click board™ uses a low power onboard step-up converter TPS61041, which can be enabled or disabled through the EN pin of the mikroBUS™ socket, providing a 15V power supply out of 3.3V mikroBUS™ rail. The EN pin enables or disables the step-up converter and, consequently - the OLED screen itself.

This Click board™ can only be operated with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. However, the Click board™ comes equipped with a library containing functions and an example code that can be used, as a reference, for further development.

Product Version:	OLED_C_Click_v100	OLED_C_Click_v101
OLED part number:	MI9696CO v1.1	PSP27801
Controller:	SEPS114A	SSD1351
Display color:	65,536	65,536/262,144
Size/Resolution:	96x96pix	96x96pix
Module size:	25.90 x 30.10 x 1.30 mm	25.8 x 48.1 x 1.227mm (type)
Diagonal A/A size	1.12 inch	1.12 inch
Active area:	19.852 x 19.852 mm	20.135 x 20.14 mm
Dot pitch:	0.207 x 0.207	0.07 x 0.21mm
Dot size:	0.187 x 0.187	0.045 x 0.19mm
Interface:	8-bit parallel, 4-wire SPI	8/16/18 bit parallel, 3-wire and 4-wire SPI

Specifications

Type	OLED
Applications	Can be used for applications that require

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	displaying some information on the screen in the form of a diagram, text, or a pie chart
On-board modules	PSP27801 - full-color square OLED display from Shenzhen Boxing World Technology
Key Features	Low power consumption, 96x96px resolution, 20.14x20.14mm active area, full-color display, integrated SSD1306 driver IC, SPI serial interface, high contrast, wide viewing angle, anti-glaze polarizer, and more
Interface	SPI
ClickID	Manifest,No
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

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

Notes	Pin	mikroBUS™				Pin	Notes
Read/Write	R/WC	1	AN	PWM	16	D/C	Data/Command
Reset	RST	2	RST	INT	15	EN	Enable
SPI Chip Select	CS	3	CS	TX	14	NC	
SPI Clock	SCK	4	SCK	RX	13	NC	
SPI Data Out	SDO	5	MISO	SCL	12	NC	
SPI Data In	SDI	6	MOSI	SDA	11	NC	
Power supply	+3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR		Power indication LED

OLED C Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Color	Full-Color			
Screen Size	25x25			mm
Resolution	96x96			px

Software support

We provide a library for OLED C click on our [Libstock page](#), as well as a demo application (example), developed using MikroElektronika [compilers](#) and [mikroSDK](#). The provided click library is mikroSDK standard compliant. The demo application can run on all the main MikroElektronika [development boards](#).

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Library Description

The library initializes and defines the SPI bus driver and drivers that offer a choice for writing data in the registers and reading data from the registers. The library includes functions for drawing a picture, pulls a rectangle and writes text on the screen. The user can set the desired text font, and adjust the background color.

Key functions:

- void oledc_init(void) - The functions that initializes the chip.
- void oledc_text(uint8_t *text, uint16_t col_off, uint16_t row_off) - The function writes text on the screen.
- void oledc_image(const uint8_t *img, uint8_t column_off, uint8_t row_off) - The function draws the image on the screen.

Examples Description

The application is composed of three sections:

- System Initialization - Initializes SPI module and AN pin, RST pin, CS pin, PWM pin and INT pin as an output.
- Application Initialization - Initializes the driver init and the OLED C init and sets a full screen in white color with writing demo text.
- Application Task - (code snippet) -
 - Display demo rectangle
 - Display demo line
 - Display demo Image

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

Other mikroE Libraries used in the example:

- Conversions
- SPI

Additional notes and information

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](#).

Specifications

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ClickID	Manifest,No
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Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click Boards™](#)

Downloads

[OLED C click example on Libstock](#)

[PSP27801 datasheet](#)

[SSD1351 datasheet](#)

[OLED C click schematic](#)

[OLED C click 2d and 3d files](#)

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