

FM3 32-BIT MICROCONTROLLER MB9B500 Series

FSS MB9BF506R EV-BOARD USER MANUAL APPLICATION NOTE

For more information for the FM3 microcontroller, visit the web site at: http://www.fujitsu.com/global/services/microelectronics/product/micom/roadmap/industrial/fm3/

FUJITSU SEMICONDUCTOR (SHANGHAI) LIMITED

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Revision History

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1 Introduction

1.1 Product Overview

FSS MB9BF506R EV-Board (PN: FSSDC-9B506-EVB) provides an economical and simple means for study usage for MB9B506 series MCU. The board compatible with both 3.3 and 5V system contains abundant external resources (LCD, buttons, UART, Nand Flash, CAN...) to demonstrate MCU periphery function.

It also provides standard 20 pin JTAG interface, which is both compatible with IAR and Keil debug tool. In addition, it allows On-board programming with both USB and UART mode.



Figure 1-1: FSSDC-9B506-EVB Overview

1.2 MB9B506 Series MCU

MB9B506 series MCU is 32-bit general purpose MCU of FM3 family that features the industry's leading-edge ARM Cortex-M3TM CPU and integrates Fujitsu's highly reliable and high-speed secure embedded flash technology. This MCU can operate at up to 80MHz CPU frequency and work at a wide voltage range (2.7V-5.5V), which can be both compatible with 3.3V and 5V system.

It includes a host of robust peripheral features, including motor control timers (MFT), base timer (can be configured to PWM, PPG, Reload, PWC timer), ADCs, on-chip memory (up to 512K Flash, up to 64K SRAM) and a wide range of communication interfaces (USB, I2C, SIO, LIN, CAN).



The size of on-chip memory can be configured according to different part number and the package is available in LQFP and BGA, shown in following table.

Product	Flash	SRAM	Package
MB9BF500N/R	256kB	32kB	N: LQFP-100
			R: LQFP-120
	256kD	20kD	N: LQFP-100/BGA-112
MB9BF504N/K	20080	JZKD	R: LQFP-120
	20.41/D		N: LQFP-100/BGA-112
MB9BF505N/R	384KB	48KB	R: LQFP-120
	540kD	CALD	N: LQFP-100/BGA-112
MB9BF200N/K	512KB	64KB	R: LQFP-120

Table 1-1: Product List

1.3 Board Features

FSS MB9BF506R EV-Board includes following features:

- Microcontroller MB9BF506R
- 2x UART-Transceiver (Female DB9 connector)
- 2x High-speed CAN-Transceiver (2 pin header)
- 1x USB-Host (Type-A connector)
- 1x USB-Device (Type-B connector)
- 32M x 8bit Nand Flash (K9F5608U0D)
- High Stability I²C-Bus Interface RTC Module (RX-8025T)
- Standard JTAG Interface on a 20 pin-header
- 128 x 64 matrix LCD
- 3x 'User' LED
- 4x 'User'-button
- 1x 'Reset'-button
- 1x potentiometer regulating input voltage to AD channel
- All 120 pins routed to test pads
- On-board 5V and 3V voltage regulators, 'Power'-LED
- Power supply via USB-Device, JTAG or external with 15V power connector

2 Hardware Setting

2.1 Main Features



2.2 Jumpers Overview

Jumper Name	Function	Setting
J101-J103 ^{*1}	Power selection	Short J101: select external power Short J102: select JTAG power Short J103: select USB power
J104 ^{*2}	Voltage selection	Short 1,2: 5V Short 2,3: 3.3V
J-USB- J-USB+	USB Host/Function selection	Short 1,2: USB Function Short 2,3: USB Host
J105	Mode setting	Short: Programming mode Open: Normal mode
J106	Oscillator Selection	Short 1,2: when 4M oscillator is used Short 2,3: when 48M oscillator is used
J107	P22 connection	Short: connect P22 (UART_TX0) with MAX3232 Open: disconnect P22 (UART_TX0) with MAX3232
J701	Voltage division	Short: when 5V power is used Open: when 3.3V power is used

Table 2-1: Jumper List

Attention:

- 1) Never short J101-103 at the same time! When Keil U-Link ME is used, JTAG power can not be used.
- 2) When Keil U-link is used, only 3.3V can be selected, never select 5V power!

2.3 Setting for UART On-Board Programming

Part Number	Function	Setting
UART-0	DB9 connector	Connect with PC via RS232 cable
J106	Oscillator Selection	Open
J105	Mode setting	short
J107	P22 connection	short

Table 2-2: Setting for UART On-Board Programming

2.4 Setting for USB On-Board Programming

Part Number	Function	Setting
USBFUNCTION	USB function connector	Connect with PC via USB cable
J-USB- J-USB+	Function/Host selection	Short 1,2
J105	Mode setting	Short
J106	Oscillator Selection	Short 1,2
J107	P22 connection	Open
J701	Voltage division	Short: when 5V power is used Open: when 3.3V power is used

Table 2-3: Setting for USB On-Board Programming

2.5 Setting for Debug Tool

Use IAR J-Link

Part Number	Function	Setting
20PIN-JTAG	JTAG connctor	Connect with J-Link
J101-J103	Power selection	Short J101: select external power Short J102: select JTAG power Short J103: select USB power
J104	Voltage selection	Short 1,2: 5V Short 2,3: 3.3V
J105	Mode setting	Open

Table 2-4: Setting for J-Link

Use Keil U-Link ME

Part Number	Function	Setting
20PIN-JTAG	JTAG connctor	Connect with U-Link ME
J101-J103	Power selection	Short J101: select external power Short J103: select USB power
J104	Voltage selection	Short 2,3
J105	Mode setting	Open

Table 2-5: Setting for U-Link

3 Flash On-Board Programming

There are two ways to program the on-chip Flash of MB9BF506 series MCU: UART On-Board Programming and USB On-Board Programming.

3.1 On-Board Programming via UART

- First check the hardware setting as introduced by section 2.3.
- Install the UART programmer: PCWFM3_V01L01. (It can be downloaded on the web)
- Open it, set the parameter as shown in following figure, and select Hex file.

FM3 FUJITSU FLASH MCU Pro	grammer for FM3			
Target Microcontroller	MB9BF506	•	Start Address	000000H
Crystal Frequency	iency 4MHz		End Address	07FFFFH
Hex File	mb9bf506r_can.sre	mb9bf506r_can.srec Open		080000H
Command to COM1			Coption	
			Set Environment	Help
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Check SUM	
Download	Erase Blank Check		V01,L01 b04	
Program & Verify	Read & Compare Copy		F	ບງິ້ເກຣບ

Figure 3-1: UART Programmer Overview



Figure 3-2: Press Reset Button

Press reset key in the board, and the programming will start.



Figure 3-3: Start Programming



3.2 On-Board Programming via USB

Click Full Operation.

- First check the hardware setting as introduced by section 2.4.
- After connect with PC via USB cable, the EVB can be identified as a USB device.



Figure 3-4: USB Device Sign Check the COM port for this USB port in the device manager.



Figure 3-5: COM Port in Device Manager

- Install the USB programmer: USBDW_V01L03. (It can be downloaded on the web)
- Open it, set the parameter as shown in following figure, and select Hex file.

🚺 FLASH USB DIRECT I	Programmer			_ 🗆 🗵
SELECT Target MCU Hex File COM (1-255) 7	1898F506 b9bf506r_can.srec	▼ Open	FLASH INFORMATIO Start Address End Address Flash Size	000000H 07FFFFH 080000H
Command to COM	7 I Operation (D+E+B+I	P)	HELP Help Version Inform	nation
Down load Program & Verify	Erase Read & Compare	Blank Check Copy		tual COM ECT ammer

Figure 3-6: USB Programmer Overview

flash	×
į	Please reset the microcontroller on userboard. Then push OK button.
	OK Cancel

Figure 3-7: Press Reset Button



■ Press reset key on the board. Programming will start.



Figure 3-8: Start Programming

4 Sample Code

The sample codes for FSSDC-9B596-EV board are listed as following table.

Project Name	Description
ext_bus_nandflash	Use external bus to access Nand Flash
uart	Use UART to communicate with PC
can	Implement CAN communication between 2 CAN nodes
rtc	Use IIC to access RTC module
usb_function_mose	Implement the USB mouse to demonstrate USB function
usb_host_catch_mouse	Identify a USB mouse and print the mouse position on debug window
lcd_ad_key	Display ad value and key status on LCD

Notes:

- 1) It provides both IAR and Keil project for these sample code, IAR project is developed in EWARM Embedded Workbench V6102, and Keil project is developed in Keil uVision 4.20.
- 2) If user use other version to open these projects, compiling error may occur, in this case, please check following setting.
 - IAR IDE
 - MCU type
 - Pre-included file
 - > ICF file
 - > Flash loader

Keil IDE

- > MCU type
- Pre-included file
- > ROM & RAM memory address



4.1 UART

Hardware Setting

Connect UART-2 with PC via RS232 cable

Flowchart



Usage

Figure 4-1: UART Sample Code Flowchart

1) Open a COM assistant software, make following setting, and open COM port

5etup		×
Settings		
Port	COM1	•
Baud rate	115200	-
Data bits	8	•
Stop bits	1	-
Parity	None	-
Flow control	Custom	•
	OK	Cancel

Figure 4-2: COM Assistant Setting

2) Open UART sample code and run it, user can watch a string on the COM assistant window. Then send character to EV-board, the character can be received.



Figure 4-3: Send UART Data From PC Side

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4.2 Nand Flash

Hardware Setting

None

Flowchart



Figure 4-4: Nand Flash Sample Code Flowchart

Usage

- 1) Open Nand Flash sample project, and start debug.
- 2) Use "step over" to debug, and watch local variable "flash_id", "buf".

4.3 RTC

Hardware Setting

It is an option that user can user external battery to supply power for RTC module (RX8025-T) so that the date and time can be stored after system power shut down.

Flowchart





Usage

- 1) Open Nand Flash sample project, and start debug.
- 2) Use "step over" to debug, and watch local variable "sec", "min", "hour".

4.4 CAN

Hardware Setting

Connect 2 EV-board with CAN interface, as following figure.



Figure 4-6: CAN Hardware Connection

Block Diagram

- Node A: use buffer 10 (ID = 0x12345678) to transfer and buffer 8 (ID = 0x08765432) to receive
- Node B: use buffer 7 (ID = 0x12345678) to receive and buffer 10 (ID = 0x08765432) to transfer.



Figure 4-7: CAN Demo Block Diagram

Usage

- 1) Define "CAN_TX_RX" in the code, and compile, then program the code into Node A
- 2) Don't define "CAN_TX_RX" in the code, and compile, then program the code into Node B.
- 3) Connect Node A with Node B

When in real usage, user can program one node, and use the other node to debug.



4.5 USB Function

Hardware Setting

- Check if 1,2 of J-USB- and J-USB+ short
- Check J701 (Short: 5V, Open: 3.3V)
- > Connect with PC via USB cable

Flowchart

The following flowchart illuminates the procedure to implement a USB mouse, it is not a certain flow of a function, but provides a clue to study and understand the sample code.



Figure 4-8: USB Function Sample Code Flowchart

■ Usage

- 1) Make the hardware setting.
- 2) Watch the mouse moving when pressing "Up", "Down", "Left", "Right" buttons.



4.6 USB Host

Hardware Setting

- Check if 2,3 of J-USB- and J-USB+ short
- Connect with a USB mouse

Flowchart

The following flowchart illuminates the procedure to implement USB host function, which can catch the position of a USB mouse, it is not a certain flow of a function, but provides a clue to study and understand the sample code.



Figure 4-9: USB Host Sample Code Flowchart

Usage

- 1) Make the hardware setting
- 2) Enable definition "Debug" in the code
- 3) Run the code.
- 4) Move the USB mouse, and watch the mouse position in the terminal IO window as following figure. (Debug viewer window in Keil IDE)

Output:
Z=-4
X=1116
7=-4
X=1116
¥=361
Z=-4 X=1116
¥=361
Z = -4
X=1116 V=361
Z=-

Figure 4-10: USB Mouse Position Display



4.7 LCD & AD & Key

Hardware Setting

None

Flowchart



Figure 4-11: LCD, key, AD Sample Code Flowchart

Usage

- 1) Run the code
- 2) Press key, and the key pressed can display on the LCD
- 3) Regulate the potentiometer to change the input voltage of channel 7, and this voltage can be detected and displayed on LCD.



5 Debug Tool and IDE

FSS MB9BF506R EV-Board supports both Keil U-Link-ME and IAR J-Link for debug shown as following.



Figure 5-1: J-Link Overview



Figure 5-2: U-Link Overview

The U-Link-me should be used with Keil uVision 4 which can be downloaded freely from following web.

https://www.keil.com/update/sw/RVMDK/4.20

The J-Link should be used with IAR Embedded Workbench which can be downloaded freely from following web.

http://www.iar.com/website1/1.0.1.0/68/1/



5.1 Debug with J-Link in IAR EWARM Workbench

The sample code can be debugged in IAR EWARM Workbench with J-Link. The following figure shows basic debug window.



Figure 5-3: IAR IDE Overview

Run an Existed Project

1) Open a project by clicking "File | Open | Workspace"



Figure 5-4: Open a Project



2) Select a project (eww file)

Open Workspace	e						<u>?</u> ×
Look in:	iar			•	G 🦻	• 🖭 👏	
My Recent Documents Desktop My Documents My Computer	mb9bf506r_te	emplate.eww					
My Network Places	File name: Files of type:	mb9bf506r_	template.eww			•	Open Cancel
	· · · · · · · · · · · · · · · · · · ·	I i circipace					

Figure 5-5: Select a Project

3) Click "Project | Rebuild All"

Project	Tools	Window	Help			
Add F	iles					
Add G	Group					
Impor	rt File Lis	t.,,				
Edit C	Edit Configurations					
Remo	Ve					
Creat	e New P	roject				
Add E	Xisting P	Project				
Optio	ns		Alt+F7			
Sourc	e Code i	Control		Þ		
Make			F7			
Comp	ile		Ctrl+F7			
Comp						
Rebui	id All					
Rebui Clean	ild All			_		
Clean Batch	ild All build		F8			
Rebui Clean Batch Stop I	ild All build		F8 Ctrl+Break			
Clean Clean Batch Stop I	ild All build Build load and	l Debug	F8 Ctrl+Break Ctrl+D			
Clean Clean Batch Stop I Down Debug	id All build Build load and g withou	l Debug t Downloa	F8 Ctrl+Break Ctrl+D dding			
Clean Clean Batch Stop I Down Debug	id All build Build load and g withou & Resta	i Debug t Downloa rt Debugg	F8 Ctrl+Break Ctrl+D dding jer Ctrl+R			
Rebui Clean Batch Stop I Down Debui Make Resta	id All build Build load and g withou & Resta ert Debu	l Debug t Downloa rt Debugg gger	F8 Ctrl+Break Ctrl+D dding jer Ctrl+R Ctrl+Shift+R			

Figure 5-6:Rebuild All



4) Click "Download and Debug"



Figure 5-7: Click Download and Debug

5) Use following tool bar to debug



Figure 5-8: Debug Tool Bar

The sample codes support both Flash and RAM debug in IAR EWARM Workbench, if Flash debug is used, the code is programmed into MB9BF506 Flash. If RAM debug is used, the code only runs in RAM area, and after power off, the code will not be stored, but the RAM debug will be faster than Flash debug.

Setting for Flash Debug

1) Check the configuration file path (\$PROJ_DIR\$\config\mb9bf506.icf) in Linker table.

Options for node "mb9	ofS06r_mfserial"
General Options C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator Angel GDB Server IAR ROM-monitor J-Link/J-Trace TI Stellaris FTDI Macraigor PE micro RDI ST-LINK Third-Party Driver	Factory Settings Config Library Linker configuration file Image: Dispersive default \$PRDJ_DIR\$\config\mb9blf506.icf Edit Configuration file symbol definitions: (one per line)
	OK Cancel

Figure 5-9: ICF File for Flash Debug



2) Don't select "Use macro files" in "Debugger|Setup" table.

Options for node "mb9	of506r_mfserial"
Category: General Options C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger	Factory Settings Setup Download Images Extra Options Plugins Driver Images Images Run to Images Images Images Images
Simulator Angel GDB Server IAR ROM-monitor J-Link/J-Trace TI Stellaris FTDI Macraigor PE micro RDI ST-LINK Third-Party Driver	Setup macros
	OK Cancel

- Figure 5-10: Macro File Disabled
- 3) Set Flash loader file path (\$TOOLKIT_DIR\$\config\flashloader\Fujitsu\MB9BF506.board) in "Debug|Download" table.

Figure 5-11: Flash Load File Path



Setting for RAM Debug

1) Check the configuration file path (\$PROJ_DIR\$\config\mb9bf506_ram.icf) in Linker table.

Options for node "mb9	bf506r_mfserial"	×
Category:		
General Options C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator Angel GDB Server IAR ROM-monitor J-Link/J-Trace TI Stellaris FTDI Macraigor PE micro RDI ST-LINK Third-Party Driver	Factory Settings Config Library Inker configuration file Override default \$PROJ_DIR\$\config\mb9bf506_ram.icf Edit Configuration file symbol definitions: (one per line)	
	OK Cancel	

- Figure 5-12: ICF File for RAM Debug
- 2) Select "Use macro files" in "Debugger|Setup" table.

Options for node "mb9	of506r_mfserial" X
Category: General Options C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator Angel GDB Server IAR ROM-monitor J-Link/J-Trace TI Stellaris FTDI Macraigor PE micro RDI ST-LINK Third-Party Driver	Factory Settings Setup Download Images Extra Options Plugins Driver Imain Imain Imain Setup macros Imain Imain Imain Setup macros Imain Imain Imain Device description file Imain Imain Imain Device description file Imain Imain Imain Device default Imain Imain Imain Device default Imain Imain Imain
	OK Cancel

Figure 5-13: Macro File Enabled



3) Don't use Flash loader file.

Options for node "mb9bf500	5r_mfserial"	×
Category: General Options C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator Angel GDB Server IAR ROM-monitor J-Link/J-Trace TI Stellaris FTDI Macraigor PE micro RDI ST-LINK Third-Party Driver	Factory Settings stup Download Attach to program Verify download Suppress download Use flash loader(s) Override default.board file \$TOOLKIT_DIR\$\config\flashloader\Fujitsu\MB9BFE Edit	
	OK Cancel	

Figure 5-14: Flash Loader File Disabled

If user need to program the hex file into Flash via UART or USB programmer, a hex file need to be produced first.

■ How to Make a HEX File

- 1) Use Flash debug
- 2) Select "Generate additional output" in "Output Converter" table.

Options for node "mb9	of506r_mfserial"
Category: General Options C/C++ Compiler Assembler Output Converter Custom Build Build Actions Linker Debugger Simulator Angel GDB Server IAR ROM-monitor J-Link/J-Trace TI Stellaris FTDI Macraigor PE micro RDI ST-LINK Third-Party Driver	Output Image: Constraint of the second se
	OK Cancel
	OK Cancel

- Figure 5-15: Hex File Genration in IAR IDE
- 3) User can find the generated file in path (../Debug/Exe)



5.2 Debug with U-Link ME in Keil uVision4

The sample code can also be debugged in Keil μ Version4 with U-Link. The following figure shows basic debug window.



Figure 5-16: Keil IDE Overview

Run an Existed Project

1) Open a project by clicking "Project | Open Project..."



Figure 5-17: Open a Project



2) Select a project (uvproj file)

Select Project Fi	e			? ×
Look in:	C ARM	•) 🗕 🔁 🔿 🗍	•
	mb9bf506r_template.uvp	proj		
My Recent Documents	Flash			
Desktop				
My Documents				
My Computer				
S				
My Network	File name: mb9bf50	l6r_template.uvproj	-	Open
	Files of type: Project F	Files (*.uvproj; *.uvmpw; *	°.uv2; *.uv3; *.i ▼	Cancel

Rebuild all

Figure 5-18: Select a Project

🔮 🖀 🔛 🥪 🗮	LOAD	Debug
Project 🔛 Rebui	ild	
	d all tar	get files

Figure 5-19: Rebuild All Files

4) Start debug

3)



Figure 5-20: Start Debug



5) Use following tool bar to debug



Figure 5-21: Debug Tool Bar

The sample codes support both Flash and RAM debug in Keil uVison 4, if Flash debug is used, the code is programmed into MB9BF506 Flash. If RAM debug is used, the code only runs in RAM area, and after power off, the code will not be stored, but the RAM debug will be faster than Flash debug.

Setting for Flash Debug

1) Set ROM address in Flash area. (0x0000000-0x00080000)

Options for Target 'Debug'	×						
Device Target Output Listing User C/C++ Asm	Linker Debug Utilities						
Fujitsu Semiconductors MB9BF506R							
×tal (MHz): 4.0							
Operating system: None	Use Cross-Module Optimization						
	🔲 Use MicroLIB 🔲 Big Endian						
	Use Link-Time Code Generation						
Read/Only Memory Areas	Read/Write Memory Areas						
default off-chip Start Size Startup	default off-chip Start Size Nolnit						
E ROM1:	□ RAM1: □ □						
□ R0M2: ○	□ RAM2: □ □						
E ROM3:	🗖 RAM3:						
on-chip	on-chip						
IROM1: 0x0 0x80000	▼ IRAM1: 0x20000000 0x8000 □						
□ IROM2: □ 0	□ IRAM2: □ □						
	cel Defaults Help						
	Help						

Figure 5-22: ROM Address Setting for Flash Debug



2) Don't use initialization file.

Options for Target 'Debug'	×
Device Target Output Listing User C/C++ Asm C Use Simulator Settings	Linker Debug Utilities
Limit Speed to Real-Time Load Application at Startup P Run to main() Initialization File	I Load Application at Startup I Run to main()
Edit	Edit
Restore Debug Session Settings Image: Set	Restore Debug Session Settings Second Section Settings Breakpoints Vatch Windows
Memory Display	Memory Display
CPU DLL: Parameter: SARMCM3.DLL -MPU	Driver DLL: Parameter: SARMCM3.DLL -MPU
1 1	· · ·
Dialog DLL: Parameter: DCM.DLL PCM3	Dialog DLL: Parameter: TCM.DLL PCM3
UK Ca	ncei Derauits Help

Figure 5-23: Don't use initialization File 3) Check "Update Target before Debugging" checkbox

Options for Target 'Debug'
Device Target Output Listing User C/C++ Asm Linker Debug Utilities
Configure Flash Menu Command
© Use Target Driver for Flash Programming
ULINK Cortex Debugger 🔄 Settings 🔽 Update Target before Debugging
Init File:
O Use External Tool for Flash Programming
Command:
Arguments:
E Run Independent
OK Cancel Defaults Help

Figure 5-24: Select Update Target Before Debugging



Setting for RAM Debug

1) Set ROM address in Code SRAM area. (0x1fff8000-0x1fffffff)

C)ptions fo	r Target '	Debug'							×
:	Device	Target 0	utput Listing	User C/C++	Asm	Linker	Debug Uti	ities		
	Fujitsu S	emiconduc	tors MB9BF506	ĩR		с. I. (
				Xtal (MHz): 4.0			eneration-			
	Operal	ina system:	None	-	•	υ	se Cross-Mo	dule Optimiza	ation	
			1			□ U	se MicroLIB	Г	Big Endian	
							se Link-Time	Code Gener	ration	
	Read/	Only Memo	ory Areas	c:		Read/	Write Memor	y Areas — —	c:	
	default	off-chip	Start	Size	Startup	default	off-chip	Start	Size	NoInit
:		ROM1:					BAM1:			
		ROM2:					RAM2:			
1		ROM3:					RAM3:			
1		on-chip					on-chip			
1	~	IROM1:	0x1fff8000	0x8000			IRAM1:	x20000000	0x8000	
		IROM2:					IRAM2:			
1										
:				OK	l Car		Default	. 1		Hab
						icei	Derault	s	_	пер

Figure 5-25: Set RAM Address for RAM Debug

2) Set initialization file path. (..\Debug_RAM.ini)

Options for Target 'Debug'	×
Device Target Output Listing User C/C++ Asm	Linker Debug Utilities
C Use Simulator Settings	Use: ULINK Cortex Debugger Settings
C Load Application at Startup C Run to main() Initialization File:	Load Application at Startup Run to main() Initialization File: Debug BAM ini
Restore Debug Session Settings Breakpoints I Toolbox Watch Windows & Performance Analyzer Memory Display	Restore Debug Session Settings Breakpoints I Toolbox Watch Windows Memory Display
CPU DLL: Parameter:	Driver DLL: Parameter:
Dialog DLL: Parameter: DCM.DLL PCM3	Dialog DLL: Parameter: TCM.DLL -pCM3
OK Ca	ncel Defaults Help

Figure 5-26: Select Initialization File



bon concert opdate ranget berere bebagging enterties	3)	Don't Check	"Update	Target b	before [Debugging"	checkbox
------------------------------------------------------	----	-------------	---------	----------	----------	------------	----------

Options for Target 'Debug'
Device Target Output Listing User C/C++ Asm Linker Debug Utilities
Configure Flash Menu Command
O Use Target Driver for Flash Programming
ULINK Cortex Debugger Settings Update Target before Debugging
Init File:
C Use External Tool for Flash Programming
Command:
Arguments:
E Run Independent
OK Cancel Defaults Help

Figure 5-27: Select Update Target Before Debugging

If user need to program the hex file into Flash via UART or USB programmer, a hex file need to be produced first.

■ How to Make a HEX File

1) Check "Create HEX File" checkbox (This file is Intel Format HEX)

Options for Target 'Debug'	×
Device Target Output Listing User C/C++ Asm Linker Debug Utilities	
Select Folder for Objects Name of Executable: mb9bf506r_mfserial	
 Create Executable: .\output\debug\mb9bf506r_mfserial ✓ Debug Information Create Batch File 	
Create HEX File Browse Information	
Create Library: .\output\debug\mb9bf506r_mfserial.LIB	
OK Cancel Defaults Help	

- Figure 5-28: HEX File Generation in Keil IDE
- 2) User can find the generated file in path "..\output\debug\"

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6 Materials Download

The following materials can be downloaded from below web. http://www.fujitsu.com/cn/fss/events/contest/2010/index_download.html

Software

- FUJITSU Flash MCU Programmer
- FUJITSU Flash USB DIRECT Programmer

Document

- FSSDC-9B506-EVB User Manual
- FSSDC-9B506-EVB Schematic
- MB9B506 Series Datasheet
- MB9B506 Series Peripheral Manual
- MB9B506 Series Flash Programming Manual

Sample code

- uart
- iic_rtc
- ext_bus_nandflash
- can
- usb_func_mouse
- usb_host_catch_mouse
- Icd_ad_key

IDE Study Material

- IAR IDE study material
- Keil IDE study material

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