iWave
Embedding Intelligence

iWave's RZ/G1C SBC is based on Renesas power efficient Dual/Solo core ARM Cortex A7 CPU cores operating @1GHz speed. This board can be used for quick prototyping of various applications targeted by the RZ/G1C processor. With the 85mm x 56mm size, the kit is highly packed with all the necessary on-board connectors to validate the RZ/G1C CPU features.

APPLICATIONS: HMI & Access Control, Industrial Control, Healthcare devices, Point of sale, IoT, Home & Office automation and White goods & appliances.

iW-RainboW-G23S HIGHLIGHTS

Dual Core ARM Cortex-A7 @ 1GHz

Hardware HD encode & decode

Built in PowerVR SGX531 3D Graphics core

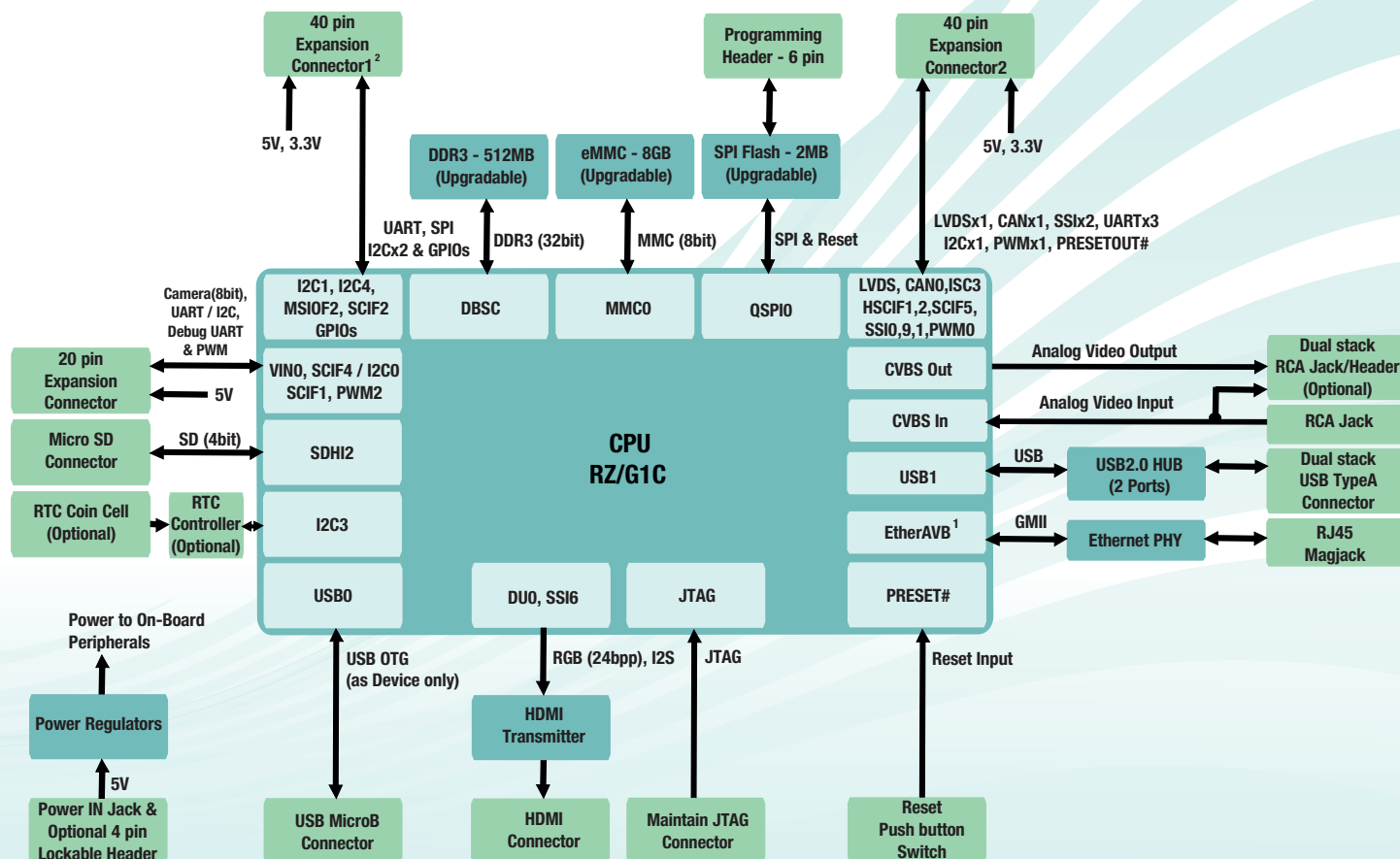High performance cost effective solution

Ultra-compact form size 85mm x 56mm

SPECIFICATIONS

CPU:	
Renesas RZ/G1C Dual/Solo ARM Cortex™-A7 MPCore™ cores @ 1GHz	
Memory:	
DDR3 SDRAM – 512 MB (Expandable Up to 2GB)	
SPI Flash - 2MB (Expandable)	
eMMC Flash - 8GB (Expandable)	
Micro SD Connector	
Communication Features:	
100/1000Mbps Ethernet through RJ45 MagJack [1]	
USB2.0 Host x 2 Ports through Dual Stack TypeA Connector	
USB2.0 OTG as Device x 1 Port through MicroB Connector	
Video Features:	
HDMI x 1 Port through HDMI connector	
CVBS Video Input through RCA Jack [2]	
CVBS Video Output through RCA Jack/Header (Optional) [2]	
Other Features:	
JTAG Header	
SPI Flash Programming Header	
Reset Switch	
RTC Controller with Coin cell Battery (Optional)	

Expansion Connector1 (40 Pin) Interfaces: [3]
Data UART (without CTS & RTS) x 1
SPI x1
I2C x 2
GPIOs (17nos)
Expansion Connector2 (40 Pin) Interfaces:
LVDS x 1
CAN x 1
I2S Audio Interface (SSI) x 2
DATA UART (with CTS & RTS) x 2
DATA UART (without CTS & RTS) x 1
I2C x 1
PWM x 1
Expansion Connector3 (20 Pin) Interfaces:
Debug UART
Data UART (without CTS & RTS)/I2C x 1
Parallel Camera (VIN0 – 8bit) x 1 Port [1]
PWM x 1
OS Support: Linux 3.10.31
Power Input Jack: 5V,2.5A
Power Input Lockable Header (Optional)
Form Factor:
85mm x 56mm

Note 1: In RZ/G1C CPU, EtherAVB collision detection signal and VIN0 clock signal is multiplexed in same pin and so EtherAVB collision detection is not supported by default.
Note 2: RZ/G1C CPU supports one CVBS Video IN and one CVBS Video Out port. By default CVBS Video IN port is supported on RZ/G1C SBC. To support CVBS Video Out port, contact iWave.
Note 3: Expansion connector1 pinout is compatible with Raspberry Pi connector pinout.

RENESAS PARTNER Gold

Block Diagram

- 40 pin Expansion Connector1 [2] — 5V, 3.3V
- DDR3 - 512MB (Upgradable)
- eMMC - 8GB (Upgradable)
- SPI Flash - 2MB (Upgradable)
- Programming Header - 6 pin
- 40 pin Expansion Connector2 — 5V, 3.3V

Connections to CPU RZ/G1C:

- UART, SPI I2Cx2 & GPIOs
- DDR3 (32bit)
- MMC (8bit)
- SPI & Reset
- LVDSx1, CANx1, SSIx2, UARTx3 I2Cx1, PWMx1, PRESETOUT#

CPU block interfaces:

- Camera(8bit), UART / I2C, Debug UART & PWM → I2C1, I2C4, MSIOF2, SCIF2 GPIOs
- 20 pin Expansion Connector — 5V → VIN0, SCIF4 / I2C0 SCIF1, PWM2
- Micro SD Connector — SD (4bit) → SDHI2
- RTC Coin Cell (Optional) ← RTC Controller (Optional) → I2C3
- USB0
- DU0, SSI6
- JTAG
- DBSC
- MMC0
- QSPI0
- LVDS, CAN0,ISC3 HSCIF1,2,SCIF5, SSI0,9,1,PWM0
- CVBS Out → Analog Video Output → Dual stack RCA Jack/Header (Optional)
- CVBS In ← Analog Video Input → RCA Jack
- USB1 — USB → USB2.0 HUB (2 Ports) → Dual stack USB TypeA Connector
- EtherAVB [1] — GMII → Ethernet PHY → RJ45 Magjack
- PRESET#

Other connections:

- Power to On-Board Peripherals
- Power Regulators — 5V ← Power IN Jack & Optional 4 pin Lockable Header
- USB OTG (as Device only) → USB MicroB Connector
- RGB (24bpp), I2S → HDMI Transmitter → HDMI Connector
- JTAG → Maintain JTAG Connector
- Reset Input → Reset Push button Switch

Note1: Since EtherAVB collision detection signal is multiplexed with VIN0 clock signal in CPU, EtherAVB collision detection feature is not supported by default.

Note2: 40 Pin Expansion Connector1 pinout is compatible with RaspberryPi Connector.

OS SUPPORT

Linux 3.10.31

DELIVERABLES

RZ/G1C SBC
Board Support Package
User Manual

OPTIONAL KITS/Modules

Camera Module
Power Adapter

CUSTOM DEVELOPMENT

BSP Development/OS Porting
Custom SOM/Carrier Development
Custom Application/GUI Development
Design Review and Support

iWave Systems Technologies, established in 1999, focuses on Product Engineering Services involving Embedded Hardware, Software & FPGA. The company designs and develops cutting edge products and solutions. iWave has been an innovator in the development of highly integrated, high performance, low power and low cost System On Modules and Development Platforms. iWave's expertise has brought out multiple SOMs based on ARM NXP, Renesas, Qualcomm, Altera, Intel, Marvell and TI Processors.

iWave System has won the confidence of its customers over the years by being a reliable partner in developing innovative products. Our engineers combine outstanding System design experience to deliver Quality Solutions. iWave specializes across Industrial, Automotive and Medical domains. We support our customers by being time efficient, which in turn helps our customers accelerate time to market their products. iWave is a Windows embedded Silver partner and a winner of the Partner Excellence Award.

Optional items not included in the standard deliverables.

Note: iWave reserves the right to change these specifications without notice as part of iWave's continuous effort to meet the best in breed specification. The registered trademarks are proprietary of their respective owners.

Ordering the RZ/G1C SBC

The device can be ordered online from the iWave Website
http://www.iwavesystems.com/webforms
Or from our Local Partners in your region
http://www.iwavesystems.com/about-us/business-partner.html

iW-G23S-BR-R1.1