

Board Function	Module	KOELSCH (R-CarM2)	PORTER_B (R-CarM2)	PORTER_C: Y-RCAR-M2-PORTER-A (R-CarM2)	
RAM	DDR3	Dual Channel DDR3L-1600 1GByte x2 channels, 32bit data width x2 4Gbit(16bit data width) x4 devices. Micron DDR3L-1600: 1.35V (MT41K256M16HA-125) SDRAM Backup feature: Supported.	← SDRAM Backup feature is not supported	Dual Channel DDR3-1600 1GByte x2 channels, 32bit data width x2 4Gbit(16bit data width) x4 devices. Hynix DDR3L-1600: 1.35V (H5TC4G63AFR-PBA) SDRAM Backup feature is not supported	
	LBSC	No device.	Footprint for a SRAM device 48TSOP package(no stuff)8Mbyte	(SRAM (LBSC/Ex-BUS) have been removed.)	
ROM	LBSC	NOR Flash Connector: NOR Flash board: ROP0400C0001FS Databus width 16bit 64MB x2banks or 128MB x1bank	NOR flash on board. NOR flash part#S29GL01GP (can support 64Mbyte or 128Mbyte part) Databus width 16bit, 128MB(64MB)	(NOR(LBSC) boot feature have been removed.)	
	QSPI	SPI Flash: Spansion S25FL512SAGMFVR10 (512Mbit=64MB) x1 device. Spansion S25FL032P0XMF1011 (32Mbit=4MB) x1 device.	SPI Flash:(Only one SPI flash is supported) Spansion S25FL512SAGMFVR10 (512Mbit=64MB) x1 device. Second SPI device is not supported	SPI Flash: two SPI flash and extension are supported. Spansion S25FL512SAGMFVR10 (512Mbit=64MB) x1 device. Spansion S25FL032P0XMF1011 (32Mbit=4MB) x1 device. (added)	
Debug I/F	DBG	Connector: HTST-110-01-S-DV (20pin)	Connector: HTST-110-01-S-DV (20pin)	←	
	DBG2	through SD card slot for SDHI1	Not supported	←	
	GPIO	LED x3 devices 'GPLED' for General Purpose.	Only One GPIO led is suffed(footprint exists for the remainig two)	←	←
		Mechanical switch x4 elements 'SOFTSW' for General Purpose.	Not supported	←	←
		Mechanical switch x7 elements 'TactSW' for General Purpose.	Not supported	←	←
	SCIFA0	Debug Serial x1 (TX, RX) USB to UART Bridge SILICON LABS CP2102-GM x1 (Bridge spec: max 1Mbps) Connector: USB Type microAB	Debug Serial x1 (TX, RX) USB to UART Bridge SILICON LABS CP2102-GM x1 (Bridge spec: max 1Mbps) Connector: USB Type miniAB	←	Connector: USB Type microAB
	SCIFA1	Debug Serial x1 (TX, RX) USB to UART Bridge SILICON LABS CP2102-GM x1 (Bridge spec: max 1Mbps) Connector: USB Type microAB	Not supported	←	←
	SCIFA2	Not supported.	Not supported	←	←
SCIF_CLK	14.7456MHz OSC mounted	14.7456MHz OSC not mounted ==> use internal clock	←	←	
LAN	EtherMAC Debug Ether(100Mbps) ... (Alternative use as Ethernet AVB.) RMII PHY: MICREL KSZ8041RNL1 Connector: RJ45: TDK TLA-6T718A or TLA-6T776F EXIO Connector D(CN34,QSE-040-01-F-D-A)	Debug Ether(100Mbps) ... (Alternative use as Ethernet AVB.) RMII PHY: MICREL KSZ8041RNL1 Connector: RJ45: TDK TLA-6T718A or TLA-6T776F EXP Connector D(JP3) Footprint exists but is no stuff	←	Connector: RJ45: TDK TLA-6T718A → CWKRJ-13BNL	
SATA I/F	SATA0 3Gbps, Gen2 Connector: 67491-0020	3Gbps, Gen2 Connector: 67491-0020 Footprint exists but is no stuff	←	Connector: 67491-0020 → HSAT-M07-V5D-40	
PCIE I/F	PCI express PCI Express Base Specification Revision 2.0, 1-lane, 2.5GT/s or 5.0GT/s Connector: 87715-9006	PCI Express Base Specification Revision 2.0, 1-lane, 2.5GT/s or 5.0GT/s Connector: 87715-9006	←	Connector: 87715-9006 → JPCIE-4CEEB36XRT110	
USB3.0 I/F	USB3.0 Not supported.	Not supported	←	←	
USB2.0 I/F	USB2.0 ch0	USB2.0 Host or Function Connector: Type microAB. Support 'On The Go'	USB2.0 Host or Function Connector: Type miniAB. Support 'On The Go'.	USB2.0 Host or Function Connector: Type microAB. 'On The Go' feature removed. Select Host/Func by JP13	
	USB2.0 ch1	USB2.0 Host Connector: Type A	←	←	
	USB2.0 ch2	←	←	←	
MLB+ I/F	MLB+ (MOST) 6wire-MOST Interface(150Mbps) MOST INIC Connector: CN18: QSH-020-01-L-D-DP-A	Not MOST-INIC connector. Goes to expansion connector CN23. (Out of operation guarantee)	←	←	
MLB I/F	MLB (MOST) 3wire-MOST Interface (Need to install chip resistor for use) MOST INIC Connector: CN18: QSH-020-01-L-D-DP-A	Not MOST-INIC connector. Goes to expansion connector CN23. (Out of operation guarantee)	←	←	
RTC I/F	I ² C1 Real Time Clock: EPSONTOYOCOM RA-8581SA (Not mounted, only pad)	Not supported	←	←	
SDHI	SDHI0	Connector: Full size SD Card slot. Interface voltage: Either 3.3V or 1.8V.	←	←	
	SDHI1	Connector: Full size SD Card slot. DBG2 can be connected instead of SD card. Interface voltage: Either 3.3V or 1.8V.	Not supported (Sub-JTAG feature have been removed)	←	
	SDHI2	Connector: microSD Card slot. Interface voltage: Either 3.3V or 1.8V.	←	←	
MMC I/F	MMC1 Not supported.	Not supported	←	←	
MSIOF	MSIOF MSIOF0: Renesas Electronics R2A11302FT (Regulator) EXIO Connector B (CN32 : QSE-040-01-F-D-A)	MSIOF0: Goes to Connector (CN6)	←	MSIOF0: Goes to Connector CN6 (Connector part not installed)	
Video Output	DU_LVDS0	LVDS output. 5 pair (CLK, CH0~CH3) Connector: Signal: Hirose DF14A-20P-1.25H(55), Backlight: SM14B-SRSS-TB(LF)(SN)	LVDS output. 5 pair (CLK, CH0~CH3) Connector: CN30 JAE: FI-SE20P-HFE; BACKLIGHT 5V, dimmable PWM and enable supported	←	
	DU0	Either [A] or [B] [A] HDMI output HDMI Transmitter. Analog Devices ADV7511WBSWZ(U23) Connector: HDMI standard type A : Tyco 1747981-1 [B] Connector: EXIO Connector E (CN30 : QSE-020-01-F-D-A)	HDMI output (control by I2C_2) HDMI Transmitter. Analog Devices ADV7511WBSWZ Connector: HDMI standard type A : Tyco 1747981-1 HPD, EDID, DDC feature supported equiped with EMI filter TPD12S016PWR * This feature is compatible to KOELSCH.	←	
	DU1	←	←	←	
Video Input	VIN0	Either [A] or [B] [A] YCbCr 16bit. RGB888 HDMI Receiver: Analog Devices ADV7612WBSWZ. Connector: HDMI standard type A: Tyco 1747981-1 [B] Connector: EXIO Connector D (CN34 : QSE-040-01-F-D-A)	[A] YCbCr 8bit. BT656 Video Decoder: Analog Devices ADV7180WBCP32Z. Connector: RCA [B] No Connector:	←	
	VIN1	Either [A] or [B] [A] YCbCr 8bit. BT656 Video Decoder: Analog Devices ADV7180WBCP32Z. Connector: RCA [B] Connector: EXIO Connector D (CN34 : QSE-040-01-F-D-A)	Not supported	←	
	VIN2	Not supported.	Not supported	←	
Audio	SSI0, SSI1, SSI2, SSI9	Either [A1] or [B] or [C] or [D] [A1] Audio Output(SSI0), Input(SSI1) Codec: AKM AK4643EN x1 Connector: mini jack x1 for stereo line output Connector: mini jack x1 for stereo line/MIC input [B] Audio Multi-Channel Output.(SSI0, SSI1, SSI2, SSI9) HDMI Transmitter ADV7511WBSWZ Connector: HDMI standard type A [C] Audio Multi-Channel Input(SSI0, SSI1, SSI2, SSI9) or TDM Input(SSI0) HDMI Receiver ADV7612WBSWZ Connector: HDMI standard type A [D] Connector: samtec 80pin. EXIO Connector B (CN32 : QSE-040-01-F-D-A)	Either [A1] or [B] [A1] Audio Output(SSI0), Input(SSI1) Codec: AKM AK4642EN x1 Connector: mini jack x1 for stereo line output Connector: mini jack x1 for stereo line/MIC input [B] Audio Multi-Channel Output.(SSI0, SSI1, SSI2, SSI9) HDMI Transmitter ADV7511WBSWZ Connector: HDMI standard type A [C] Not supported [D] Not supported	←	
	SSI3, SSI4	[A2] Audio Output(SSI3), Input(SSI4) Codec: AKM AK4643EN x1 Connector: mini jack x1 for stereo line output Connector: mini jack x1 for stereo line/MIC input EXIO Connector B (CN32 : QSE-040-01-F-D-A)	[A2] Not supported	←	
I ² C I/F	I ² C0	Not supported.	Not supported.	←	
	I ² C1	Interface voltage: 3.3V This interface is connected to the following devices. PMIC DA9063(HS_I2C), DA9063 Slave address: 0xB4(write)/0xB5(read) RTC RA-8581SA and EXIO Connector B (CN32 : QSE-040-01-F-D-A)	Interface voltage: 3.3V ← RTC RA-8581SA, and I2C_1 on EXIO connector have been removed.	Interface voltage: 3.3V Unusable on PORTER_C. These connections have been removed. Use alternative I2C port (HS_I2C by I2C_6). (The 'PM_I2C' pins are removed at DA9063L.)	
	I ² C2	Interface voltage: 3.3V This interface is connected to the following devices. HDMI Transmitter ADV7511W, HDMI Receiver ADV7612, Video decoder ADV7180, Audio codes AK4643, I2C EEPROM, EXIO Connector A (CN31: QSE-040-01-F-D-A) and EXIO Connector D (CN34: QSE-040-01-F-D-A)	Interface voltage: 3.3V This interface is connected to the following devices. Video decoder ADV7180,Audio codes AK4642 ADV7511W control(with DDC feature), I2C EEPROM	←	
	I ² C3	Not supported.	Not supported.	←	
	I ² C4	Interface voltage: 3.3V This interface is connected to the following devices. Pin header (CN28 : DSP03-004-432G) and EXIO Connector E (CN30 : QSE-020-01-F-D-A)	Interface voltage: 3.3V This interface is connected to the following devices. CAP Touch interface circuitry CN31	←	
	I ² C5	Interface voltage: 1.8V Pin header (CN29 : DSP03-004-432G)	Interface voltage: 1.8V Expansion connector CN23	←	
I ² C6	Interface voltage: 1.8V This interface is connected to the following devices. PMIC DA9063(PM_I2C) DA9063 Slave address: 0xB0(write)/0xB1(read) PMIC DA9210	Interface voltage: 1.8V ←	Interface voltage: 1.8V This interface is connected to the following devices. PMIC DA9063(HS_I2C) DA9063L I2C slave address needs to be modified from KOELSCH/PORTER_B. DA9063L Slave address: 0xB4(write)/0xB5(read)		

Board Function	Module	KOELSCH (R-CarM2)	PORTER_B (R-CarM2)	PORTER_C: Y-RCAR-M2-PORTER-A (R-CarM2)
		DA9210 Slave address: 0xD0(write)/0xD1(read) EXIO Connector C (CN33 : QSE-020-01-F-D-A)	I2C_6 on EXIO connector have been removed.	PMIC DA9210 DA9210 Slave address: 0xD0(write)/0xD1(read)
	I ² C7		Not supported	←
CAN	CAN0	Not supported.	CN11 (1pin: CAN_H, 2pin: CAN_L, 3pin GND)	← A connector is reversed. http://elinux.org/File:Porter_CAN_connector.png
EXIO Connector	various modules	EXIO Connector A CN31 samtec 80pin.QSE-040-01-F-D-A EXIO Connector B CN32 samtec 80pin.QSE-040-01-F-D-A EXIO Connector C CN33 samtec 40pin.QSE-020-01-F-D-A EXIO Connector D CN34 samtec 80pin.QSE-040-01-F-D-A EXIO Connector E CN30 samtec 40pin.QSE-020-01-F-D-A	EX_IO Connector A CN23 samtec 120pin.QSE-060-01-F-D-A EX_IO Connector B (CN3: EtherAVB) samtec QSH-030-01-L-D-A-K	EX_IO Connector A CN23 (Most of ExBUS pins on EX_IO ConnectorA have been removed.) EX_IO Connector B (CN3: EtherAVB) samtec QSH-030-01-L-D-A-K (Some jumpers and unnesseary wiring have been removed.)
Power IC	—	Renesas Electronics R2A11302FT(5V, 4.2V) Dialog Semiconductor DA9210, DA9063 (SOC,3.3V,1.8V) Linear Technology LTC3634EFE#PBF x 2 (DDR, VTT)	IR3838MPbF(5V) Dialog Semiconductor DA9210, DA9063 (SOC,3.3V,1.8V) RT7239GSP(DDR_1.35V), RT9026GSP(VTT)	IR3838MPbF(5V) Dialog Semiconductor DA9210, DA9063L (SOC,3.3V,1.8V,1.35V, Vtt) (RT7239GSP and RT9026GSP have been removed.)
Boot device	—	two SPI or one LBSC(NOR)* *optional	one SPI(64MB) or one NOR (64MB on board)	two SPI(64MB or 4MB) or external SPI* *optional
Power Supply	—	DC12.0V input	←	←
PWB Layer	—	8 Layer 2-4-2 Build-UP, Pad on VIA	8 Layer 2-4-2 Build-UP, Pad on VIA	8 Layer TH (penetrated)
Board size	—	210mm x 160mm	170mm x 125mm	←
Notes	—		IE-BUS, CAN function do not work.(need to modify)	ExBUS(LBSC) function have been removed. Added three GPI soft-switch for Android. Fixed some wrong circuit. (IE-BUS, CAN etc)