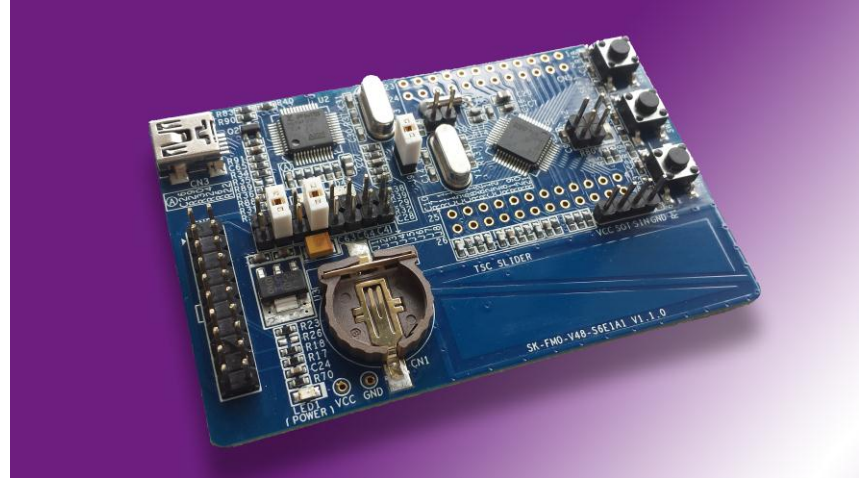# SK-FM0-V48-S6E1A1

(PN:S6SE1A12C0ASA0002)

Hardware v1.1.0 / document v1.2.0

Content of this document

- [Hardware](#)

- [Software](#)

- [Flash Programming](#)

- [JTAG debugger](#)

- [Finally](#)

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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"
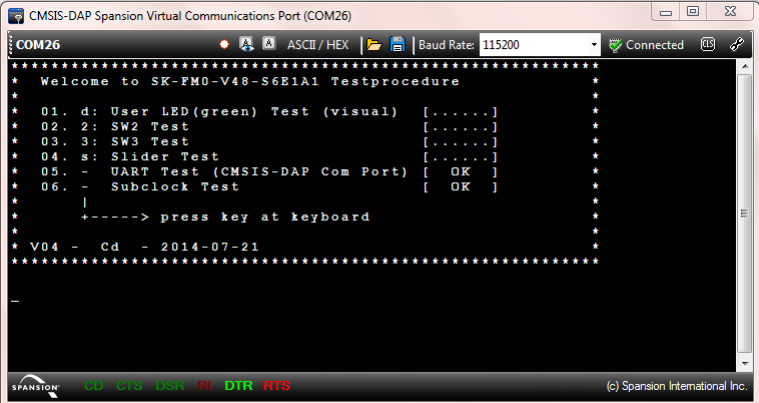
  <Release>:Tools\SerialPortViewerAndTerminalV5.5.zip

  - Set the baud rate to "115200"

  - Click "Disconnected", to be "Connected"

  - Press <**Space**> to show the welcome menu
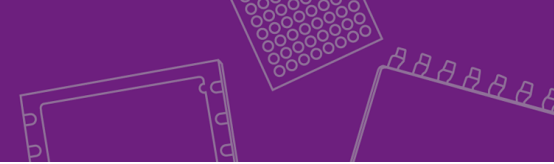
  - Test the functions by enter the number

  Learn more details…

Congratulation!

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# 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

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Feature of the board

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

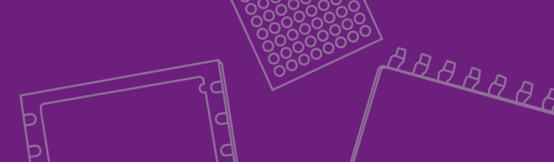| Features	Details
Power supply	CN3 (USB), CN2 (Debugger), BAT (Cell battery) (Note: Cell battery is not included in this kit)
On-board voltage	3V3, 5V0 or Cell Battery (BAT)
Buttons and Touch	Reset, External INT, NMI, Touch slider
LED	Power, User
Debug interface	CMSIS-DAP, SWD
Programming I/F	Virtual-COM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

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SK-FM0-V48-S6E1A1 V1.1.0

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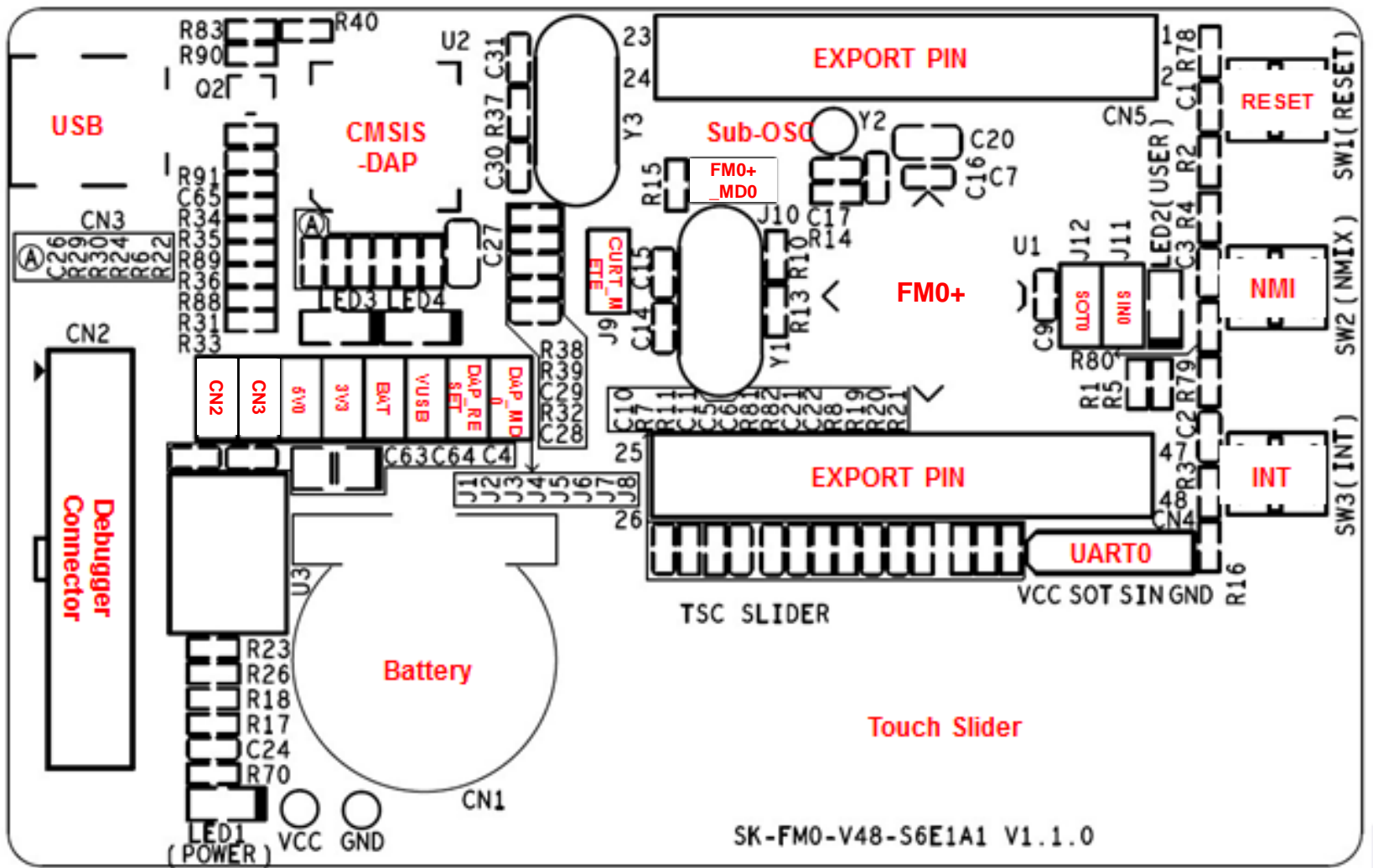
MCU pin assignment – 48 LQFP(1/4)
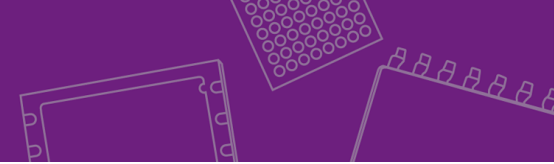
Pin	Pin definition	Function
1	VCC	3V3, BAT, 5V0
2	P50/INT00_0/AIN0_2/SIN3_1/IC01_0	N/A
3	P51/INT01_0/BIN0_2/SOT3_1	N/A
4	P52/INT02_0/ZIN0_2/SCK3_1	N/A
5	P39/DTTI0X_0/ADTG_2	N/A
6	P3A/RTO00_0/TIOA0_1/AIN0_3/SUBOUT_2/RTCCO_2/INT03_0/SCK0_2	N/A
7	P3B/RTO01_0/TIOA1_1/BIN0_3/SOT0_2/INT04_0/SCS31_2	N/A
8	P3C/RTO02_0/TIOA2_1/ZIN0_3/SIN0_2/INT05_0/SCS30_2	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

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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

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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

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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

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Jumper Table
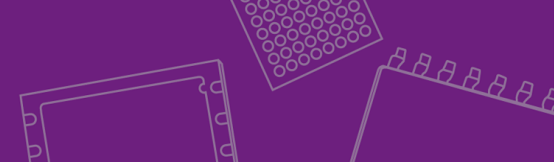
| Jumpers	Function	Setting
J1-J2	Select power source *Please just select one power source!*	J1: CN2 (Debugger) J2: CN3 (USB)
J3-J5	Select on-board voltage *Do only set one jumper!*	J3: 5V0 J4: 3V3 J5: BAT (Cell battery)
J6	VUSB detection	Open: for on-board voltage is 3V3 Close: for on-board voltage is 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

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- **Power structure and jumpers**
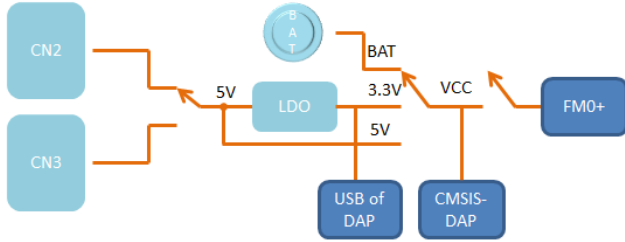
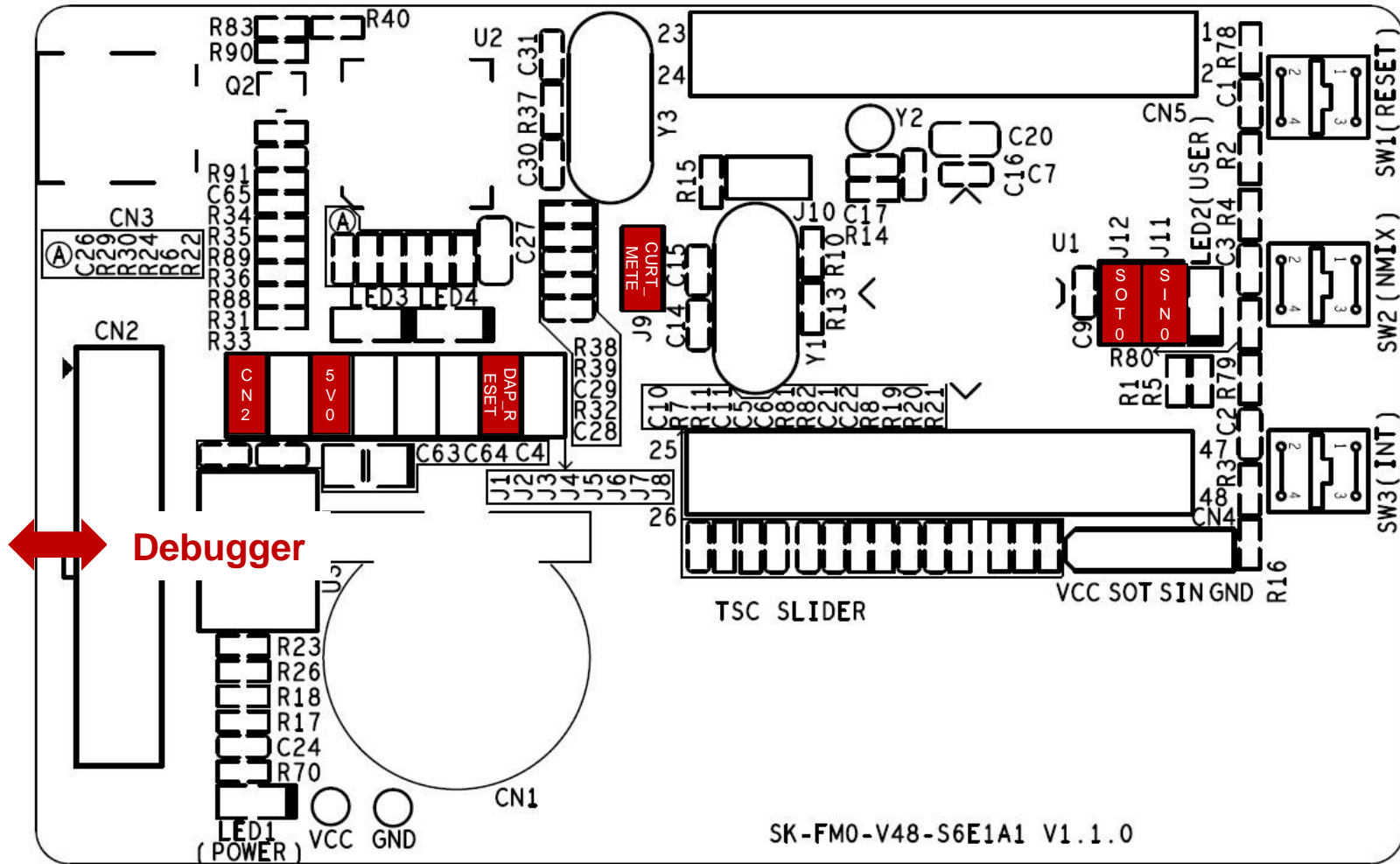* Please just select one power supply and on-board voltage!
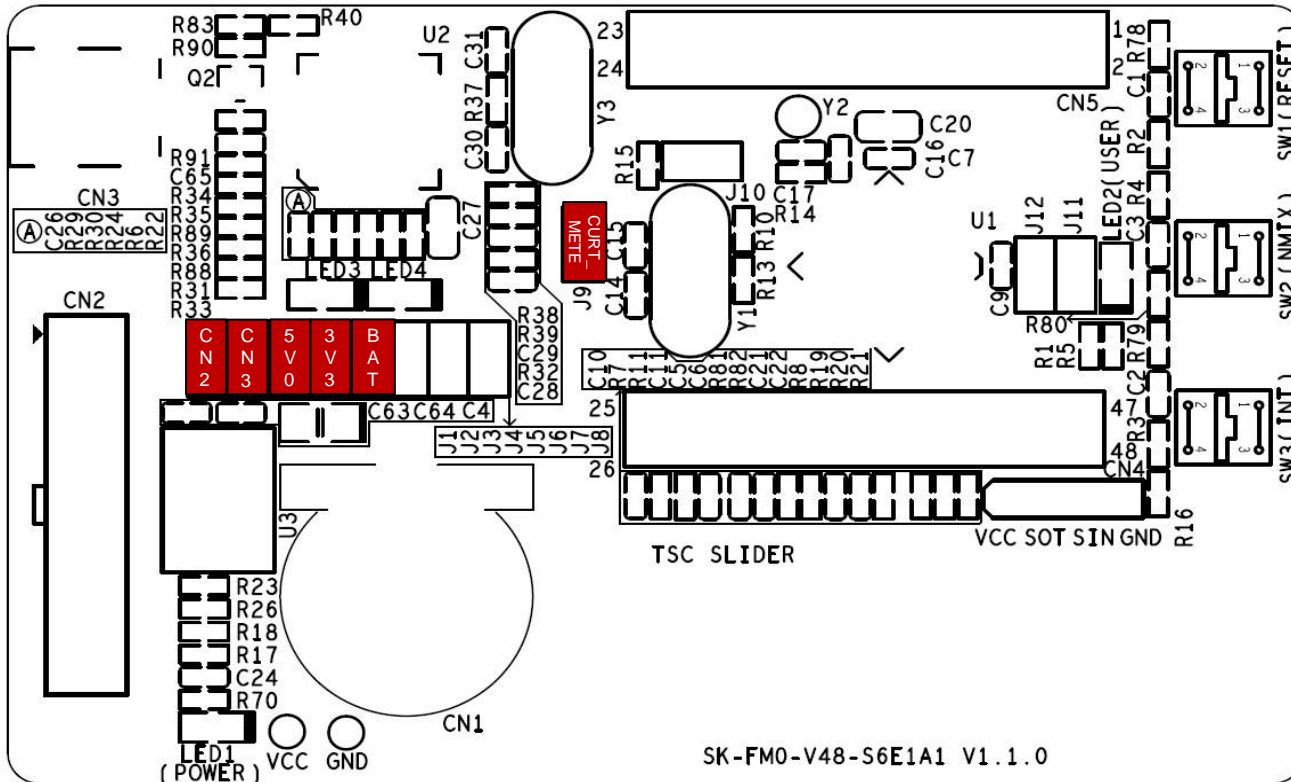
- Default jumper setting (Run mode,CMSIS-DAP,3V3)
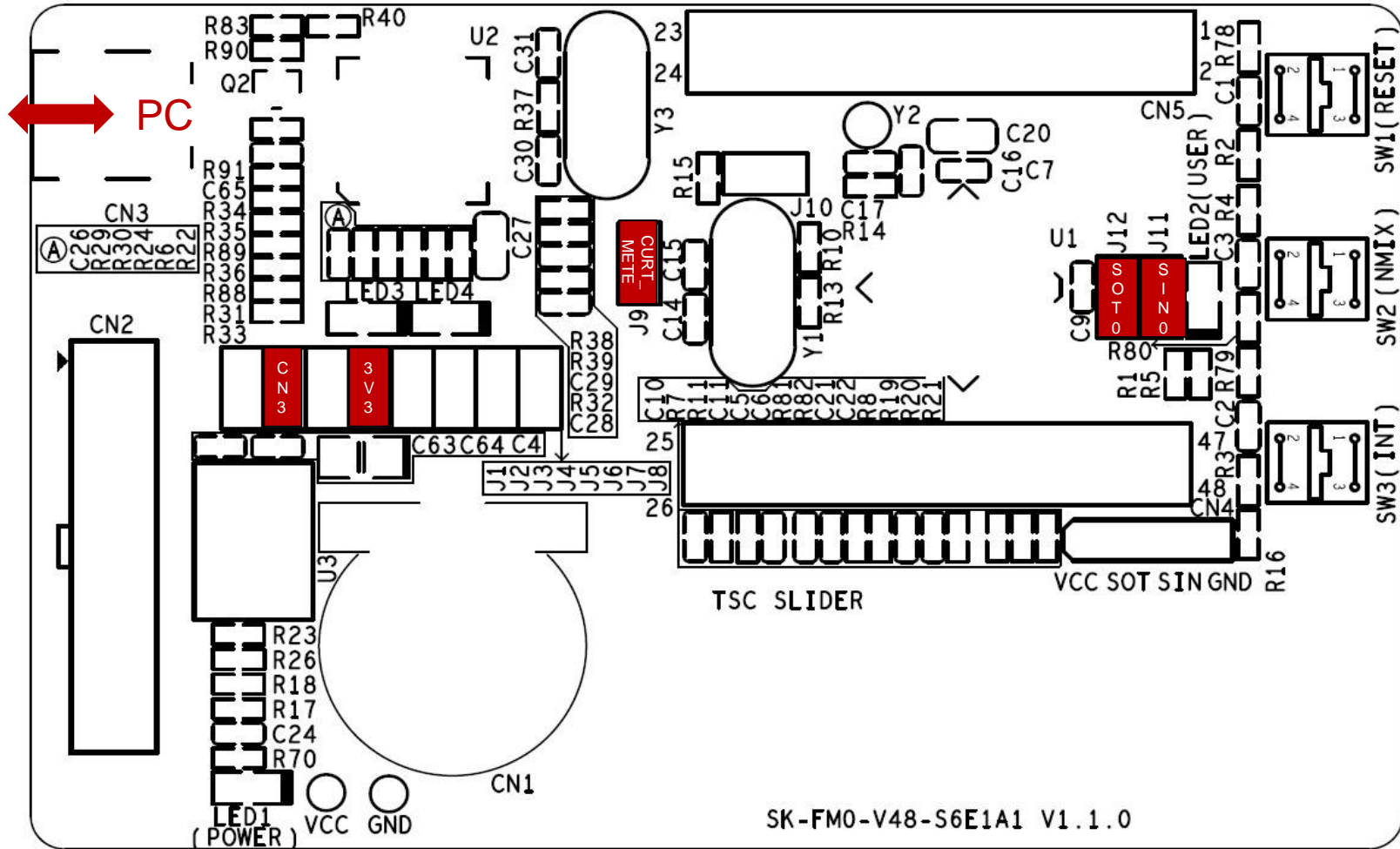
- Jumper Setting for SWD debugging mode (5V0)

Software

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**

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Software- Tools

- ## 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**

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Flash programming

- 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
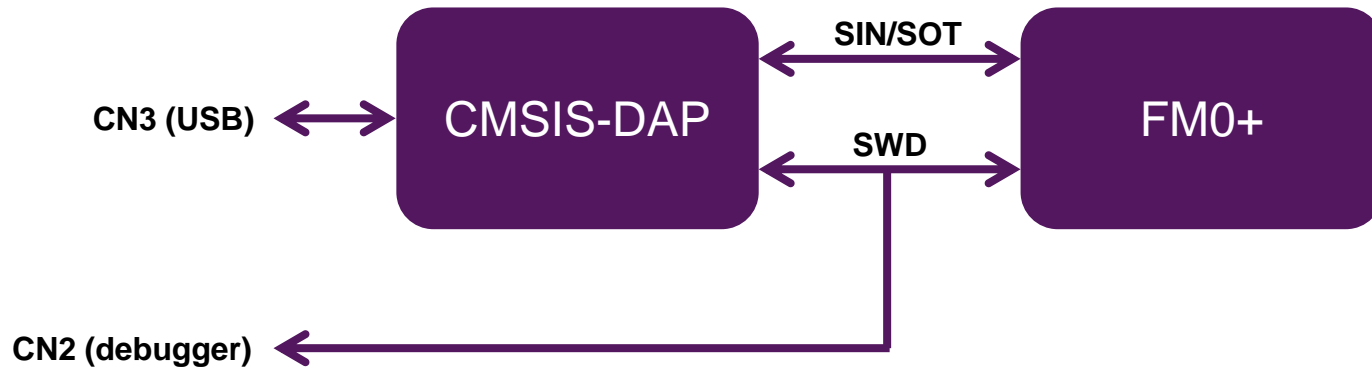   - Select COM port
      - Execute the process
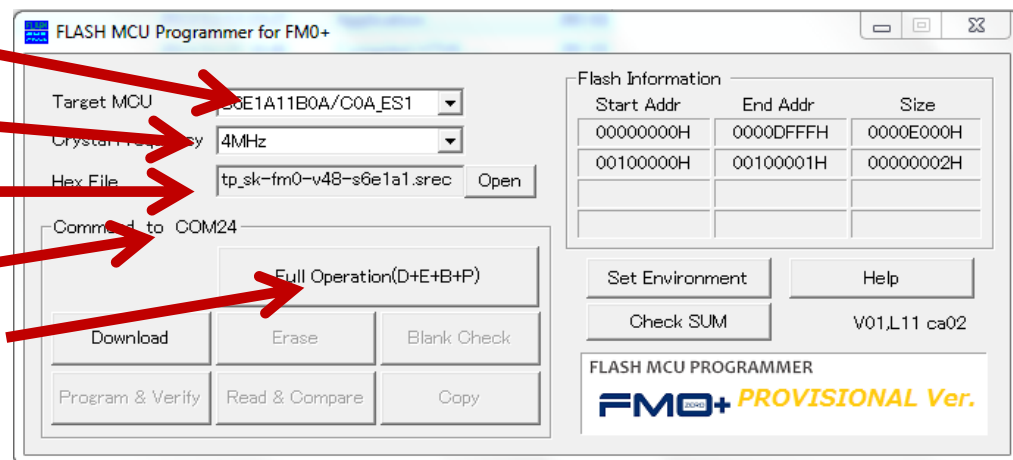
- Jumper setting for Programming the FM0+ via CN3
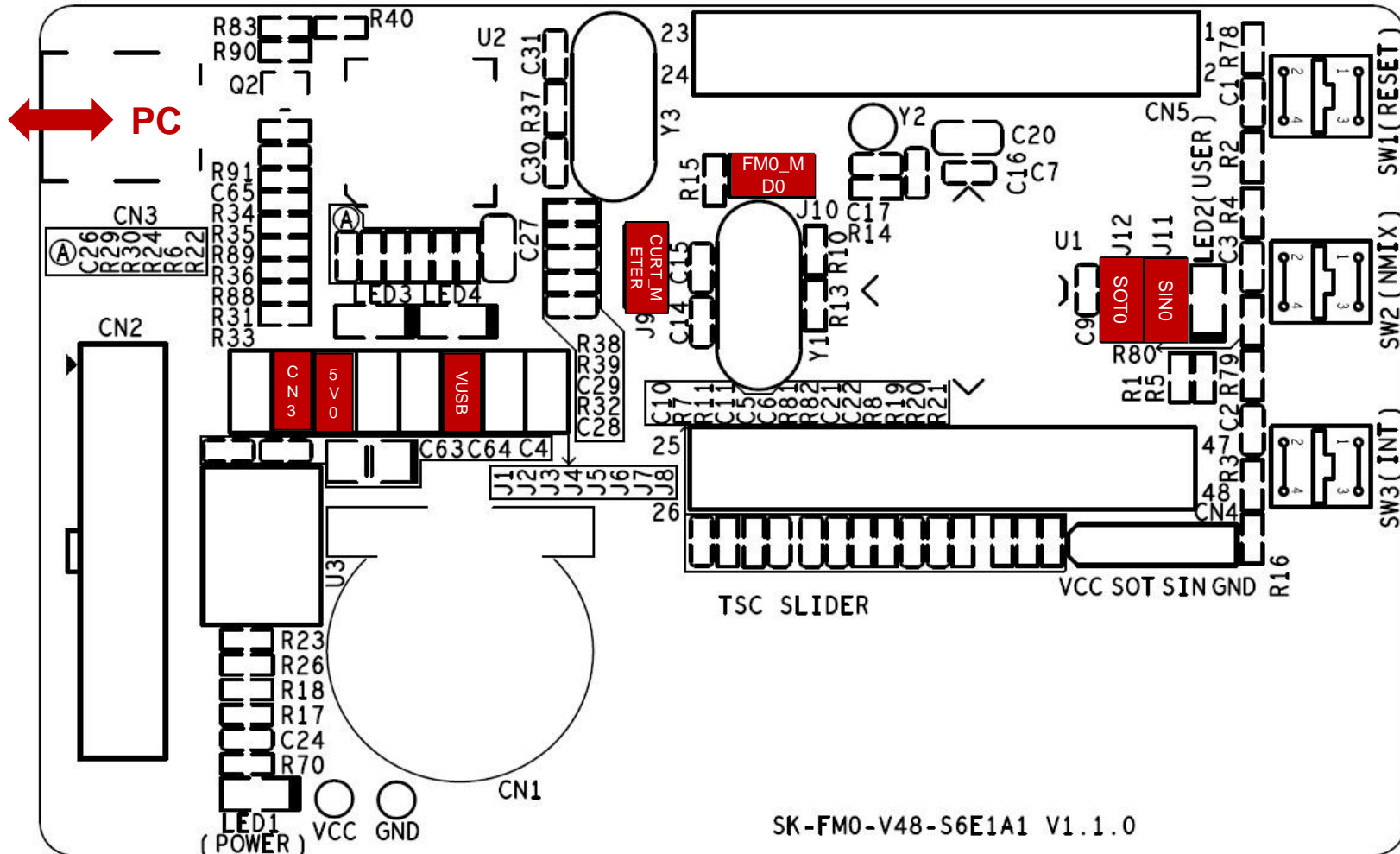
JTAG debugger

- **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

- **Select the CMSIS-DAP within IAR EWARM6**

  - Right click on the project

  - Select "**Options**"

  - Select "**Debugger**"

  - Click "**Setup**"

  - Select "**CMSIS-DAP**"

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CMSIS-DAP within IAR EWARM6
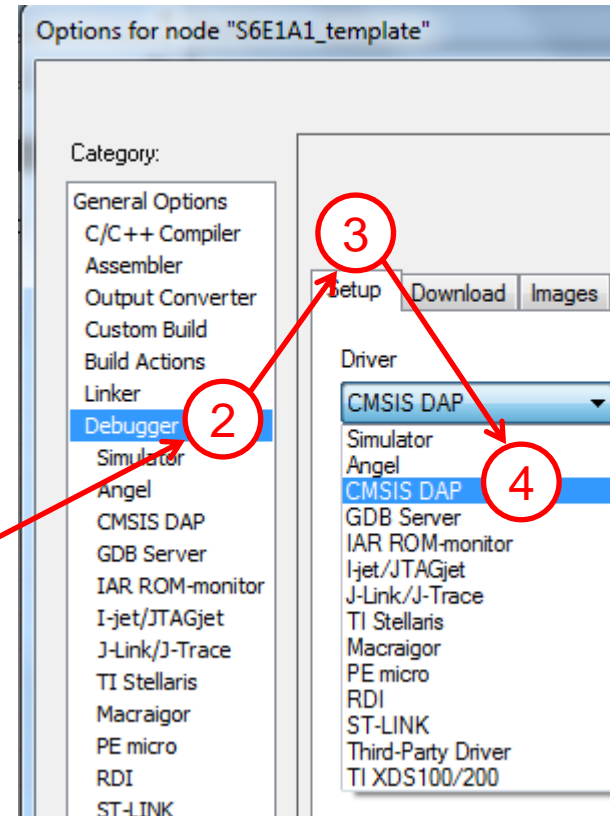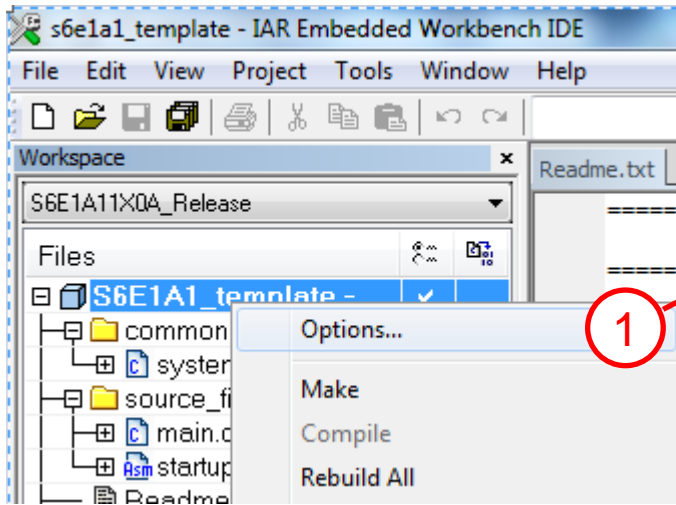
- Select SWD interface for CMSIS-DAP
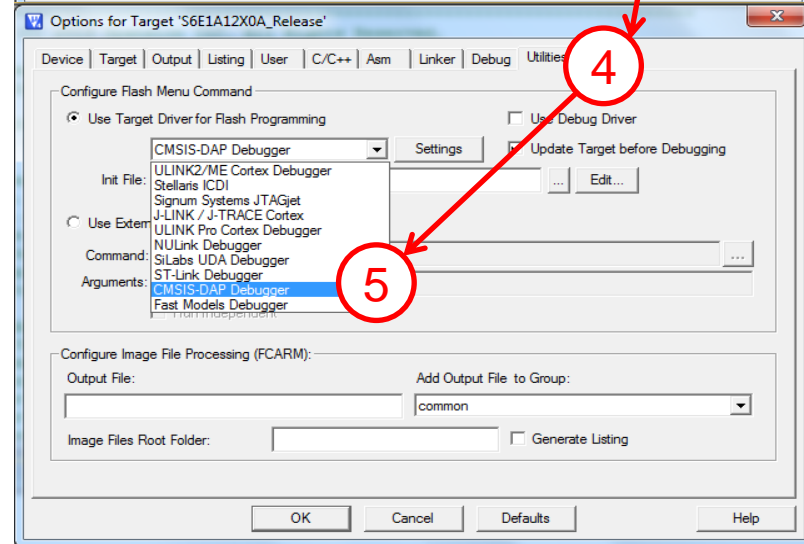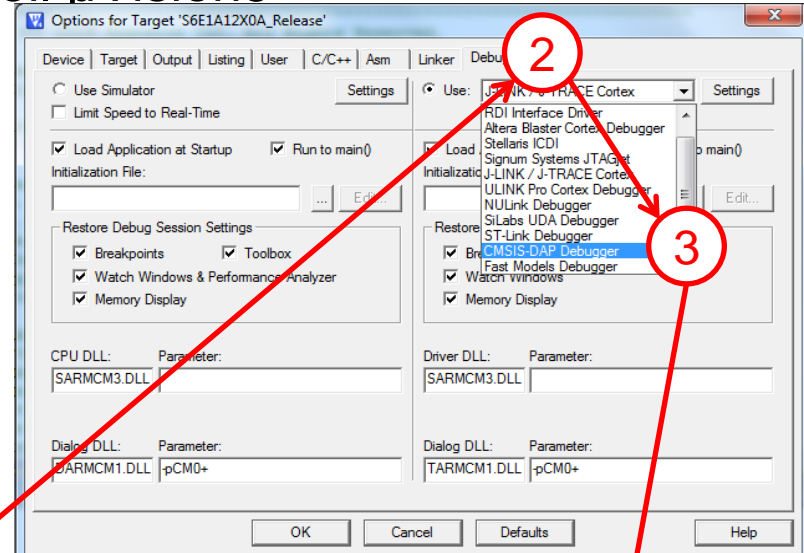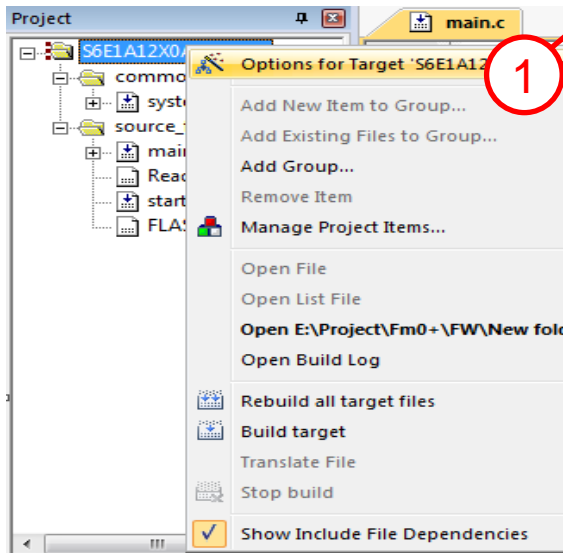 - Click on "**CMSIS-DAP**" -> "**JTAG/SWD**" -> "**SWD**"
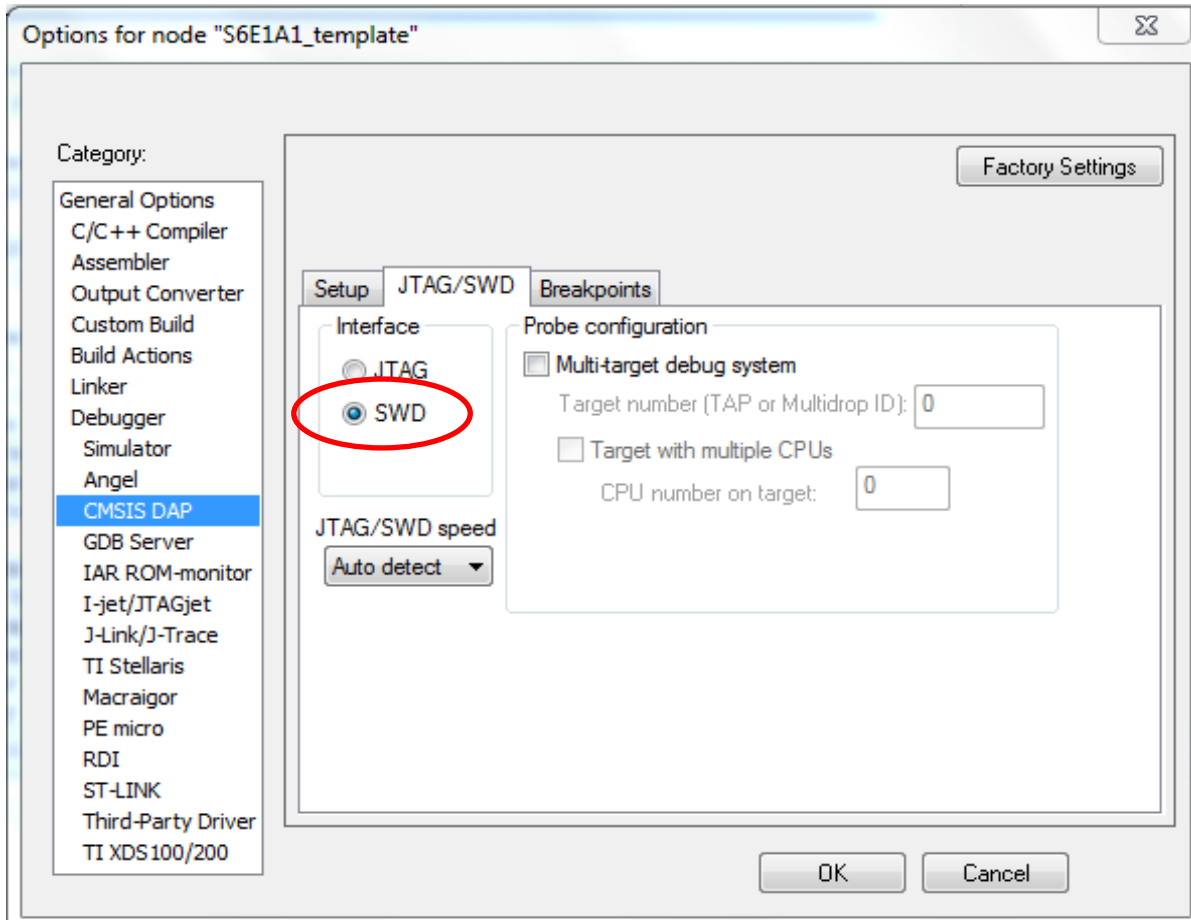
*For FM0+, only SWD interface is available

CMSIS-DAP within Keil µVision5

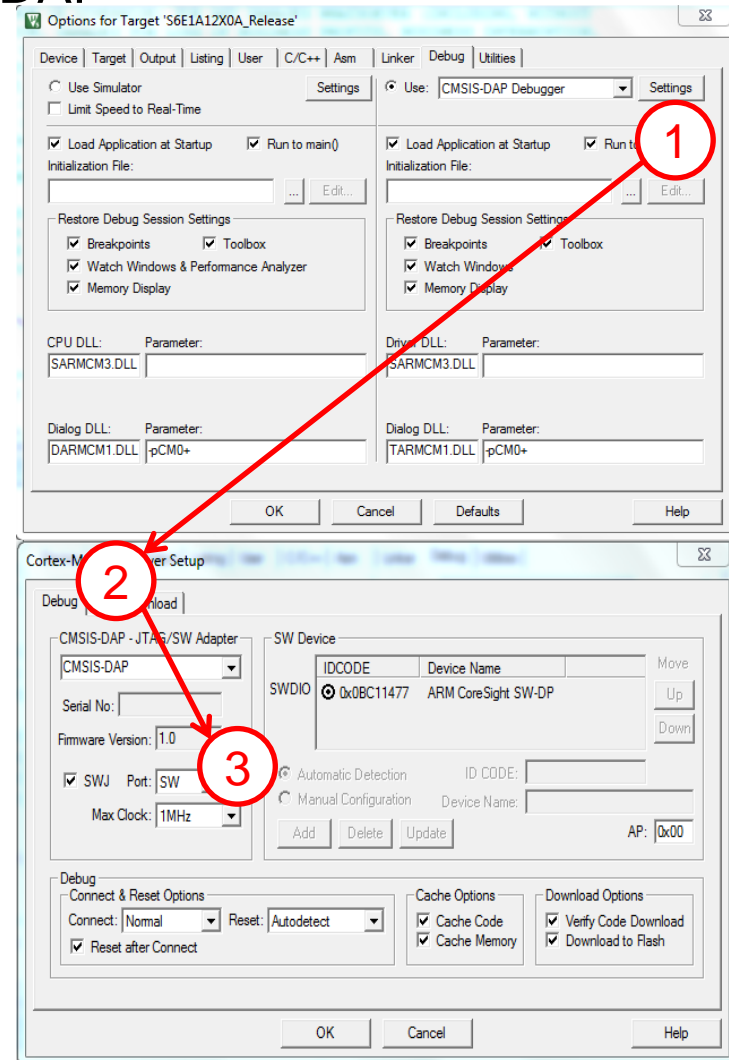- Select the CMSIS-DAP within Keil µVision5

  - Right click on the project

  - Select "**Options for ..**"

  - Click "**Debug**"

  - Select "**CMSIS-DAP Debugger**"

  - Click "**Utilities**"

  - Select "**CMSIS-DAP Debugger**"

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- **Select the SWD interface for CMSIS-DAP**

  - Click "**Settings**" on Debug sheet

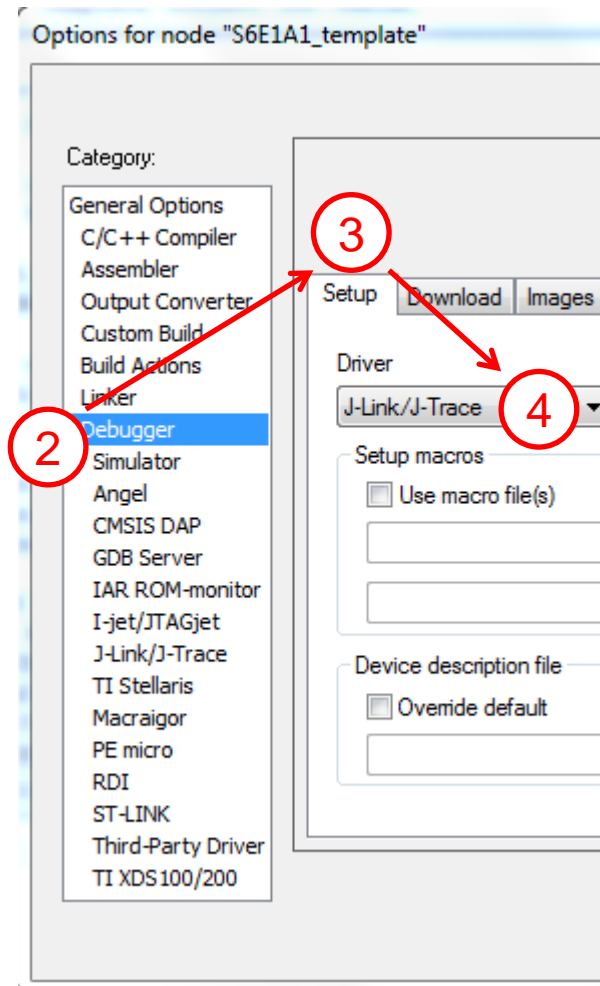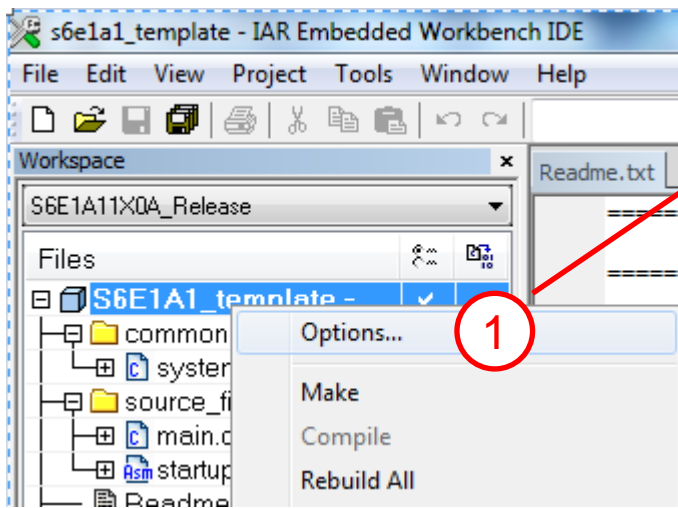 - Click "**Debug**"

  - Select "**SW**"

*For FM0+, only SWD interface is available

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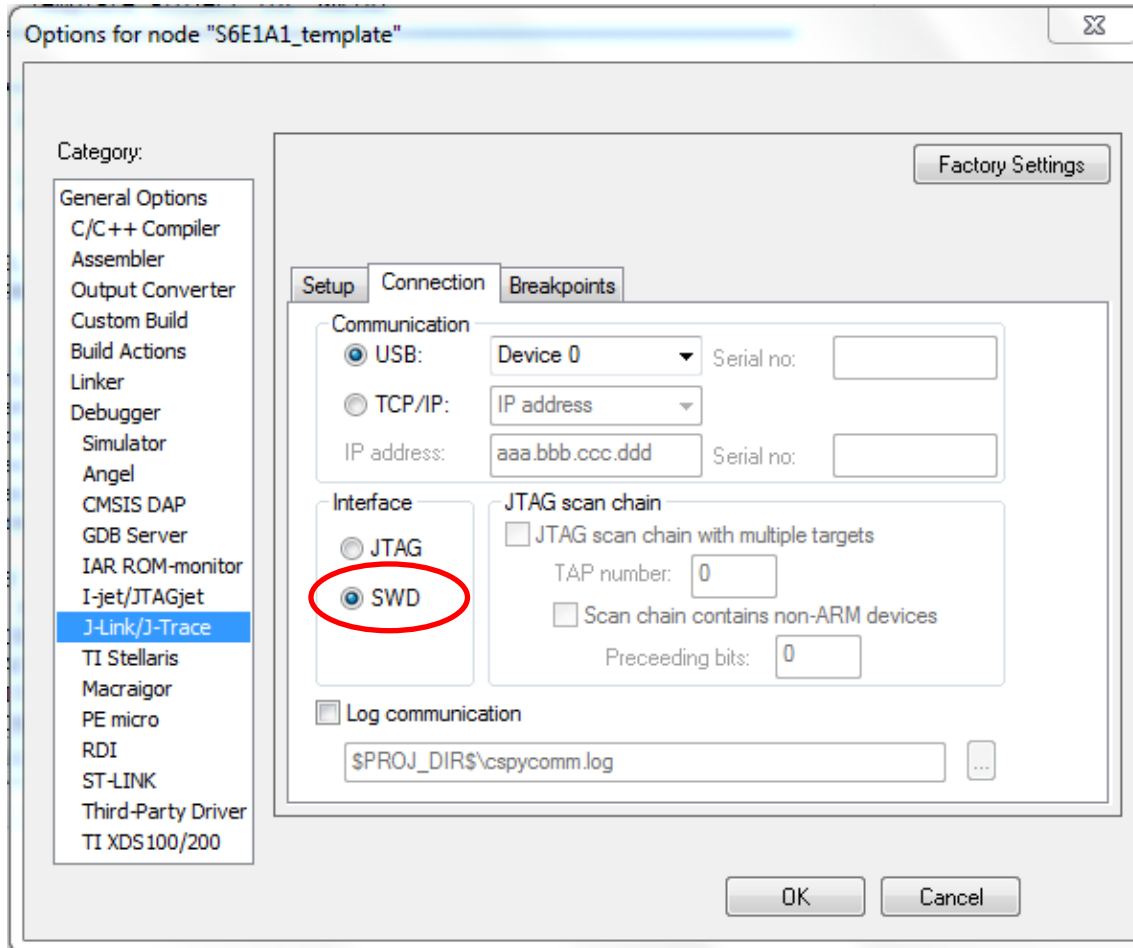# J-Link (an example of SWD supported tool)

- Select the J-Link within IAR EWARM6

  − Right click on the project

  − Select "**Options**"

  − Select "**Debugger**"

  − Click "**Setup**"

  − Select "**J-Link/J-Trace**"

- Select the SWD interface for J-Link
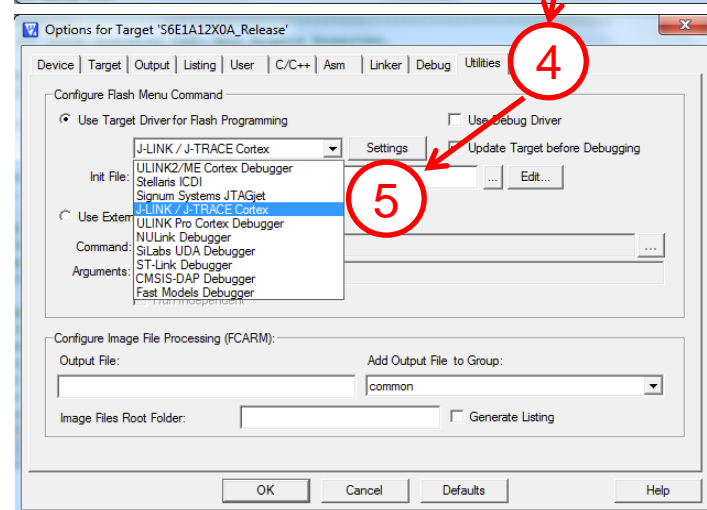 - Click on the "**J-Link/J-Trace**" -> "**Connection**" -> "**SWD**"
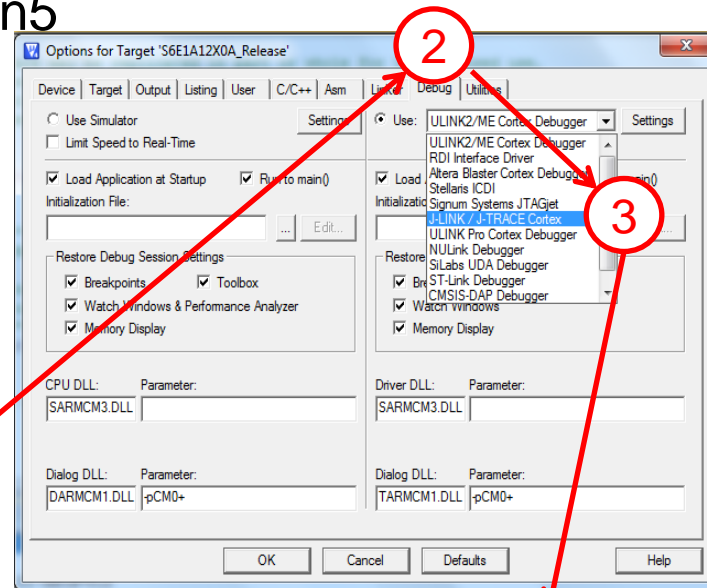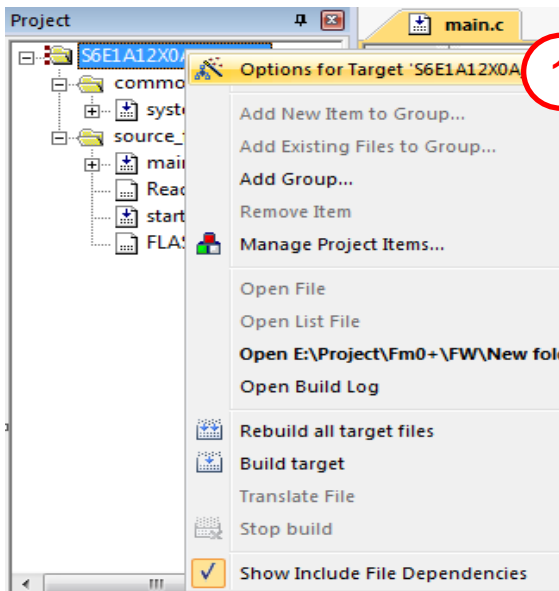

*For FM0+, only SWD interface is available

J-Link (an example of SWD supported tool)
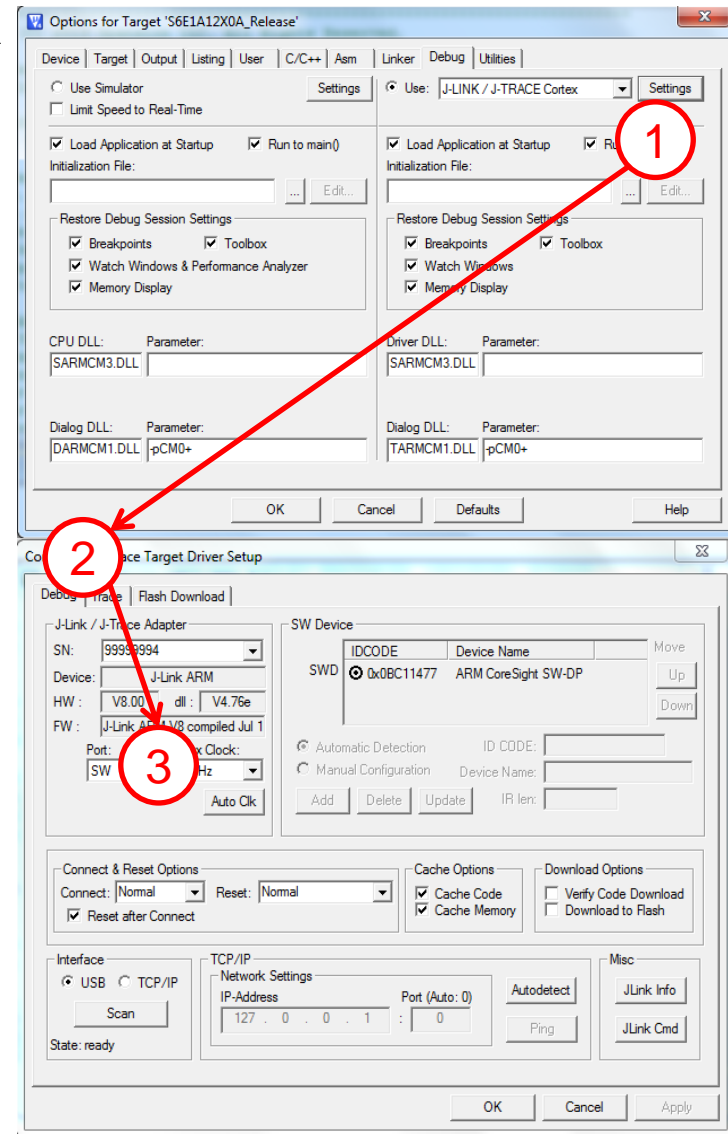
- Select the J-Link within Keil µVision5

  - Right click on the project

  - Select "**Options for …**"

  - Click "**Debug**"

  - Select "**J-Link/J-Trace**"

  - Click "**Utilities**"

  - Select "**J-Link/J-Trace**"

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- **Select the SWD interface for J-Link**

  - Click "**Settings**" on Debug sheet

  - Click "**Debug**"

  - Select "**SW**"

Finally

Contact us

- Please check the following web, for any available updates:

  www.spansion.com/starterkit

- Please contact local support team for technical support:

  America: Spansion.Solutions@spansion.com

  China   :   mcu-ticket-cn@spansion.com

  Europe :   mcu-ticket-de@spansion.com

  Japan   :   mcu-ticket-jp@spansion.com

  Other: http://www.spansion.com/Support/SES/Pages/Ask-Spansion.aspx

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Recycling

- **Gültig für EU-Länder:**

  - Gemäß der Europäischen WEEE-Richtlinie und deren Umsetzung in landesspezifische Gesetze nehmen wir dieses Gerät wieder zurück.

  - Zur Entsorgung schicken Sie das Gerät bitte an die folgende Adresse:

- **Valid for European Union Countries:**

  - According to the European WEEE-Directive and its implementation into national laws we take this device back.

  - For disposal please send the device to the following address:

    CCS Express GMBH
    c/o Spansion International Inc.
    Frankfurter Str. 83-107
    D-65479 Raunheim
    Germany

- **This board is compliant with China RoHS**

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