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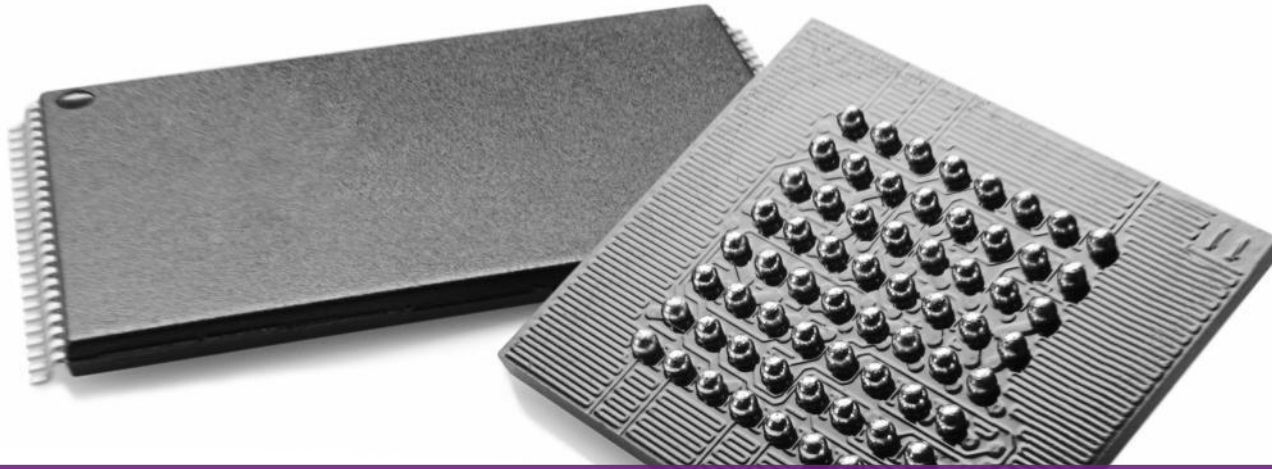
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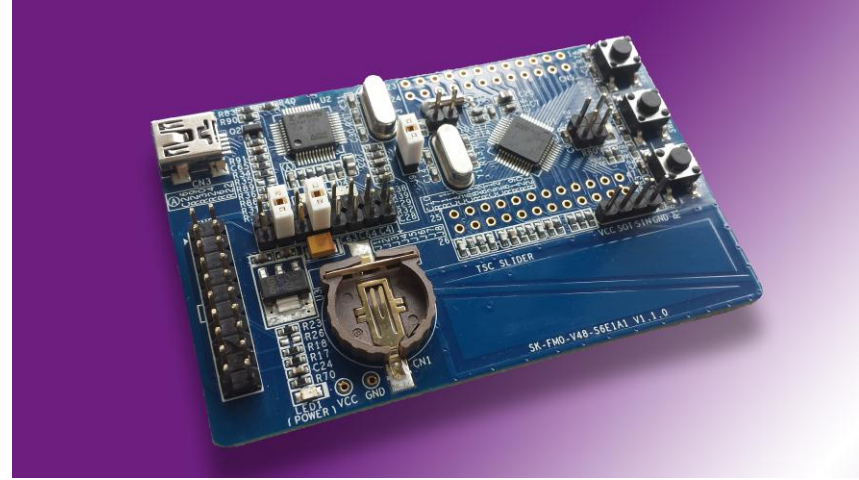
SK-FM0-V48-S6E1A1

(PN:S6SE1A12C0ASA0002)

Hardware v1.1.0 / document v1.2.0

Content of this document

- [Hardware](#)
- [Software](#)
- [Flash Programming](#)
- [JTAG debugger](#)
- [Finally](#)



Try this board

- This MCU on the board is preprogrammed with a test application.

- Follow the steps to test it:

- Install the USB Virtual-COM port driver

<Release>:Tools\vcom_drivers_spansion.zip

- Close J2, J4, J9, J11, J12

- Check the availability of Virtual-COM (e.g. Windows Device Manager)

- Open the “Spansion Serial Port Viewer”

<Release>:Tools\SerialPortViewerAndTerminalV5.5.zip

- Set the baud rate to “115200”

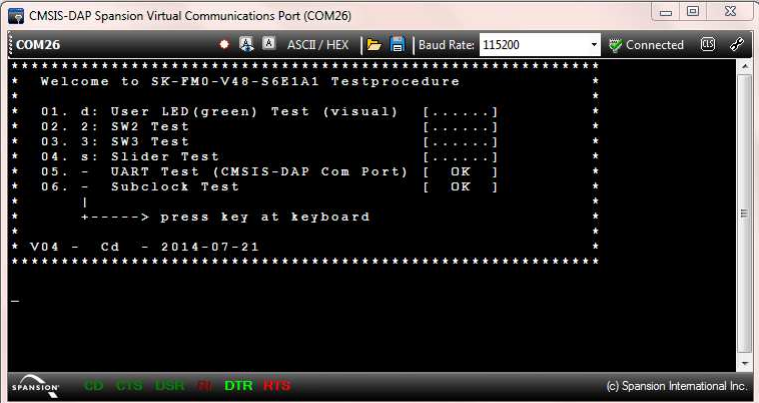
- Click “Disconnected”, to be “Connected”

- Press <Space> to show the welcome menu

- Test the functions by enter the number

Congratulation!

[Learn more details...](#)



The screenshot shows a terminal window titled "CMSIS-DAP Spansion Virtual Communications Port (COM26)". The window displays a test procedure menu with the following text:

```
*****
Welcome to SK-PM0-V48-S6E1A1 Testprocedure
*****
* 01. d: User LED(green) Test (visual) [.....] *
* 02. 2: SW2 Test [.....] *
* 03. 3: SW3 Test [.....] *
* 04. s: Slider Test [.....] *
* 05. - UART Test (CMSIS-DAP Com Port) [ OK ] *
* 06. - Subclock Test [ OK ] *
*****
|
+-----> press key at keyboard
*****
* V04 - Cd - 2014-07-21 *
*****
```



Hardware

Features of the MCU



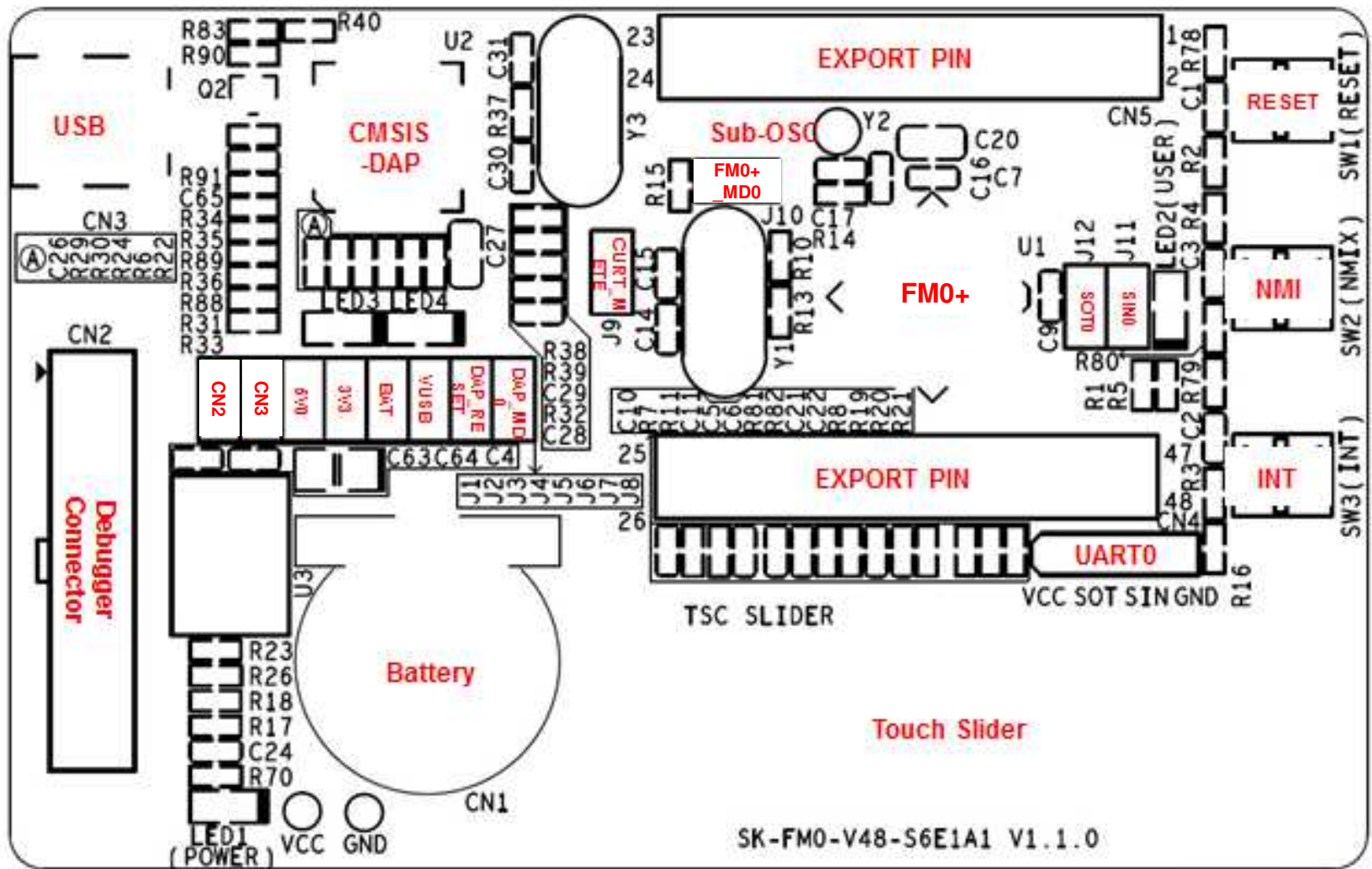
- The SK-FM0-V48-S6E1A1 is based on the Spansion ARM® Cortex™-M0+ device S6E1A12C0A
- The S6E1A1 Series have these features:
 - Power Supply: 2.7 to 5.5V
 - Up to 40MHz frequency
 - Up to 88Kbytes flash and 6Kbytes SRAM
 - Up to 3 channels of Multi-Function-Serial (MFS) interface with 128bytes FIFO
 - One 12-bit A/D Converter; Max. 8 channels
 - One Real Time Clock
 - DMA-Controller (2ch)
 - One Multi-Function-Timer (MFT) and Quadrature Position/Revolution Counter (QPRC), e.g. Motor control
 - Timers (base timer, dual timer, watch dog, etc.)
 - Low Voltage Detection and Clock Supervisor module
 - 32/48 LQFP and QFN, 52 LQFP

Feature of the board

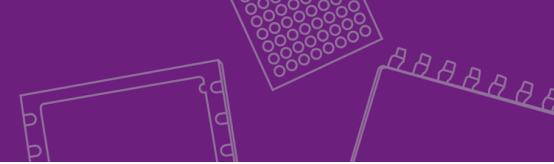
- The SK-FM0-V48-S6E1A1 has these features:

Features	Details
Power supply	CN3 (USB), CN2 (Debugger), BAT (Cell battery) (Note: Cell battery is not included in this kit)
On-board voltage	3V3, 5V0 or Cell Battery (BAT)
Buttons and Touch	Reset, External INT, NMI, Touch slider
LED	Power, User
Debug interface	CMSIS-DAP, SWD
Programming I/F	Virtual-COM port
Current Measure	Configurable jumper for measuring the current of the FM0+ MCU VCC pin

Components layout

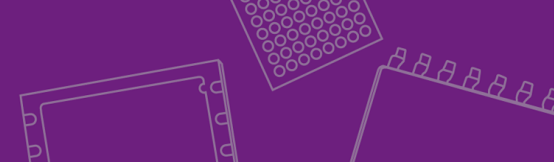


MCU pin assignment – 48 LQFP(1/4)



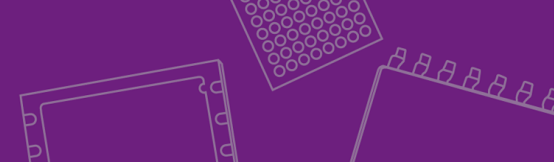
Pin	Pin definition	Function
1	VCC	3V3, BAT, 5V0
2	P50/INT00_0/AIN0_2/SIN3_1/IC01_0	N/A
3	P51/INT01_0/BIN0_2/SOT3_1	N/A
4	P52/INT02_0/ZIN0_2/SCK3_1	N/A
5	P39/DTTI0X_0/ADTG_2	N/A
6	P3A/RTO00_0/TIOA0_1/AIN0_3/SUBOUT_2/RTCCO_2/INT03_0/SCK0_2	N/A
7	P3B/RTO01_0/TIOA1_1/BIN0_3/SOT0_2/INT04_0/SCS31_2	N/A
8	P3C/RTO02_0/TIOA2_1/ZIN0_3/SIN0_2/INT05_0/SCS30_2	N/A
9	P3D/RTO03_0/TIOA3_1/INT06_0/AIN0_0/SCK3_2	N/A
10	P3E/RTO04_0/TIOA0_0/BIN0_0/SOT3_2/INT15_0	N/A
11	P3F/RTO05_0/TIOA1_0/ZIN0_0/SIN3_2	N/A
12	VSS	VSS

MCU pin assignment – 48 LQFP (2/4)



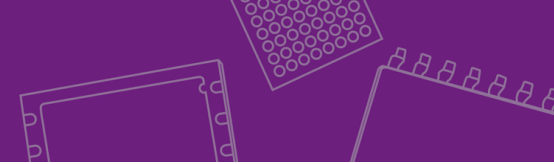
Pin	Pin definition	Function
13	C	4.7uF
14	VCC	3V3, BAT, 5V0
15	P46/X0A	Sub-crystal 32.768KHz
16	P47/X1A	Sub-crystal 32.768KHz
17	INITX	RESET
18	P49/TIOB0_0	N/A
19	P4A/TIOB1_0	N/A
20	PE0/ADTG_1/DTTI0X_1/INT02_2	N/A
21	MD0	MD0
22	PE2/X0	Main crystal 4MHz
23	PE3/X1	Main crystal 4MHz
24	VSS	VSS

MCU pin assignment – 48 LQFP (3/4)



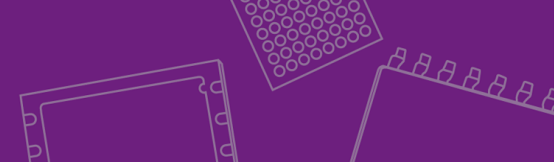
Pin	Pin definition	Function
25	P10/AN00	N/A
26	P11/AN01/SIN1_1/INT02_1/FRCK0_2/IC02_0	TSC slider part1
27	P12/AN02/SOT1_1/IC00_2/INT01_1	TSC slider part2
28	P13/AN03/SCK1_1/SUBOUT_1/IC01_2/RTCCO_1/INT00_1	N/A
29	P13/AN03/SCK1_1/SUBOUT_1/IC01_2/RTCCO_1/INT00_1	N/A
30	P15/AN05/SOT0_1/SCS11_1/IC03_2/INT15_2	TSC charger
31	AVCC	AVCC
32	AVRH	AVRH
33	AVSS	AVSS
34	P23/AN06/SCK0_0/TIOA2_0/IC02_1/AIN0_1/INT04_1	N/A
35	P22/AN07/SOT0_0/TIOB2_0/IC03_1/ZIN0_1/INT05_1	SOT0_0
36	P21/SIN0_0/INT06_1/TIOB1_1/IC01_1/BIN0_1/FRCK0_0	SIN0_0

MCU pin assignment – 48 LQFP (4/4)



Pin	Pin definition	Function
37	P00	N/A
38	P01/SWCLK	SWCLK (SWD)
39	P02	N/A
40	P03/SWDIO	SWDIO (SWD)
41	P04/SCK3_0/INT03_2/TIOB0_1/IGTRG0_1	INT button
42	P0F/NMIX/SUBOUT_0/CROUT_1/RTCCO_0	NMIX button
43	P61/SOT3_0/TIOB2_2/DTTI0X_2/SCS11_2	LED
44	P60/SIN3_0/TIOA2_2/INT15_1/IC00_0/IGTRG0_0/SCS10_2	Pull-down to GND
45	P80/SCK1_2/FRCK0_1	N/A
46	P81/SOT1_2	N/A
47	P82/SIN1_2	N/A
48	VSS	VSS

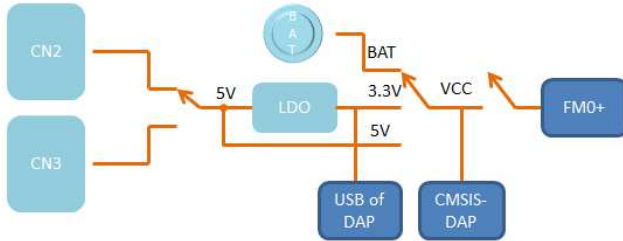
Jumper Table



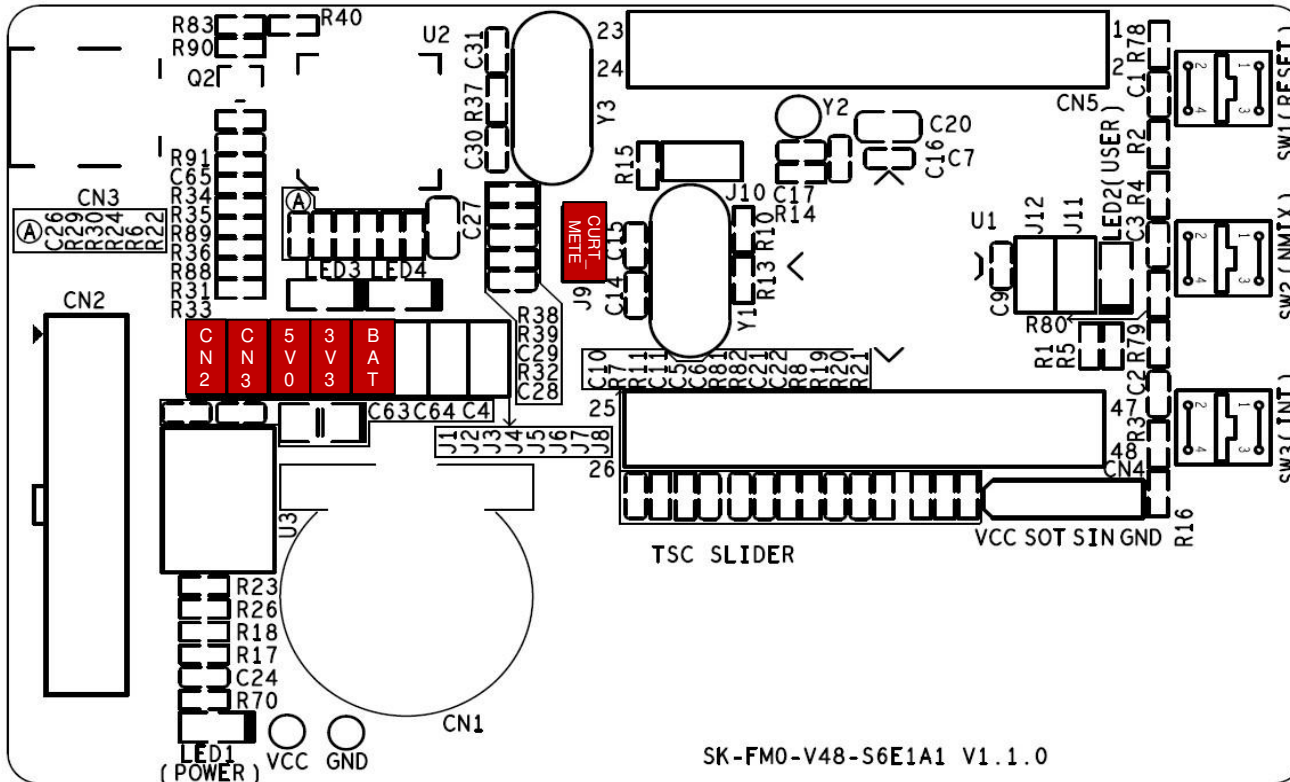
Jumpers	Function	Setting
J1-J2	Select power source <i>Please just select one power source!</i>	J1: CN2 (Debugger) J2: CN3 (USB)
J3-J5	Select on-board voltage <i>Do only set one jumper!</i>	J3: 5V0 J4: 3V3 J5: BAT (Cell battery)
J6	VUSB detection	Open: for on-board voltage is 3V3 Close: for on-board voltage is 5V0
J7	CMSIS-DAP Reset	Do not close!
J8	CMSIS-DAP MD0	Open: user mode Close: flash programming for CMSIS-DAP
J9	Jumper for current metering	Open: connect a current meter in serial Close: normal mode
J10	FM0+ MD0	Open: user mode Close: flash programming for fm0
J11-J12	UART connecting between FM0+ and FM3	Use of virtual COM-port: Open: Disconnect from CMSIS-DAP UART Close: Connect to CMSIS-DAP UART

Jumper - Power Supply

- Power structure and jumpers

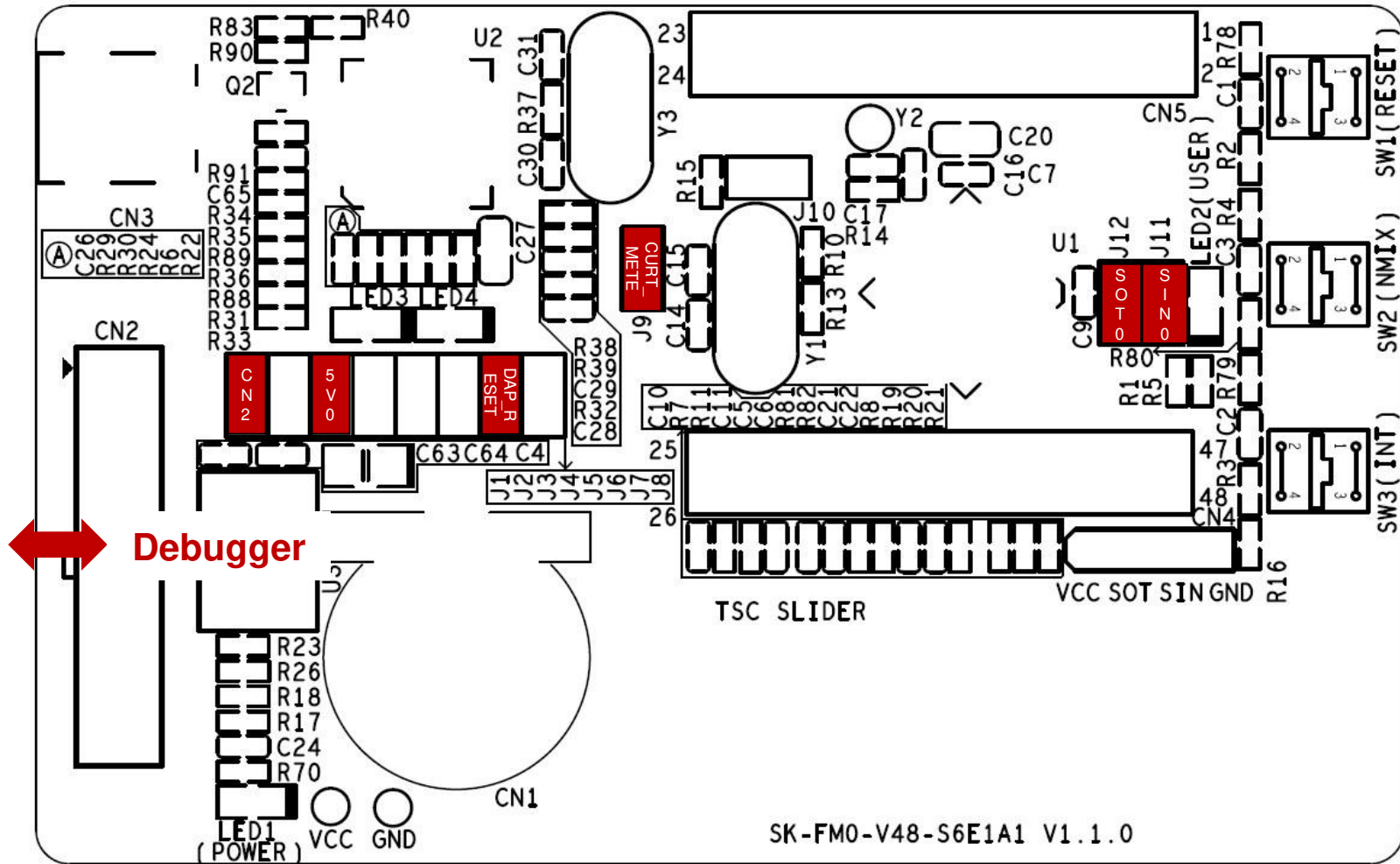


* Please just select one power supply and on-board voltage!



Jumper - Debug Mode(SWD)

- Jumper Setting for SWD debugging mode (5V0)





Software

- s6e1a1-template-v1.1.0 (template project)
 - “Empty ”project as base for user application
 - Find the template project **<Release>:Template\s6e1a1-template-v1.1.0.zip**
- tp-sk-fm0-v48-s6e1a1 (testcode)
 - Touch slider implementation using ADC and I/O
 - LED driving by timer
 - For checking the functionality of starterkit
 - Find the hex file **<Release>:Hex file\tp_sk-fm0-v48-s6e1a1-v04.srec**

- The following tools are available
 - FLASH USB DIRECT Programmer
 - ◆ MCU flash programmer via USB port
 - ◆ Install from: <Release:> **Tools\usbdirect-v01I08.zip**
 - FLASH MCU Programmer
 - ◆ MCU flash programmer via UART (CN3, on-board USB-to-UART)
 - ◆ Install from: <Release:> **Tools\PCW_for_S6E1A1_ES1_[V01L11ca02].zip**
 - USB Virtual-COM port
 - ◆ Allows UART communication by the PC's USB connection
 - ◆ On-board USB-to-UART converter (via CN3, CMSIS-DAP)
 - ◆ For driver installation: <Release:> **Tools\ vcom_drivers_spansion.zip**



Flash programming

Flash programming the FM0+ via CN3 (serial)

■ FLASH MCU Programming the FM0+ via CN3

- Jumper Setting

- ◆ Close jumper J2, J3 and J6
- ◆ Close jumper J9 and J10
- ◆ Close jumper J11 and J12

- Connect the board via CN3 with USB port of PC

- FLASH MCU Programmer for FM0+

- ◆ Programming the FM0+ via USB-to-UART converter(CMSIS-DAP)

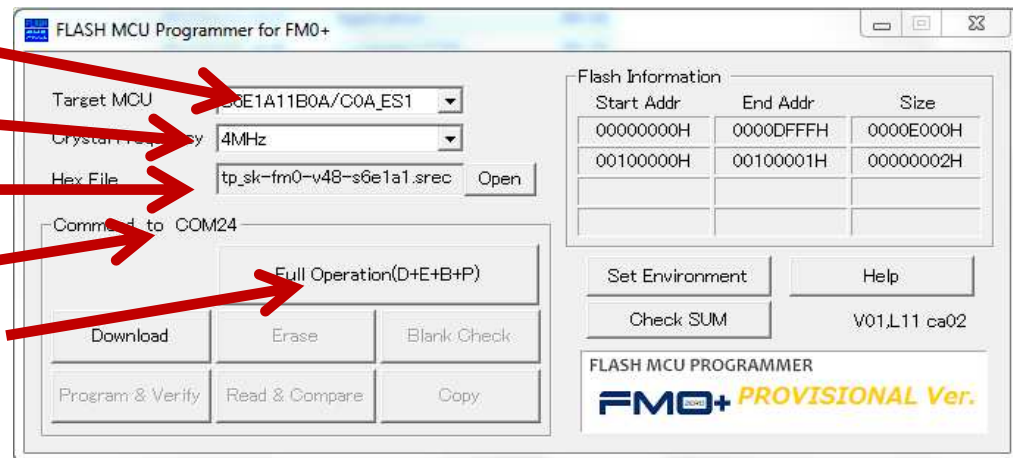
- Select MCU

- Select frequency

- Select hex file

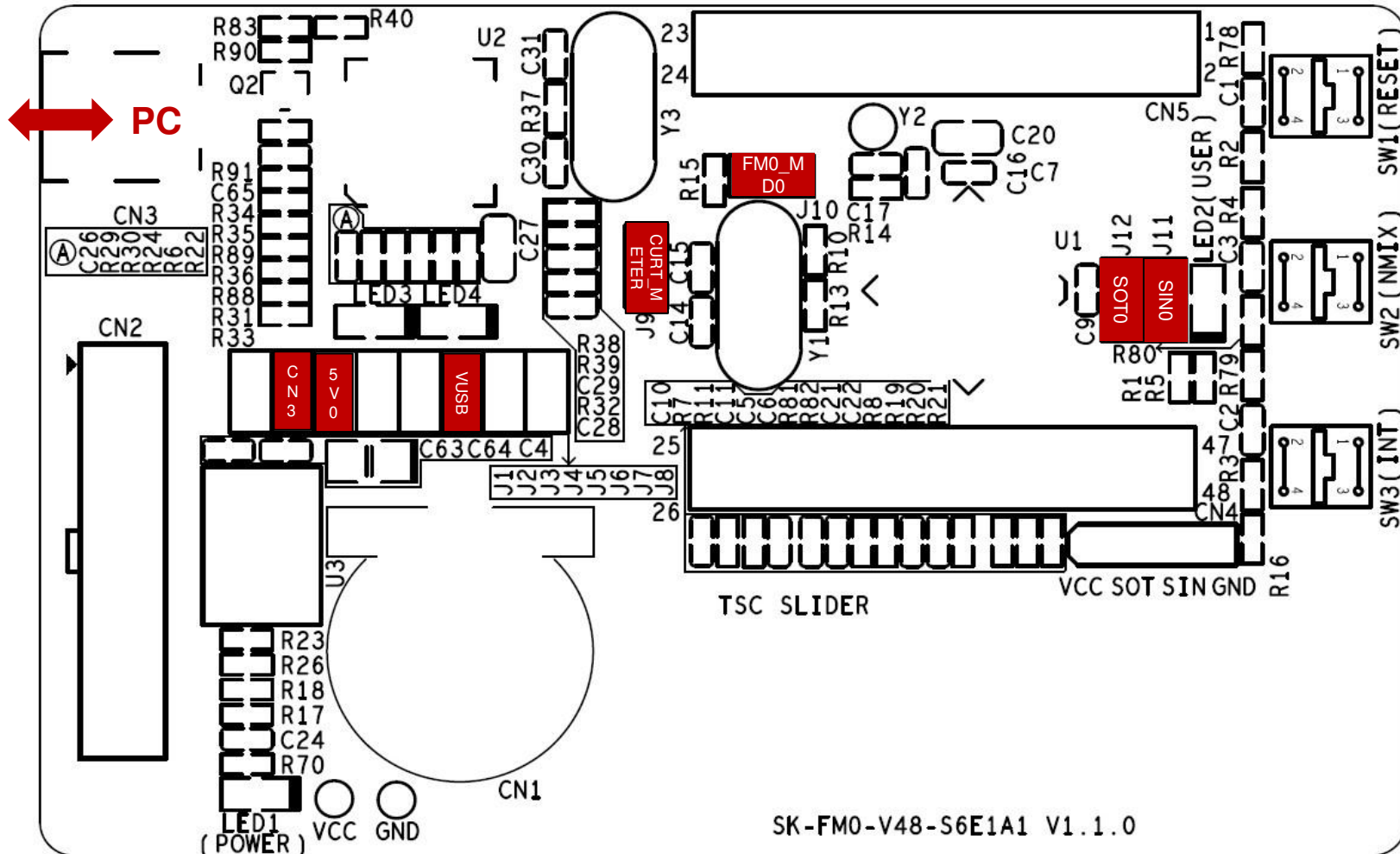
- Select COM port

- Execute the process



Jumper - Programming mode (serial)

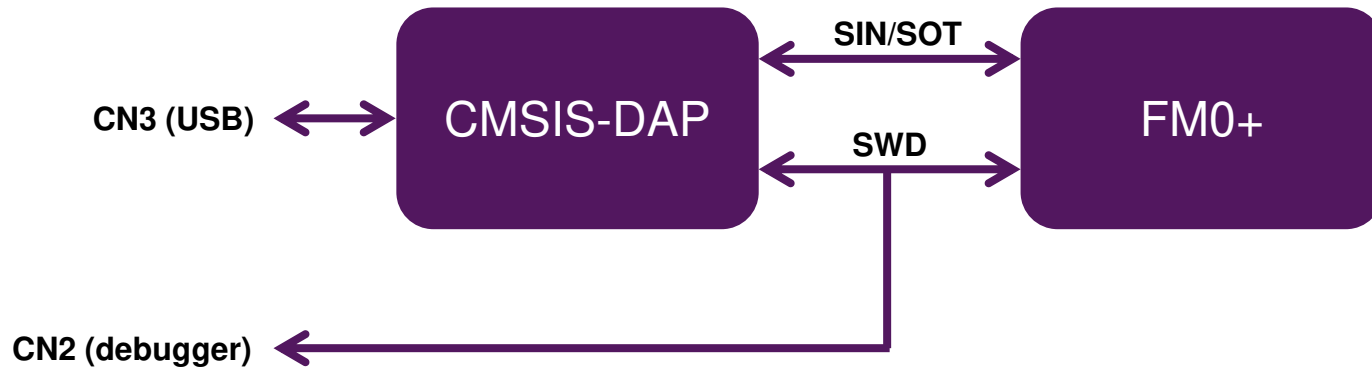
- Jumper setting for Programming the FM0+ via CN3





JTAG debugger

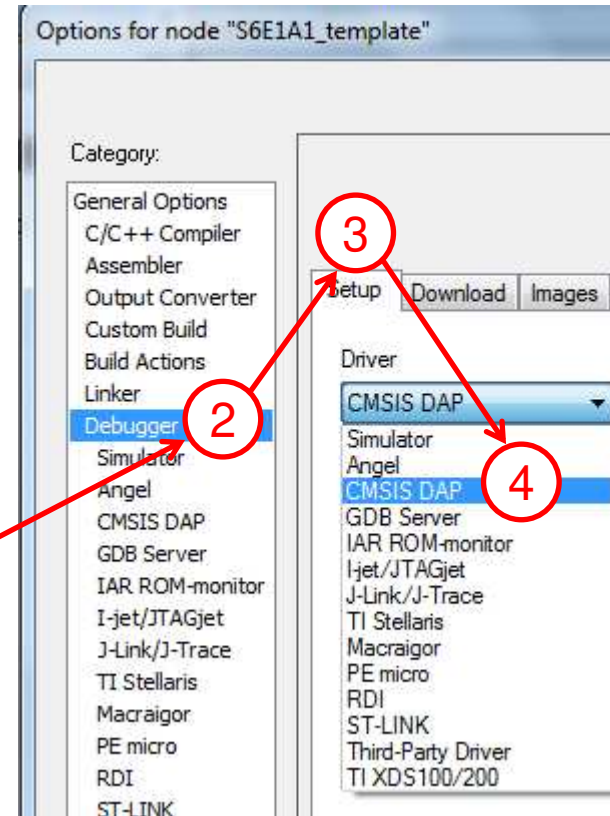
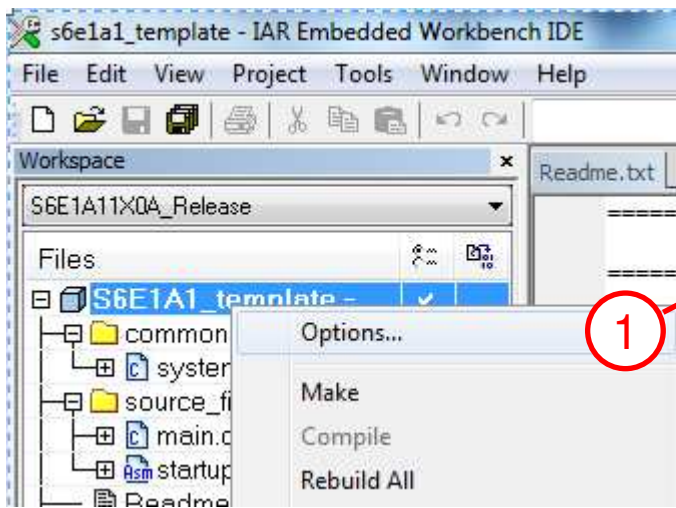
- This starterkit also provides an on-board JTAG adapter
 - Compatible to CMSIS-DAP
 - Based on MB9AF312K



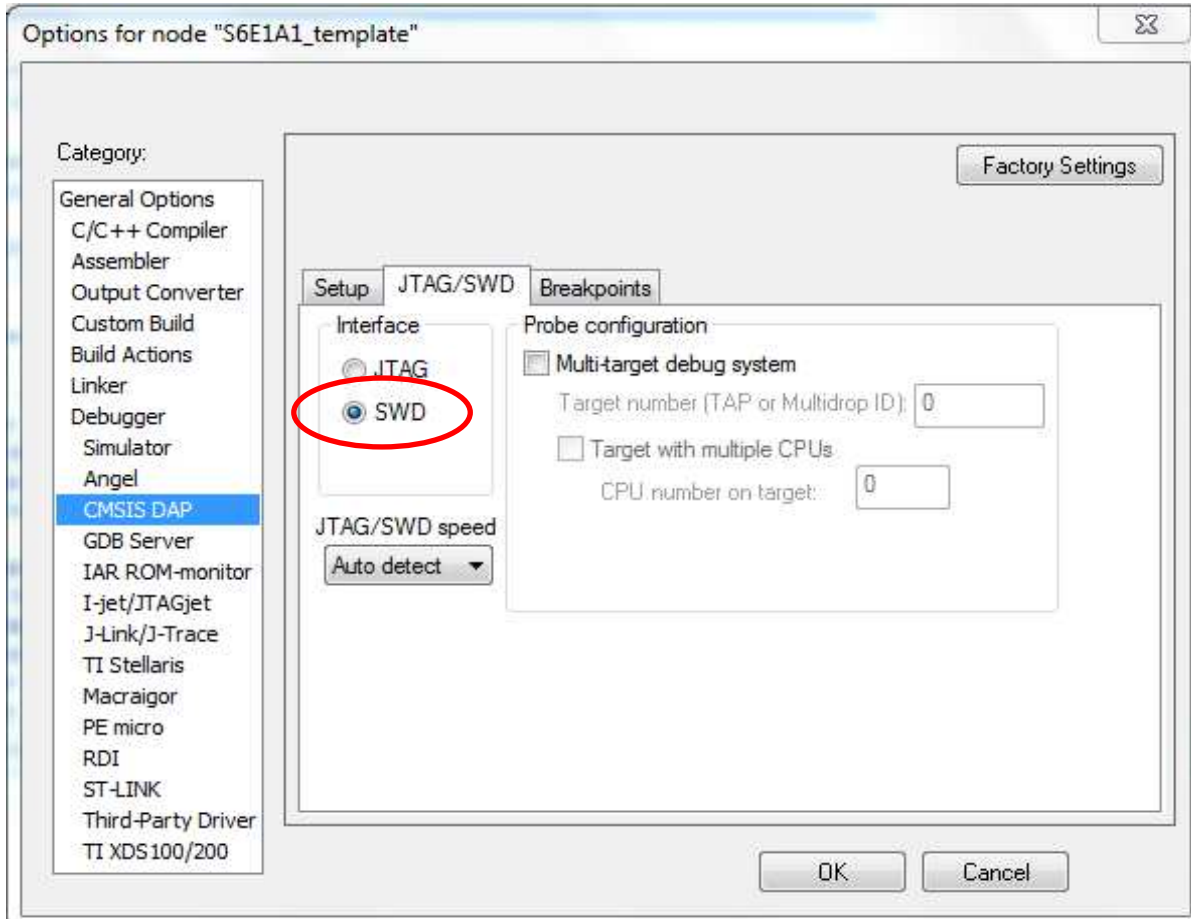
- To use CMSIS-DAP (for first time)
 - Install Virtual-COM port driver. <Release>:Tools\vcom_drivers_spansion.zip
 - Install CMSIS-DAP and Programming driver. <Release>: Tools\ cmsis-dap\setup_driver_installer.zip
 - Update CMSIS-DAP firmware by FLASH USB DIRECT programmer

CMSIS-DAP within IAR EWARM6

- Select the CMSIS-DAP within IAR EWARM6
 - Right click on the project
 - Select **“Options”**
 - Select **“Debugger”**
 - Click **“Setup”**
 - Select **“CMSIS-DAP”**



- Select SWD interface for CMSIS-DAP
 - Click on “**CMSIS-DAP**” -> “**JTAG/SWD**” -> “**SWD**”



*For FM0+, only SWD interface is available