**Revision History**

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- **1.1.1**
  - Removed compatibility notes.
  - Changed R29 to C185.
  - Added SOM pins 68, 69, 176.
  - Fixed U22.B1, C113.1 net name.

- **1.1.2**
  - Added SH1 wire short symbol.
  - Changed R23, R24 to 10K.
  - Changed U2, U3 to CBTL02043B.

- **1.1.3**
  - Added SH1 wire short, J1.68 routed to capacitive touch.
  - Updated parallel camera/HDMI/DP note.
  - Updated PCIe resistor assembly note.

- **1.1.4**
  - Added VAR-SOM-MX8M-MINI Block Diagram and Symbol.
  - Added VAR-SOM-MX8M-MINI Block Diagram.
  - Added VAR-SOM-MX8M-MINI Symbol.

- **1.1.5**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.6**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.7**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.8**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.9**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.10**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.11**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.12**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.13**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.14**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.15**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.16**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.17**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.18**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.19**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.20**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.21**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.22**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

- **1.1.23**
  - Added VAR-SOM-MX8M-MINI Block Diagram.

**Disclaimer:**

Variscite LTD provides no warranty for the use of these schematics. Information is subject to change without notice.
For complete alternate function per pin and specific SOM, please refer to "VAR-SOMs Compatibility and Pinout.XLS" located at ftp://ftp.variscite.com/SOM_Compatibility
06. uSD, Audio, CAN

SD POWER

uSD CARD

uSD CARD

uSD CARD

uSD CARD

uSD CARD

CAN BUS

Headphones

Line In

DIGITAL MIC
07. Camera, HDMI, DP

MIPI-CSI

J13: MX6/MX8-HDMI, MX8-DP, MX8X-CSI, MX8MP-2nd MIPI-CSI

Switch select control on adapter will select between:
1) EC08 which can export:
   VAR=60-MODEX=EC08 (used by parallel interfaces)
   VAR=60-MODEX=EC08 (used by HDMI/DDC buffer on SOM)
   VAR=60-MODEX=EC08 (used by HDMI/DDC buffer on SOM)
2) VCC_SEL_0 which can export:
   VAR=60-MODEX=EC08 (used by HDMI/DDC)
Switch can be enabled when designing to only one of the above interfaces.
Note: 1. Default always ON, To disable clock install R21.
2. Replacement PN: AB-557-0344FL1T
3. Disabled with SW6 in ON state

Differential Impedance: 100 ohms

LAYOUT NOTE:
PCIE Differential Pairs, Follow PCIe routing guidelines. Differential Impedance: 85 ohms
Length match +/-5mil

1.5V_LDO Current limited to 300mA

PCIe CLK

Differential Impedance: 100 ohms

LAYOUT NOTE:
SOM-AUL NAND signals should not be driven

LAYOUT NOTE:
Place parallel termination resistors close to the mPCIe connector

Parallel termination resistors assembled with Ferrite Bead P/N: BLM15BA330SN1D for EMI suppression

mPCIe

LAYOUT NOTE:
Place AC caps close to the connector

LAYOUT NOTE:
PCIE Differential Pairs, Follow PCIe routing guidelines, Differential Impedance: 85 ohms
Length match +/-5mil
10. Debug, GPIO Exp, Buttons, LED

USB UART DEBUG

LAYOUT NOTE:
USB 2.0 Differential Pair, annotated with a ring around the pair. Follow USB 2.0 routing guidelines.
Length Match: +/- 100 mils
Differential Impedance: 90 ohms

GPIO EXPANDER

In VAR-SOM-MX8 SOM pin 29 EXP_INT is referenced to 1.8V.
When using pin 29 as an input pin driven by higher input voltage,
use an external voltage divider or limit the current using a series resistor to a maximum of 1mA.

GP BUTTON

GP LED

Variscite
USB2 Host

LAYOUT NOTE:
USB 2.0 Differential Pair, annotated with a ring around the pair. Follow USB 2.0 routing guidelines. Length Match: +/- 100 mils. Differential Impedance: 90 ohms

NOTE:
Power always enabled. In order to control the power see page 14 "Headers"
13. USB3, uSATA

SATA/USB select

LAYOUT NOTE:
USB 3.0 Differential Pair, annotated with a ring around the pair. Follow USB 3.0 routing guidelines.
Differential Impedance: 90 ohms

LAYOUT NOTE:
SATA Differential Pair, Follow SATA routing guidelines.
Differential Impedance: 85 ohms
Length match +/-5mil

USB TYPE C Circuirty

LAYOUT NOTE:
USB 3.0 Differential Pair, annotated with a ring around the pair. Follow USB 3.0 routing guidelines.

Config Channel Logic Detection & Indication of Plug Orientation

5V Source Load Switch

USB Profile 1 = 5 V @ 2.1 A

USB#B_OTG_ID can be left floating if not used.

Usage of native USB ID for iMX8MP requires patches not included in the formal release, pull up should be to 1.8V.
For simple OTG function for VAR-SOM-MX8M-PLUS:
Connect J1.72 GPIO to U22 PTN ID output - same solution applies also for VAR-SOM-MX8/8X/8M-MINI.
14. Headers

Headers arranged for compatible alternate function

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PWM#B | PWM#C | UART#A | UART#B | UART#TX | UART#RX | UART#TS | UART#CS | UART#RTS_B | BT UART |

Headers arranged for partial compatible alternate function

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| SAI# | SAI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# | SPI# |
| UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART | UART |

SAI

I2C#B

I2C#C

For complete header alternate function refer to "VAR-SOMs_Compatibility_and_Pinout.XLS" located at: ftp://ftp.variscite.com/SOM_Compatibility

COLD RESET ON WDOG_B EVENT for MX6/SOLO and 6UL SOMs

Listed above SOMs require short on headers to get "reboot" to function. For all other watch dog looped on SOM

SOM_6UL: PIN57 WDOG1_B

See J3.18

USB#A Host VBUS power control

In order to control the USB#A HOST VBUS power a short is required:

J1.82-USB#A_HOST_PWR

Symphony Board U22

See J1.19

USB#A has internal pulls in Camera buffer

I2C_B has internal pulls in MX6/MX8/MX8X/MX8MP SOMs. For MX8MM/MX8MN/6UL SOMs - external pull ups should be added.