



VARISCITE LTD

# VCAM-5640S-1ST / VCAM-5640S-DUO Datasheet

## i.MX8 Serial Camera Extension Board V 1.x



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## Revision History

Revision	Date	Notes
1.00	APR 17 2018	Preliminary
1.01	JUL 26 2018	Official Release
1.02	NOV 18 2018	Fix Revision History numbers. 1.1 – modify OV5645 to OV5640 1.1.2 – Remove TBD from Linux support
1.03	JUL 09 2019	Board name changed to VCAM-5460S
1.04	OCT 18 2020	Board name changed to VCAM-5460S-1ST / VCAM-5460S-DUO

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# 1 Overview

This chapter gives an overview of the VCM-5640S -1ST / VCM-5640S -DUO

## 1.1 General Information

The VCAM-5640S-1ST / VCAM-5640S-DUO is a serial camera extension board for various Variscite carrier boards. It allows evaluation and easy integration between up to two OV5640 camera modules and several Variscite SOMs.

### 1.1.1 VCAM-5640S-1ST / VCAM-5640S-DUO Features:

- 1 x 5 Mega Pixel Camera module, based on OV5640 sensor

### 1.1.2 VCAM-5640S-DUO Features:

- 2 x 5 Mega Pixel Camera module, based on OV5640 sensor

### 1.1.3 The VCAM-5640S-1ST Supporting Variscite Carrier Boards

- Symphony-Board

### 1.1.4 The VCAM-5640S-DUO Supporting Variscite Carrier Boards

- VAR-DT8MCustomBoard

### 1.1.5 The VCAM-5640S-1ST Compatible Variscite SOM

- VAR-SOM-MX8
- VAR-SOM-MX8X
- VAR-SOM-MX8M-MINI
- VAR-SOM-MX8M-NANO

### 1.1.6 The VCAM-5640S-DUO Compatible Variscite SOM

- DART-MX8M-PLUS
- DART-MX8M
- DART-MX8M-MINI

### 1.1.7 Supporting O.S

- Android
- Linux

### 1.1.8 Additional Information

Board schematics is available to download at [www.variscite.com](http://www.variscite.com),

For further information contact Variscite support at [support@variscite.com](mailto:support@variscite.com).

## 1.2 VCAM-5640S-1ST Features Summary

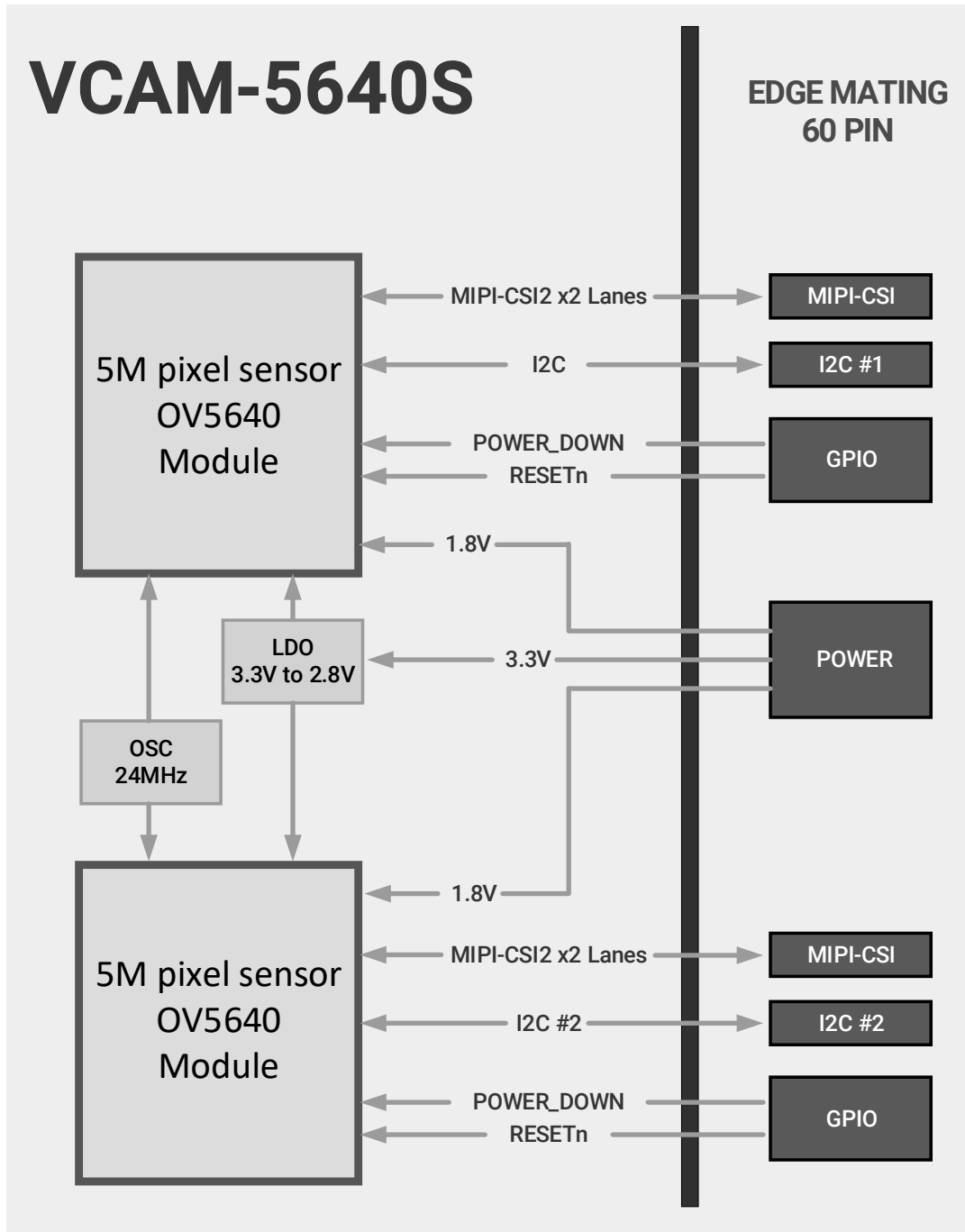
- 1 x 60 PIN Card Edge Connector compatible with various carrier board;  
see section The VCAM-5640S-1ST Supporting Variscite **Carrier Boards**
- 1 x JAL-MIPI-OV5640 V5.0 camera module

## 1.3 VCAM-5640S-DUO Features Summary

- 1 x 60 PIN Card Edge Connector compatible with various carrier board;  
see section The VCAM-5640S-1ST Supporting Variscite **Carrier Boards**
- 2 x JAL-MIPI-OV5640 V5.0 camera module

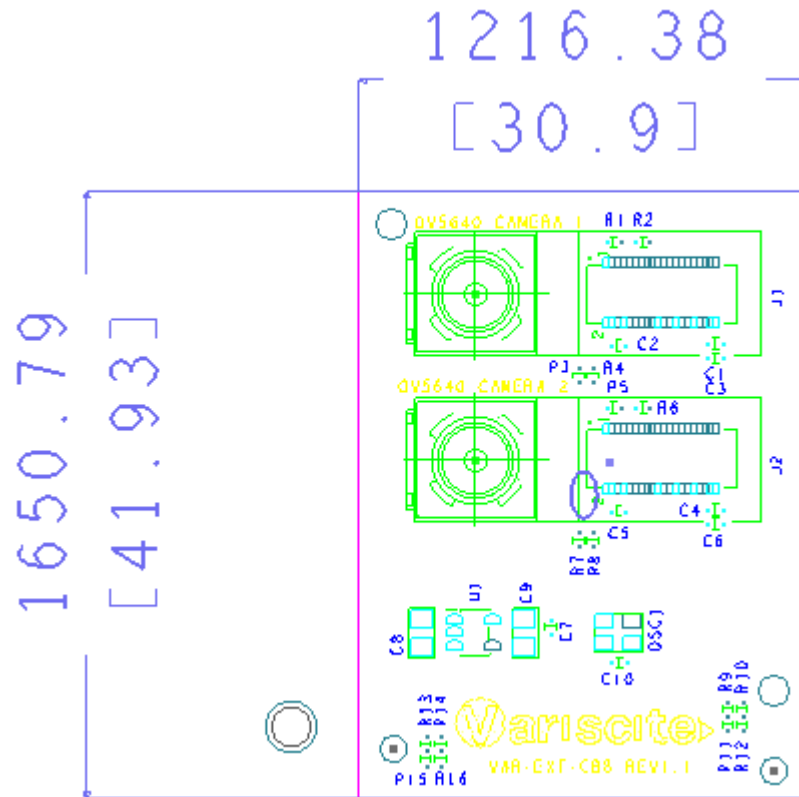


### 1.4 Block Diagram



## 1.5 Board Layout

The VCAM-5640S-1ST / VCAM-5640S-DUO physical dimensions are 42 x 31 mm.



Detailed CAD files are available for download at [www.variscite.com](http://www.variscite.com).

## 1.6 VCAM-5640S-1ST / VCAM-5640S-DUO Connectors

The below table lists all available connectors on the VCAM-5640S-1ST / VCAM-5640S-DUO, refer to chapter 2 for a more detailed description and Pin-out of each connector.

**Table 1-1 VCAM-5640S-1ST / VCAM-5640S-DUO connectors**

Reference	Function	Type
J23	VAR-DT8MCustomBoard and SPEAR-MX8CustomBoard Mating connector	HSEC8-130-01-SM-DV-A
J1	JAL-MIPI-OV5640 V5.0 module mating connector for camera #1	Board to board, 90 pos., 0.4mm
J2	JAL-MIPI-OV5640 V5.0 module mating connector for camera #2	Board to board, 90 pos., 0.4mm

## 2 Detailed Description

### 2.1 Overview

This chapter details the VCAM-5640S-1ST / VCAM-5640S-DUO features and external interfaces.

Please refer to the The VCAM-5640S-1ST Compatible **Variscite SOM** section data sheets for more information.

Table 2-1 describes this chapter table header and acronyms used.

**Table 2-1: Acronyms used on tables column header**

Column		Meaning
Pin#	x	Pin number on a connector
Type		Pin type & direction
	I	INPUT
	O	OUTPUT
	DS	Differential Signal
	A	Analog
	P	Power
Signal		VCAM-5640S-1ST / VCAM-5640S-DUO schematic signal name
Description		Short Pin functionality description

## 2.2 VCAM-5640S-1ST / VCAM-5640S-DUO Interfaces

### 2.2.1 Camera Board PCB Connector

The mated The VCAM-5640S-1ST Supporting Variscite **Carrier Boards** exports the The VCAM-5640S-1ST Compatible **Variscite SOM** dual 4-lane MIPI CSI serial camera interfaces to a 60POS 0.8mm PCB connector.

**Mating Edge connector is SAMTEC P/N: HSEC8-130-01-SM-DV-A**

**Table 2-2: Mating Edge connector pin out (J23)**

Pin #	Camera Board Signal	Type	Description
1	VCC_3V3	P	Camera Power supply 3.3V
2	DGND	P	Digital Ground
3	VCC_3V3	P	Camera Power supply 3.3V
4	CSI_P2_I2C_SDA	IO	I2C Data for Camera 2
5	VCC_1V8	P	Camera Power supply 1.8V
6	CSI_P2_I2C_SCL	IO	I2C Clk for Camera 2
7	VCC_1V8	P	Camera Power supply 1.8V
8	DGND	P	Digital Ground
9	DGND	P	Digital Ground
10	CSI_P2_PWDN	O	Power down control; Active Low;
11	CSI_P1_D0_P	DSI	CSI Port1 Lane0; Positive
12	CSI_P2_RST	O	Reset control; Active Low;
13	CSI_P1_D0_N	DSI	CSI Port1 Lane0; Negative
14			
15	DGND	P	Digital Ground
16			
17	CSI_P1_CK_P	DSI	CSI Port1 Clock; Positive
18	DGND	P	Digital Ground
19	CSI_P1_CK_N	DSI	CSI Port1 Clock; Negative
20	CSI_P2_MCLK	I	Optional reference clock source. <i>Note: Available on SPEAR-MX8CustomBoard only!</i>
21	DGND	P	Digital Ground
22	DGND	P	Digital Ground
23	CSI_P1_D1_P	DSI	CSI Port1 Lane1; Positive

Pin #	Camera Board Signal	Type	Description
24			
25	CSI_P1_D1_N	DSI	CSI Port1 Lane1; Negative
26			
27	DGND	P	Digital Ground
28	DGND	P	Digital Ground
29			
30			
31			
32			
33	DGND	P	Digital Ground
34	DGND	P	Digital Ground
35			
36	CSI_P2_D1_N	DSI	CSI Port2 Lane1; Negative
37			
38	CSI_P2_D1_P	DSI	CSI Port2 Lane1; Positive
39	DGND	P	Digital Ground
40	DGND	P	Digital Ground
41	CSI_P1_MCLK	I	Optional reference clock source. <i>Note: Available on SPEAR-MX8CustomBoard only!</i>
42	CSI_P2_CK_N	DSI	CSI Port2 Clock; Negative
43	DGND	P	Digital Ground
44	CSI_P2_CK_P	DSI	CSI Port2 Clock; Positive
45			
46	DGND	P	Digital Ground
47			
48	CSI_P2_D0_N	DSI	CSI Port2 Lane0; Negative
49	CSI_P1_RST	O	Reset control; Active Low;
50	CSI_P2_D0_P	DSI	CSI Port2 Lane0; Positive
51	CSI_P1_PWDN	O	Power down control; Active Low;
52	DGND	P	Digital Ground
53	DGND	P	Digital Ground
54	VCC_1V8	P	Camera Power supply 1.8V
55	CSI_P1_I2C_SCL	IO	I2C #2 Clock

**VCAM-5640S-1ST / VCAM-5640S-DUO CAMERA BOARD**

Pin #	Camera Board Signal	Type	Description
56	VCC_1V8	P	Camera Power supply 1.8V
57	CSI_P1_I2C_SDA	IO	I2C #2 Data
58	VCC_3V3	P	Camera Power supply 3.3V
59	DGND	P	Digital Ground
60	VCC_3V3	P	Camera Power supply 3.3V

## 2.2.2 OV5640 V5.0 5 Mega Pixel Camera Module Connector

The VCAM-5640S-1ST / VCAM-5640S-DUO features two 5 Mega Pixel camera modules based on OV5640 sensor. The mating connector is Hirose DF30FC-40DS-0.4V(82).

**Table 2-3: Camera Module mating connector pin out (J1) (J2)**

Pin #	Carrier board Signal	Type	Description
1	DGND	P	Digital Ground
2	DGND	P	Digital Ground
3			
4	VCC_2V8	P	Camera 2.8V
5	I2C_SDA_CAM	IO	I2C data <i>Note: Signal level is 1.8V</i>
6			
7	I2C_SCL_CAM	I	I2C clock <i>Note: Signal level is 1.8V</i>
8	VCC_2V8	P	Camera 2.8V
9	RSTn	I	Camera Reset control; Active low <i>Note: Signal level is 1.8V</i>
10			
11			
12			
13			
14			
15			
16	CSI_D1_P	I	Camera MIPI-CSI Lane 1; Positive
17	PWRDOWN	I	Camera power down control; Active high <i>Note: Signal level is 1.8V</i>
18	CSI_D1_N	I	Camera MIPI-CSI Lane 1; Positive
19			
20	DGND	P	Digital Ground
21			
22	CSI_CK_P	I	Camera MIPI-CSI Clock; Positive
23			
24	CSI_CK_N	I	Camera MIPI-CSI Clock; Negative
25			
26	DGND	P	Digital Ground
27			



Pin #	Carrier board Signal	Type	Description
28	CSI_DO_P	I	Camera MIPI-CSI Lane 0; Positive
29			
30	CSI_DO_N	I	Camera MIPI-CSI Lane 0; Negative
31			
32	DGND	P	Digital Ground
33			
34	MCLK	I	Refence clock <i>Note: Signal level is 1.8V</i>
35			
36			
37			
38	VCC_1V8	P	Camera 1.8V
39			
40	DGND	P	Digital Ground

### 3 Environmental Specifications

*Table 3-1: Environmental Specification*

	Min	Max
Commercial operating temperature range	0°C	+70°C
MTBF	>10KHRS	
Relative humidity, Operational	10%	90%
Relative humidity, Storage	5%	95%

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