



MAXimator Expander



Rev. 20200924083928

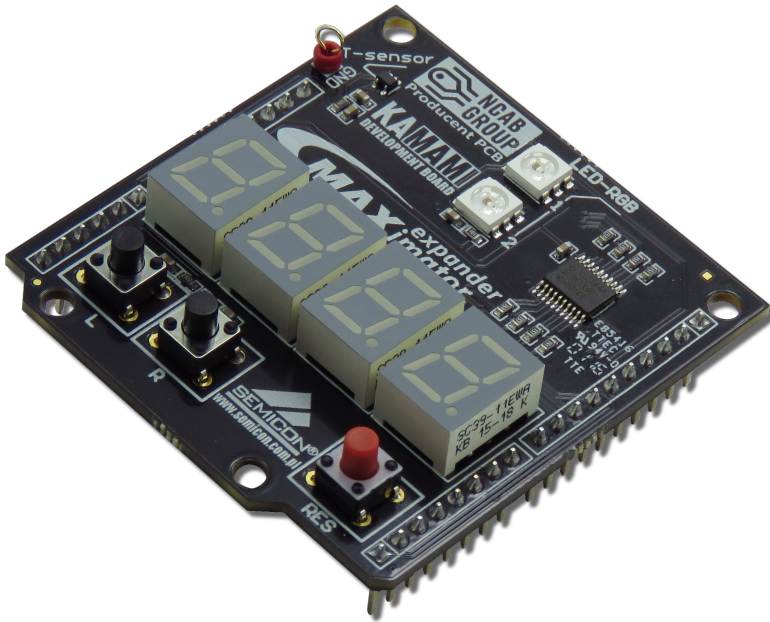
Źródło: https://wiki.kamamilabs.com/index.php/MAXimator_Expander

Spis treści

Description	1
Basic features and parameters	2
Standard equipment	3
Electrical schematic	4
View of board	5
Temperature sensor	6
7-segment displays	7
Multi-colored LEDs (RGB)	9
Buttons	10

Description

MAXimator Expander is an extension module with an embedded temperature sensor, 7-segment displays, keyboard and multi-colored LEDs. The board is dedicated to work with MAXimator



Basic features and parameters

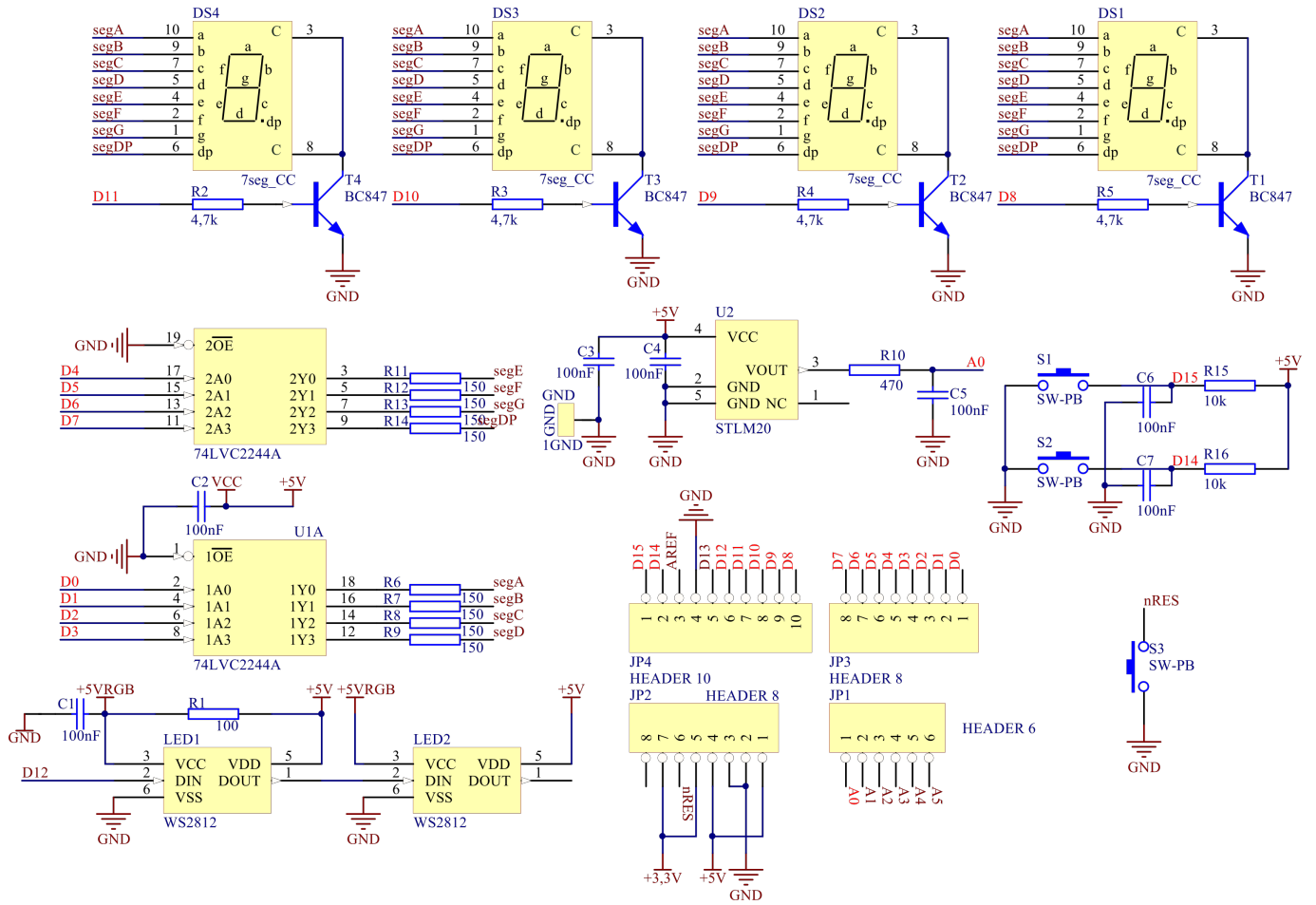
- STLM20W87F temperature sensor from STMicroelectronics
- Four 7-segment displays, multiplex controlled
- Embedded 74LVC2244A (buffer powered displays)
- Two multi-colored (RGB) LEDs WS2812B type
- Embedded two user buttons and reset button
- Mounting holes 3mm
- Module size: 5 mm x 55mm x 19mm

Board is not compatible with Arduino!

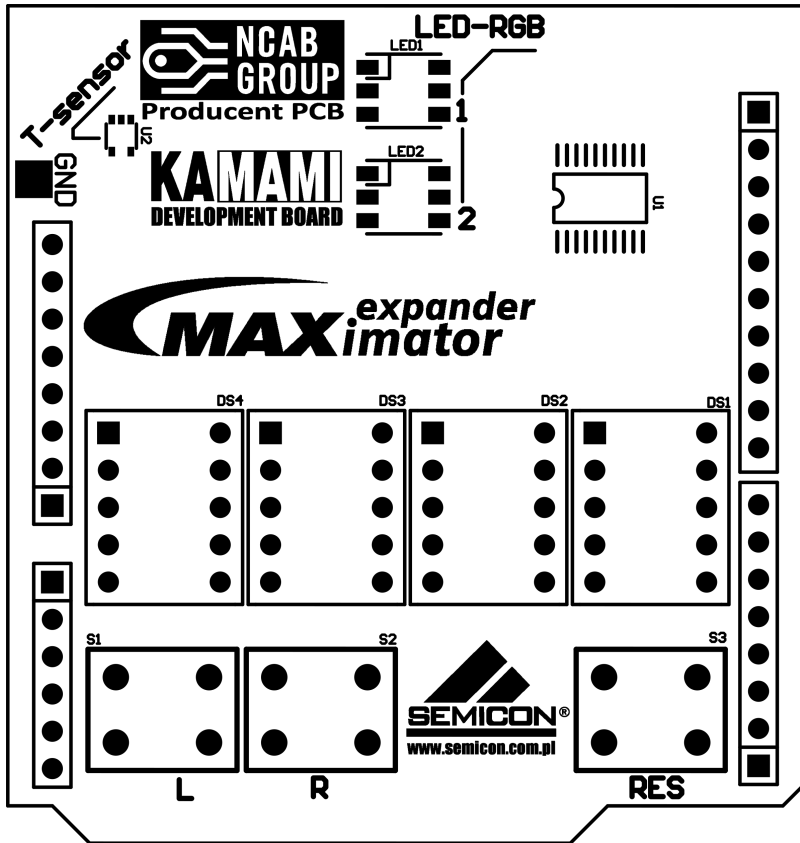
Standard equipment

Code	Description
MAXimator Expander	• Assembled and launched module

Electrical schematic



View of board



Temperature sensor

On MAXimator Expander board is placed integrated STLM20 temperature sensor with an analog signal output. The signal output is available on the A0 line. The output voltage of chip represents the measured temperature, according to the transfer function:

$$V_o = -11.69 \text{ (mV/}^\circ\text{C)} * T + 1.8663\text{V}$$

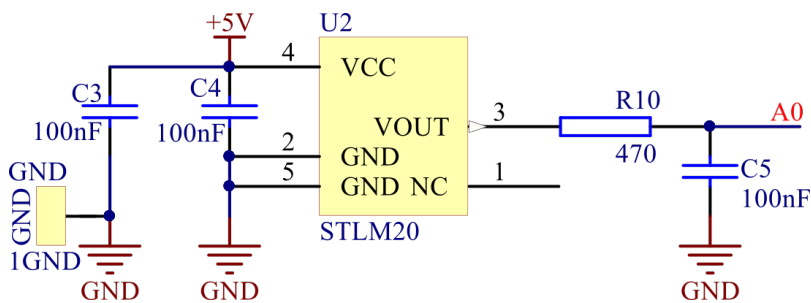
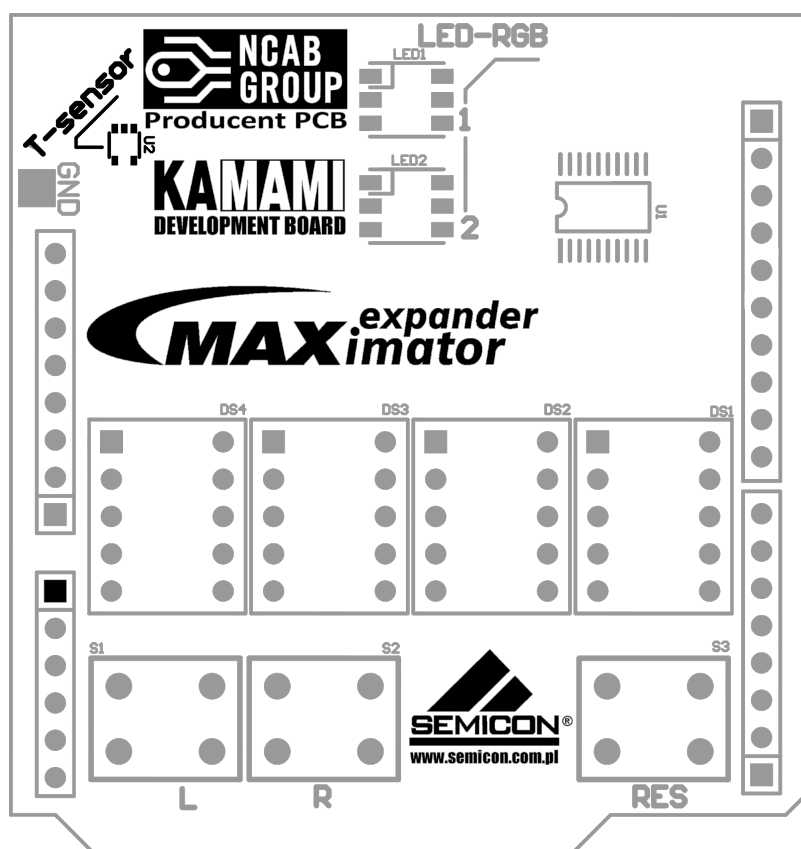
where:

T - temperature measured by sensor

V_o - output voltage

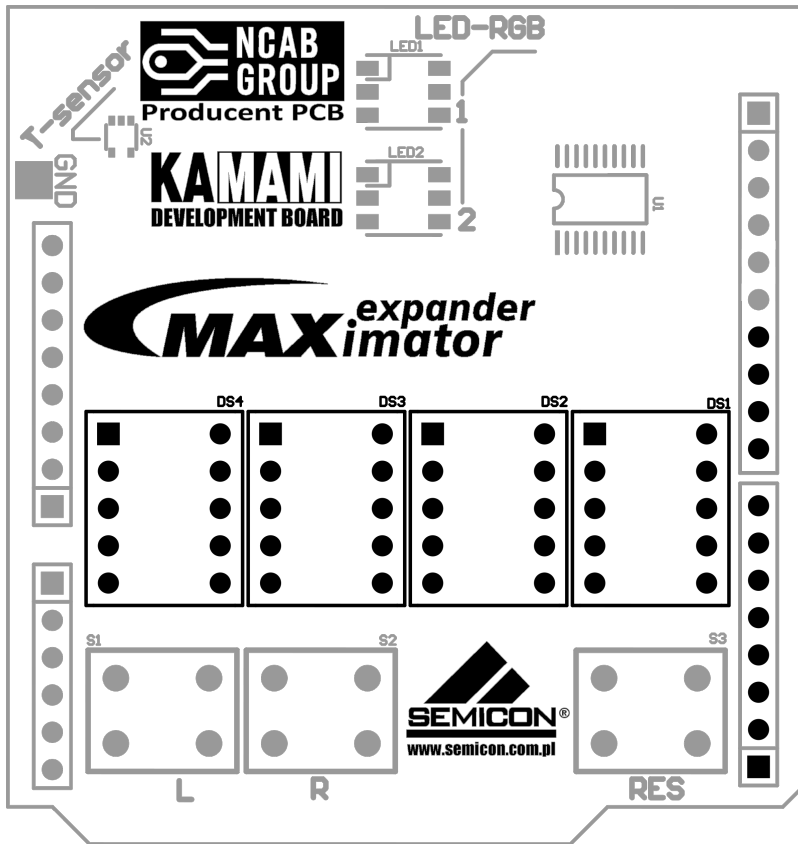
Measured temperature has a value:

$$T = (1.8663 - V_o) / 0.01169$$

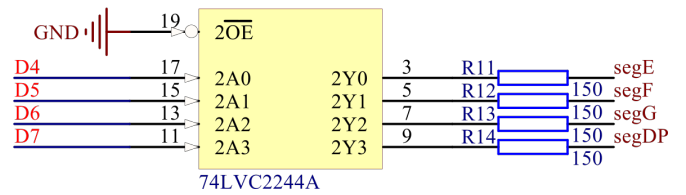
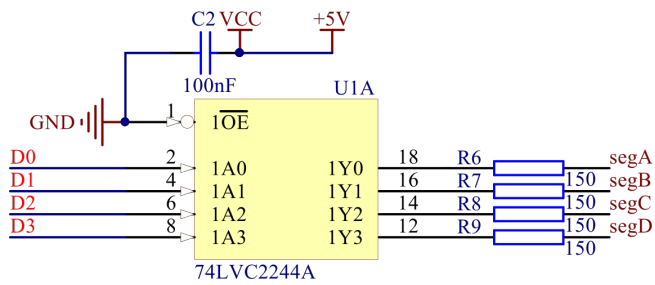
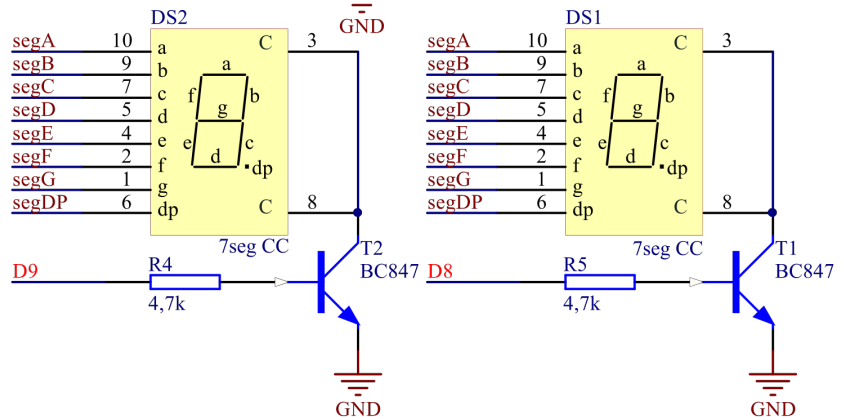
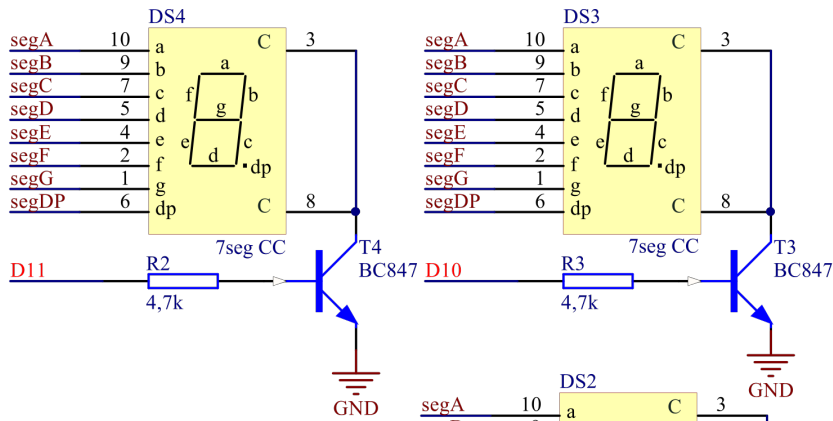
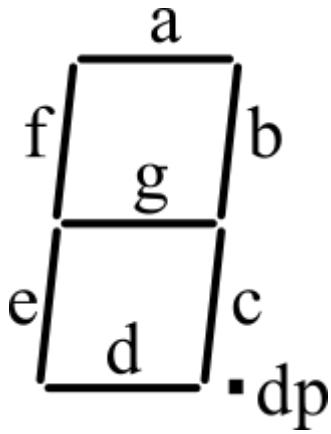


7-segment displays

On board are mounted four 7-segment LED displays, multiplex-controlled via 74LVC2244A chip.

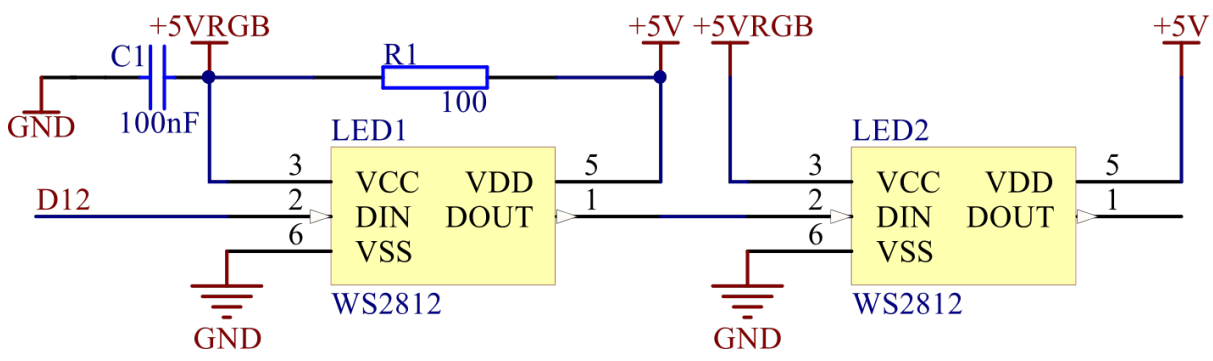
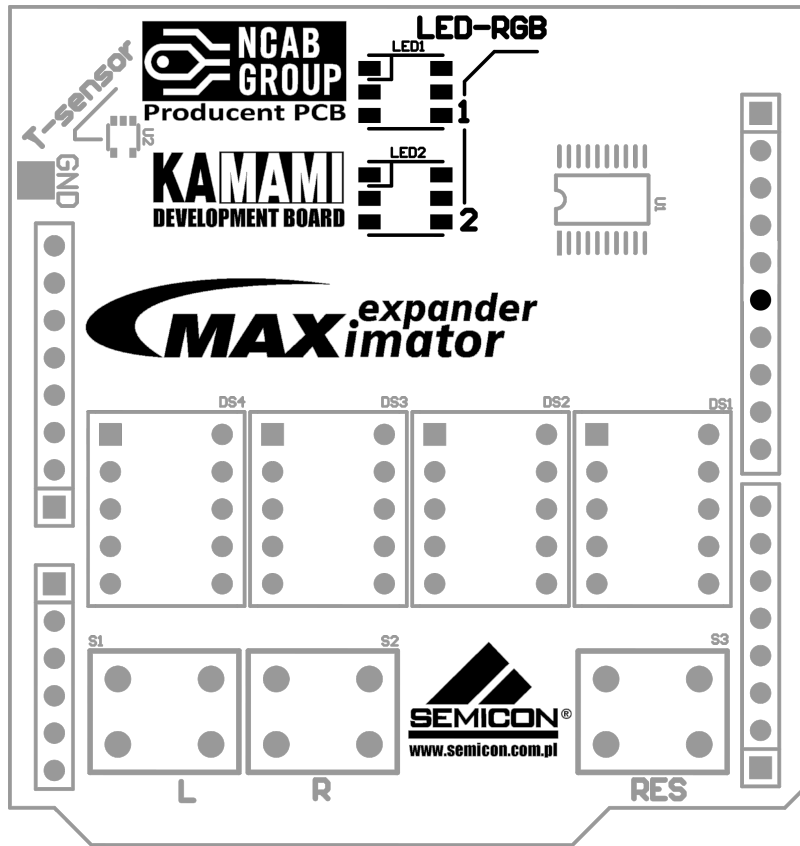


Line	LED segment
D0	segment A
D1	segment B
D2	segment C
D3	segment D
D4	segment E
D5	segment F
D6	segment G
D7	segment DP
D8	cathode DS1
D9	cathode DS2
D10	cathode DS3
D11	cathode DS4



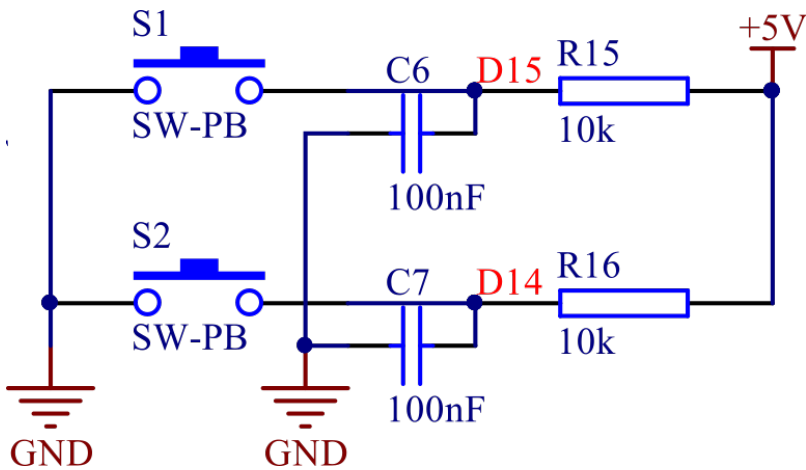
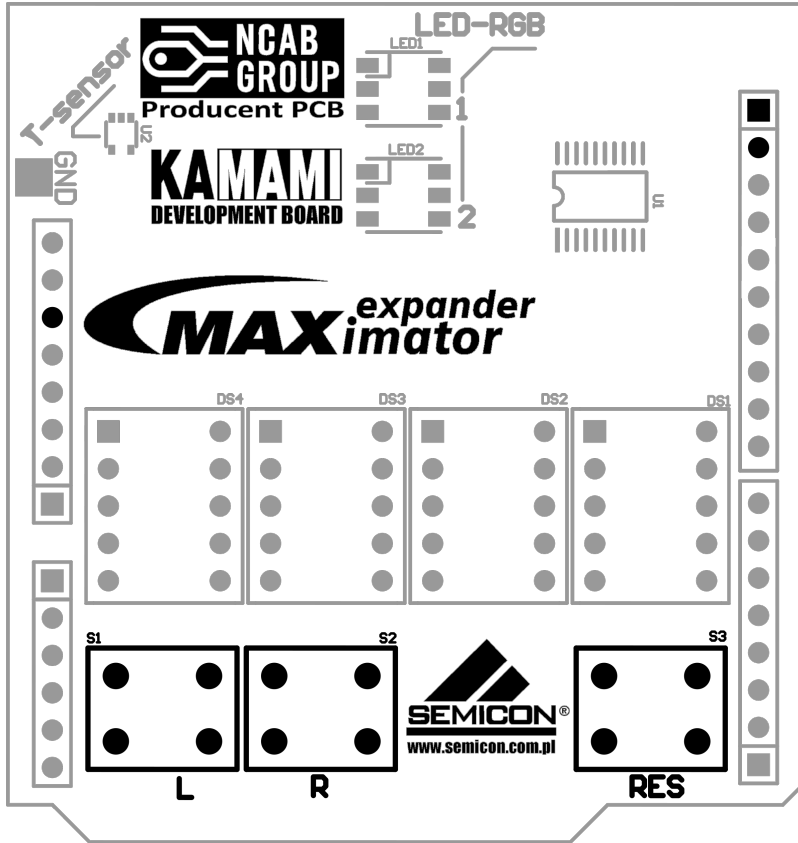
Multi-colored LEDs (RGB)

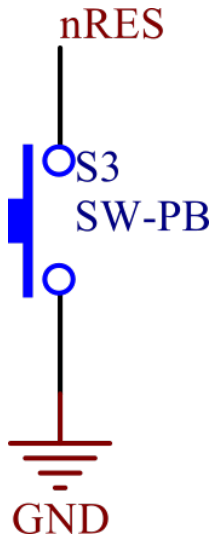
Embedded multi-colored WS2812 diodes allow for displaying colors in more than 16.7 million shades, diode control is in series - with one signal line it is possible to control a series of such diodes. The D12 line supplies the control signal to the LED1 input, its output is connected to the LED2 input.



Buttons

Board has two user buttons (marked "L" and "R") and a system reset button. Signal lines D14 and D15 (to which the "R" and "L" buttons are connected) are pulled up to the supply voltage (+5V). Reset button (RES) is connected to the nRST line, pressed to connect the line to the ground.





Key	Line	Default state
„L” (S1)	D15	Pull up to power supply (+5 V)
„R” (S2)	D14	Pulled up to power supply (+5 V)
RES (S3)	nRST	Disconnected



Zastrzegamy prawo do wprowadzania zmian bez uprzedzenia.

Oferowane przez nas płytki drukowane mogą się różnić od prezentowanej w dokumentacji, przy czym zmianom nie ulegają jej właściwości użytkowe.

BTC Korporacja gwarantuje zgodność produktu ze specyfikacją.

BTC Korporacja nie ponosi odpowiedzialności za jakiegokolwiek szkody powstałe bezpośrednio lub pośrednio w wyniku użycia lub nieprawidłowego działania produktu.

BTC Korporacja zastrzega sobie prawo do modyfikacji niniejszej dokumentacji bez uprzedzenia.