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MPC5606E Board User Guide

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Contents

1 Introduction

The MPC5606E Evaluation Board (EVB) is based on the e200z0 Power Architecture core. The MPC5606E 121-pin MAPBGA is assembled on this board to allow the evaluation of the full functionality of this part.

This board was designed as a validation platform with the maximum flexibility. Where possible it is also designed for power and speed but the primary goal of this system is to allow main use cases of this processor.

IMPORTANT

Before the EVB is used or power is applied, read the following sections on how to correctly configure the board.

Failure to correctly configure the board may cause irreparable component, Microcontroller unit (MCU), or video broadcast (VB) damage.

2 EVB features

MPC5606E EVB board has following external interfaces:

- Video encoder wrapper connected either to Omnivision connector (J58 - default)[1] or Aptina connector (J57)[1]

- Serial audio interface connected to the Audio connector (J59)[1]
- Onboard two wire Ethernet physical interface
- JTAG
- Either one LIN or one UART (default) interface selectable through jumpers setting
- FlexCAN interface
- External interrupts

3 JTAG interface

There is a populated standard JTAG 14-pin connector with 0.1-inch walled header footprint on the EVB.

The pin out of the JTAG connector is shown in Figure 1.

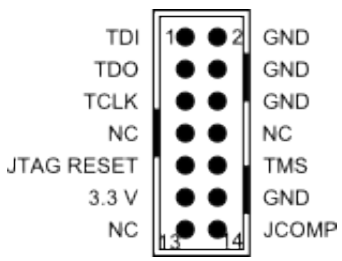

Figure 1. JTAG connector pin out

The JTAG interface is shared between MPC5604E and Broadcom parts of MPC5606E. It means that it is possible to connect via JTAG to the Broadcom part of MPC5606E. Resistors select which part of MPC5606E is connected to the JTAG interface. The JTAG interface is connected to the MPC5604E as default. Only one part of MPC5606E can be connected to the JTAG interface in one time, see Table 1 for the resistors setting.

Table 1. The resistors setting for JTAG interface

Name of signal	Resistor name	MPC5604E (default)	Broadcom
TDI	R14	Populate	DNP
	R721	DNP	Populate
TDO	R13	Populate	DNP
	R718	Populate[1]	DNP
	R719	DNP	Populate
TCK	R12	Populate	DNP
	R48	Populate	DNP
	R738	DNP	Populate
JTAG RESET	R15	Populate	DNP
	R53	Populate	DNP
	R732	DNP	Populate
JCOMP	R11	Populate	DNP
TMS	R16	Populate	DNP
	R724	DNP	Populate

1. Only for MPC5606E Ethernet LED activity.

1. Only one of these three interfaces can be active. The selection is done via jumpers (I2C communication) and resistors (interface). The omnivision is active as default.

CAUTION

It is necessary to populate resistors R712 and R720 for Broadcom JTAG. These two resistors enable JTAG interface in the Broadcom part.

4 Power 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 switching regulators to provide the necessary EVB and MCU operating voltages of 5.0 V, 3.3 V, and 1.2 V.

4.1 Power supply connector

2.1 mm barrel connector should be used to connect the supplied wall-plug mains adapter.

NOTE

If a replacement or alternative adapter is used, care must be taken to ensure the 2.1 mm plug uses the correct polarization as shown Figure 2.

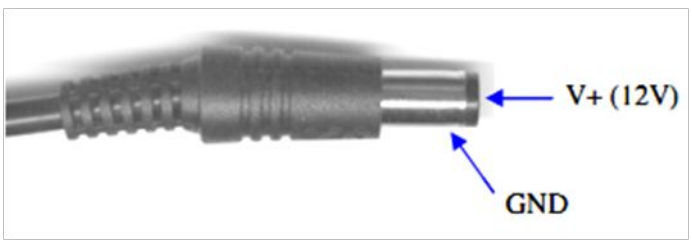

Figure 2. 2.1 mm Power connector

4.2 Power switch (SW1) and fuse

Side switch SW1 can be used to isolate power supply input from the EVB voltage regulators if required

- EVB OFF - SW1 is in the position 1 (default setting)
- EVB ON - SW1 is in the position 3

If there is no power to the MCU, it is possible that either power switch SW1 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 20 mm 2 A fast blow fuse.

4.3 Power status LEDs

When Power is applied to the EVB, a green power LEDs adjacent to 5.0 V, 3.3 V, and 1.2 V of the voltage regulators show the presence of the supply voltages. Following are connection between LED's labels and supply voltages:

- 5.0 V voltage supply is connected to LED D16

- 3.3 V voltage supply is connected to LED D17
- 1.2 V voltage supply is connected to LED D1

4.4 Power jumpers settings

There are three main areas of these jumpers: 1.2 V regulator, Broadcom part of MPC5606E, and MPC5604E part of MPC5606E.

- Table 2 shows setting of jumper J9 which select input voltage for 1.2 V regulator.

Table 2. Select input voltage for 1.2 V regulator

Position of jumper J9	Input voltage for 1.2 V regulator
1-2	5.0 V
2-3 (default)	12.0 V

- Broadcom part needs to populate jumpers in the Table 3 for its supply voltages:

Table 3. Broadcom part voltage jumpers

Jumper	Voltage name
J17	OVDD_3V3
J18	OVDD_RGMI_3V3
J22	AVDD_3V3
J24	AVDDL_1V2
J25	DVDD_1V2
J32	PLLVDD_1V2
J49	XTALVDD_3V3
J51	BIASVDD_3V3

- MC5604E part needs to populate jumpers in the Table 4 for its supply voltages:

Table 4. MPC5604E part voltage jumpers

Jumper	Voltage name
J23	VDD_LV_COR0_1, VDD_LV_COR0_2, VDD_LV_PLL0
J31	VDD_HV_ADR0
J50	VDD_HV_FLA0 ,VDD_HV_FLA1 ,VDD_HV_OSC0_REG0

The MCU can run at two regulation modes:

- **Internal regulation mode:**

In this mode I/O supply, ballast supply, and ADC supply are at the same potential of typical 3.3 V (+/- 10 %). To reduce power dissipation on the chip there are exploring possibilities of connecting the I/O supply with the ballast supply via a small resistor R731 with value 2.55 Ohms. This will lead to the ballast supply being lower than the I/O supply, see Figure 3 and the Table 5 for the jumpers setting.

Table 5. Jumpers setting for internal regulation mode

Jumper	Position of jumper	Description
J8	Connect pin 2 to 3.3 V	POR_B signal is not used in internal regulation mode
J23	DNP	Used internal generated 1.2 V supply
J34	1-2	Select internal regulation mode
J35	1-2 or 2-3 (default)	Unused (1-2) or used (2-3) ballast resistor R731

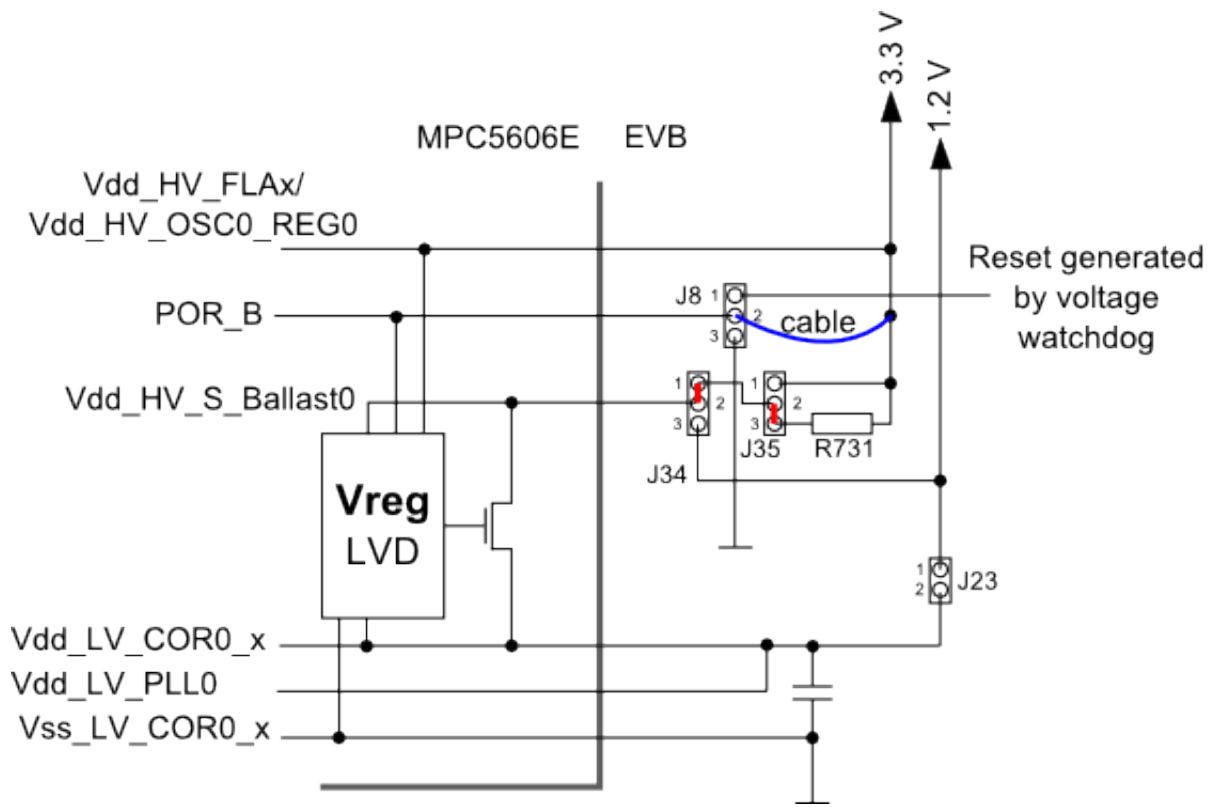

Figure 3. Internal regulation mode - simplified connection

- **External regulation mode (default setting):**

  In this mode the Ballast supply is shorted to 1.2 V (+/-10%) generated by an external regulator. The I/O supply and the MCU ADC supply continues to be at 3.3 V (+/-10%), see Figure 4 and the Table 6 for jumper setting.

Table 6. Jumpers setting for external regulation mode

Jumper	Position of jumper	Description
J8	1-2	POR_B signal is connected to the external voltage watchdog
J23	1-2	Used external 1.2 V supply
J34	2-3	Select external regulation mode - external 1.2 V supply
J35	DNP	-

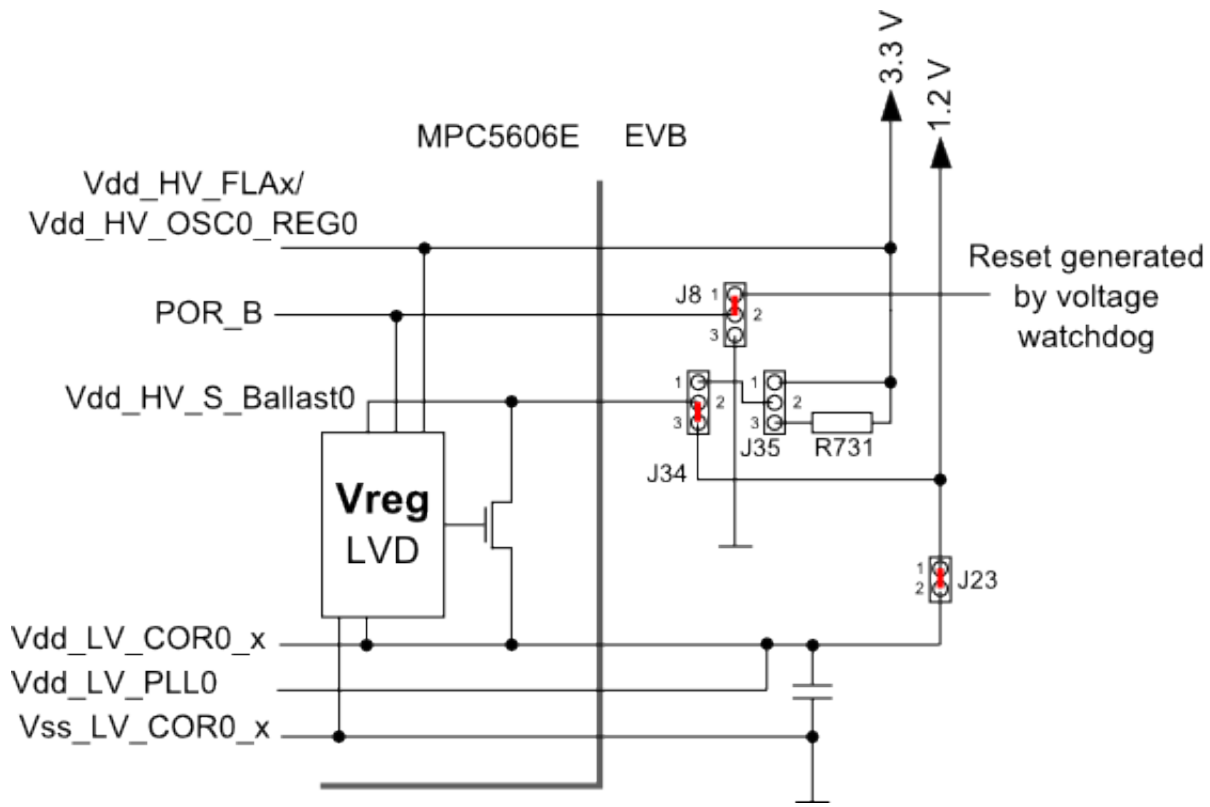

Figure 4. External regulation mode - simplified connection

5 Reset circuit

The external reset circuits are consisted from three different resets. Power on Reset (MPC5604E), JTAG Reset (MPC5604E), and Reset_BR (Broadcom). All MPC5604E resets can be activate by buttons manually (SW2 - JTAG Reset, SW3 - Power on Reset).

The Power on Reset circuit uses device STM6904TGEDS6F. This device deactivates the Power on Reset after voltages 1.2 V, 3.3 V, and 5.5 V are in valid ranges. If any of these voltages falls down under allowed range, the device activates the Power on Reset signal. The device also filters the glitches from the button (SW3).

The JTAG Reset uses device STM6315RDW13F. This device deactivates the JTAG Reset after voltage 3.3 V is in valid range. If the voltage falls down under allowed range the device activate the JTAG Reset signal. The device also filters the glitches from the button (SW2).

The last one Reset_BR uses GPIO pin from MPC5604E. The reason is that Broadcom parts has different (more complex) reset sequence, see Figure 5. The timing parameters are in the Table 7.

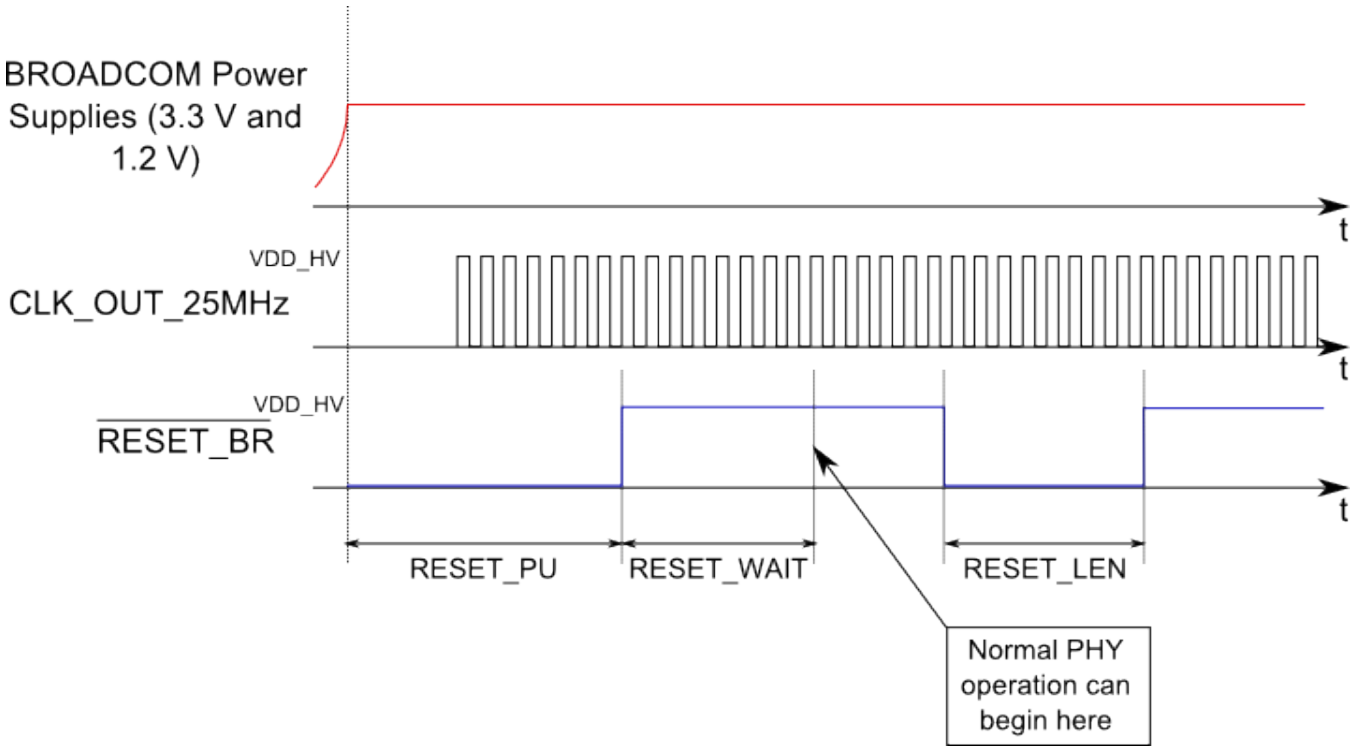

Figure 5. Broadcom reset sequence waveforms

NOTE

CLK_OUT_25 MHz is generated by MPC5604E part of MPC5606E via CLK_OUT pin.

Table 7. Reset Timing parameters

Symbol	Parameter	Minimum	Maximum	Unit
RESET_PU	Power up to RESET deassertion	10	-	ms
RESET_WAIT	RESET deassertion to normal PHY operation	20	-	µs
RESET_LEN	RESET pulse length	2	-	µs
-	RESET rise/fall time	-	25	ns

The jumper J61, resistors R71, and R65 are for the selection between two MPC5604E GPIO pins. The selection depends on the connected daughter card, if there is connected video daughter cards (Omnivision, Aptina), Port C2 is used for generating the reset and if there is connected sound daughter card, Port A12 is used for generating the reset, see Figure 6. The setting of J61 and resistors are in the Table 8.

Reset circuit

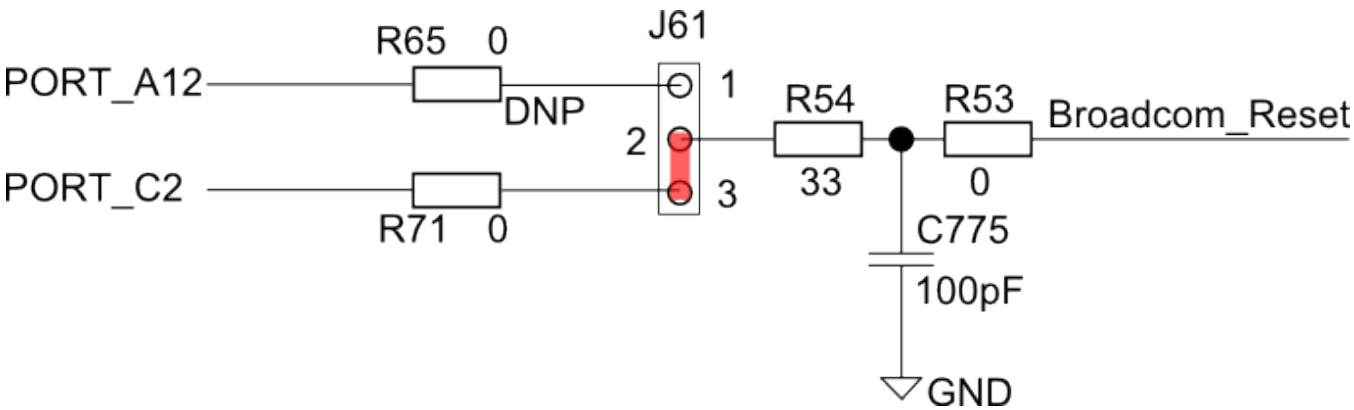

Figure 6. Broadcom reset circuitry

Table 8. The setting of J61

Used daughter card	position of J61	R71	R65
video (Aptina, Omnivision)	2-3 (default)	Populate	DNP
sound	1-2	DNP	Populate

NOTE

Both devices only monitor the decrease of the supply voltages under set threshold and filter the glitches from reset buttons.

5.1 Reset boot configuration

The MPC5606E has three jumpers for boot configuration (BOOTCFG) that determines the boot location of the MCU based at POR (Power On Reset), Table 9 shows the boot configuration possibility.

The fourth row configuration (Boot-ID in boot sector) is set as default.

Table 9. Boot configuration

FAB (J36)	ABS0 (J48)	ABS2 (J37)	Boot ID	description
1 (1-2)	0 (2-3)	0 (2-3)	-	Serial boot (SBL) - UART (LINFlex) without autobaud
1 (1-2)	1 (1-2)	0 (2-3)	-	Serial boot (SBL) - FlexCAN without autobaud
1 (1-2)	0 (2-3)	1 (1-2)	-	Scan of both serial interfaces (FlexCAN and LINFlex) for Serial Boot with autobaud
0 (2-3)	-	-	Boot-ID in boot sector	Boot from internal code Flash - single chip (SC)
0 (2-3)	-	-	no Boot-ID[1]	Static mode

1. Flash boot ID was not be find in any boot sector.

6 Clock configuration

EVB supports following MCU clock sources:

- 25 MHz crystal oscillator (Y2)
- 8 MHz external oscillator module (Y1) - driving the MCU EXTAL signal
- An external clock input to the EVB via the SMA connector (J53), driving the MCU EXTAL signal

The clock circuitry is shown in the diagram on the Figure 7 - the default positions of jumpers have red color. The 25 MHz crystal circuit is used as default.

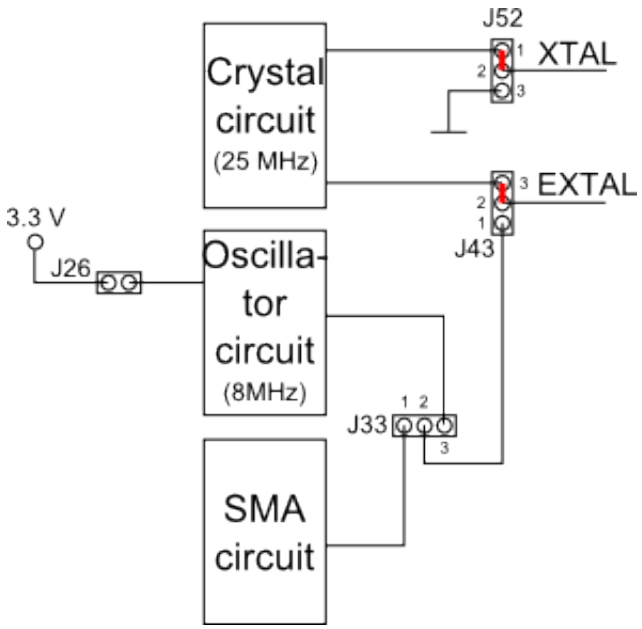

Figure 7. EVB clock circuit

Table 10 shows the jumper setting for the clock circuit:

Table 10. Jumper setting for different source of clock

Jumper	Crystal (default)	External oscillator	SMA connector
J26	DNP	populate	DNP
J33	DNP	2-3	1-2
J43	2-3	1-2	1-2
J52	1-2	2-3	2-3

CAUTION

The MPC5606E clock circuitry are all 3.3 V based. Any external clock signal driven into the SMA connector must have a maximum voltage of 3.3 V.

7 Audio and video interfaces

Audio and video interfaces

The EVB support two video interfaces (Omnivision and Aptina) and one audio interface, but only one of these interface can be active.

All interfaces have two main part:

- The first part of the interface is for managing the device (daughter card) connected on the interface and it uses I2C interface. I2C interface is muxing via jumpers, see Table 11 and the connection among jumpers is on Figure 8. The default setting has done by red symbols (jumpers).
- The second part of the interface is the interface itself and is muxing via resistors and inductors, see Table 12.

The Omnivision video interface is selected as default. There are other peripherals available in this setting, see Table 12. Video interface signals are routed to the Video Encoder wrapper module of MPC5606E. Audio interface signals are routed to the Serial Audio Interface module of MPC5606E.

Omnivision video interface

EVB is possible to connect Omnivision camera evaluation boards to Ominivision video connector J58. This interface supports up to 10-bit parallel data (camera). For the pin description of J58, see Connectors summary description.

Aptina video interface

EVB is possible to connect Aptina camera evaluation boards to Aptina video connector J57. This interface supports up to 10-bit parallel data (camera). For the pin description of J57, see Connectors summary description.

Audio interface

The audio interface uses connector J59, for the pin description, see Connectors summary description.

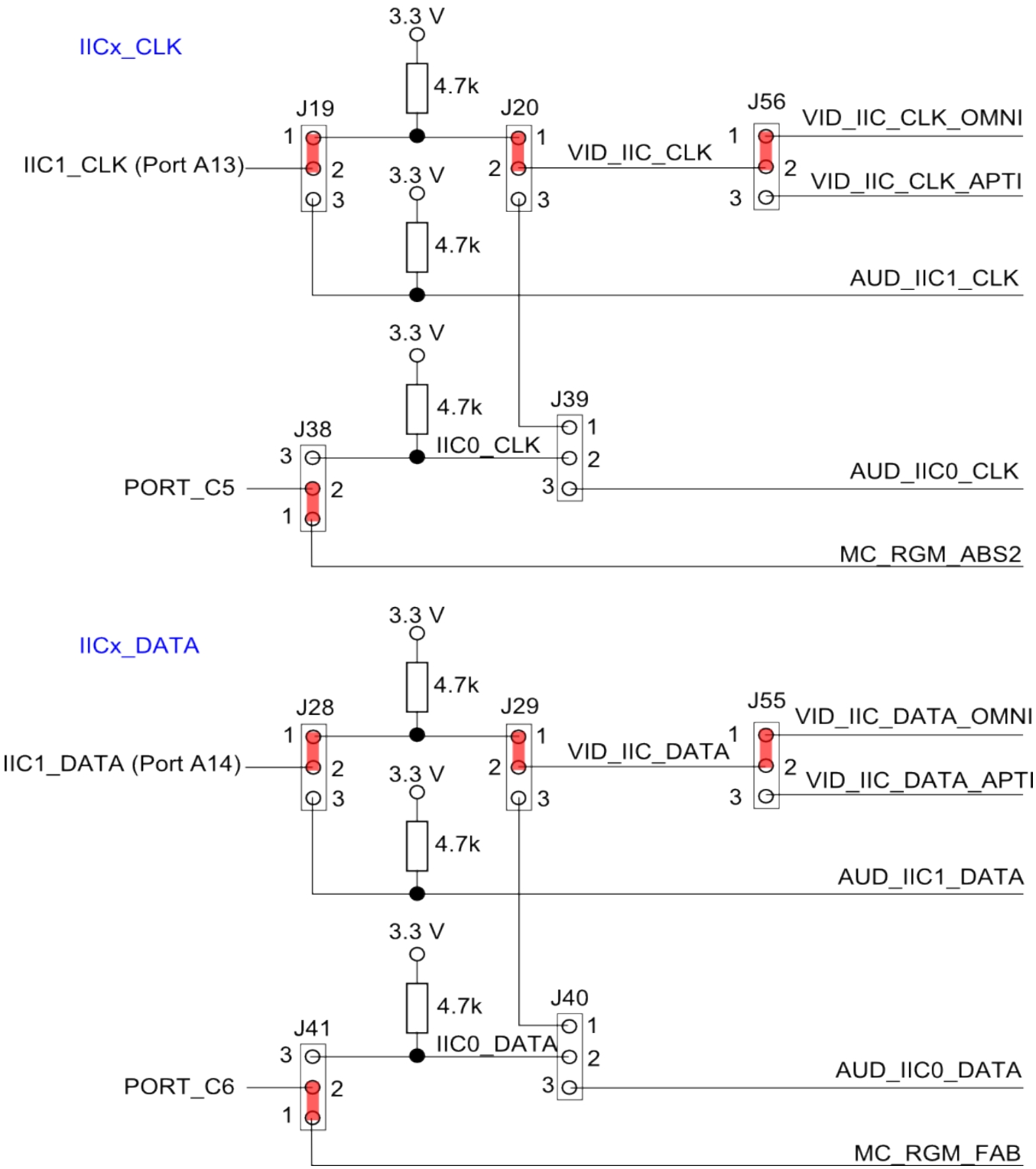

Figure 8. I2C jumpers interconnection

Table 11. I2C setting of jumper for each interface

Jumper	Omnivision interface (default)	Aptina interface	Audio interface
J19	1-2	1-2	2-3

Table continues on the next page...

Table 11. I2C setting of jumper for each interface (continued)

Jumper	Omnivision interface (default)	Aptina interface	Audio interface
J20	1-2	1-2	DNP
J28	1-2	1-2	2-3
J29	1-2	1-2	DNP
J38[1]	1-2	1-2	2-3
J39	DNP	DNP	2-3
J40	DNP	DNP	2-3
J41[1]	1-2	1-2	2-3
J55	1-2	2-3	DNP
J56	1-2	2-3	DNP

1. This jumper is also used for boot selection during reset.

- When the Omnivision video interface is selected CAN, LIN interfaces, and one measure point (JP18) is available.
- When the Aptina video interface is selected CAN interface and one measure point (JP18) is available.
- When the Audio interface is selected one measure point (JP21) is available.

Table 12. Audio and Video resistors and inductors muxing

Device	Omnivision video interface (default)		Aptina video interface		Audio interface		Other peripheral	
Port Pin	Part	Name	Part	Name	Part	Name	Part	Name
A0	R101	Data[11]	R102	Data[11]	R100	SAI0_Data[0]	-	-
A1	R104	Data[10]	R105	Data[10]	R103	SAI0_Data[1]	-	-
A2	R98	Data[9]	R99	Data[9]	R97	SAI0_Data[2]	-	-
A3	R95	Data[8]	R96	Data[8]	R94	SAI0_Data[3]	-	-
A4	R92	Data[7]	R93	Data[7]	R91	SAI0_Sync	-	-
A5	L9	PIX_CLK	L10	PIX_CLK	R114	SAI1_Sync	-	-
A6	R112	V_Sync	R113	V_Sync	R111	SAI2_Sync	-	-
A7	R109	H_Sync	R110	H_Sync	R108	SAI0_Bclk	-	-
A8	R89	Data[6]	R90	Data[6]	R88	SAI2_Data[0]	-	-
A9	R86	Data[5]	R87	Data[5]	R85	SAI2_Bclk	-	-
A10	R82	Data[4]	R84	Data[4]	R83	SAI2_Mclk	-	-
A11	R118	Data[3]	R119	Data[3]	-	-	R66	JP21
A12	R116	Data[2]	R117	Data[2]	R65	Broadcom Reset	-	-
A15	R107	PWDN	-	-	R106	SAI1_Mclk	-	-
B0	-	-	-	-	R77	SAI1_Bclk	R69	CAN0_TXD

Table continues on the next page...

Table 12. Audio and Video resistors and inductors muxing (continued)

Device	Omnivision video interface (default)		Aptina video interface		Audio interface		Other peripheral	
Port Pin	Part	Name	Part	Name	Part	Name	Part	Name
B1	-	-	-	-	R76	SAI1_Data[0]	R68	CAN0_RXD
B2	-	-	R81	Frame_Sync	R80	AN13	R72	LIN0_TXD
B3	-	-	R75	RST	R74	ETC2_AN14	R67	LIN0_RXD
C2	R71	Broadcom Reset	R71	Broadcom Reset	R79	ETC0	-	-
C3	-	-	-	-	R78	ETC1	R70	JP18
C4[1]	L11	Clk_in	L12	Clk_in	R115	SAI0_Mclk	-	-

1. This port pin is used for generation of the 25 MHz signal for Audio and Video interfaces. It is necessary to set the functionality of this pin as CLKOUT, the source of CLKOUT is 25 MHz oscillator without divider. The name of this signal in the schematics is CLK_OUT_25_MHz signal.

CAUTION

There is only one functionality available for each port pin Omnivision video interface, Aptina video interface, or other peripheral.

8 CAN interface

The EVB has one NXP TJA1041T high speed CAN transceiver on the MCU CAN channel. This can operate with 3.3 V I/O from the MCU. For flexibility, the CAN transceiver I/O is connected to a standard 0.1-inch connector (P5) and DB9 connector (P3) at the top edge of the PCB. Connectors P5 and P3 provides the CAN bus level signal interface for CAN-A. The connectors pin out are shown on the Figure 9.

CAUTION

This interface is not available when the audio daughter card is used.

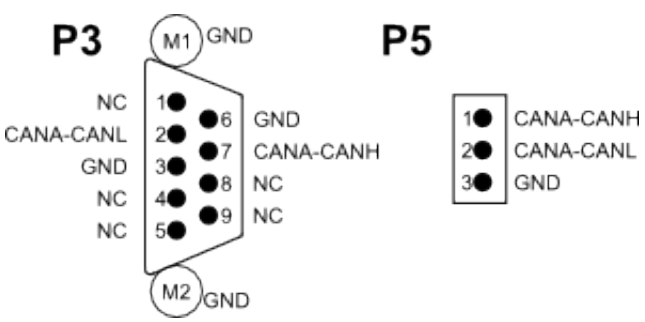

Figure 9. CAN connectors pin out

Table 13 shows the jumpers setting which controls the external CAN transceiver (interface).

Table 13. CAN jumper setting

Jumper	Description	Default position
J1	device setting	short 1-2, 3-4, and 5-6[1]
J4	Enable RX	Populate

Table continues on the next page...

Table 13. CAN jumper setting (continued)

Jumper	Description	Default position
J5	Connect supply voltage 5.0 V	Populate
J6	Check battery voltage	Populate
J7	Enable TX	Populate

1. 1-2 disable local wake up, 3-4 disable standby, 5-6 enable the driver.

There is one more connector J3 with following (CAN transceiver) functionality:

- pin 1 - error and power indication output
- pin 2 - switching the external regulator

.

9 LIN and SCI interface

The EVB provides one LIN interface or one SCI interface. SCI interface is set as default and it is one mode of LIN module which is on MPC5606E. It means only one of this interface can be active in one time. But the selection is given by jumper also because each of the interface uses different external hardware. The jumper setting is in the Table 14.

Table 14. Jumper setting for LIN interface (SCI default)

Name of jumper	LIN setting	SCI setting (default)
J2	DNP	Populate[1]
J10	1-2	2-3
J11	Depends on the setting[2]	DNP
J13	Populate[3]	DNP
J14	1-2	2-3
P6	Short 1-2[4]	DNP

1. Enable the SCI driver power supply.
2. This jumper enables master mode pull-up on the LIN interface.
3. Enable the LIN driver.
4. Enable the LIN driver power supply.

9.1 LIN interface

The EVB has one MC33661PEF LIN enhanced physical interface on the MCU LIN channel. This can operate with 3.3 V I/O from the MCU. The LIN transceiver I/O is connected to the standard 0.1-inch connector (P6) and one Molex connector (J12) at the left edge of the PCB. Connectors P6 and J12 provide the LIN bus level signal interface for LIN0. The connectors pin out are shown on the Figure 10.

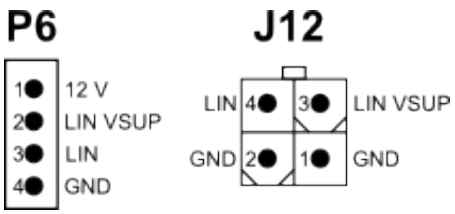

Figure 10. LIN physical interface connectors

CAUTION

The LIN VSUP is power supply of LIN driver. You need to populate jumper on position 1-2 of P6 for powering the driver.

9.2 SCI interface

The EVB has one MAX3223 RS232 line driver on the MCU SCI (LIN) channel. This can operate with 3.3 V I/O from the MCU. The line driver I/O are connected to a standard DB9 connector (P2) at the top edge of the PCB. Connector P2 provides the RS232 bus level signal interface for SCI (LIN0). The connector pin out is shown on the Figure 11.

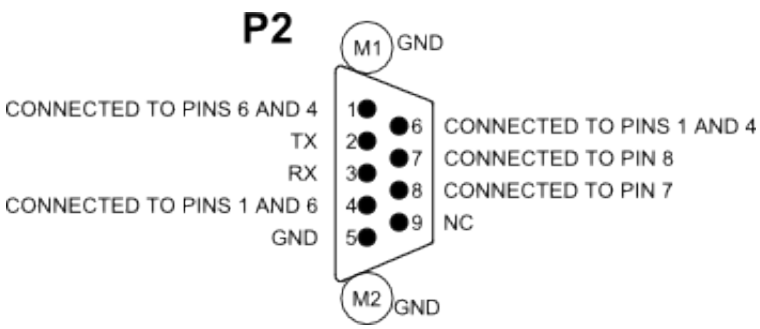

Figure 11. SCI physical interface connector

10 Ethernet interface

The ethernet physical interface uses two wire ethernet standard and it is a part of MPC5606E, but the interconnection between ethernet and processor is done outside the chip, see the Table 15.

Table 15. Connection between ethernet and microcontroller

Name of signal	MPC5604E PADs of MPC5606E	Broadcom PADs of MPC5606E	Connection
FEC_RXD3	C6	D7	directly
FEC_RXD2	D8	D9	directly
FEC_RXD1	C7	C9	directly
FEC_RXD0	B8	B9	directly
FEC_RX_DV	G8	H8	directly
FEC_RX_CLK	A7	B7	directly
FEC_TXD3	F11	F10	directly
FEC_TXD2	E9	E8	directly

Table continues on the next page...

Table 15. Connection between ethernet and microcontroller (continued)

Name of signal	MPC5604E PADs of MPC5606E	Broadcom PADs of MPC5606E	Connection
FEC_TXD1	G11	H10	directly
FEC_TXD0	G10	H9	directly
FEC_TX_EN	E11	E10	directly
FEC_TX_CLK	A10	A9	directly
CLK_OUT_25 MHz	G6	H7	R713 = 150 Ohm
MDC	D11	C11	R20 = 33 Ohm[1]
MDIO	C10	B10	directly[2]

1. MDC: Connect Capacitor 100 pF against ground.
2. MDIO: Connect pull up 4k7 and Capacitor 100 pF against ground.

There is populated molex connector Molex 34793-0040, see its pin out on the Figure 12.

CAUTION

It is necessary to populate jumpers on J15 (short 3-4 and 5-6), without these MII interface (MDIO and MDC) will not be connected.

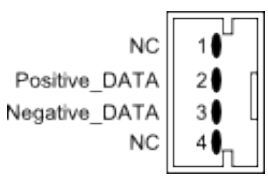

Figure 12. Ethernet connector pin out

11 User buttons and LEDs

There are two buttons and four LEDs for the user on the EVB. LEDs and buttons are not primarily connected to the MCU. The connection can be done via cables, because each LED and button has own test point.

The LED is active (light) if the connected signal is in low level. The LEDs numbers and their tests pins are in the Table 16.

Table 16. User LEDs and their test pins

LED name	Test pin
D10	JP13
D11	JP14
D12	JP15
D13	JP12

The buttons are more flexible because it is possible to configure their active level via jumpers. The setting is valid for both and is not possible to separate settings for each button. The configuration of jumpers is in the Table 17.

Table 17. Buttons setting

Position J45	Position J46	Description
1-2 (GND)	1-2 (GND)	nonsense [1]
	2-3 (3.3 V)	When the button is pressed there is high voltage level on the test pin. Idle level of voltage is low.
2-3 (3.3 V)	1-2 (GND)	When the button is pressed there is low voltage level on the test pin. Idle level of voltage is high.
	2-3 (3.3V)	nonsense [1]

1. If the button is touched it does not influence on the test pin voltage level (buttons are between the same voltage levels).

The buttons number and their tests pins are in the Table 18.

Table 18. User Buttons and their test pins

Button name	Test pin
SW4	JP16
SW5	JP17

12 Summary table with default jumpers setting

Table 19. Default jumpers summary table

Name	Position of jumper	Description
J1	1-2	Disable CAN driver wake up signal
	3-4	Disable CAN driver standby mode
	5-6	Enable CAN driver
J2	populate	Supply voltage for RS232 driver
J3	DNP	Unconnect CAN information signals
J4	populate	Connect CAN RX to driver
J5	populate	Connect supply voltage for CAN driver
J6	populate	Connect battery voltage to the CAN driver
J7	populate	Connect CAN TX to driver
J8	1-2	Part MPC5604E reset
J9	2-3	12 V source voltage for 1V2 DC/DC convertor
J10	2-3	Select LIN TX signal for SCI
J11	DNP	Disable LIN Master mode pull-up
J13	DNP	Disable LIN driver
J14	2-3	Select LIN RX signal for SCI

Table continues on the next page...

Table 19. Default jumpers summary table (continued)

Name	Position of jumper	Description
J15	3-4	Short MDIO signal
	5-6	Short MDC signal
J17	populate	OVDD_3V3
J18	populate	OVDD_RGMI_3V3
J19	1-2	I2C setting for omnivision
J20	1-2	I2C setting for omnivision
J21	1-2	VPP_Test connect to GND
J22	populate	AVDD_3V3
J23	Populate	VDD_LV_COR0_1, VDD_LV_COR0_2, VDD_LV_COR0_3, VDD_LV_PLL0
J24	Populate	AVDDL_1V2
J25	Populate	DVDD_1V2
J26	DNP	Disable external oscillator
J28	1-2	I2C setting for omnivision
J29	1-2	I2C setting for omnivision
J30	DNP	Not select voltage for NMI
J31	populate	VDD_HV_ADR
J32	Populate	PLLVDD_1V2
J33	DNP	Disable external oscillator as clock source
J34	2-3	VDD_HV_S_BALLAST0 = 1.2 V
J35	2-3	Select ballast resistor
J36	2-3	Bootconfig FAB = 0
J37	2-3	Bootconfig ABS2 = 0
J38	1-2	I2C setting and bootconfig
J39	DNP	I2C setting
J40	DNP	I2C setting
J41	1-2	I2C setting
J43	2-3	Select external crystal as a source of clock
J45	DNP	Disable buttons
J46	DNP	Disable buttons
J48	2-3	Bootconfig ABS0 = 0
J49	populate	XTALVDD_3V3
J50	populate	VDD_HV_FLA0 , VDD_HV_FLA1, VDD_HV_OSC0_REG0
J51	populate	BIASVDD_3V3
J52	1-2	Select external crystal
J55	1-2	I2C setting for omnivision
J56	1-2	I2C setting for omnivision
J61	2-3	Broadcom reset

13 Connectors summary description

This section describes the pinout of the EVB user connectors. Each connector has own table with pinout description.

Table 20. NMI connector (J30)

Pin	Description
1	GND
2	NMI
3	3.3 V

Table 21. GPIO connector (J54)

Pin	Description	Pin	Description
1	PORT_B0	2	GND
3	GND	4	GND
5	PORT_B1	6	GND

Table 22. Aptina video interface connector (J57)

Pin	Description	Pin	Description
1	DATA [4]	2	DATA [5]
3	DATA [6]	4	DATA [7]
5	DATA [8]	6	DATA [9]
7	DATA [10]	8	DATA [11]
9	DATA [2]	10	DATA [3]
11	GND	12	GND
13	HSYNC	14	FRAME_SYNCH
15	NC	16	RST
17	VSYNC	18	IIC_DATA
19	IIC_CLK	20	NC
21	5.0 V	22	5.0 V
23	PIX_CLK	24	GND
25	GND	26	CLK OUT 25 MHz

Table 23. Omnivision video interface connector (J58)

Pin	Description	Pin	Description
1	DATA [4]	2	DATA [5]
3	DATA [6]	4	DATA [7]

Table continues on the next page...

Table 23. Omnivision video interface connector (J58) (continued)

Pin	Description	Pin	Description
5	DATA [8]	6	DATA [9]
7	DATA [10]	8	DATA [11]
9	PWDN	10	NC
11	IIC_DATA	12	NC
13	IIC_CLK	14	HSYNC
15	GND	16	VSYNC
17	GND	18	PIX_CLK
19	CLK OUT 25 MHz	20	5.0 V
21	GND	22	5.0 V
23	DATA [2]	24	DATA [3]
25	NC	26	NC
27	NC	28	NC
29	NC	30	NC
31	GND	32	GND

Table 24. Audio interface connector (J59)

Pin	Description	Pin	Description
1	3.3 V	2	GND
3	SAI0_DATA [3]	4	GND
5	SAI0_DATA [2]	6	GND
7	SAI0_DATA [1]	8	GND
9	SAI0_DATA [0]	10	GND
11	SAI0_BCLK	12	GND
13	SAI0_SYNC	14	GND
15	SAI0_MCLK	16	GND
17	ETC2_AN14	18	GND
19	IIC1_CLK	20	GND
21	IIC1_DATA	22	GND
23	SAI1_DATA [0]	24	GND
25	SAI1_BCLK	26	GND
27	ETC1	28	GND
29	SAI1_SYNC	30	GND
31	SAI1_MCLK	32	GND
33	IIC0_CLK	34	GND
35	IIC0_DATA	36	GND
37	SAI2_DATA [0]	38	GND
39	SAI2_BCLK	40	GND
41	SAI2_SYNC	42	GND

Table continues on the next page...

Table 24. Audio interface connector (J59) (continued)

Pin	Description	Pin	Description
43	SAI2_MCLK	44	GND
45	ETC0	46	GND
47	AN13	48	GND
49	5.0 V	50	GND

Table 25. FlexCAN connector (P5)

Pin	Description
1	CANH
2	CANL
3	GND

Table 26. LINFlex connector (P6)

Pin	Description
1	12 V
2	Supply LIN driver
3	LIN
4	GND

NOTE

The description of J12 and P2 connectors are in the LIN interface and SCI interface.

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