Freescale Semiconductor
Quick Start Guide

Revision Number: 1.0

MPC8308-NSG

1. Introduction

This quick start guide applies to MPC8308-NSG board with schematic revision B or greater and PCB revision B or greater.

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1.1. MPC8308-NSG Board Details

Figure 1 below displays the MPC8308-NSG board details.

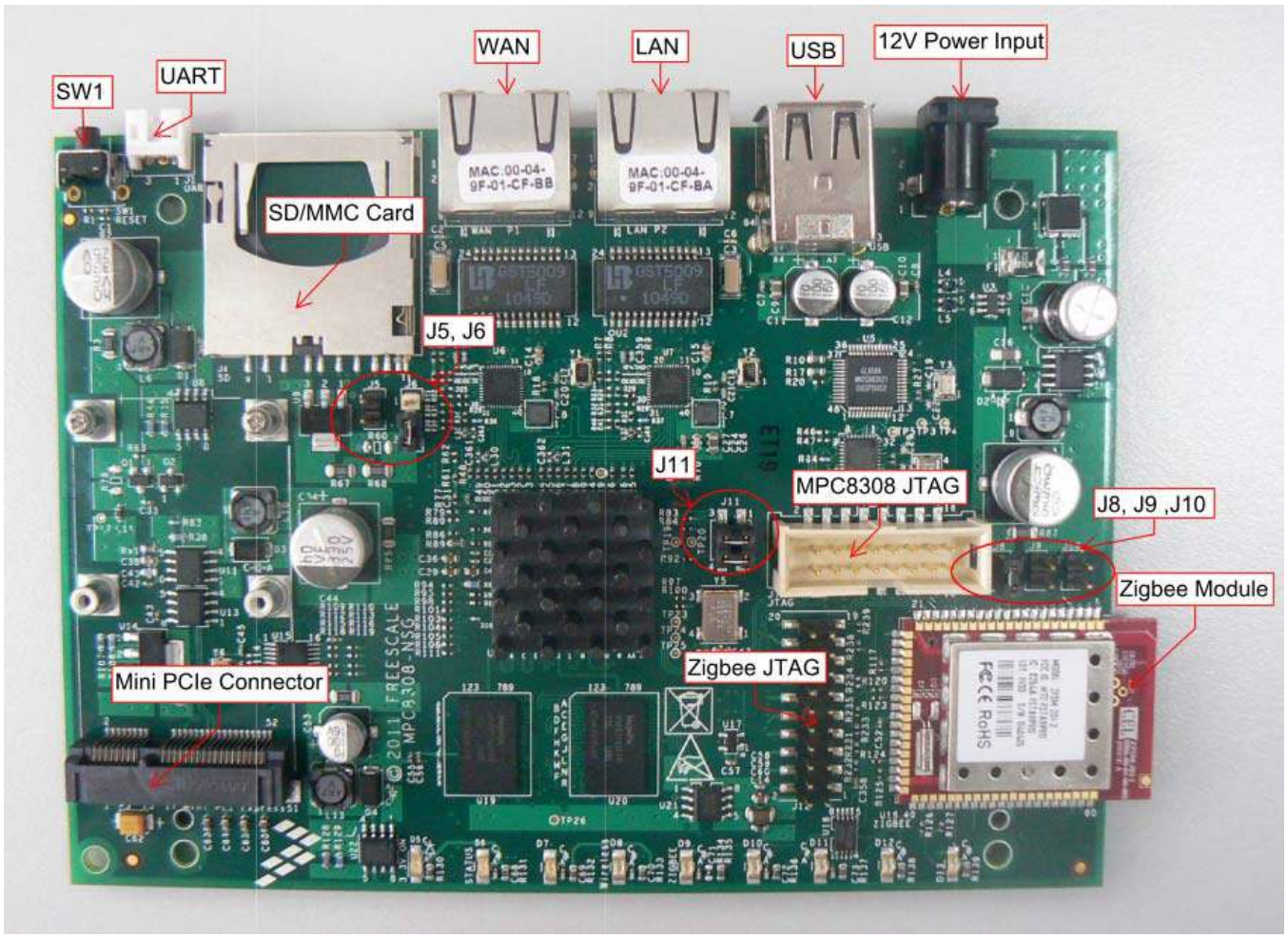

Figure 1. MPC8308-NSG Board Details

1.2. High Level Block Diagram

Figure 2 below displays the high level block diagram of the MPC8308-NSG board.

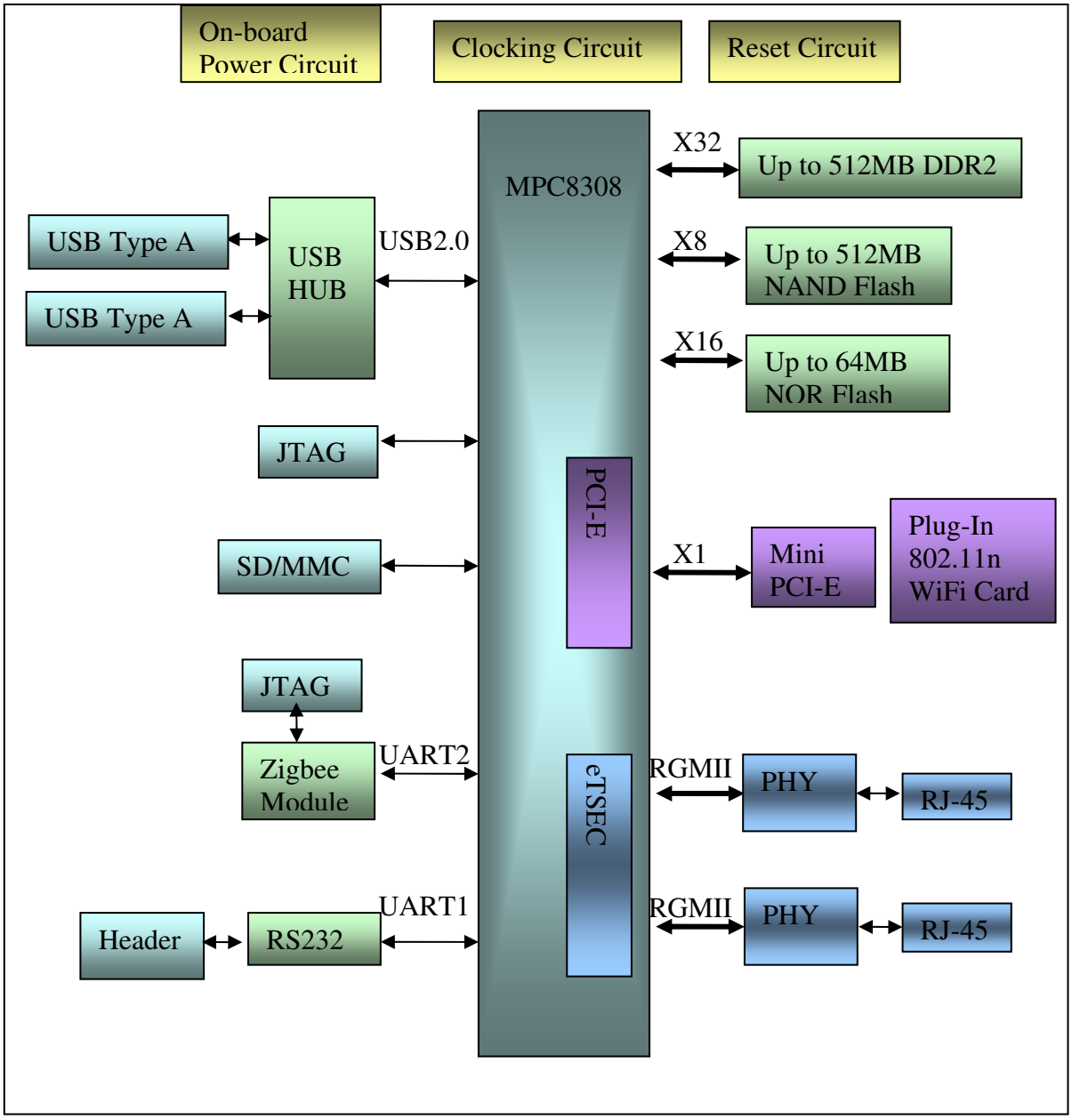

Figure 2. MPC8308-NSG High Level Block Diagram

1.3. Key Features

The key features of the MPC8308-NSG board are listed in Table 1:

Table 1. Key Features of MPC8308-NSG

Key Feature	Description
CPU	MPC8308 @ 400 MHz core speed, 1.0V core voltage
Memory	DDR2 on-board chips – 128MByte NOR Flash – 8MByte NAND Flash – 32MByte I2C EEPROM – 256Kbit
PCIe	One mini PCIe connector (x1)
Zigbee module	Zigbee/IEEE 802.15.4 module ZFSM-201-2 from CEL
Ethernet	Two 10/100/1000 ports as follows: 1 RGMII PHY connected to eTSEC1 1 RGMII PHY connected to eTSEC2
I2C	Serial EEPROM Secure EEPROM
SD/MMC card slot	
USB	Two Type A USB
UART	UART1: One 1x3 right angle header for serial port UART2: Communication interface between MPC8308 and Zigbee module
Schematics	OrCad
PCB	Allegro

2. Getting Started

2.1. Preloaded Binaries on the Board

Table 2 displays the MPC8308-NSG kit contents:

Table 2. MPC8308-NSG Kit

Kit Contents	Description
On-board NOR Flash loaded with complete NOR flash image	u-boot.bin uImage dtb

2.2. Default Booting Method

By default, the boot loader executes from NOR flash. Different booting modes refer to Table 3.

Table 3. Flash Memory Chip Select and Boot ROM

Mode	J11	J6	J5	Description
1 (default)	Pin 1&3: short Pin 2&4: short	Pin 2&3: short	Open	NOR Flash CS0, NAND Flash CS1, Booting from NOR Flash
2	Pin 1&2: short Pin 3&4: short	Pin 2&3: short	Short	NAND Flash CS0, NOR Flash CS1, Booting from NAND Flash
3	Pin 1&3: short Pin 2&4: short	Pin 1&2: short	Open	NOR Flash CS0, NAND Flash CS1, For CodeWarrior connection

2.3. Default Frequency Setting

The default frequency is configured by Reset Configuration Word (RCW) . Table 4 displays default frequency settings:

Table 4. Default Frequency Settings

Core Freq (MHz)	Platform Freq (MHz)	DDR Freq (MHz)
400	133	266

2.4. Ethernet and USB Ports

Figure 3 shows the Ethernet and USB ports on MPC8308-NSG.

Figure 3. Ethernet and USB Ports on MPC8308-NSG

Table 5 displays Ethernet ports on MPC8308-NSG.

Table 5. Ethernet ports on MPC8308-NSG

Marking on board	On SoC	In u-boot	In Linux	Mode of operation
WAN	eTSEC1	eTSEC0	eth0	RGMII
LAN	eTSEC2	eTSEC1	eth1	RGMII

Table 6 displays USB ports on MPC8308-NSG.

Table 6. USB ports on MPC8308-NSG

Marking on board	On SoC	In u-boot	In Linux	Mode of operation
USB-TOP	USB		usb1/1-1/1-1.4	ULPI(external PHY) + USB HUB
USB-BOTTOM	USB		usb1/1-1/1-1.3	ULPI (external PHY)+ USB HUB

2.5. UART and SD/MMC

Figure 4 shows the UART port and SD/MMC slot on MPC8308-NSG.

Figure 4. UART Port and SD/MMC Slot on MPC8308-NSG

Table 7 displays the UART port on MPC8308-NSG.

Table 7. UART port on MPC8308-NSG

Marking on board	On SoC	In u-boot	In Linux
UART	UART1		ttyS0

Table 8 displays the SD/MMC interface on MPC8308-NSG.

Table 8. SD/MMC on MPC8308-NSG

Marking on board	On SoC	In u-boot	In Linux	Mode of operation
SD/MMC	eSDHC	FSL_ESDHC	mmcblk0	SD/MMC 1-bit or 4-bit

2.6. Zigbee Module

Zigbee module based on Freescale MC13226 is soldered on PCB directly as shown in Figure 5. The 2x10 header J12 is for Zigbee module JTAG development tools.

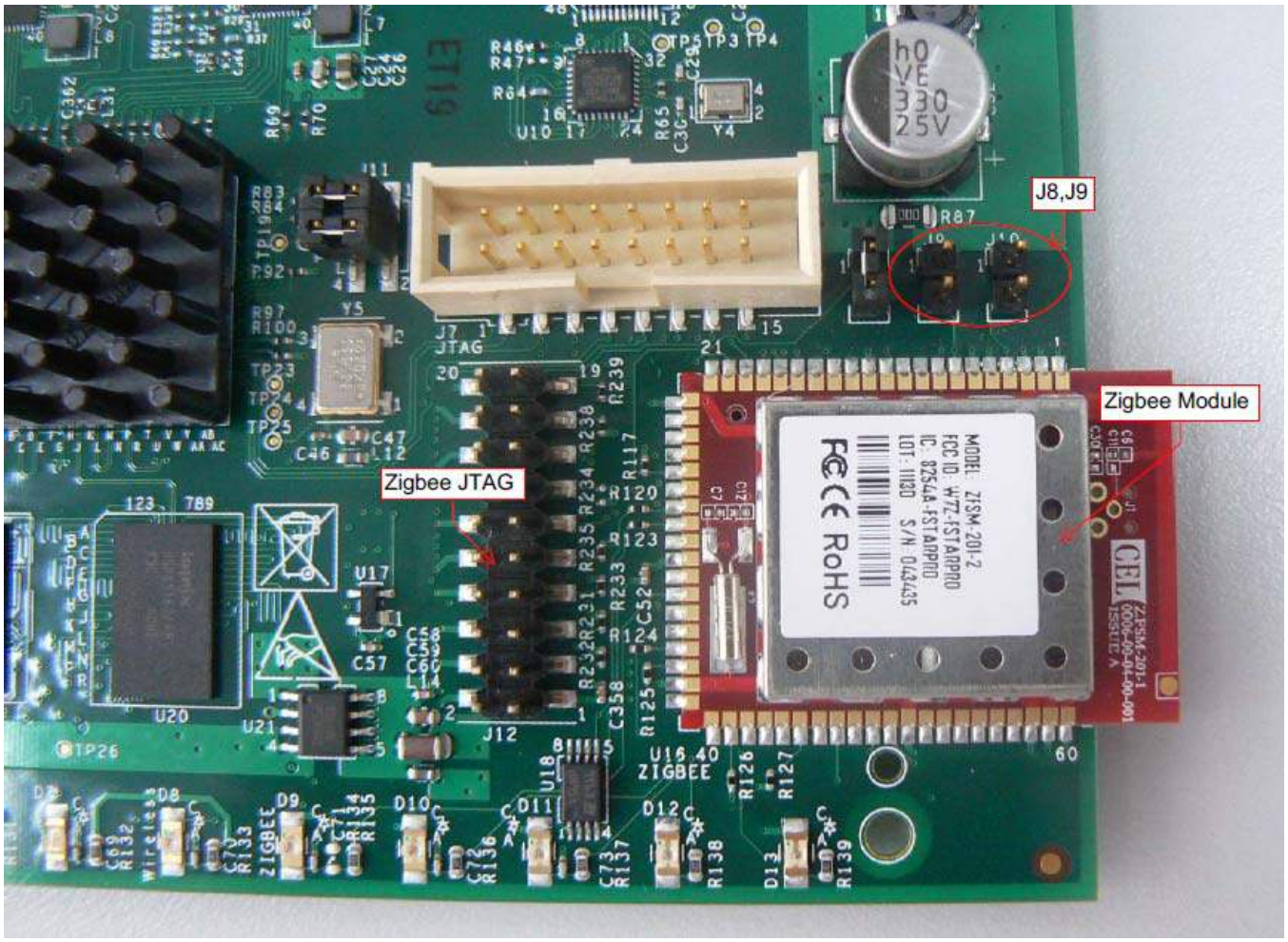

Figure 5. Zigbee Module and Zigbee Module JTAG connector

Table 9 shows how to configure the flash erase mode on Zigbee Module.

Table 9. Flash Erase Mode

Mode	J9	J10	Mode of Operation
Recovery Mode	Short	Short	Erase the FLASH on Zigbee module through the boot process
Non-recovery Mode (default)	Open	Open	Not erase the FLASH on Zigbee module through the boot process

2.7. Preparing the Board

1. Ensure that board is not connected to the power.

NOTE	It is recommended to wear the wrist strap before preparing the MPC8308-NSG board to get protection from electrical charges.

2. Attach a 3-pin to DB9 RS-232 cable between the MPC8308-NSG (UART) and a host PC.
3. For serial you can use any serial program viz TeraTerm, Hyperterm, etc.
4. Configure the host PC's serial port with the following settings:
   - Data rate: 115200 bps
   - Number of data bits: 8
   - Parity: None
   - Number of Stop bits: 1
   - Flow Control: None
5. Plug in +12V adapter cable
6. U-boot starts followed by Linux. (see example log)

2.7.1. Example U-boot Log

U-Boot 2009.11-rc1-00021-gb55d5a0-dirty (Dec 22 2010 - 23:22:51) MPC83XX

Reset Status:

CPU: e300c3, MPC8308, Rev: 1.0 at 400 MHz, CSB: 133.333 MHz
Board: Freescale MPC8308WMG Rev <unknown>
I2C: ready
DRAM: 128 MB
FLASH: 8 MB
NAND: 32 MiB
PCIE0: No link
In: serial
Out: serial
Err: serial
MMC: FSL_ESDHC: 0
Net: eTSEC0, eTSEC1
Hit any key to stop autoboot: 0
=>

3. References

For more information, refer to MPC8308-NSG User's Guide.pdf.

How to Reach Us:

Home Page:
www.freescale.com

E-mail:
support@freescale.com

USA/Europe or Locations Not Listed:
Freescale Semiconductor
Technical Information Center, CH370
1300 N. Alma School Road
Chandler, Arizona 85224
+1-800-521-6274 or +1-480-768-2130
support@freescale.com

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
support@freescale.com

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064, Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor Hong Kong Ltd.
Technical Information Center
2 Dai King Street
Tai Po Industrial Estate
Tai Po, N.T., Hong Kong
+800 2666 8080
support.asia@freescale.com

For Literature Requests Only:
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P.O. Box 5405
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1-800-521-6274 or 303-675-2140
Fax: 303-675-2150
LDCForFreescaleSemiconductor@hibbertgroup.com

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