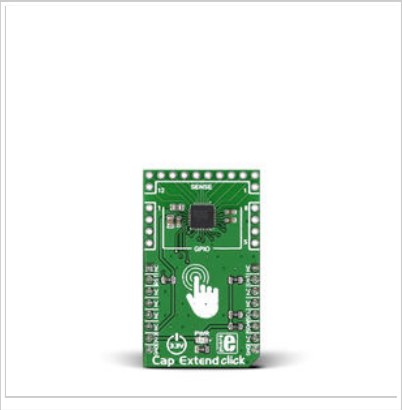
Cap Extend click

From MikroElektonika Documentation

Cap Extend click carries a SEMTECH SX8633 low power, capacitive button touch controller. It has 12 pins for connecting capacitive inputs (either touch-buttons or proximity sensors). Any sort of conductive object can be used as an input. Additional 8 GPIO pins, available on the side-edges of the board, can be used as LED drivers. Cap Extend click communicates with the target MCU through the mikroBUS™ I2C interface, with additional functionality provided by RST and INT pins. Designed to use a 3.3V power supply only.

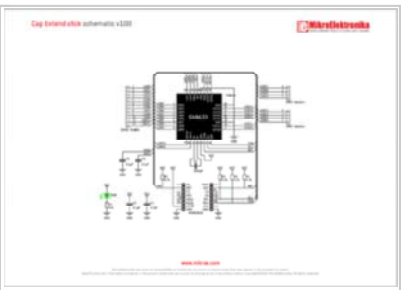
Cap Extend click



Cap Extend click

IC/Module	SX8633 (http://www.semtech.com/images/datasheet/sx8633.pdf)
Interface	I2C
Power supply	3.3V
Website	www.mikroe.com/click/cap-extend (http://www.mikroe.com/click/cap-extend)

Features and usage notes



Schematic also available in PDF (http://cdn-docs.mikroe.com/images/6/60/Cap_Extend_click_sch

The SX8633 IC has a 10 bit ADC and up to 100pF offset capacitance compensation at full sensitivity. This high resolution enable it to support a wide variety of touch pad sizes and shapes to be used with the click. An overlay material up to 5mm thick can also be used, simplifying integration.

The 8 GPIO pins on Cap Extend click can be used as LED drivers. An interesting application that combines capacitive sensing with LED drivers is to have LEDs that slowly fade in as a user's finger approaches.

The LED fading effect can be initiated using the SX8633 autolight mode.

Programming

This example shows how you can setup Cap Extend click very quickly and easily, and show which surface you are touching through the GPIOs as LEDs.

```
#include <stdint.h>
#include "capextend_hw.h"

void system_init( void );

sbit RST at GPIOC_ODR.B2;

//Global Declatations
uint8_t address      = 0x2B;
uint8_t my_buffer          = 0;

void main()
{
     //Local Decalartions
     uint8_t msb          = 0;
     uint8_t lsb          = 0;
     char uart_text[20] = { 0 };

     system_init();
     Delay_ms(100);

     GPIOD_ODR = 0xFF;

     while(1)
     {
          msb = capextend_read_msb_buttons();
          lsb = capextend_read_lsb_buttons();
          GPIOD_ODR = ( lsb | ( msb << 8 ) );

     }  //While

}  //Main

void system_init( void )
{
     //GPIOs
     GPIO_Digital_Output( &GPIOC_BASE, _GPIO_PINMASK_2 );
```

```
38      GPIO_Digital_Output( &GPIOD_BASE, _GPIO_PINMASK_ALL );
39
40      //Toggle Reset Pin
41      RST = 0;
42      Delay_ms(50);
43      RST = 1;
44      Delay_ms(200);
45
46      //Initialize UART
47      UART1_Init( 9600 );
48      Delay_ms(100);
49      UART1_Write_Text( "UART Initialized\r\n" );
50
51      //Initialize I2C
52      I2C1_Init_Advanced( 400000, &_GPIO_MODULE_I2C1_PB67 );
53      UART1_Write_Text( "I2C Initialized\r\n" );
54
55      //Initialize Cap Extend
56      capextend_init( address );
57      UART1_Write_Text( "Cap Extend Initialized\r\n" );
58
59 }
```

Code examples that demonstrate the usage of Cap Extend click with MikroElektronika hardware, written for mikroC for ARM, AVR, dsPIC, FT90x, dsPIC, PIC and PIC32 are available on Libstock (http://libstock.mikroe.com/projects/view/1804/cap-extend-click).

Resources

- Vendor’s data sheet (http://www.semtech.com/images/datasheet/sx8633.pdf)

- Cap Extend click Libstock Code example (http://libstock.mikroe.com/projects/view/1804/cap-extend-click)