

Getting Started Guide

IAR KickStart Kit™ for Spansion' MB9BF568R

This guide briefly describes how to get started using IAR Embedded Workbench® with CMSIS-DAP on-board debug interface, to run an example application on the target system MB9BF568R-SK.

For more detailed information, see the IAR Embedded Workbench® IDE user guides, which can be reached from the Help menu or the IAR Information Center in the IAR Embedded Workbench IDE.

Features of the MB9BF568R-SK evaluation board

- MB9BF568R ARM 32-bit Cortex-M4F device
- JTAG/SWD connector 20 pin 0.1"
- Trace connector 20 pin 0.05"
- 5 choices of power supply: USB (CMSIS-DAP), EXT DC Power jack, JTAG pin 19, ETM Trace pin 11 & 13, USB (Device)
- CMSIS-DAP on-board debug interface
- USB connectors (Host, Device)
- CR2032 Battery holder for VBAT
- Power LED
- User LED
- User SW
- Reset SW
- Power/current measuring points (I-scope ready)
- Dimensions: 140 x 70 mm
- RoHS compliant



Install IAR Embedded Workbench for ARM

- 1 Insert the IAR KickStart Kit DVD to your PC, which contains all the software you need to get the example projects up and running. The installation program should start automatically.
- 2 Click **Install** and follow the instructions to install IAR Embedded Workbench. Note that it may take several minutes for the installation files to unpack. We recommend that you use the default directories on your installation.
- 3 When you start IAR Embedded Workbench for the first time, the License Wizard will open. Choose **Register with IAR Systems to get an evaluation license** (the internet access is needed).



Figure 1 - Register to get an evaluation license

- 4 Click **Register**, choose a time or code size limited evaluation license, and then register to get your license number, which will be delivered to you via e-mail within a few minutes.
- 5 Activate the license in the License Wizard window.

You may register both the time or code size limited evaluation licenses, active and switch in between from the **License Manager**. For further information, see the IAR Embedded Workbench, Licensing Guide, under \IAR Systems\Embedded Workbench 7.0\common\doc.

For the latest updates on software and documentation, please visit www.iar.com/kit_updates.

Set up the evaluation board

- 1 Check the JP12 (DAP) jumper is closed to supply board power from USB connector (J5).
- 2 Check the JP3 (OBJTAG) jumper is opened to use CMSIS-DAP on board debug interface.
- 3 Connect the USB cable to the USB connector (J5) and your computer.

The Power LED on the evaluation board is now lit and you are ready to move on.

Running example applications

We assume that you have some working knowledge of the IAR Embedded Workbench IDE. For a quick introduction, see the tutorials under **GETTING STARTED** (Figure 2).

The example described here is `Getting Started` which is simple application to blink USER LED, and can change the blinking frequency with USER BUTTON.

- 1 From the **Start** menu, start the IAR Embedded Workbench IDE by choosing **All Programs> IAR Systems> IAR Embedded Workbench for ARM 7.20 >IAR Embedded Workbench**. You will get straight into the IAR Information Center for ARM.
- 2 Click **EXAMPLE PROJECTS**.

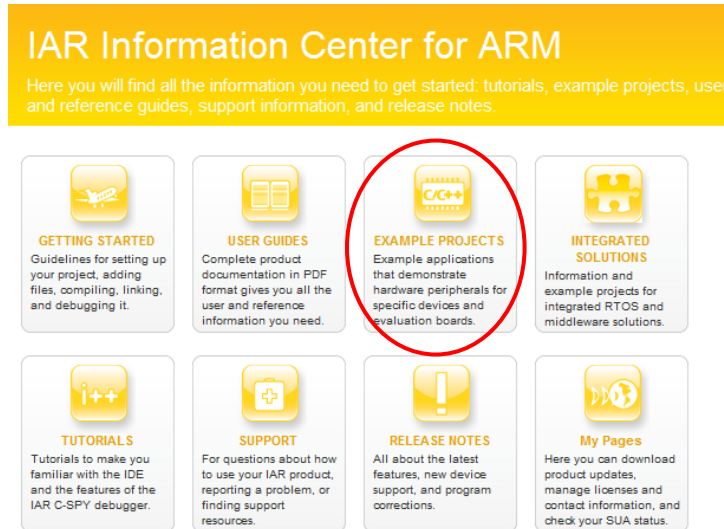



Figure 2- IAR Information Center for ARM

- 3 Select to download the example projects for Spansion (click the  icon).
- 4 You may choose either **Download from IAR Systems** or **Copy from the installation DVD** (select `\Software\ARM_Spansion_7.20.1_7307.exe` on the DVD). Then **Spansion** will appear under Installed example projects on the top.

Installed example projects

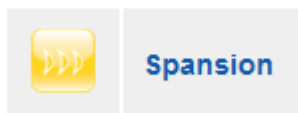



Figure 3 - Install example projects

- 5 Select **Spansion -> MB9B560R FM4 series -> IAR MB9BF568R-SK -> Getting Started** project (click the  icon).
- 6 Click **Choose** to select a (default) destination folder to save a copy of this project for testing, so that the original project will not be updated for any changes you made during testing.
- 7 Read the Example description and choose RAM Debug build configuration.

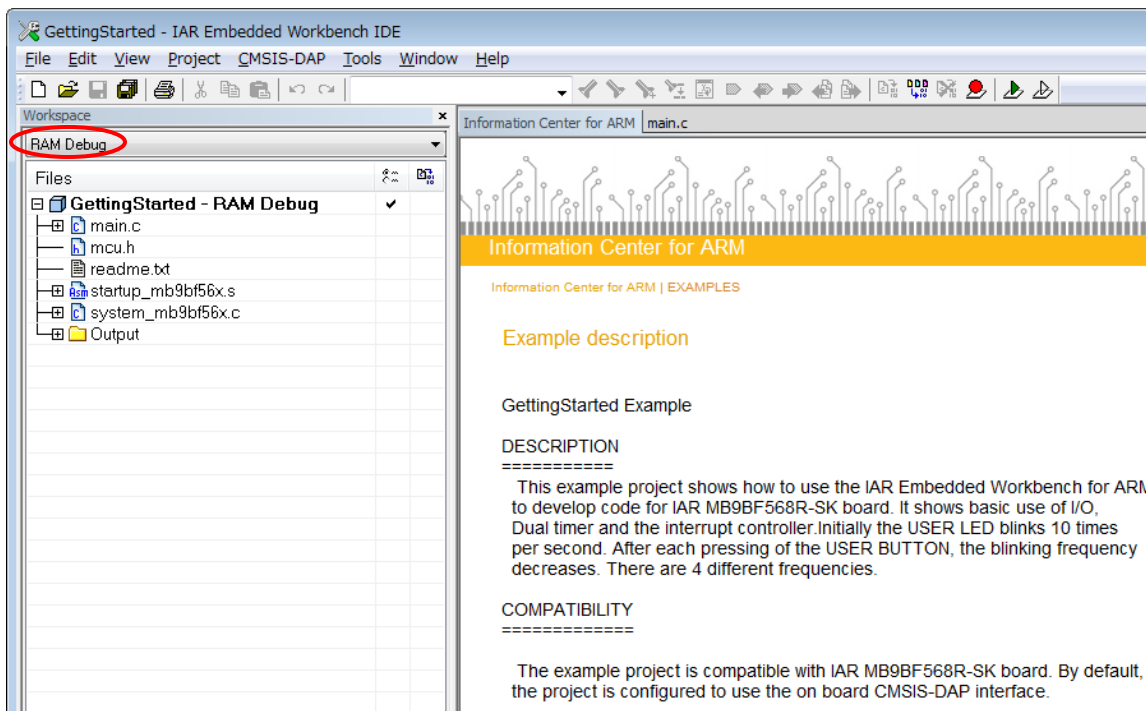



Figure 4 – Build configuration

- 8 Choose **Project>Make** or click the  button on the toolbar. The project should be compiled and linked without errors.

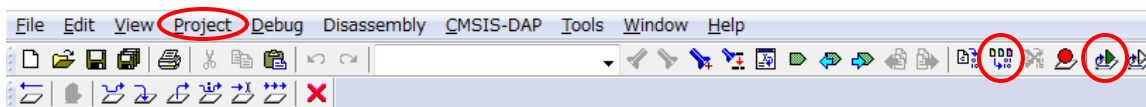






Figure 5 – IAR Embedded Workbench IDE - Toolbar

- 9 Click the  button to download your program to the evaluation board. The file `main.c` is now open in the Editor window and the program is stopped at the start.
- 10 Click the  button to start the application. USER LED will start to blink. You can change the blinking frequency by USER SW.
- 11 To explore the C-SPY debugging features or change the CMSIS-DAP settings, choose the **View** and **CMSIS-DAP** menu.
- 12 To stop C-SPY, click the  button.
- 13 To exit C-SPY, click the  button.

You can now try other example applications. Remember to read `Example description` included in the project.

Board overview

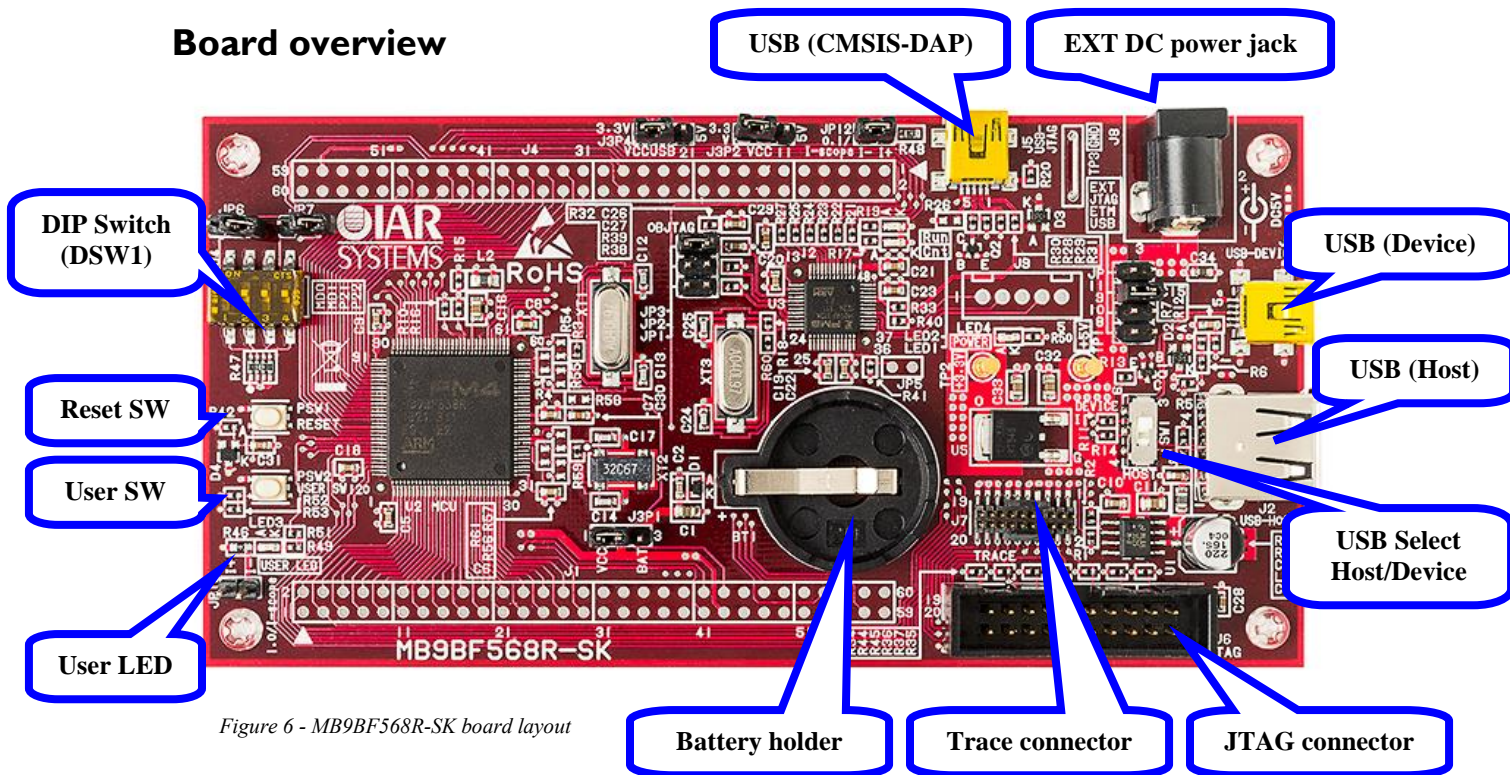


Figure 6 - MB9BF568R-SK board layout

Connector description

Connector	PCB	Description
J1		MCU external pin: Pin header is not mounted
J2	USB-HOST	USB connector for USB Host
J3	USB-DEVICE	USB connector for USB Device
J4		MCU external pin: Pin header is not mounted
J5	USB-JTAG	USB connector for CMSIS-DAP on-board debug interface
J6	JTAG	JTAG connector
J7	TRACE	TRACE connector
J8	DC5V	Power Supply 5V DC

Table 1 - Connector description

Switch description

Switch	PCB	Description
DSW1		1: MD0 of MB9BF568R SW-ON: L * , SW-OFF: H
		2: MD1 of MB9BF568R SW-ON: L * , SW-OFF: H
		3: P21 of MB9BF568R SW-ON: L * , SW-OFF: H
		4: P22 of MB9BF568R SW-ON: L * , SW-OFF: H
SW1		USB Host / Device select
PSW1	RESET	Reset SW
PSW2	USER SW	User SW

Table 2 - Switch description

Note: * means factory default setting

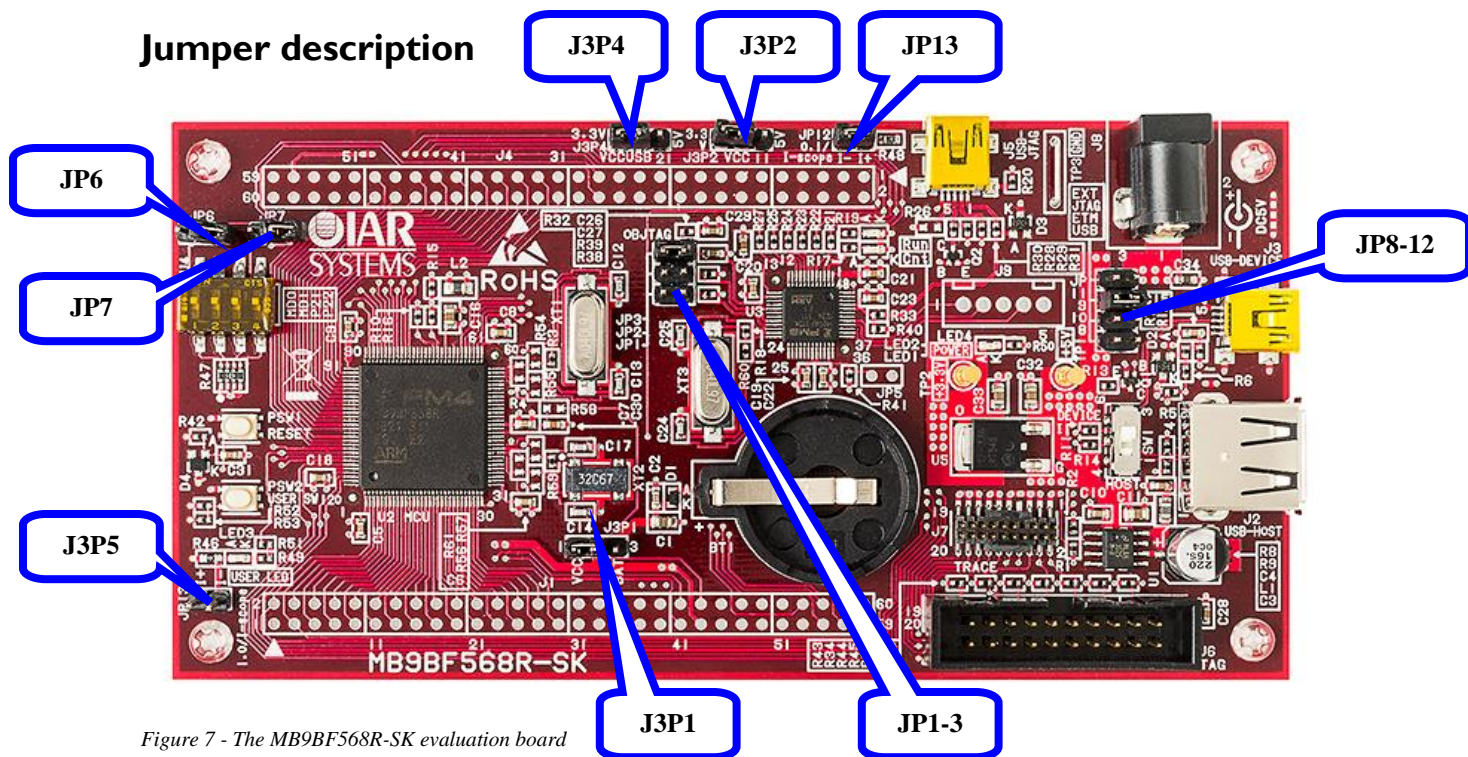


Figure 7 - The MB9BF568R-SK evaluation board

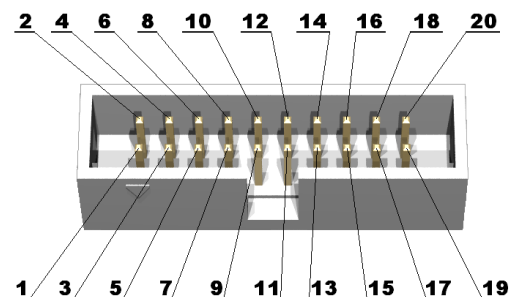
Jumper	PCB	Description
JP1		MD0 of MB9AF311K (for CMSIS-DAP) (opened *)
JP2		MD1 of MB9AF311K (for CMSIS-DAP) (opened *)
JP3	OBJTAG	CMSIS-DAP on-board Enable (opened) * / disabled
JP6		Connect P21 of MB9BF568R to DIP-SW (DSW1-3) * / disconnected
JP7		Connect P22 of MB9BF568R to DIP-SW (DSW1-4) * / disconnected
JP8	USB	Board power select: USB device connector (J3)
JP9	JTAG	Board power select: JTAG connector (J6)
JP10	ETM	Board power select: ETM Trace connector (J7)
JP11	EXT	Board power select: EXT DC power jack (J8)
JP12	DAP	Board power select: USB CMSIS-DAP (J5) *
JP13	0.1/I-scope	MCU current measurement output for I-scope (closed *) Shunt resistor: 0.1 ohm
J3P1		Connect I-scope probe to I+/I-, GND to J3P5 - G
J3P2	VCC	VCC voltage select 1-2: use 5V / 2-3: use 3.3V *
J3P4	VCCUSB	USBVCC voltage select 1-2: use 5V / 2-3: use 3.3V *
J3P5	1.0/I-scope	User LED current measurement output for I-scope (opened *) Shunt resistor: 1.0 ohm Connect I-scope probe to I+/I-/G

Table 3 - Jumper description

Note: * means factory default setting

External connectors description

JTAG connector



Pin #	Signal name	Signal type	Description
1	VTref		Target reference voltage – Connected to +3.3V/+5V.
2	NC		
3	nTRST	Input	JTAG reset – The TRST pin can be used to reset the test logic within the Embedded ICE logic.
4	GND		
5	TDI	Input	Test Data In – This is the serial data input for the shift register.
6	GND		
7	TMS	Input	Test Mode Select – The TMS pin selects the next state in the TAP state machine.
8	GND		
9	TCK	Input	Test Clock – This allows shifting of the data input, on the TMS and TDI pins. It is a positive edge triggered clock with the TMS and TCK signals that define the internal state of the device.
10	GND		
11	RTCK		(Not used)
12	GND		
13	TDO	Output	Test Data Output – This is the serial data output from the shift register. Data is shifted out of the device on the negative edge of the TCK signal.
14	GND		
15	nRST		Target CPU reset signal. Typically connected to the RESET pin of the target CPU, which is typically called nRST, nRESET or RESET.
16	GND		
17	NC		
18	GND		
19	VCC		Power supply – I-jet or some other ICE provide power through this pin.
20	GND		

Table 4 - JTAG signals and descriptions

Note: To use the JTAG connector with external debug interface, please close JP3 (OBJTAG) to disable on-board debug interface

Trace connector

Pin #	Signal name	Signal type	Description
1	VTref	Output	Target reference voltage - Connected to +3.3V/+5V.
2	SWDIO/TMS	I/O / Input	Serial wire data input / output / JTAG mode set - Connected to SWDIO/TMS of MB9BF568R.
4	SWCLK/TCK	Input	Serial wire clock / JTAG clock - Connected to SWCLK/TCK of MB9BF568R.
6	SWO/TDO	Output	Serial Wire Output trace port / Test data out - Connected to SWO/TDO of MB9BF568R.
8	TDI	Input	JTAG data input - Connected to TDI of MB9BF568R.
10	nRESET	Input	JTAG reset - Connected to RESET of MB9BF568R.
12	TRACECLK	Output	Trace clock - Connected to TRACECLK of MB9BF568R.
14	TRACEDATA[0]	Output	Trace data pin 0 - Connected to TRACED0 of MB9BF568R.
16	TRACEDATA[1]	Output	Trace data pin 1 - Connected to TRACED1 of MB9BF568R.
18	TRACEDATA[2]	Output	Trace data pin 2 - Connected to TRACED2 of MB9BF568R.
20	TRACEDATA[3]	Output	Trace data pin 3 - Connected to TRACED3 of MB9BF568R.
11, 13	VCC		Power supply – I-jet or some other ICE provide power through this pin.
7	NC		
3,5,9,15, 17,19	GND		

Table 5 - Trace signals and descriptions

Note: To use the JTAG connector with external debug interface, please close JP3 (OBJTAG) to disable on-board debug interface

USB Connector (J2 : USB-HOST)

Pin #	Signal name	Signal type	Description
1	VBUS	Output	USB +5V
2	USB2_N	Input/Output	USB Data-
3	USB2_P	Input/Output	USB Data+
4	GND		GND
5	SHIELD		

Table 6 - USB signals

USB Connector (J3:USB-Device)

Pin #	Signal name	Signal type	Description
1	VBUS	Input	USB +5V
2	USB1_N	Input/Output	USB Data-
3	USB1_P	Input/Output	USB Data+
4	NC		
5	GND		GND
6	SHIELD		

Table 7 - USB signals

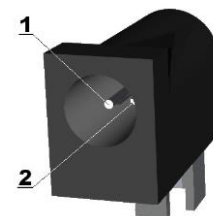
USB Connector (J5:USB-JTAG)

Pin #	Signal name	Signal type	Description
1	VBUS	Input	USB +5V
2	USB1_N	Input/Output	USB Data-
3	USB1_P	Input/Output	USB Data+
4	NC		
5	GND		GND
6	SHIELD		

Table 8 - USB signals

Power jack (J8)

There is a standard 2.1 mm power jack mounted on the board. The power input should be DC +5V.



Pin #	Signal name	Description
1	Power input	+5V
2	GND	GND

Table 9 - Power jack signals

Troubleshooting

If you are unable to find the cause of a problem, try resetting the evaluation board by using the reset button on the board. Then restart the C-SPY Debugger in the IAR Embedded Workbench IDE. You can also try disconnecting and reconnecting the power to the evaluation board, pressing the reset button and then restarting C-SPY.

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