

MPC5777M EVB User Guide

Prototype Board

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1 Introduction

This user guide details the setup and configuration of the Freescale MPC5777M Evaluation Board (hereafter referred to as the EVB). The EVB is intended to provide a mechanism for easy customer evaluation of the MPC57xx family of microprocessors, and to facilitate hardware and software development.

At the time of writing this document, the MPC57xx family consists of the 55nm powertrain and safety devices. For the latest product information, please speak to your Freescale representative or consult the MPC57xx website at www.freescale.com.

The EVB is intended for bench or laboratory use and has been designed using normal temperature specified components (+70°C).

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1.1 Modular Concept

For maximum flexibility and simplicity, the EVB has been designed as a modular development platform. The EVB main board does not contain an MCU. Instead, the MCU is fitted to an MCU daughter card (occasionally referred to as an adapter board). This approach means that the same EVB platform can be used for multiple packages and MCU derivatives within the MPC57xx family. High density connectors provide the interface between the EVB and MCU daughter cards as shown [Figure 1](#). See [Section 4, “Configuration — Daughter card”](#) for more details on the daughter cards and [Section 5, “Board Interface Connector”](#) for more details on the interface connectors.

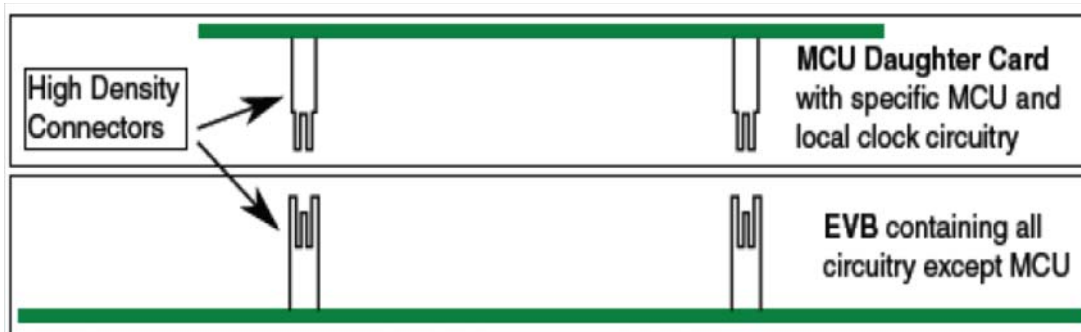


Figure 1. Modular concept – Mother board and MCU daughter card

Please consult the MPC57xx website at www.freescale.com or speak to your Freescale representative for more details on the availability of MCU daughter cards.

NOTE

For details on your specific daughter card, please consult the instructions included with the daughter card.

The EVB is designed to use the motherboard and the daughter in conjunction. However, it is possible to use the daughter cards standalone.

1.2 Daughter Card Availability

A number of compatible daughter cards are available for the motherboard across a number of devices. [Table 1](#) gives an overview of daughter cards that can be used with MPC57xx motherboard and associated devices, package sizes and part numbers.

Table 1. Daughter Card Overview

Daughter card number	Device	Package	Socket	Nexus
MPC5746M_176DS/C	MPC5746M / MPC5744K	176LQFP	yes/no	no
MPC5746M_216DC	MPC5746M / MPC5744K	216 Fusion Quad	no	yes
MPC5746M_292DS/DC	MPC5746M / MPC5744K	292 BGA	yes/no	yes
MPC5777M_416DS	MPC5777M	416 BGA	yes	yes

Table 1. Daughter Card Overview

Daughter card number	Device	Package	Socket	Nexus
MPC5777M_512DS	MPC5777M	512 BGA	yes	yes
MPC5744K_144DS/C	MPC5744K	144LQFP	yes/no	no
MPC5744K_172DC	MPC5744K	172 Fusion Quad	no	yes
TBD	MPC5726L	TBD	TBD	TBD
TBD	MPC5744P	144LQFP	TBD	TBD
TBD	MPC5744P	257 MAPBGA	TBD	TBD

All daughter cards will be similar in design and concept. For details on the daughter cards please refer to [Section 4, “Configuration — Daughter card.”](#)

2 EVB features

The EVB system consists of a motherboard and a daughter card, both with distinct features.

The motherboard provides the following key features:

- Support provided for different MPC57xx MCUs by utilizing MCU daughter cards
- Single 12 V external power supply input with four on-board regulators providing all of the necessary EVB and MCU voltages; power supplied to the EVB via a 2.1mm barrel style power jack or a 2-way level connector; 12 V operation allows in-car use if desired
- Master power switch and regulator status LEDs
- Two 240-way high-density daughter card expansion connectors allowing connection of the MCU daughter card or a custom board for additional application specific circuitry
- All MCU signals readily accessible at a port-ordered group of 0.1in. pitch headers
- RS232/SCI physical interface and standard DB9 connector
- FlexRAY interface
- LINFlexD interface
- 2 CAN interfaces, one configurable to be connected to one out of two CAN modules, and one connected to a dedicated third CAN module
- Ethernet interface
- Variable resistor, driving between 5 V and ground
- 4 user switches and 4 user LEDs, freely connectable
- Liberal scattering of GND test points (surface mount loops) placed throughout the EVB

The daughter cards provide the following features:

- MCU (soldered or through a socket)
- Flexible MCU clocking options allow provision of an external clock via SMA connector or 40MHz EVB clock oscillator circuit. Jumpers on the daughter card allow selection between these external clocks. SMA connector on MCU-CLKOUT signal for easy access.
- User reset switch with reset status LEDs

Configuration—Motherboard

- Standard 14-pin JTAG debug connector and 34-pin Samtec Nexus3+ connector
- 10-pin Serial Interprocessor Interface (SIPI) connector
- Liberal scattering of ground and test points (surface mount loops) placed throughout the EVB

NOTE

To alleviate confusion between jumpers and headers, all EVB jumpers are implemented as 2 mm pitch whereas headers are 0.1 in. (2.54 mm). This prevents inadvertently fitting a jumper to a header.

CAUTION

Before the EVB is used or power is applied, please fully read the following sections on how to correctly configure the board. Failure to correctly configure the board may cause irreparable component, MCU or EVB damage.

3 Configuration—Motherboard

This section details the configuration of each of the EVB functional blocks.

The EVB has been designed with ease of use in mind and has been segmented into functional blocks as shown in [Figure 2](#). Detailed silkscreen legend has been used throughout the board to identify all switches, jumpers and user connectors.

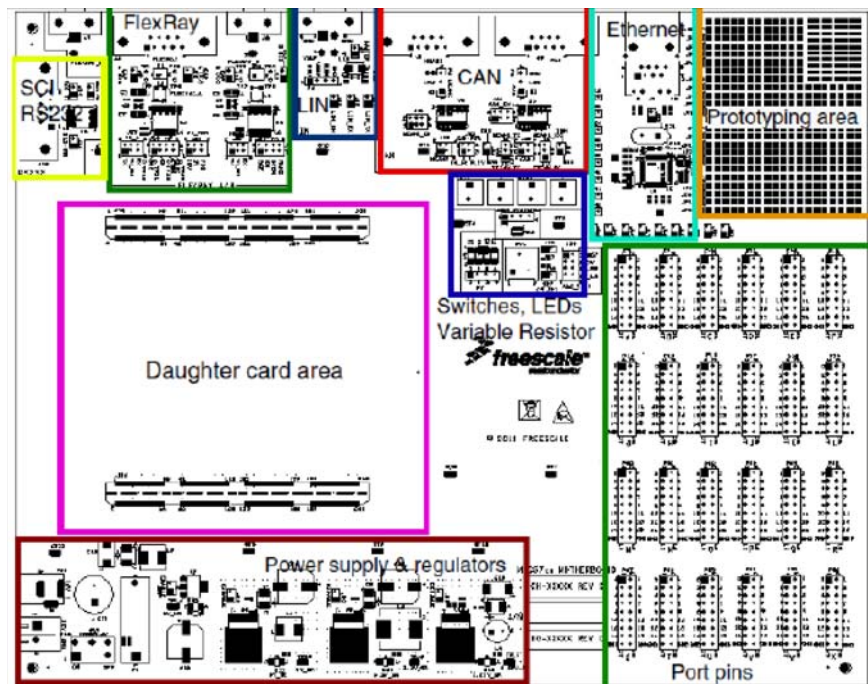


Figure 2. EVB Functional Blocks

3.1 Power Supply Configuration

The EVB requires an external power supply voltage of 12 V DC, minimum 1 A. This allows the EVB to be easily used in a vehicle if required. The single input voltage is regulated on-board using three switching regulators to provide the necessary EVB and MCU operating voltages of 5.0 V, 3.3 V and 1.25 V¹ and one 5 V linear regulator for the ADC supplies and references.

For flexibility there are two different power supply input connectors on the motherboard as detailed below. There is also a power supply option on the daughter card to use the daughter card in standalone mode. Please refer to [Section 4.1.2, “Daughter Card Standalone Power Input”](#) for details on the daughter card power input.

3.1.1 Motherboard Power Supply Connectors

2.1 mm Barrel Connector – P28:

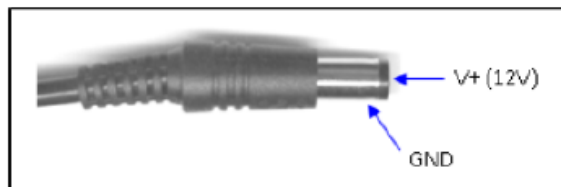


Figure 3. 2.1 mm Power Connector

2-Way Lever Connector – P32:

This can be used to connect a bare wire lead to the EVB, typically from a laboratory power supply. The polarization of the connectors is clearly marked on the EVB. Care must be taken to ensure correct connection.

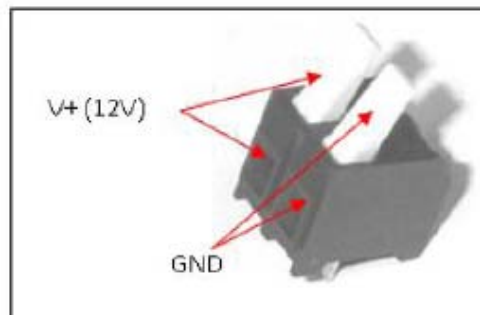


Figure 4. Lever Power Connector

3.1.2 Regulator Power Jumpers

There are four power regulator circuits on the MPC57xx motherboard that supply the required voltages to operate the MCUs:

¹.To support the MPC5777M revision 2, the 1.25 V_{SR} voltage must increase from 1.25 V to 1.30 V.

Configuration—Motherboard

- 1.25V_SR: This voltage, also called VDD_LV_SR, shall be increased from 1.25 V to 1.30 V to support the MPC5777M revision 2.
- 5V_SR: 5 V switching regulator to supply the power management controller, I/O and peripherals
- 3.3V_SR: 3.3 V switching regulator for Ethernet, FlexRAY, debug and I/O
- 5V_LR: 5 V linear regulator for ADC supply and reference

All of the regulators have the option of being disabled/enabled if they are not required. By default (jumpers are off), all of the switching regulators are enabled and the 5 V linear regulator is disabled. The regulators can be enabled individually by the following jumper settings:

- Connecting J57 enables the 5 V linear regulator
- Disconnecting J58 enables the 5 V switching regulator
- Disconnecting J59 enables the 3.3 V switching regulator
- Disconnecting J60 enables the 1.25 V switching regulator

The regulators supply power to the daughter cards through the board connector. The individual selection and configuration of the MCU supplies are done on the daughter cards.

NOTE

Not all the supported daughter card MCUs require all the supplies to be switched on. Please refer to [Section 4, “Configuration — Daughter card”](#) for details.

NOTE

The MPC5777M revision 2 nominal VDD_LV increase from 1.25 V to 1.30 V. This requires a change to the MPC5746MMB motherboard to increase the supply voltage to 1.30 V. This can be achieved by changing resistors R85 from 33.2 ohms to 75 ohms. R85 can be found on the bottom side of the motherboard directly underneath U10.

See also Errata e7355 Datasheet revision 3 and later for updated voltage monitor level, VDD_LV specification, and detailed change summary.

3.1.3 Power Switch, Status LEDs and Fuse

The main power switch (slide switch SW5) can be used to isolate the power supply input from the EVB voltage regulators if required.

- Moving the slide switch to the right (away from connector P33) will turn the EVB on
- Moving the slide switch to the left (towards connector P33) will turn the EVB off

When power is applied to the EVB, four green power LEDs adjacent to the voltage regulators show the presence of the supply voltages as follows:

- LED D9 – Indicates that the 5.0 V linear regulator is enabled and working correctly
- LED D11 – Indicates that the 5.0 V switching regulator is enabled and working correctly
- LED D12 – Indicates that the 3.3 V switching regulator is enabled and working correctly
- LED D13 – Indicates that the 1.25 V switching regulator is enabled and working correctly

If no LED is illuminated when power is applied to the EVB and the regulators are correctly enabled using the appropriate jumpers, it is possible that either power switch SW5 is in the “OFF” position or that the fuse F1 has blown. The fuse will blow if power is applied to the EVB in reverse-bias, where a protection diode ensures that the main fuse blows rather than causing damage to the EVB circuitry. If the fuse has blown, check the bias of your power supply connection then replace fuse F1 with a 20mm 1.5A fast blow fuse.

3.2 CAN Configuration

The EVB has two NXP TJA1041T high speed CAN transceivers and two standard DB9 connectors to provide physical CAN interfaces for the MCU.

The pinout of the DB9 connector (J2) is shown in [Figure 5](#).

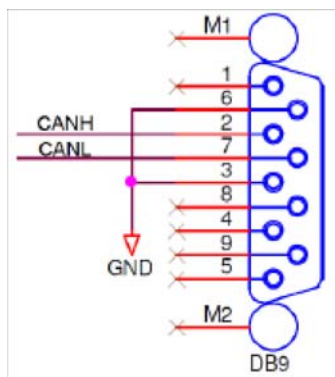


Figure 5. CAN DB9 connector pinout

For flexibility, the CAN transceiver I/Os are also connected to two standard 0.1 in. connectors (P4 and P5) at the top side of the PCB. The pin-out for these connectors is shown in [Figure 6](#).

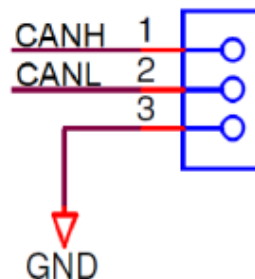


Figure 6. CAN 3pin header interface connector

By default the CAN interfaces are not enabled. To enable the CAN interfaces the jumpers detailed in [Table 2](#) need to be placed.

Table 2. CAN control jumpers

Jumper	Label	Description
J23	CAN2_EN	PHY U2 configuration 1-2: WAKE to GND 3-4: STB to 5V 5-6: EN to 5V
J32	CAN2	1-2: PHY TX to MCU 3-4: PHY RX to MCU
J33	CAN-PWR	1-2: 5.0V_SR to PHY U2 VCC 3-4: 12V to PHY U2 VBAT
J34	—	PHY U2 signal out 1: ERR 2: INH
J21	CAN_EN	PHY U1 configuration 1-2: WAKE to GND 3-4: STB to 5V 5-6: EN to 5V
J35	CAN	1-2: 5.0V_SR to PHY U1 VCC 3-4: 12V to PHY U1 VBAT
J37	CAN	PHY U1 TX to MCU 1-2: TTCAN TX 2-3: MCAN1 TX
J38	—	PHY U1 RX to MCU 1-2: TTCAN RX 2-3: MCAN1 RX
J36	—	PHY U1 signal out 1: ERR 2: INH

3.3 RS232 Configuration

DB9 connector J19 and MAX3221E RS232 transceiver device provide a physical RS232 interface, allowing a direct RS232 connection to a PC or terminal.

The pin-out of these connectors is detailed in [Figure 7](#). Note that hardware flow control is not supported on this implementation.

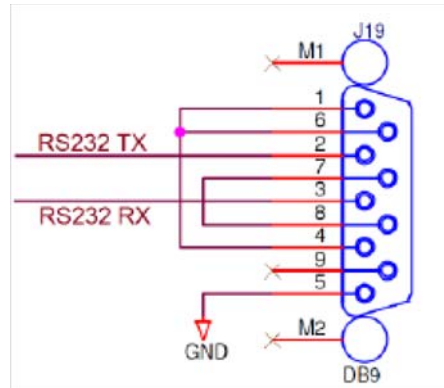


Figure 7. RS232 physical interface connector

On default the RS232 interface is not enabled. To enable the RS232 interface the user needs to place the jumpers detailed in [Table 3](#).

Table 3. RS232 control jumpers

Jumper	Label	Description
J13	SCI TX	TX enable
J14	SCI RX	RX enable
J25	SCI_PWR	Transceiver power on

3.4 LIN Configuration

The EVB is fitted with a Freescale MC33661F LIN transceiver (U50) and two different style connectors: A standard LIN Molex connector (J14) at the edge of the board and a standard 0.1 in. connector (P3).

The pin-out of the Molex connector J4 is shown in [Figure 8](#).

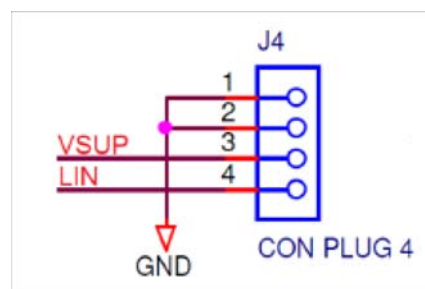


Figure 8. LIN Molex connector

For flexibility, the LIN transceiver is also connected to a standard 0.1 in. connector (P3) at the top side of the PCB as shown in [Figure 9](#). For ease of use, the 12 V EVB supply is fed to pin1 of P3 and the LIN transceiver power input to pin2. This allows the LIN transceiver to be powered directly from the EVB supply by simply linking pins 1 and 2 of connector P3 using a 0.1 in. jumper shunt.

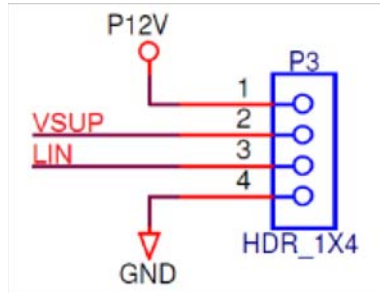


Figure 9. LIN 4pin header interface connector

By default the LIN interface is not enabled. To enable the LIN interface the jumpers detailed in [Table 4](#) need to be placed.

Table 4. LIN control jumpers

Jumper	Label	Description
J15	LIN_EN	LIN PHY (U50) enable
J16	LIN_RX	LIN RX enable
J17	LIN_TX	LIN TX enable

3.5 FLEXRAY Configuration

The EVB is fitted with two FlexRAY transceivers, a DB9 connector (for both transceivers) and two alternative connectors. Jumpers J27 and J30 are provided to route the respective MCU signals to the physical interfaces.

The pin-out of the DB9 connector (J2) is shown in [Figure 10](#).

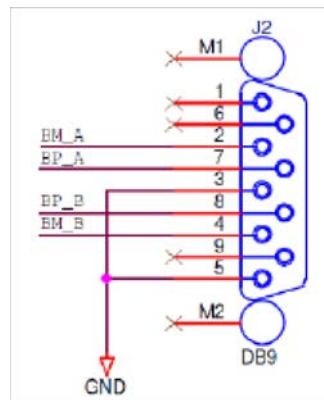


Figure 10. FlexRAY DB9 connector pinout

For flexibility, the FlexRAY transceiver is also connected to two FlexRAY connectors (P1 & P2) and two 2pin Molex connectors (J1 & J3, not populated by default) at the top side of the EVB. [Figure 11](#) shows the connections for both types of connectors.

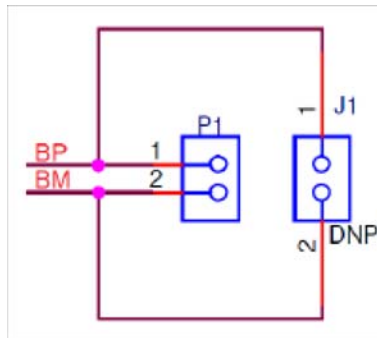


Figure 11. FlexRAY alternative connector pin-outs

By default the FlexRAY interface is not enabled. To enable the FlexRAY interface the jumpers detailed in [Table 5](#) need to be placed.

Table 5. FlexRAY control jumpers

Jumper	Label	Description
J29	FR_PWR	FlexRay transceiver VIO selection 1-2: 12V to VBAT 3-4: 5V_SR to VCC and VBUF 5-6: 3.3V_SR to VIO
J27	FR_A	1-2: PHY U4 TX to MCU 3-4: PHY U4 TXEN to MCU 5-6: PHY U4 RX to MCU
J28	FR_A	PHY U4 configuration: 1-2: 3.3V (VIO) to BGE 3-4: 3.3V (VIO) to EN 5-6: 3.3V (VIO) to STBY 7-8: GND to WAKE
J30	FR_B	1-2: PHY U5 TX to MCU 3-4: PHY U5 TXEN to MCU 5-6: PHY U5 RX to MCU
J31	FR_B	PHY U5 configuration: 1-2: 3.3V (VIO) to BGE 3-4: 3.3V (VIO) to EN 5-6: 3.3V (VIO) to STBY 7-8: GND to WAKE

3.6 Ethernet Configuration

The EVB is fitted with a standard RJ45 ethernet connector (*J7*) and a DP83848C 10/100 ethernet transceiver (*U6*).

By default, the Ethernet interface is not enabled. To enable the Ethernet interface the jumpers detailed in [Table 6](#) need to be placed.

Table 6. Ethernet control jumpers

Jumper	Description
J22	PHY power on (jumper placed on default)
J18	RXCLK
J20	CRS_LEDCFG
J24	RXER_MDIXEN
J26	RXDV_MIIIMODE
J39	RXD0_PHYAD1
J40	RXD1_PHYAD1
J41	RXD2_PHYAD2
J42	RXD3_PHYAD3
J44	COL_PHYAD0
J45	TXEN
J46	TXCLK
J47	TXD0
J48	TXD1
J49	TXD2
J50	TXD3_SNIMODE
J51	MDC
J52	MDIO

3.7 User Area

There is a rectangular prototype area on the EVB top right corner, consisting of a 0.1in. pitch array of through-hole plated pads. Power from all the three switching regulators is readily accessible along with GND through JP1 – JP16 next to the prototyping area. This area is ideal for the addition of any custom circuitry.

There are four active low user LEDs D2, D3, D4 and D5, these are driven by connecting a logic 0 signal to the corresponding pin on 0.1in. header P7 (USER LEDS). The LED inputs are pulled to VDD_HV_IO_MAIN through 10 kΩ resistors.

There are 4 active high pushbutton switches SW1, SW2, SW3 and SW4 which will drive 5V onto the respective pins on 0.1in. connector P6 when pressed. The switch outputs are pulled to GND via 10 kΩ.

Potentiometer RV1 can be connected to port pin PB[0] and is adjustable between GND and 5 V from the linear regulator. Power from all regulators can be connected to port pins as through J54:

- 1-2: 1.25V_SR to PB[1]
- 3-4: 3.3V_SR to PB[2]
- 5-6: 5V_SR to PB[3]

- 7-8: 5V_LR to PB[4]

The P12V rail from the 12 V input is scaled to 4.3V through the voltage divider of R81 and R82 and the scaled voltage can be connected to PB[5] via J55.

3.8 Testpoints — Motherboard

A number of test points of different shape and functionality is scattered around the EVB to allow easy access to MCU and reference signals. This chapter summarizes and describes the available test points. Motherboard test points are listed and detailed in [Table 7](#).

Table 7. Test points-motherboard

Signal	TP name	Shape	Description
GND	GT1	Hook	Ground reference
GND	GT2	Hook	Ground reference
GND	GT3	Hook	Ground reference
GND	GT4	Hook	Ground reference
GND	GT5	Hook	Ground reference
GND	GT6	Hook	Ground reference
GND	GT7	Hook	Ground reference
GND	GT8	Hook	Ground reference
GND	GT9	Hook	Ground reference
GND	GT10	Hook	Ground reference
GND	GT11	Hook	Ground reference
1.25V_SR	JP1	Pin	1.25V_SR reference
1.25V_SR	JP2	Pin	1.25V_SR reference
1.25V_SR	JP3	Pin	1.25V_SR reference
1.25V_SR	JP4	Pin	1.25V_SR reference
3.3V_SR	JP5	Pin	3.3V_SR reference
3.3V_SR	JP6	Pin	3.3V_SR reference
3.3V_SR	JP7	Pin	3.3V_SR reference

Table 7. Test points-motherboard (continued)

3.3V_SR	JP8	Pin	3.3V_SR reference
5V_SR	JP9	Pin	5V_SR reference
5V_SR	JP10	Pin	5V_SR reference
5V_SR	JP11	Pin	5V_SR reference
5V_SR	JP12	Pin	5V_SR reference
GND	JP13	Pin	Ground reference
GND	JP14	Pin	Ground reference
GND	JP15	Pin	Ground reference
GND	JP16	Pin	Ground reference
5V_SR	TP15	Hook	5V_SR reference
5V_LR	TP14	Hook	5V_LR reference
3.3V_SR	TP16	Hook	3.3V_SR reference
1.25V_SR	TP17	Hook	1.25V_SR reference
FRA-INH2	TP5	Pad	FlexRAY
FRA-INH1	TP1	Pad	FlexRAY
FRA-ERRN	TP2	Pad	FlexRAY
FRA-RXEN	TP6	Pad	FlexRAY
FRB-INH2	TP7	Pad	FlexRAY
FRB-INH1	TP3	Pad	FlexRAY
FRB-ERRN	TP4	Pad	FlexRAY
FRB-RXEN	TP8	Pad	FlexRAY
FR_DBG0	TP10	Pad	FlexRAY debug0

Table 7. Test points-motherboard (continued)

FR_DBG1	TP11	Pad	FlexRAY debug1
FR_DBG2	TP12	Pad	FlexRAY debug2
FR_DBG3	TP13	Pad	FlexRAY debug3
FEC 25MHz	TP9	Pad	Ethernet clock

4 Configuration — Daughter card

This section details the configuration of each of the daughter card's functional blocks.

The daughter card has been designed with ease of use in mind and has been segmented into functional blocks as shown in [Figure 12](#). Detailed silkscreen legend has been used throughout the board to identify all switches, jumpers and user connectors.

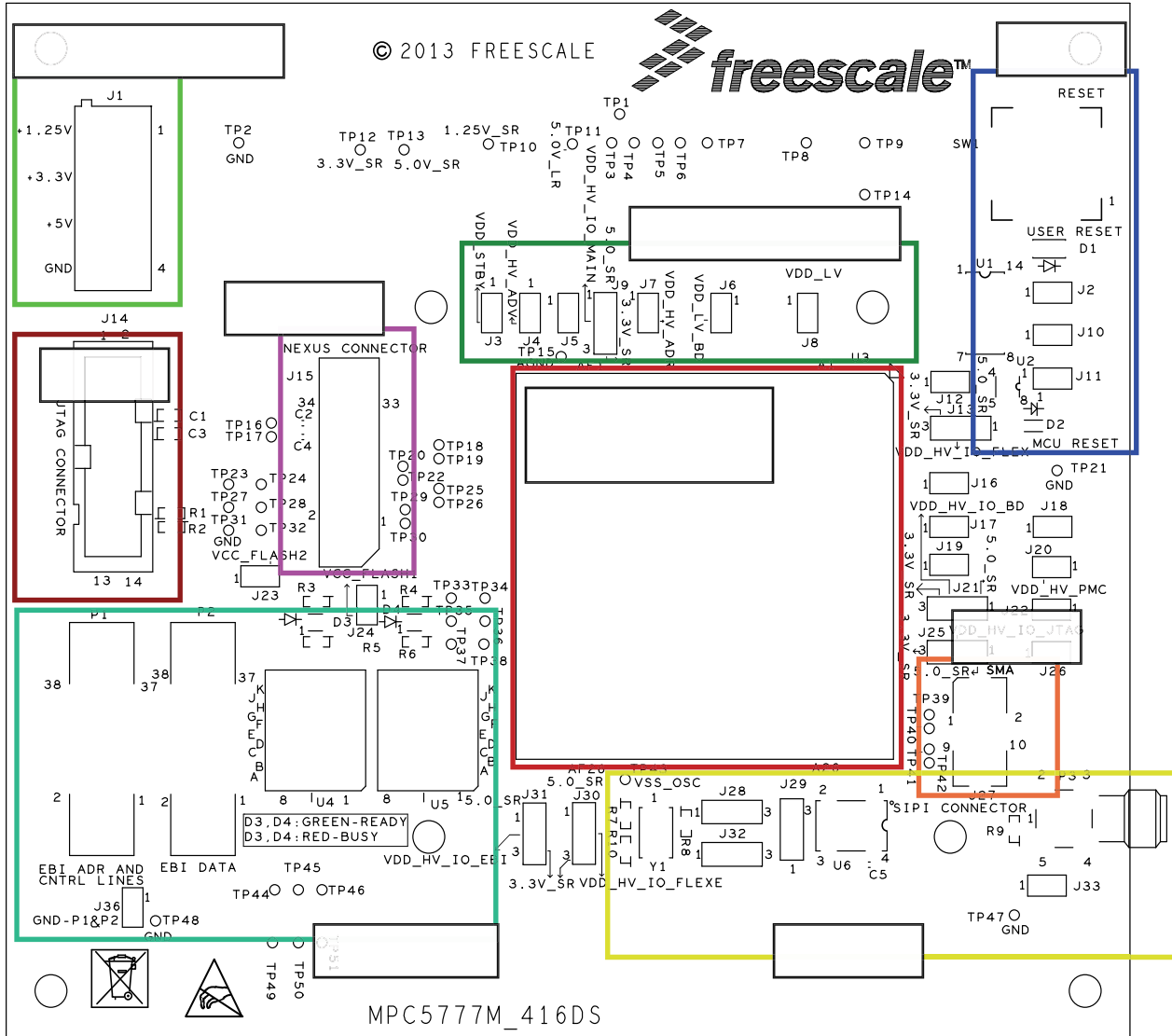


Figure 12. Daughter card — functional blocks

4.1 MCU Power

4.1.1 Supply Routing and Jumpers

The different MCU supplies are connected to the regulators on the motherboard through the interface connector. [Figure 13](#) shows how the MCU power domains are connected to the regulators.

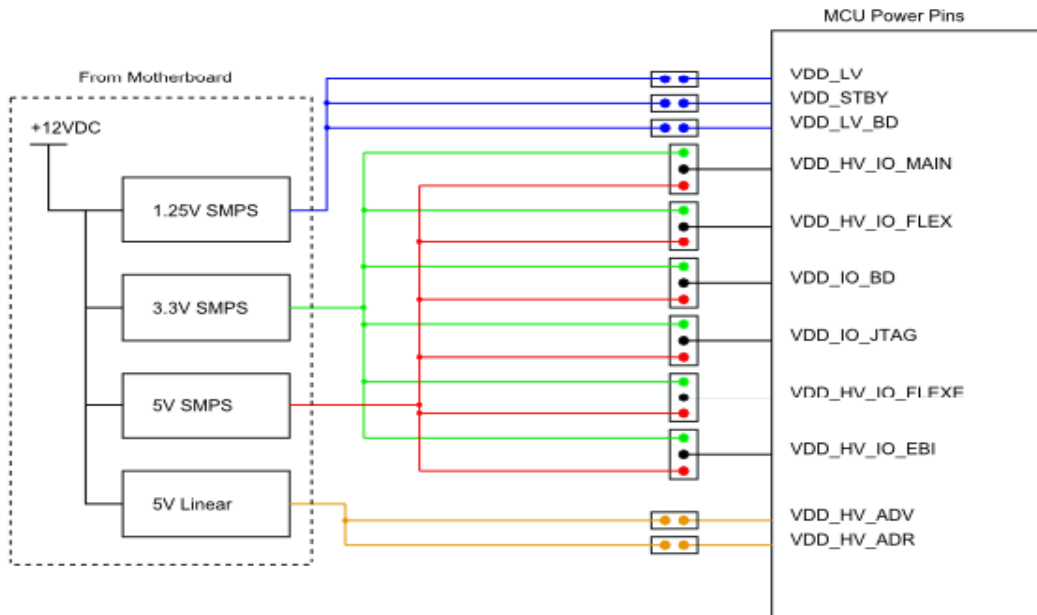


Figure 13. Daughter card power distribution

The connection of any power domain to a regulator has to be enabled by a dedicated jumper as described in [Table 8](#).

Table 8. MCU power selection jumpers

Jumper	Description
J1	Connect ADC supplies to 5V_LR
J2	Connect ADC supplies to 5V_LR
J3	Select VDD_HV_JTAG_OSC
J4	Connect PMC supply to 5V_SR
J6	Select VDD_HV_IO_MAIN
J7	Connect FlexRay supply to 3.3V_SR
J9	Connect VDD_LV_STBY to 1.25V_SR
J10	Connect core supply to 1.25V_SR

4.1.2 Daughter Card Standalone Power Input

A terminal power input is provided on the daughter card to enable use of the daughter card without the motherboard.

The connections of the power terminal are detailed in [Figure 14](#).

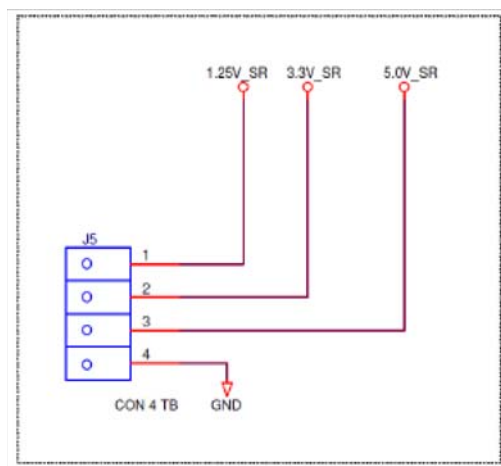


Figure 14. Terminal power input connections

NOTE

The power terminal does not connect to the 5.0V_LR power rail which is powered by the 5 V linear regulator when used with the motherboard. This rail is powering the VDD_HV_ADV (ADC supply) and VDD_HV_ADR (ADC reference voltage). When using the daughter card standalone (without the motherboard) it is required to connect the 5.0V_LR and the 5.0V_SR rail in order for the microcontroller to come out of reset. Refer to [Section 4.8, “Configuring the Daughter Card for Standalone Use”](#) for more information.

4.2 Reset Circuit

To enable standalone use, the reset circuitry is placed on the daughter card. It consists of a reset switch that is connected to both reset pins, ESR0 and PORST, via jumpers. It is also connected to the signal RST-SW that is connected to the mother board to reset peripherals. Additionally LEDs are used to indicate the individual reset situations.

Due to the existence of chip internal low voltage detect (LVD) and high voltage detect (HVD) circuits the EVB does not provide external voltage monitoring.

The EVB reset circuit provides the following functionality: It is indicated if the device is in reset through the red LED D4. The reset switch SW1 can be used to reset the MCU when jumper J27 is set. The reset switch signal is connected to the MCU reset signals ESR0 (through jumper J25) and PORST (through

jumper J26) and the connections can be released by lifting the respective jumper. Pushing the reset switch will also reset peripherals that are connected to the board reset signal RST-SW. LED D1 indicates when this signal is driven low by the reset switch.

Table 9. Reset circuit jumper settings

Jumper	Description
J25	Connect reset switch circuit to ESR0 pin
J26	Connect reset switch circuit to PORST pin
J27	Connect reset switch (SW1) to reset circuit

4.3 MCU External Clock Circuit

In addition to the internal 16 MHz oscillator, the MCU can be clocked by different external sources. The EVB system supports three possible MCU clock sources:

1. 40 MHz crystal Y1
2. 8 MHz external crystal oscillator U2
3. External clock input to the EVB via the SMA connector (P1), driving the MCU EXTAL signal

The clock circuitry for the 40 MHz crystal is shown in [Figure 15](#).

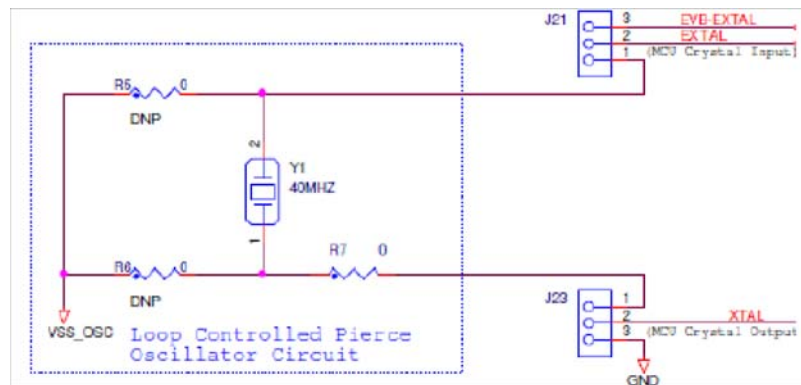


Figure 15. 40 MHz crystal circuit

The default configuration routes the signals of oscillator module (Y1) to the MCU. Jumpers are set as follows:

- J21 is set to position 1-2 to connect the crystal (pin2) to the MCUs EXTAL signal
- J23 is set to position 1-2 to connect the crystal (pin1) to the MCUs XTAL signal

To use either the 8 MHz oscillator or the external clock input both jumpers J21 and J23 need to be moved to position 2-3 to connect the MCUs EXTAL signal to the EVB-EXTAL signal and to connect the MCUs XTAL signal to ground. The circuit of the EVB-EXTAL signal is shown in [Figure 16](#).

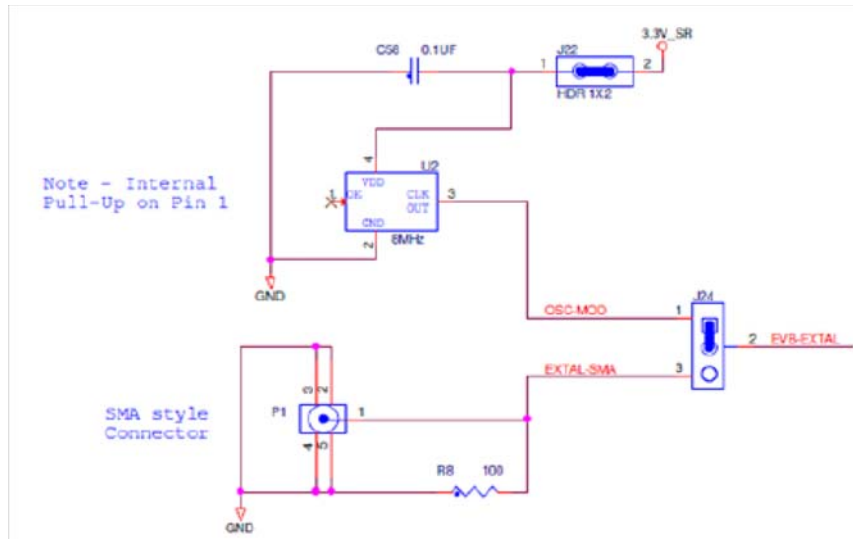


Figure 16. EVB-EXTAL clock circuit

If it is required to use 8 MHz oscillator jumper J22 has to be set to power the oscillator and jumper J24 must be set to 1-2 (MOD) to connect to oscillator signal to the EVB-EXTAL signal.

If it is required to use the SMA connector (P1) to supply a clock signal, jumper J24 must be moved to position 2-3 (SMA).

4.4 JTAG Connector

The EVB is fitted with 14-pin JTAG debug connector. The following diagram shows the 14-pin JTAG connector pinout (0.1in. keyed header).

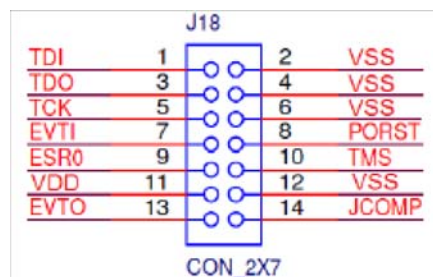


Figure 17. JTAG connector point

4.5 Nexus Aurora Connector

Table 10 shows the pinout of the 34-pin Samtec connector for the MPC5777M (emulation device).

Table 10. Trace Connector Pinout

Pin No	Function	Pin No	Function
1	TX0+	2	VREF
3	TX0-	4	TCK/TCKC/DRCLK
5	VSS	6	TMS/TMSC/TxDataP
7	TX1+	8	TDI/TxDataN
9	TX1-	10	TDO/RxDataP
11	VSS	12	JCOMP/RxDataN
13	TX2+	14	EVTI1
15	TX2-	16	EVTI0
17	VSS	18	EVTO0
19	TX3+	20	PORST
21	TX3-	22	ESR0
23	VSS	24	VSS
25	TX4+ ¹	26	CLK+
27	TX4+ ¹	28	CLK-
29	VSS	30	VSS
31	TX5+ ¹	32	EVTO1/RDY
33	TX5+ ¹	34	N/C
GND	VSS	GND	VSS

¹ These signals are not implemented on MPC5777M.

NOTE

The existence of a Nexus interface depends on the package the MCU is delivered. Generally, production devices do not have the Nexus interface implemented. Daughter cards which are intended solely for the production devices will not come with the Nexus connector. Please refer to [Table 1](#) for information which daughter cards have the Nexus connector.

4.6 Serial Interprocessor Interface (SIPI)

A dedicated SIPI interface connector is provided on the daughter card. For signal integrity the SIPI signals are not routed to the mother board. Test points are provided on the signals so they can be accessed if required to be used as a different function.

A 10pin Samtec connector (J20: ERF8-005-05.0-LDV-L-TR) is used for the SIPI interface. The pin-out of the connector is shown in [Figure 18](#).

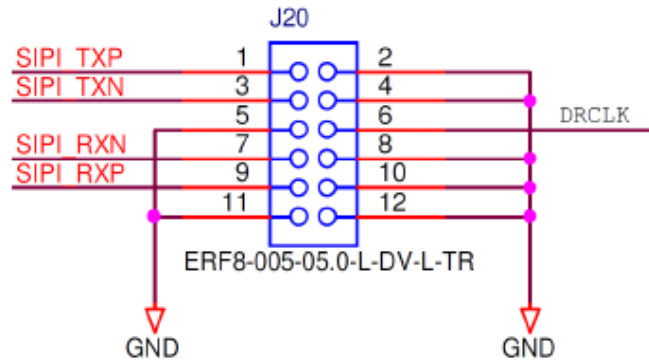


Figure 18. SIPI connector pinout

4.7 Test points — Daughter Card

Daughter card test points are listed and detailed in [Table 11](#).

Table 11. Test points — daughter card

Signal	TP name	Shape	Description
VSS_OSC	TP1	Hook	Oscillator ground reference
AGND	TP2	Hook	Analog ground reference
GND	GT1	Hook	Ground reference
GND	GT2	Hook	Ground reference
GND	GT3	Hook	Ground reference
GND	GT4	Hook	Ground reference
GND	GT5	Hook	Ground reference
JCOMP	TP3	Pad	JCOMP access
TCK	TP4	Pad	TCK access
TMS	TP5	Pad	TMS access
TDI	TP6	Pad	TDI access
TDO	TP7	Pad	TDO access
SIPI_RXN	TP9	Pad	SIPI_RXN access
SIPI_TXN	TP11	Pad	SIPI_TXN access
SIPI_RXP	TP13	Pad	SIPI_RXP access
SIPI_TXP	TP15	Pad	SIPI_TXP access
MB PA5	TP22	Pad	Motherboard connection PA5
MB PA9	TP23	Pad	Motherboard connection PA9
MB PA14	TP24	Pad	Motherboard connection PA14
MB PA7	TP25	Pad	Motherboard connection PA7

Table 11. Test points — daughter card

MB PA8	TP26	Pad	Motherboard connection PA8
MB PD7	TP27	Pad	Motherboard connection PD7
MB PA6	TP28	Pad	Motherboard connection PA6
MB PD6	TP29	Pad	Motherboard connection PD6
MB PF13	TP30	Pad	Motherboard connection PF13

4.8 Configuring the Daughter Card for Standalone Use

It is possible to use the daughter cards without the motherboard to run code on the microcontroller. Power to the daughter cards must be supplied through the terminal power connector J5 – PWR_IN. It is required to connect all three voltages (1.25 V, 3.3 V and 5 V) and ground.

Additional to connecting the board to the power supply it is required to connect the 5V_SR power rail to the 5V_LR power rail of the daughter card that powers the VDD_HV_ADV and VDD_HV_ADR pins. It is recommended to do that by installing a jumper connecting J5-1 (5.0V_LR) to (5.0V_SR).

5 Board Interface Connector

This chapter provides a useful cross reference to see the connection from the motherboard to the board interface connector, and what MCU pins are connected to the interface connector on the daughter card.

[Table 12](#) lists all the connections to the board interface connector on both motherboard and daughter card. The columns on the left lists the 240 connections for the first interface connector (J43), the table on the right lists the 240 connections for the second interface connector (J56):

- The column “Motherboard” shows the motherboard connections to the interface connectors like power supply connections and user area port pins.
- The columns BGA416 PD and BGA416 ED shows the connections from the MCU pins to the interface connector on daughter card for the BGA416 Production Device (PD) and Emulation Device (ED) packages. It is ensured that the MCU port pins are routed to the associated user area port pin on the motherboard.
- The columns show BGA512 PD and BGA512 ED show the connections from the MCU pins to the interface connector on daughter card for the BGA512 PD and BGA512 ED packages. It is ensured that the MCU port pins are routed to the associated user area port pin on the motherboard.
- Green fields indicate power signals, power signals are connected to all the appropriate pins on the MCU
- Orange fields indicate MCU signals that are not connected to the motherboard through the interface connector (usually to retain signal integrity).
- Ground signals are not listed here. A solid ground connection is achieved through the middle bar of the interface connector.

Table 12. Board interface connector details

Daughter Card to Motherboard Connector Pin	Motherboard	BGA416 PD	BGA416 ED	BGA512 PD	BGA512 ED
J34A-1	VDD_LV_SR ^[1]				
J34A-2	VDD_LV_SR[1]				
J34A-3	VDD_LV_SR[1]				
J34A-4	VDD_LV_SR[1]				
J34A-5	PA[0]	A21	A21	F22	F22
J34A-6	PA[1]	C22	C22	F23	F23
J34A-7	PA[2]	-	-	G25	G25
J34A-8	PA[3]	AF15	AF15	AD21	AD21
J34A-9	PA[4]	A22	A22	M21	M21
J34A-10	PA[5]	JCOMP	JCOMP	JCOMP	JCOMP
J34A-11	PA[6]	TCK	TCK	TCK	TCK
J34A-12	PA[7]	TMS	TMS	TMS	TMS
J34A-13	PA[8]	TDI	TDI	TDI	TDI
J34A-14	PA[9]	TDO	TDO	TDO	TDO
J34A-15	PA[10]	C21	C21	G21	G21
J34A-16	PA[11]	D21	D21	F20	F20
J34A-17	PA[12]	B21	B21	H24	H24
J34A-18	PA[13]	D18	D18	G22	G22
J34A-19	PA[14]	SIPI TXP	SIPI TXP	SIPI TXP	SIPI TXP
J34A-20	PA[15]	AC14	AC14	AD23	AD23
J34A-21	5.0V_SR				
J34A-22	5.0V_SR				
J34A-23	5.0V_SR				
J34A-24	5.0V_SR				
J34A-25	PC[0]	M2	M2	N6	N6

J34A-26	PC[1]	M3	M3	M7	M7
J34A-27	PC[2]	M4	M4	M6	M6
J34A-28	PC[3]	J3	J3	L6	L6
J34A-29	PC[4]	H1	H1	L7	L7
J34A-30	PC[5]	H2	H2	K6	K6
J34A-31	PC[6]	D4	D4	K7	K7
J34A-32	PC[7]	C1	C1	J6	J6
J34A-33	PC[8]	F2	F2	J7	J7
J34A-34	PC[9]	E2	E2	H6	H6
J34A-35	PC[10]	C5	C5	G13	G13
J34A-36	PC[11]	D6	D6	F13	F13
J34A-37	PC[12]	D5	D5	G14	G14
J34A-38	PC[13]	B5	B5	F14	F14
J34A-39	PC[14]	C6	C6	J14	J14
J34A-40	PC[15]	A5	A5	G15	G15
J34A-41	3.3V_SR				
J34A-42	3.3V_SR				
J34A-43	3.3V_SR				
J34A-44	3.3V_SR				
J34A-45	PE[0]	M1	M1	N7	N7
J34A-46	PE[1]	N4	N4	P6	P6
J34A-47	PE[2]	N3	N3	P7	P7
J34A-48	PE[3]	T2	T2	R9	R9
J34A-49	PE[4]	N2	N2	R7	R7
J34A-50	PE[5]	-	-	L25	L25
J34A-51	PE[6]	-	-	K22	K22
J34A-52	PE[7]	-	-	K24	K24

Board Interface Connector

J34A-53	PE[8]	-	-	J25	J25
J34A-54	PE[9]	-	-	H25	H25
J34A-55	PE[10]	C14	C14	G19	G19
J34A-56	PE[11]	D13	D13	G20	G20
J34A-57	PE[12]	D10	D10	F15	F15
J34A-58	PE[13]	AA3	AA3	AE14	AE14
J34A-59	PE[14]	AB4	AB4	AB13	AB13
J34A-60	PE[15]	AC4	AC4	AD13	AD13
J34A-61	VDD_LV_SR[1]				
J34A-62	VDD_LV_SR[1]				
J34A-63	VDD_LV_SR[1]				
J34A-64	VDD_LV_SR[1]				
J34A-65	PG[0]	N1	N1	R10	R10
J34A-66	PG[1]	-	-	U7	U7
J34A-67	PG[2]	-	-	U6	U6
J34A-68	PG[3]	-	-	V7	V7
J34A-69	PG[4]	-	-	V6	V6
J34A-70	PG[5]	AD7	AD7	AD6	AD6
J34A-71	PG[6]	AC7	AC7	AD7	AD7
J34A-72	PG[7]	AD3	AD3	AB10	AB10
J34A-73	PG[8]	AC3	AC3	AD10	AD10
J34A-74	PG[9]	-	-	AD11	AD11
J34A-75	PG[10]	-	-	AA12	AA12
J34A-76	PG[11]	AF3	AF3	AD12	AD12
J34A-77	PG[12]	AE3	AE3	AE13	AE13
J34A-78	PG[13]	-	-	L22	L22
J34A-79	PG[14]	-	-	L24	L24

J34A-80	PG[15]	D19	D19	K19	K19
J34A-81	5.0V_SR				
J34A-82	5.0V_SR				
J34A-83	5.0V_SR				
J34A-84	5.0V_SR				
J34A-85	PI[0]	Y3	Y3	Y6	Y6
J34A-86	PI[1]	W3	W3	W9	W9
J34A-87	PI[2]	AC1	AC1	AB6	AB6
J34A-88	PI[3]	AB1	AB1	AB7	AB7
J34A-89	PI[4]	AB2	AB2	AC6	AC6
J34A-90	PI[5]	AA2	AA2	AC7	AC7
J34A-91	PI[6]	AF2	AF2	AD8	AD8
J34A-92	PI[7]	AE2	AE2	AD9	AD9
J34A-93	PI[8]	P2	P2	T6	T6
J34A-94	PI[9]	P1	P1	T7	T7
J34A-95	PI[10]	AF11	AF11	AE16	AE16
J34A-96	PI[11]	AE11	AE11	AD16	AD16
J34A-97	PI[12]	AD11	AD11	AE15	AE15
J34A-98	PI[13]	AC11	AC11	AD15	AD15
J34A-99	PI[14]	J23	J23	R22	R22
J34A-100	PI[15]	G24	G24	P22	P22
J34A-101	N.C.	x	x	x	x
J34A-102	N.C.	x	x	x	x
J34A-103	N.C.	x	x	x	x
J34A-104	N.C.	x	x	x	x
J34A-105	PK[0]	U1	U1	T9	T9
J34A-106	PK[1]	T1	T1	T10	T10

Board Interface Connector

J34A-107	PK[2]	U3	U3	U9	U9
J34A-108	PK[3]	U4	U4	U10	U10
J34A-109	PK[4]	-	-	Y9	Y9
J34A-110	PK[5]	-	-	W10	W10
J34A-111	PK[6]	-	-	Y10	Y10
J34A-112	PK[7]	-	-	AA9	AA9
J34A-113	PK[8]	-	-	AA10	AA10
J34A-114	PK[9]	-	-	AA11	AA11
J34A-115	PK[10]	AD4	AD4	AB12	AB12
J34A-116	PK[11]	-	-	AB11	AB11
J34A-117	PK[12]	-	-	T22	T22
J34A-118	PK[13]	-	-	T21	T21
J34A-119	PK[14]	B10	B10	J13	J13
J34A-120	PK[15]	A10	A10	K13	K13
J34B-121	5.0V_SR				
J34B-122	5.0V_SR				
J34B-123	5.0V_SR				
J34B-124	5.0V_SR				
J34B-125	PM[0]	C8	C8	J12	J12
J34B-126	PM[1]	C9	C9	K12	K12
J34B-127	PM[2]	C7	C7	J11	J11
J34B-128	PM[3]	B9	B9	K11	K11
J34B-129	PM[4]	C11	C11	K14	K14
J34B-130	PM[5]	D11	D11	K15	K15
J34B-131	PM[6]	C10	C10	J15	J15
J34B-132	PM[7]	B11	B11	K16	K16
J34B-133	PM[8]	A11	A11	K17	K17

J34B-134	PM[9]	B20	B20	F21	F21
J34B-135	PM[10]	B7	B7	F11	F11
J34B-136	PM[11]	B6	B6	B8	B8
J34B-137	PM[12]	C4	C4	B7	B7
J34B-138	PM[13]	-	-	B6	B6
J34B-139	PM[14]	C3	C3	B5	B5
J34B-140	PM[15]	B3	B3	A6	A6
J34B-141	RST_SW	-	-	-	-
J34B-142	N.C.	x	x	x	x
J34B-143	N.C.	x	x	x	x
J34B-144	N.C.	x	x	x	x
J34B-145	N.C.	x	x	x	x
J34B-146	N.C.	x	x	x	x
J34B-147	N.C.	x	x	x	x
J34B-148	N.C.	x	x	x	x
J34B-149	N.C.	x	x	x	x
J34B-150	N.C.	x	x	x	x
J34B-151	N.C.	x	x	x	x
J34B-152	N.C.	x	x	x	x
J34B-153	N.C.	x	x	x	x
J34B-154	N.C.	x	x	x	x
J34B-155	N.C.	x	x	x	x
J34B-156	N.C.	x	x	x	x
J34B-157	N.C.	x	x	x	x
J34B-158	N.C.	x	x	x	x
J34B-159	N.C.	x	x	x	x
J34B-160	N.C.	x	x	x	x

Board Interface Connector

J34B-161	VDD_LV_SR[1]				
J34B-162	VDD_LV_SR[1]				
J34B-163	VDD_LV_SR[1]				
J34B-164	VDD_LV_SR[1]				
J34B-165	PQ[0]	R2	R2	U2	U2
J34B-166	PQ[1]	P3	P3	T2	T2
J34B-167	PQ[2]	P4	P4	U1	U1
J34B-168	PQ[3]	A19	A19	A20	A20
J34B-169	PQ[4]	A15	A15	B19	B19
J34B-170	PQ[5]	B19	B19	A19	A19
J34B-171	PQ[6]	B15	B15	B18	B18
J34B-172	PQ[7]	B14	B14	A18	A18
J34B-173	PQ[8]	B17	B17	B16	B16
J34B-174	PQ[9]	A17	A17	A16	A16
J34B-175	PQ[10]	A16	A16	B15	B15
J34B-176	PQ[11]	B16	B16	A15	A15
J34B-177	PQ[12]	-	-	B14	B14
J34B-178	PQ[13]	C12	C12	A14	A14
J34B-179	PQ[14]	A13	A13	B13	B13
J34B-180	PQ[15]	B12	B12	B12	B12
J34B-181	5.0V_SR				
J34B-182	5.0V_SR				
J34B-183	5.0V_SR				
J34B-184	5.0V_SR				
J34B-185	N.C.	x	x	x	x
J34B-186	N.C.	x	x	x	x
J34B-187	N.C.	x	x	x	x

J34B-188	N.C.	x	x	x	x
J34B-189	N.C.	x	x	x	x
J34B-190	N.C.	x	x	x	x
J34B-191	N.C.	x	x	x	x
J34B-192	N.C.	x	x	x	x
J34B-193	N.C.	x	x	x	x
J34B-194	N.C.	x	x	x	x
J34B-195	N.C.	x	x	x	x
J34B-196	N.C.	x	x	x	x
J34B-197	N.C.	x	x	x	x
J34B-198	N.C.	x	x	x	x
J34B-199	N.C.	x	x	x	x
J34B-200	N.C.	x	x	x	x
J34B-201	N.C.	x	x	x	x
J34B-202	N.C.	x	x	x	x
J34B-203	N.C.	x	x	x	x
J34B-204	N.C.	x	x	x	x
J34B-205	PY[0]	-	-	AC2	AC2
J34B-206	PY[1]	-	-	AC1	AC1
J34B-207	PY[2]	-	-	AA2	AA2
J34B-208	PY[3]	-	-	AA1	AA1
J34B-209	PY[4]	AA25	AA25	AG29	AG29
J34B-210	N.C.	x	x	x	x
J34B-211	N.C.	x	x	x	x
J34B-212	N.C.	x	x	x	x
J34B-213	N.C.	x	x	x	x
J34B-214	N.C.	x	x	x	x

Board Interface Connector

J34B-215	N.C.	x	x	x	x
J34B-216	N.C.	x	x	x	x
J34B-217	N.C.	x	x	x	x
J34B-218	N.C.	x	x	x	x
J34B-219	N.C.	x	x	x	x
J34B-220	N.C.	x	x	x	x
J34B-221	VDD_HV_IO_MAIN				
J34B-222	VDD_HV_IO_MAIN				
J34B-223	VDD_HV_IO_MAIN				
J34B-224	VDD_HV_IO_MAIN				
J34B-225	N.C.	x	x	x	x
J34B-226	N.C.	x	x	x	x
J34B-227	N.C.	x	x	x	x
J34B-228	N.C.	x	x	x	x
J34B-229	N.C.	x	x	x	x
J34B-230	N.C.	x	x	x	x
J34B-231	N.C.	x	x	x	x
J34B-232	N.C.	x	x	x	x
J34B-233	N.C.	x	x	x	x
J34B-234	N.C.	x	x	x	x
J34B-235	N.C.	x	x	x	x
J34B-236	N.C.	x	x	x	x
J34B-237	N.C.	x	x	x	x
J34B-238	N.C.	x	x	x	x
J34B-239	N.C.	x	x	x	x
J34B-240	N.C.	x	x	x	x
J33A-1	PX[15]	-	-	AE1	AE1

J33A-2	PX[14]	-	-	AE2	AE2
J33A-3	PX[13]	-	-	AK6	AK6
J33A-4	PX[12]	-	-	AJ6	AJ6
J33A-5	PX[11]	-	-	A22	A22
J33A-6	PX[10]	-	-	B22	B22
J33A-7	PX[9]	-	-	A23	A23
J33A-8	PX[8]	-	-	B23	B23
J33A-9	PX[7]	-	-	A24	A24
J33A-10	PX[6]	-	-	B24	B24
J33A-11	PX[5]	-	-	B25	B25
J33A-12	PX[4]	-	-	A11	A11
J33A-13	PX[3]	-	-	A12	A12
J33A-14	PX[2]	A12	A12	B11	B11
J33A-15	PX[1]	B13	B13	A13	A13
J33A-16	PX[0]	A2	A2	A5	A5
J33A-17	VDD_HV_IO_MAIN				
J33A-18	VDD_HV_IO_MAIN				
J33A-19	VDD_HV_IO_MAIN				
J33A-20	VDD_HV_IO_MAIN				
J33A-21	N.C.	x	x	x	x
J33A-22	N.C.	x	x	x	x
J33A-23	N.C.	x	x	x	x
J33A-24	N.C.	x	x	x	x
J33A-25	N.C.	x	x	x	x
J33A-26	N.C.	x	x	x	x
J33A-27	N.C.	x	x	x	x
J33A-28	N.C.	x	x	x	x

Board Interface Connector

J33A-29	N.C.	x	x	x	x
J33A-30	N.C.	x	x	x	x
J33A-31	N.C.	x	x	x	x
J33A-32	N.C.	x	x	x	x
J33A-33	N.C.	x	x	x	x
J33A-34	N.C.	x	x	x	x
J33A-35	N.C.	x	x	x	x
J33A-36	N.C.	x	x	x	x
J33A-37	3.3V_SR				
J33A-38	3.3V_SR				
J33A-39	3.3V_SR				
J33A-40	3.3V_SR				
J33A-41	N.C.	x	x	x	x
J33A-42	N.C.	x	x	x	x
J33A-43	N.C.	x	x	x	x
J33A-44	N.C.	x	x	x	x
J33A-45	N.C.	x	x	x	x
J33A-46	N.C.	x	x	x	x
J33A-47	N.C.	x	x	x	x
J33A-48	N.C.	x	x	x	x
J33A-49	N.C.	x	x	x	x
J33A-50	N.C.	x	x	x	x
J33A-51	N.C.	x	x	x	x
J33A-52	N.C.	x	x	x	x
J33A-53	N.C.	x	x	x	x
J33A-54	N.C.	x	x	x	x
J33A-55	N.C.	x	x	x	x

J33A-56	N.C.	x	x	x	x
J33A-57	5.0V_SR				
J33A-58	5.0V_SR				
J33A-59	5.0V_SR				
J33A-60	5.0V_SR				
J33A-61	PR[15]	V1	V1	W2	W2
J33A-62	PR[14]	U2	U2	W1	W1
J33A-63	PR[13]	W1	W1	Y2	Y2
J33A-64	PR[12]	V2	V2	Y1	Y1
J33A-65	PR[11]	Y1	Y1	AB1	AB1
J33A-66	PR[10]	W2	W2	AB2	AB2
J33A-67	PR[9]	AA1	AA1	AD2	AD2
J33A-68	PR[8]	Y2	Y2	AD1	AD1
J33A-69	PR[7]	AB3	AB3	AF2	AF2
J33A-70	PR[6]	AA4	AA4	AF1	AF1
J33A-71	PR[5]	AF7	AF7	AK4	AK4
J33A-72	PR[4]	AE7	AE7	AJ4	AJ4
J33A-73	PR[3]	AF6	AF6	AK5	AK5
J33A-74	PR[2]	AE6	AE6	AJ5	AJ5
J33A-75	PR[1]	AE1	AE1	AJ7	AJ7
J33A-76	PR[0]	AD2	AD2	AK7	AK7
J33A-77	VDD_LV_SR[1]				
J33A-78	VDD_LV_SR[1]				
J33A-79	VDD_LV_SR[1]				
J33A-80	VDD_LV_SR[1]				
J33A-81	N.C.	x	x	x	x
J33A-82	N.C.	x	x	x	x

Board Interface Connector

J33A-83	N.C.	x	x	x	x
J33A-84	N.C.	x	x	x	x
J33A-85	N.C.	x	x	x	x
J33A-86	N.C.	x	x	x	x
J33A-87	N.C.	x	x	x	x
J33A-88	N.C.	x	x	x	x
J33A-89	N.C.	x	x	x	x
J33A-90	N.C.	x	x	x	x
J33A-91	N.C.	x	x	x	x
J33A-92	N.C.	x	x	x	x
J33A-93	N.C.	x	x	x	x
J33A-94	N.C.	x	x	x	x
J33A-95	N.C.	x	x	x	x
J33A-96	N.C.	x	x	x	x
J33A-97	N.C.	x	x	x	x
J33A-98	N.C.	x	x	x	x
J33A-99	N.C.	x	x	x	x
J33A-100	N.C.	x	x	x	x
J33A-101	PN[15]	L1	L1	P1	P1
J33A-102	PN[14]	L2	L2	P2	P2
J33A-103	PN[13]	L3	L3	N1	N1
J33A-104	PN[12]	L4	L4	N2	N2
J33A-105	PN[11]	K1	K1	M1	M1
J33A-106	PN[10]	K2	K2	M2	M2
J33A-107	PN[9]	J1	J1	L2	L2
J33A-108	PN[8]	K3	K3	L1	L1
J33A-109	PN[7]	G1	G1	K2	K2

J33A-110	PN[6]	J2	J2	K1	K1
J33A-111	PN[5]	F1	F1	J2	J2
J33A-112	PN[4]	D2	D2	G1	G1
J33A-113	PN[3]	E1	E1	G2	G2
J33A-114	PN[2]	D1	D1	F1	F1
J33A-115	PN[1]	D3	D3	F2	F2
J33A-116	PN[0]	A3	A3	A7	A7
J33A-117	5.0V_LR				
J33A-118	5.0V_LR				
J33A-119	5.0V_LR				
J33A-120	5.0V_LR				
J33B-121	PL[15]	-	TX0P	-	TX0P
J33B-122	PL[14]	AC13	AC13	AA19	AA19
J33B-123	PL[13]	-	TX0N	-	TX0N
J33B-124	PL[12]	AD10	AD10	AA18	AA18
J33B-125	PL[11]	-	TX1P	-	TX1P
J33B-126	PL[10]	AC10	AC10	AA17	AA17
J33B-127	PL[9]	-	TX1N	-	TX1N
J33B-128	PL[8]	-	-	T1	T1
J33B-129	PL[7]	E3	E3	P10	P10
J33B-130	PL[6]	F3	F3	N9	N9
J33B-131	PL[5]	G4	G4	N10	N10
J33B-132	PL[4]	H3	H3	M10	M10
J33B-133	PL[3]	G3	G3	M9	M9
J33B-134	PL[2]	C2	C2	L9	L9
J33B-135	PL[1]	E4	E4	K9	K9
J33B-136	PL[0]	F4	F4	L10	L10

Board Interface Connector

J33B-137	N.C.	x	x	x	x
J33B-138	N.C.	x	x	x	x
J33B-139	N.C.	x	x	x	x
J33B-140	N.C.	x	x	x	x
J33B-141	PJ[15]	-	-	U21	U21
J33B-142	PJ[14]	-	-	U22	U22
J33B-143	PJ[13]	-	-	V21	V21
J33B-144	PJ[12]	-	-	V22	V22
J33B-145	PJ[11]	-	-	W22	W22
J33B-146	PJ[10]	-	-	W21	W21
J33B-147	PJ[9]	K26	K26	Y22	Y22
J33B-148	PJ[8]	-	-	Y21	Y21
J33B-149	PJ[7]	-	CLK_N	-	CLK_N
J33B-150	PJ[6]	AD14	AD14	AA20	AA20
J33B-151	PJ[5]	-	CLK_P	-	CLK_P
J33B-152	PJ[4]	L26	L26	AA24	AA24
J33B-153	PJ[3]	L25	L25	AB25	AB25
J33B-154	PJ[2]	M26	M26	AC25	AC25
J33B-155	PJ[1]	AF13	AF13	AE24	AE24
J33B-156	PJ[0]	AE13	AE13	AE23	AE23
J33B-157	3.3V_SR				
J33B-158	3.3V_SR				
J33B-159	3.3V_SR				
J33B-160	3.3V_SR				
J33B-161	PH[15]	A9	A9	F12	F12
J33B-162	PH[14]	A8	A8	G11	G11
J33B-163	PH[13]	B4	B4	F8	F8

J33B-164	PH[12]	A4	A4	G9	G9
J33B-165	PH[11]	-	-	M24	M24
J33B-166	PH[10]	D12	D12	J18	J18
J33B-167	PH[9]	A14	A14	F18	F18
J33B-168	PH[8]	C19	C19	J17	J17
J33B-169	PH[7]	C15	C15	J16	J16
J33B-170	PH[6]	K25	K25	AA22	AA22
J33B-171	PH[5]	K24	K24	AA25	AA25
J33B-172	PH[4]	C13	C13	G18	G18
J33B-173	PH[3]	C20	C20	F19	F19
J33B-174	PH[2]	D20	D20	K18	K18
J33B-175	PH[1]	D16	D16	J19	J19
J33B-176	PH[0]	A20	A20	J20	J20
J33B-177	VDD_LV_SR[1]				
J33B-178	VDD_LV_SR[1]				
J33B-179	VDD_LV_SR[1]				
J33B-180	VDD_LV_SR[1]				
J33B-181	PF[15]	-	-	M25	M25
J33B-182	PF[14]	A24	A24	N25	N25
J33B-183	PF[13]	SIPI RXN	SIPI RXN	SIPI RXN	SIPI RXN
J33B-184	PF[12]	J26	J26	Y24	Y24
J33B-185	PF[11]	J25	J25	Y25	Y25
J33B-186	PF[10]	J24	J24	W24	W24
J33B-187	PF[9]	K23	K23	W25	W25
J33B-188	PF[8]	L24	L24	AB24	AB24
J33B-189	PF[7]	AC17	AC17	AD22	AD22
J33B-190	PF[6]	AD17	AD17	AE22	AE22

Board Interface Connector

J33B-191	PF[5]	A7	A7	F10	F10
J33B-192	PF[4]	B8	B8	G12	G12
J33B-193	PF[3]	A6	A6	G10	G10
J33B-194	PF[2]	G2	G2	F9	F9
J33B-195	PF[1]	AC12	AC12	AD17	AD17
J33B-196	PF[0]	AD12	AD12	AE17	AE17
J33B-197	3.3V_SR				
J33B-198	3.3V_SR				
J33B-199	3.3V_SR				
J33B-200	3.3V_SR				
J33B-201	PD[15]	B1	B1	H7	H7
J33B-202	PD[14]	B2	B2	G6	G6
J33B-203	PD[13]	T3	T3	R6	R6
J33B-204	PD[12]	R3	R3	P9	P9
J33B-205	PD[11]	AC2	AC2	AA14	AA14
J33B-206	PD[10]	AC15	AC15	AE18	AE18
J33B-207	PD[9]	AE12	AE12	AD18	AD18
J33B-208	PD[8]	AE15	AE15	AE21	AE21
J33B-209	PD[7]	SIPI RXP	SIPI RXP	SIPI RXP	SIPI RXP
J33B-210	PD[6]	SIPI TXN	SIPI TXN	SIPI TXN	SIPI TXN
J33B-211	PD[5]	-	-	J24	J24
J33B-212	PD[4]	-	-	K25	K25
J33B-213	PD[3]	C17	C17	G17	G17
J33B-214	PD[2]	C18	C18	F17	F17
J33B-215	PD[1]	D17	D17	G16	G16
J33B-216	PD[0]	C16	C16	F16	F16
J33B-217	5.0V_SR				

J33B-218	5.0V_SR				
J33B-219	5.0V_SR				
J33B-220	5.0V_SR				
J33B-221	PB[15]	-	-	W6	W6
J33B-222	PB[14]	-	-	V10	V10
J33B-223	PB[13]	V3	V3	W7	W7
J33B-224	PB[12]	V4	V4	V9	V9
J33B-225	PB[11]	AD15	AD15	AD19	AD19
J33B-226	PB[10]	AF12	AF12	AE19	AE19
J33B-227	PB[9]	AE14	AE14	AD20	AD20
J33B-228	PB[8]	AF14	AF14	AE20	AE20
J33B-229	PB[7]	AD8	AD8	AE7	AE7
J33B-230	PB[6]	AC8	AC8	AE8	AE8
J33B-231	PB[5]	-	-	Y7	Y7
J33B-232	PB[4]	AD1	AD1	AA13	AA13
J33B-233	PB[3]	AF4	AF4	AB14	AB14
J33B-234	PB[2]	AE4	AE4	AD14	AD14
J33B-235	PB[1]	AD5	AD5	AB15	AB15
J33B-236	PB[0]	AC5	AC5	AA15	AA15
J33B-237	VDD_LV_SR[1]				
J33B-238	VDD_LV_SR[1]				
J33B-239	VDD_LV_SR[1]				
J33B-240	VDD_LV_SR[1]				

[1] For MPC5777M revision 1, VDD_LV_SR = 1.25V. For MPC5777M revision 2, VDD_LV_SR = 1.30V

Some of the port pins on the mother board share functionality with other peripherals like communication interfaces. [Table 13](#) shows what port pins are used for peripherals on the motherboard.

Table 13. Port pins alternate function - on motherboard

Port Pin	Function	Port Pin	Function
PC2	FEC MDIO	PE9	FlexRay0Debug0
PC3	FEC MDC	PE10	FlexRay0Debug1
PC8	RX MCAN2	PE11	FlexRay0Debug2
PC9	TX MCAN2	PE12	FlexRay0Debug3
PC10	FEC RXCLK	PF14	DRCLK (SIPI)
PC11	FEC CRS_LEDG	PF15	EVTI/EVTO (JTAG)
PC12	FEC RXD0	PG14	RX TTCAN
PC13	FEC RXD1	PH3	TXD FlexRay_B
PC14	FEC TXEN	PH4	TXEN FlexRay_B
PC15	FEC TXD0	PH7	TXD FlexRay_A
PD14	TXD eSCI/LINFlex_2	PH8	TXEN FlexRay_A
PD15	RXD eSCI/LINFlex_2	PH9	RXD Flexray_A
PE5	TX TTCAN	PH10	RXD FlexRay_B
PE6	RX LINFlexD_1	PL3	TX MCAN1
PE7	TX LINFlexD_1	PL4	RX MCAN1

Some of the port pins of the MCU share functionality with a peripheral that is used on the daughter card and these pins might not be routed to the motherboard. [Table 14](#) lists port pins that are not routed to the motherboard and shows what they are used for on the daughter card.

Table 14. Port pins alternate function — not on motherboard

Port Pin	Function	Port Pin	Function
PA5	JCOMP	PK14	Nexus EVT11
PA6	TCK	PL9	Nexus TX1N
PA7	TMS	PL11	Nexus TX1P
PA8	TDI	PL13	Nexus TX0N
PA9	TDO	PL15	Nexus TX0P
PA14	SIPI_TXP	PM4	Nexus EVT10
PD6	SIPI_TXN	PM5	Nexus EVTO0
PD7	SIPI_RXP	PM6	Nexus EVTO1
PF13	SIPI_RXN	—	Nexus TX2N
PJ6	Nexus CLKP	—	Nexus TX2P
PJ7	Nexus CLKN	—	Nexus TX3N
		—	Nexus TX3P

6 Default Jumper Summary Table

The following table details the DEFAULT jumper configuration of the EVB as set up on delivery.

6.1 Default Jumper Table - Motherboard

On delivery the motherboard comes with a default jumper configuration. [Table 15](#) lists and describes briefly the jumpers on the MPC57xx motherboard and indicates which jumpers are on/off on delivery of the board.

Table 15. Default Jumper Table-Motherboard

Jumper	Default	PCB Legend	Description
J8	Off	MASTER	LIN Master/Slave select
J9	Off	CAP A DIS	Disable capacitor circuitry for FlexRAY_A signals
J10	Off	CAP A DIS	Disable capacitor circuitry for FlexRAY_A signals
J11	Off	CAP B DIS	Disable capacitor circuitry for FlexRAY_B signals
J12	Off	CAP B DIS	Disable capacitor circuitry for FlexRAY_B signals
J13	Off	SCI TX	Connect SCI TX signal
J14	Off	SCI RX	Connect SCI RX signal
J15	Off	LIN_EN	Enable LIN PHY U50
J16	Off	LIN_RX	Connect LIN RX signal
J17	Off	LIN_TX	Connect LIN TX signal

Table 15. Default Jumper Table-Motherboard

J18	Off	—	Ethernet signal: RXCLK
J20	Off	—	Ethernet signal: CRS_LED_CFG
J21	Off	CAN2_EN	PHY U2 configuration:
			1-2: WAKE to GND
			3-4: STB to 5V
			5-6: EN to 5V
J22	On	—	Ethernet phy power-on
J23	Off	CAN-EN	PHY U1 configuration:
			1-2: WAKE to GND
			3-4: STB to 5V
			5-6: EN to 5V
J24	Off	—	Ethernet signal: RXER_MDIXEN
J25	Off	SCI-PWR	SCI phy power-on
J26	Off	—	Ethernet signal: RXDV_MIIMODE
J27	Off	FR-A	1-2: PHY U4 TX to MCU
			3-4: PHY U4 TXEN to MCU
			5-6: PHY U4 RX to MCU
J28	Off	FR-A	PHY U4 configuration:
			1-2: 3.3V (V _{IO}) to BGE
			3-4: 3.3V (V _{IO}) to EN
			5-6: 3.3V (V _{IO}) to STBY
			7-8: GND to WAKE
J29	Off	FR_PWR	FlexRAY transceiver VIO selection
			1-2: 12V to V _{BAT}
			3-4: 5V _{SR} to V _{CC} and V _{BUF}
J30	Off	FR_B	1-2: PHY U5 TX to MCU
			3-4: PHY U5 TXEN to MCU
			5-6: PHY U5 RX to MCU
J31	Off	FR_B	PHY U5 configuration:
			1-2: 3.3V (V _{IO}) to BGE
			3-4: 3.3V (V _{IO}) to EN
			5-6: 3.3V (V _{IO}) to STBY
			7-8: GND to WAKE
J32	Off	CAN2	1-2: PHY TX to MCU
			3-4: WAKE to GND

Table 15. Default Jumper Table-Motherboard

J33	Off	CAN-PWR	1-2: 5V_SR to PHY U2 V _{CC}
			3-4: 12V to PHY U2 V _{BAT}
J34	Off	—	MCAN2 signal out:
			1: ERR
			2: INH
J35	Off	CAN	1-2: 5V_SR to PHY U1 V _{CC}
			3-4: 12V to PHY U1 V _{BAT}
J36	Off	—	CAN PHY U1 signal out
J37	Off	—	CAN TX connect
J38	Off	—	CAN RX connect
J39	Off	—	Ethernet signal: RXD0_PHYAD1
J40	Off	—	Ethernet signal: RXD1_PHYAD1
J41	Off	—	Ethernet signal: RXD2_PHYAD2
J42	Off	—	Ethernet signal: RXD3_PHYAD3
J44	Off	—	Ethernet signal: COL_PHYAD0
J45	Off	—	Ethernet signal: TXEN
J46	Off	—	Ethernet signal: TXCLK
J47	Off	—	Ethernet signal: TXD0
J48	Off	—	Ethernet signal: TXD1
J49	Off	—	Ethernet signal: TXD2
J50	Off	—	Ethernet signal: TXD3_SNIMODE
J51	Off	—	Ethernet signal: MDC
J52	Off	—	Ethernet signal: MDIO
J53	Off	RV1	Connect RV1 to analog input AN0
J54	Off	ADC_VSUP	Connect EVB supply voltages to analog inputs
J55	Off	12V (4.3V)	Connect 12V (scaled to 4.3V) EVB power to analog input
J57	On	ENABLE	Enable 5V linear regulator
J58	Off	DISABLE	Disable 1.25V switching regulator
J59	Off	DISABLE	Disable 3.3V switching regulator
J60	Off	DISABLE	Disable 5.0V switching regulator

7 List of Acronyms

Table 16. List of Acronyms

Acronym	Description
1.25V_SR	Supply voltage from the 1.25V switching regulator
3.3V_SR	Supply voltage from the 3.3V switching regulator
5V_LR	Supply voltage from the 5.0V linear regulator
5V_SR	Supply voltage from the 5.0V switching regulator
ADC	Analog-to-Digital converter
ESR0	External signal reset
EVB	Evaluation board
FEC	Fast ethernet controller module
GND	Ground
HV	High voltage (3.3V and/or 5V)
LED	Light emitting diode
LV	Low voltage (1.25V)
MCU	Microcontroller
OSC	Oscillator
P12V	12 V EVB supply power domain
PORST	Power-on reset
PWR	Power
RX	Receive
SIPI	Serial Interprocessor Interface
TBD	To be defined
TX	Transmit
VSS	Ground