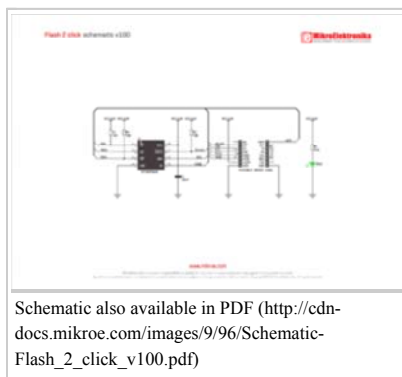# Flash 2 click

From MikroElektonika Documentation

Flash 2 click carries Microchip's **SST26VF064B** flash-memory module with 8 MB capacity. It's a highly reliable module with a specified minimum of 100,000 write cycles and with over 100 years of Data Retention. For data security, the module features a One-Time Programmable (OTP) 2 KB bit secure ID and a 64 bit unique, factory pre-programmed identifier. Additional software security measures include inidividual-block write Protection with permanent lock-down capability. Flash 2 click communicates with the target MCU through the mikroBUS™ SPI interface (CS#, SCK, MISO, MOSI) with additional functionality provided by the #HOLD pin (in place of default mikroBUS™ RST pin). The board is designed to use a 3.3V power supply.

Flash 2 click

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IC/Module	Microchip SST26VF064B (http://ww1.microchip.com/downloads/en/DeviceDoc/20005119G.pdf)
Interface	SPI (MISO, MOSI, SCK), CS, #HOLD
Power supply	3.3V
Website	www.mikroe.com/click/flash-2 (http://www.mikroe.com/click/flash-2)

Features and usage notes

Schematic also available in PDF (http://cdn-docs.mikroe.com/images/9/96/Schematic-Flash_2_click_v100.pdf)

The SST26VF064B/064BA memory array is organized in uniform, 4 KByte erasable sectors with the following erasable blocks:

- Eight 8 KB parameter

- Two 32 KByte overlay

- One-hundred twenty-six 64 KByte overlay blocks

The #HOLD pin temporarily stops serial communication with the SPI Flash memory while the device is selected. This pin only works in SPI, single-bit and dual-bit Read mode and must be tied high when not in use.

The manufacturer's data sheet has more information about the memory protection features of the chip:

"SST26VF064B/064BA offers flexible memory protection scheme that allows the protection state of each individual block to be controlled separately. In addition, the Write-Protection Lock-Down register prevents any change of the lock status during device operation. To avoid inadvertent writes during power-up, the device is write-protected by default after a power-on reset cycle. A Global Block Protection Unlock command offers a single command cycle that unlocks the entire memory array for faster manufacturing throughput."
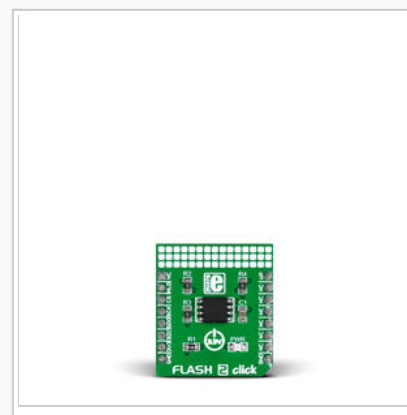
Programming

This snippet initializes all necessary pins and functions for using Flash 2 Click, and performs a test by writing test values to the click, and then reading them back to the user through UART communication.

```
1  #include <stdint.h>
2  #include "flash_2_hw.h"
3
4  sbit FLASH_2_WP at GPIOA_ODR.B0;
5  sbit FLASH_2_CS at GPIOD_ODR.B13;
6  sbit FLASH_2_HLD at GPIOC_ODR.B2;
7
8  int main(void)
9  {
10
11     uint8_t buffer[4]                  = {15,20,25,30};
12     uint16_t count                     = 4;
13     uint32_t address              = 0x0100F0;
14     uint8_t receive_buffer[4];
15     char tmp[20];
16
17     GPIO_Digital_Output( &GPIOA_BASE, _GPIO_PINMASK_0 );
18     GPIO_Digital_Output( &GPIOC_BASE, _GPIO_PINMASK_2 );
19     GPIO_Digital_Output( &GPIOD_BASE, _GPIO_PINMASK_13 );
20
21     SPI1_Init_Advanced( _SPI_FPCLK_DIV64,
22                         _SPI_MASTER | _SPI_8_BIT | _SPI_CLK_IDLE_LOW |
23                         _SPI_FIRST_CLK_EDGE_TRANSITION | _SPI_MSB_FIRST |
24                         _SPI_SS_DISABLE | _SPI_SSM_ENABLE |
25                         _SPI_SSI_1,
26                         &_GPIO_MODULE_SPI3_PC10_11_12 );
27
28     Delay_ms(300);
29
30     UART1_Init(9600);
```

```
31     Delay_ms(300);
32
33     UART1_Write_Text( "Initializing Flash 2 click... " );
34     UART1_Write_Text( "\r\n" );
35     flash_2_init();
36     Delay_ms(300);
37     flash_2_global_block_unlock();
38     Delay_ms(400);
39     flash_2_write( address, buffer, count );
40     flash_2_read( address, receive_buffer, count );
41
42     UART1_Write_Text( "Initial Values: " );
43     while( count-- )
44     {
45        ByteToStr( buffer[count], tmp );
46        UART1_Write_Text( tmp );
47     }
48     UART1_Write_Text( "\r\n" );
49     count = 4;
50
51     UART1_Write_Text( "Received Values: " );
52     while( count -- )
53     {
54        ByteToStr( receive_buffer[count], tmp );
55        UART1_Write_Text( tmp );
56     }
57     UART1_Write_Text( "\r\n" );
58
59     return;
60 }
```

Code examples that demonstrate the usage of Flash 2 click with MikroElektronika hardware, written for mikroC for ARM, AVR, dsPIC, FT90x, PIC and PIC32 are available on Libstock (http://libstock.mikroe.com/projects/view/1785/flash-2-click).

Resources

- Microchip SST26VF064B data sheet (http://ww1.microchip.com/downloads/en/DeviceDoc/20005119G.pdf)

- Flash 2 click examples on Libstock (http://libstock.mikroe.com/projects/view/1785/flash-2-click)

- This NAND, NOR that NAND (http://learn.mikroe.com/this-nand-nor-that-nand/), artile about Flash 2 click on learn.mikroe.com

- mikroBUS standard specifications (http://download.mikroe.com/documents/standards/mikrobus/mikrobus-standard-specification-v200.pdf)

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