



VARISCITE LTD

VAR-EXT-CB103

Extension Board for VAR-xxxxCustomBoard

Ver 1.0

© 2009 Variscite Ltd.

All Rights Reserved. No part of this document may be photocopied, reproduced, stored in a retrieval system, or transmitted, in any form or by any means whether, electronic, Mechanical, or otherwise without the prior written permission of Variscite Ltd.

No warranty of accuracy is given concerning the contents of the information contained in this publication. To the extent permitted by law no liability (including liability to any person by reason of negligence) will be accepted by Variscite Ltd., its subsidiaries or employees for any direct or indirect loss or damage caused by omissions from or inaccuracies in this document.

Variscite Ltd. reserves the right to change details in this publication without notice. Product and company names herein may be the trademarks of their respective owners.

Variscite Ltd.

60 Mediant Ha'Yehudim.

Hertzelia Pituach

P.O.B 12598

46722, Israel

Phone +972 (9) 9562910 • Fax +972 (9) 9589477

Revision History

| Revision | Date | Notes |
|-----------------|-------------|-----------------|
| 1.0 | 14/01/2010 | Initial release |
| | | |

Table of Contents

| | | |
|---|---|----|
| | Revision History | ii |
| 1 | Overview..... | 4 |
| | 1.1 General Information | 4 |
| | 1.2 Related Documents..... | 4 |
| 2 | Detailed Description | 5 |
| | 2.1 VAR-EXT-CB103 Layout & Connectors | 5 |
| | 2.1.1 IO & BUS Extenders (Section A) | 5 |
| | 2.1.2 RS-232 Level UARTS (Section B)..... | 6 |
| | 2.1.3 USB HUB (Section C)..... | 6 |
| | 2.1.4 JTAG (Section D)..... | 6 |
| 3 | Connectors Pin out..... | 7 |
| | 3.1 Extension Headers..... | 7 |
| | 3.1.1 Extension Header J6 – LCD Interface | 7 |
| | 3.1.2 Extension Header J3 – CAM & I2C | 8 |
| | 3.1.3 Extension Header J7 – Local Bus | 9 |
| | 3.1.4 Extension Header J9 – SPI, MMC & ADC..... | 10 |
| | 3.2 UARTs | 11 |
| | 3.2.1 RS232 connectors assignment..... | 11 |
| | 3.2.2 RS232 connectors pin out | 11 |
| | 3.3 JTAG Connectors..... | 11 |
| | 3.3.1 JTAG In (J12) | 11 |
| | 3.3.2 JTAG Out (J11)..... | 11 |
| 4 | Environmental specifications | 12 |
| 5 | Legal notice | 13 |
| 6 | Warranty terms | 15 |
| 7 | Contact information | 16 |

1 Overview

This chapter gives a short overview of the VAR-EXT-CB103 extension board.

1.1 General Information

The VAR-EXT-CB103 extension board is an add-on board, plugs into the VAR-xxxxCustomBoard extension connectors. The VAR-EXT-CB103 exposes more than 90% of the VAR-SOM-xxxx IO's and interfaces into an easy to use 2.54mm pitch through-hole connectors. The VAR-EXT-CB103 standard prototyping headers offers a fast & easy way for adding additional custom hardware to the VAR-xxxxCustomBoard.

Additional to exposing the VAR-SOM-xxxx IO's the VAR-EXT-CB103 features also:

1. On board 3 port USB2 HUB
2. Two RS-232 transceivers & connectors
3. JTAG interface adapter

Supporting products:

- VAR-OM35CustomBoard
- VAR-MX25CustomBoard

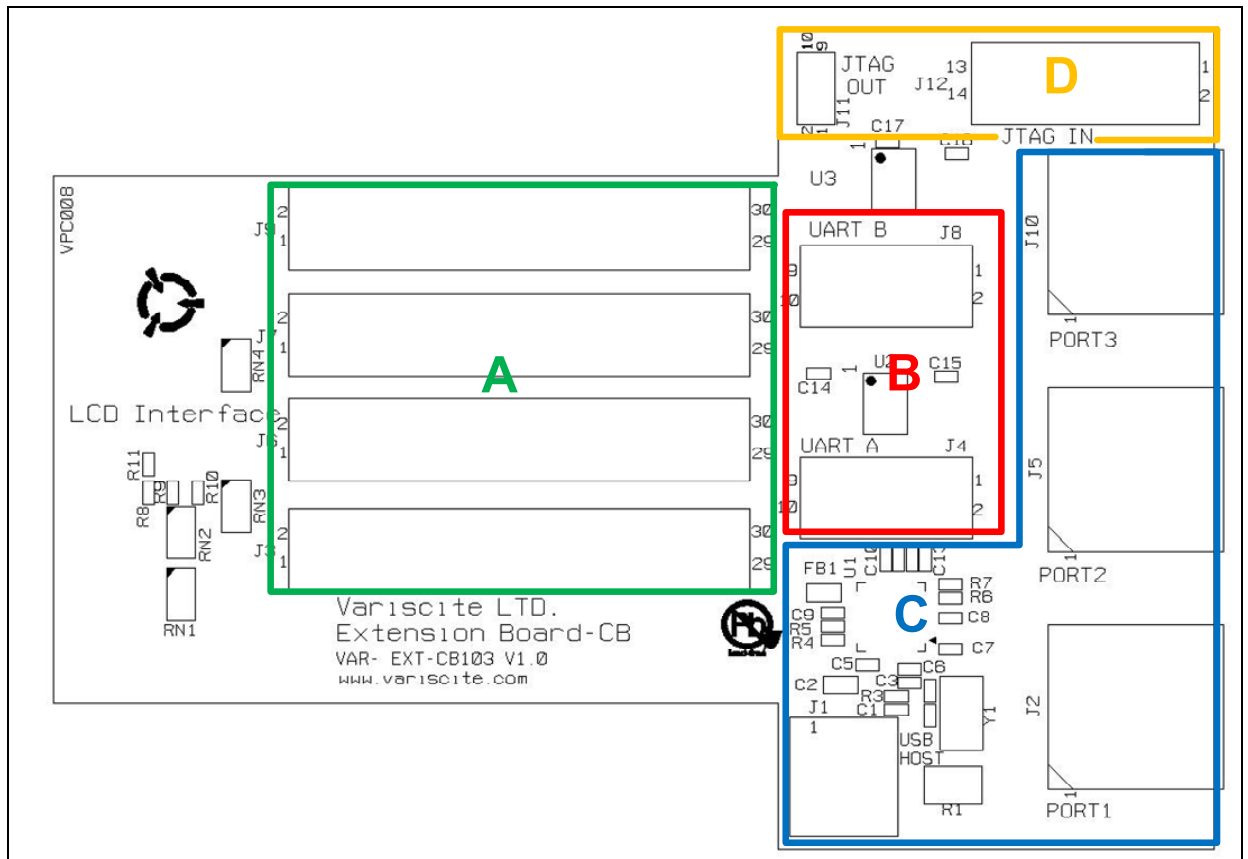
Contact support for further information: <mailto:support@variscite.com>.

1.2 Related Documents

| Document | Location |
|-------------------------|---|
| VAR-SOM-OM35 data sheet | http://www.variscite.com/DataSheets/VAR-OM35xxSBC_DS_V1_3.pdf |
| VAR-SOM-MX25 data sheet | http://www.variscite.com/DataSheets/VAR-SOM-MX25_DS_V1_1.pdf |

2 Detailed Description

2.1 VAR-EXT-CB103 Layout & Connectors



2.1.1 IO & BUS Extenders (Section A)

The VAR-EXT-SB103 features four 15x2, 2.54mm, standard header connectors. The four headers expose more than 90% of VAR-SOM-xxxx modules IOs and interfaces, among including:

- Full LCD interface.
- CAM Interface.
- SPI,I2C Serial BUS.
- MMC.
- Two A to D inputs.
- Local BUS (if featured in SOM connector).
- GPIO.

Detailed pin out can be found in section [3.1 “Extension Headers”](#)

2.1.2 RS-232 Level UARTS (Section B)

The VAR-EXT-SB103 features two 5x2 headers. Together with on board UART connector featured by the VAR-xxxxCustomBoard, all three VAR-SOM-xxxx UART interfaces can be directly connected to any standard RS-232 terminal.

Detailed pin out can be found in section [3.2 UARTS](#)

2.1.3 USB HUB (Section C)

The VAR-EXT-SB103 features stand alone, 3 ports USB2 HUB. The HUB can be connect either to VAR-xxxxCustomBoard HOST port or to the OTG port using standard USB cable.

The HUB enables to using USB1.1 devices with VAR-OM35CustomBoard HOST port without needing third party USB hub.

2.1.4 JTAG (Section D)

The VAR-EXT-SB103 features on board 2x7 pin, 2.57mm pitch JTAG connector to 2x5 pin, 1.27mm JTAG connector converter.

Detailed pin out can be found in section [3.3 JTAG Connectors](#)

3 Connectors Pin out

3.1 Extension Headers

3.1.1 Extension Header J6 – LCD Interface

| PIN# | VAR-SOM-OM35 Signal Name | VAR-SOM-MX25 Signal Name |
|-------------|-------------------------------------|-------------------------------------|
| 1 | VIO | VIO |
| 2 | DSS_D0 | CAN_TX1 |
| 3 | DSS_D1 | CAN_RX1 |
| 4 | DSS_D2 | LCD_D0 |
| 5 | DSS_D3 | LCD_D1 |
| 6 | DSS_D4 | LCD_D2 |
| 7 | DSS_D5 | LCD_D3 |
| 8 | DSS_D6 | LCD_D4 |
| 9 | DSS_D7 | LCD_D5 |
| 10 | DSS_D8 | CSPI1_RDY |
| 11 | DSS_D9 | LCD_16 |
| 12 | DSS_D10 | LCD_D6 |
| 13 | DSS_D11 | LCD_D7 |
| 14 | DSS_D12 | LCD_D8 |
| 15 | DSS_D13 | LCD_D9 |
| 16 | DSS_D14 | LCD_D10 |
| 17 | DSS_D15 | LCD_D11 |
| 18 | DSS_D16 | NC |
| 19 | DSS_D17 | GPIO4[6] |
| 20 | DSS_D18 | LCD_D12 |
| 21 | DSS_D19 | LCD_D13 |
| 22 | DSS_D20 | LCD_D14 |
| 23 | DSS_D21 | LCD_D15 |
| 24 | DSS_D22 | LCD_D16 |
| 25 | DSS_D23 | LCD_D17 |
| 26 | DSS_PCLK | LCD_PCLK |
| 27 | DSS_VSYNC | LCD_VSYNC |
| 28 | DSS_HSYNC | LCD_HSYNC |
| 29 | GND | GND |
| 30 | DSS_ACBIAS | LCD_DRDY |

•

3.1.2 Extension Header J3 – CAM & I2C

| PIN # | VAR-SOM-OM35 Signal Name | VAR-SOM-MX25 Signal Name |
|--------------|---------------------------------|---------------------------------|
| 1 | VIO | VIO |
| 2 | NC | NC |
| 3 | CAM_D0 | NC |
| 4 | NC | NC |
| 5 | CAM_D1 | NC |
| 6 | NC | NC |
| 7 | CAM_D2 | CSI_D2 |
| 8 | NC | NC |
| 9 | CAM_D3 | CSI_D3 |
| 10 | NC | NC |
| 11 | CAM_D4 | CSI_D4 |
| 12 | NC | NC |
| 13 | CAM_D5 | CSI_D5 |
| 14 | NC | NC |
| 15 | CAM_D6 | CSI_D6_MMC2_CMD |
| 16 | CAM_STROBE | CSPI_CS1 |
| 17 | CAM_D7 | CSI_D7__MMC2_CLK |
| 18 | CAM_XCLKA | CSI_MCLK_MMC2_DAT0 |
| 19 | CAM_D8 | CSI_D8 |
| 20 | CAM_PCLK | CSI_PIXCLK_MMC2_DAT3 |
| 21 | CAM_D9 | CSI_D9 |
| 22 | I2C3_SDA | I2C1_DATA |
| 23 | CAM_D10 | NC |
| 24 | I2C3_SCL | I2C1_CLOCK |
| 25 | CAM_D11 | NC |
| 26 | CAM_WEN | NC |
| 27 | CAM_VS | CSI_VSYNC_MMC2_DAT1 |
| 28 | CAM_FLD | GND |
| 29 | GND | GND |
| 30 | CAM_HS | CSI_HSYNC_MMC2_DAT2 |

3.1.3 Extension Header J7 – Local Bus

| PIN # | VAR-SOM-OM35 Signal Name | VAR-SOM-MX25 Signal Name |
|--------------|-------------------------------------|-------------------------------------|
| 1 | LB_IO_0 | NC |
| 2 | LB_IO_1 | NC |
| 3 | LB_IO_2 | NC |
| 4 | LB_IO_3 | NC |
| 5 | LB_IO_4 | NC |
| 6 | LB_IO_5 | NC |
| 7 | LB_IO_6 | NC |
| 8 | LB_IO_7 | NC |
| 9 | LB_IO_12 | NC |
| 10 | LB_IO_9 | NC |
| 11 | LB_IO_14 | NC |
| 12 | LB_IO_11 | NC |
| 13 | LB_IO_A1 | NC |
| 14 | LB_IO_13 | NC |
| 15 | LB_IO_A3 | NC |
| 16 | LB_IO_15 | NC |
| 17 | LB_IO_A5 | NC |
| 18 | LB_IO_A2 | NC |
| 19 | LB_IO_A7 | NC |
| 20 | LB_IO_A4 | NC |
| 21 | LB_IO_8 | NC |
| 22 | LB_IO_A6 | NC |
| 23 | LB_IO_10 | NC |
| 24 | LB_nCS3 | NC |
| 25 | LB_RE_OE_N | NC |
| 26 | LB_nADV_ALE | NC |
| 27 | LB_WE_N | 3V3 |
| 28 | LB_CLE | NC |
| 29 | LB_WAIT0 | NC |
| 30 | LB_CLK | PWM1 |

3.1.4 Extension Header J9 – SPI, MMC & ADC

| PIN # | VAR-SOM-OM35 Signal Name | VAR-SOM-MX25 Signal Name |
|--------------|-------------------------------------|-------------------------------------|
| 1 | VIO | VIO |
| 2 | MsSPI2_CLK | CSPI_CLK |
| 3 | MMC1_CD | MMC1_CD |
| 4 | MsSPI2_SIMO | CSPI_MOSI |
| 5 | MMC1_CLKO | MMC1_CLKO |
| 6 | MsSPI2_SOMI | CSPI_MISO |
| 7 | MMC1_CMD | MMC1_CMD |
| 8 | MsSPI2_CS0 | CSPI_CS0 |
| 9 | MMC1_DAT0 | MMC1_DAT0 |
| 10 | GPIO28 | GPIO3_16 |
| 11 | MMC1_DAT1 | MMC1_DAT1 |
| 12 | McBSP1_CLKR | NC |
| 13 | MMC1_DAT2 | MMC1_DAT2 |
| 14 | McBSP1_FSR | GND |
| 15 | MMC1_DAT3 | MMC1_DAT3 |
| 16 | McBSP1_DX | SSI5_STXD |
| 17 | KPD.R4 | GPIO4[8] |
| 18 | McBSP1_DR | SSI5_SRXD |
| 19 | HP_LOUT | HP_LOUT |
| 20 | McBSP1_FSX | SSI5_STXFS |
| 21 | HP_ROUT | HP_ROUT |
| 22 | McBSP1_CLKX | SSI5_SCK |
| 23 | CODEC_AUXADC1 | CODEC_AUXADC1 |
| 24 | KPD.C4 | NC |
| 25 | CODEC_AUXADC2 | CODEC_AUXADC2 |
| 26 | KPD.C5 | NC |
| 27 | AGND | #N/A |
| 28 | PWM0 | LCD_CONTRAST |
| 29 | GND | GND |
| 30 | RESET_OUT_N | RESET_OUT |

3.2 UARTs

3.2.1 RS232 connectors assignment

| Connector | VAR-SOM-OM35 | VAR-SOM-MX25 |
|-------------|--------------|--------------|
| UART A (J4) | UART 2 | UART 2 |
| UART B (J8) | UART 1 | UART 3 |

3.2.2 RS232 connectors pin out

| Pin # | Type | Description |
|-------|-------|---------------|
| 1 | NC | |
| 2 | I | UART Receive |
| 3 | O | UART Transmit |
| 4 | NC | |
| 5 | Power | GND |
| 6 | NC | |
| 7 | O | UART RTS |
| 8 | I | UART 3 CTS |
| 9 | NC | |
| 10 | NC | |

3.3 JTAG Connectors

3.3.1 JTAG In (J12)

| Pin # | Pin Function |
|-------|--------------|
| 1 | TDO |
| 2 | EMU1 |
| 3 | nTRST |
| 4 | EMU0 |
| 5 | TDS |
| 6 | NC |
| 7 | TDI |
| 8 | NC |
| 9 | TCK |
| 10 | GND |

3.3.2 JTAG Out (J11)

| Pin # | Pin Function |
|-------|--------------|
| 1 | TMS |
| 2 | nTRST |
| 3 | TDI |
| 4 | GND |
| 5 | VIO |
| 6 | NC |
| 7 | TDO |
| 8 | GND |

| | |
|----|------|
| 9 | RTCK |
| 10 | GND |
| 11 | TCK |
| 12 | GND |
| 13 | EMU0 |
| 14 | EMU1 |

4 Environmental specifications

| | Min | Max |
|--|--------------------|--------------------|
| Commercial operating temperature range | 0 ^o C | +70 ^o C |
| Extended operating temperature range | -25 ^o C | +85 ^o C |
| MTBF | 10000hrs > | |
| Shock resistance | 50G / 20 ms | |
| Relative humidity, Operational | 10% | 90% |
| Relative humidity, Storage | 5% | 95% |
| Vibration | 20G / 0 - 600 Hz | |

5 Legal notice

Variscite LTD (“Variscite”) products and services are sold subject to Variscite’s terms and conditions of sale, delivery and payment supplied at the time of order acknowledgement.

Variscite warrants performance of its products to the specifications in effect at the date of shipment. Variscite reserves the right to make changes to its products and specifications or to discontinue any product or service without notice. Customers should therefore obtain the latest version of relevant information from Variscite to verify that the information is current.

Testing and other quality control techniques are utilized to the extent Variscite deems necessary to support its warranty.

Specific testing of all parameters of each device is not necessarily performed unless required by law or regulation.

In order to minimize risks associated with customer applications, the customer must use adequate design and operating safeguards to minimize inherent or procedural hazards. Variscite is not liable for applications assistance or customer product design. The customer is solely responsible for its selection and use of Variscite products. Variscite is not liable for such selection or use nor for use of any circuitry other than circuitry entirely embodied in a Variscite product.

Variscite products are not intended for use in life support systems, appliances, nuclear systems or systems where malfunction can reasonably be expected to result in personal injury, death or severe property or environmental damage. Any use of products by the customer for such purposes is at the customer’s own risk.

Variscite does not grant any license (express or implied) under any patent right, copyright, mask work right or other intellectual property right of Variscite covering or relating to any combination, machine, or process in which its products or services might be or are used. Any provision or publication of any third party’s products or services does not constitute Variscite’s approval, license, warranty or endorsement thereof. Any third party trademarks contained in this document belong to the respective third party owner.

Reproduction of information from Variscite datasheets is permissible only if reproduction is without alteration and is accompanied by all associated copyright, proprietary and other notices (including this notice) and conditions. Variscite is not liable for any un-authorized alteration of such information or for any reliance placed thereon.

Any representations made, warranties given, and/or liabilities accepted by any person which differ from those contained in this datasheet or in Variscite's standard terms and conditions of sale, delivery and payment are made, given and/or accepted at that person's own risk. Variscite is not liable for any such representations, warranties or liabilities or for any reliance placed thereon by any person.

6 Warranty terms

Variscite guarantees hardware products against defects in workmanship and material for a period of one (1) year from the date of shipment. Your sole remedy and Variscite's sole liability shall be for Variscite, at its sole discretion, to either repair or replace the defective hardware product at no charge or to refund the purchase price. Shipment costs in both directions are the responsibility of the customer. This warranty is void if the hardware product has been altered or damaged by accident, misuse or abuse.

Disclaimer of Warranty

THIS WARRANTY IS MADE IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESSED, OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A SPECIFIC PURPOSE, NON-INFRINGEMENT OR THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION, EXCEPT THE WARRANTY EXPRESSLY STATED HEREIN. THE REMEDIES SET FORTH HEREIN SHALL BE THE SOLE AND EXCLUSIVE REMEDIES OF ANY PURCHASER WITH RESPECT TO ANY DEFECTIVE PRODUCT.

Limitation on Liability

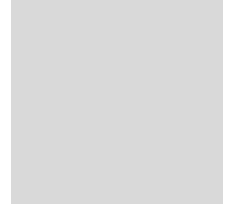
UNDER NO CIRCUMSTANCES SHALL VARISCITE BE LIABLE FOR ANY LOSS, DAMAGE OR EXPENSE SUFFERED OR INCURRED WITH RESPECT TO ANY DEFECTIVE PRODUCT. IN NO EVENT SHALL VARISCITE BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES THAT YOU MAY SUFFER DIRECTLY OR INDIRECTLY FROM USE OF ANY PRODUCT.

7 Contact information

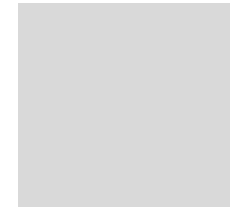
Headquarters

Variscite LTD

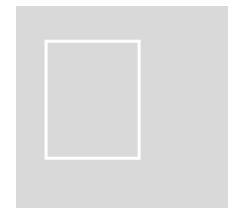
60 Medinat Hayehudim st. Hertzelia
P.O.B 12598
46722, Israel



Tel: +972 (9) 9562910
Fax: +972 (9) 9589477



Sales: sales@variscite.com
Technical support: support@variscite.com



Website: www.variscite.com

