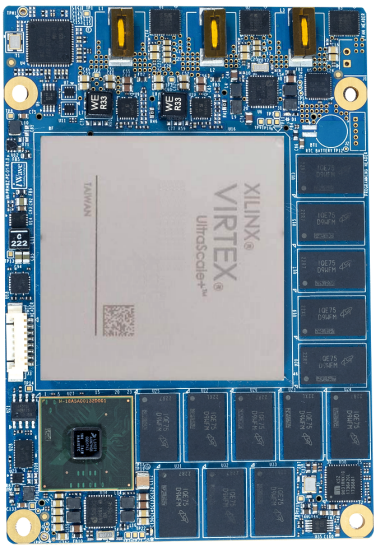
iWave
Embedding Intelligence

System On Module iW-RainboW-G47M
Virtex Ultrascale+ FPGA SOM



Virtex Ultrascale+ FPGA System On Module supports Virtex Ultrascale+ FPGA and ARM Cortex A7 processor. The SOM features FPGA with programmable logic cells up to 3780K and Power-efficient 32-bit Dual Arm Cortex-A7 processor running up to 1.2 GHz.

The SOM is compatible with VU13P, VU11P, VU9P, VU7P & VU5P Virtex Ultrascale+ FPGAs and VU160, VU190, VU125, VU080 & VU095 Virtex Ultrascale FPGAs in B2104 package. The module is capable of high speed connectivity peripherals such as 100G Ethernet, PCIe, USB3.0, SATA 3.1, Gigabit Ethernet and dual 64-bit DDR4 with ECC and 32-bit DDR4 with ECC.

APPLICATIONS:

Data Centre Network Acceleration, Industrial IoT, Cloud Computing

iW-RainboW-G47M HIGHLIGHTS

Xilinx Virtex Ultrascale+ FPGA with B2104 package

Dual 4GB FPGA-DDR4 with ECC (64bit + 8bit)

48 channels of GTY transceivers up to 32Gbps

Two 240pin High-Speed Connectors with 172 user IOs

Dual ARM Cortex-A7 core processor of 1.2GHz speed

2GB DDR4 for CPU with ECC (32bit+4bit)

QorIQ Trust Architecture and Arm TrustZone

4 lanes of 6Gbps SERDES from CPU

Industrial Grade Availability

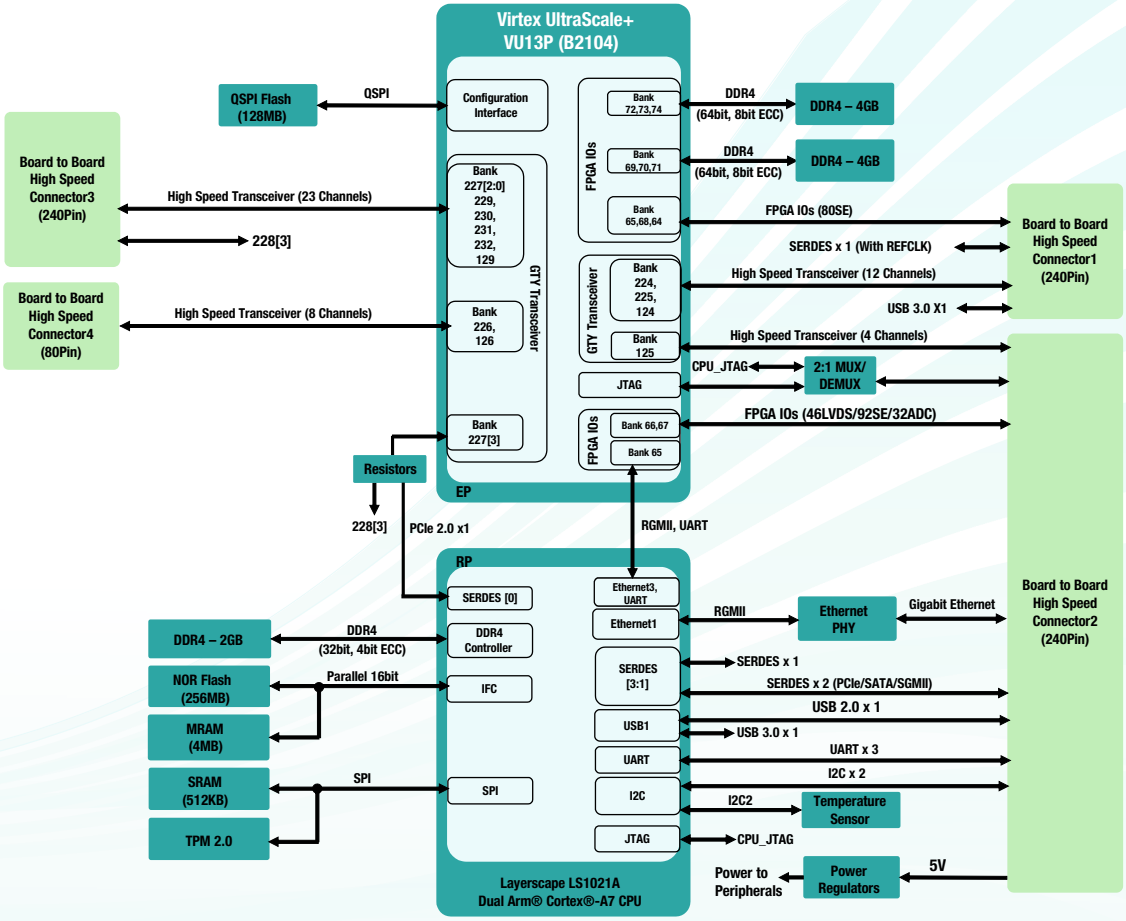
SPECIFICATIONS

Virtex UltraScale+ FPGA
Virtex Ultrascale+ with B2104 package
Upto 3,780K Logic Cells
Upto 12,288 DSP Slices
CPU
Dual ARM Cortex-A7 core processor
Operation frequency of 1.2GHz
QorIQ Trust Architecture and Arm TrustZone
High-speed serial interfaces (SERDES) x4 @6Gbps
Memory Interfaces
From FPGA
Dual 64-bit DDR4 with ECC
128MB QSPI flash
From CPU
32bit DDR4 with ECC
256MB parallel NOR Flash
4MB MRAM
512KB SRAM via SPI
On SOM Features
10/100/1000 Ethernet PHY
Temperature Sensor
TPM2.0 Module via SPI

Quad Board to Board Connector interfaces
From FPGA
GTY Transceiver x48 up to 32Gbps
46 LVDS Pairs
80 SE FPGA IOs
From CPU
SERDES x3 @6Gbps (PCIe, SATA, SGMII)
Gigabit Ethernet x 1
USB 2.0 OTG x 1
USB 3.0 x1
I2C x 2
Debug UART
UART x 2
JTAG
Operating Systems
Linux
Power Supply
5V through Board to Board connector
Temperature Support
-40°C to +85°C (Industrial grade operation)
Form Factor
75mm x 110mm
Environmental Specifications
REACH & RoHS3

iWave
Embedding Intelligence

Virtex Ultrascale+ FPGA SOM Block Diagram



Compatible FPGAs:
VU13P, VU11P, VU9P, VU7P & VU5P Virtex Ultrascale+ FPGAs and VU190, VU160, VU125, VU080 & VU095 Virtex Ultrascale FPGAs. Also compatible with KU19P, KU115 & KU095.

Note:
Bank Numbers mentioned in the block diagram is as per VU13P. Bank Number & Performance may vary for other compatible FPGAs.
Transceiver speed is limited to 16Gbps for Transceivers in Board to Board connector1 & 2 because of connector speed limit.

OS SUPPORT
Linux

DELIVERABLES
Virtex UltraScale + FPGA Module
Board Support Package
Example FPGA Design
User Manuals

OPTIONAL KITS/Modules
Virtex UltraScale+ Development Kit
Heat Spreader

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

iWave Systems Technologies is an ISO 9001:2015 certified company, head quartered in Bangalore India established in the year 1999. The company focuses on providing embedded solution and services for Industrial, Medical, Automotive and various other Embedded Computing applications. iWave Systems offers wide range of System On Modules and Single Board Computers built using wide range of CPU and FPGA SoC platforms with different form factors such as Qseven, SMARC, SODIMM and HPC by closely working with Tier-1 silicon companies such as NXP, Xilinx, Intel etc.

iWave Systems offers various state of art ready ODM solutions such as Connected Telematic Control Unit / OBD II devices for the automotive edge analytics, Comprehensive ARINC818 solutions for the low latency Aerospace applications and Rugged IP rated performance scalable HMI solutions for Industrial applications.

iWave Systems also provides comprehensive Engineering design services involving Embedded Hardware, FPGA and Software development. iWave offers carrier board and custom hardware development with manufacturing and certification services.iWave's Hardware expertise spans complex board design up to 30 layers; Analog, Digital & RF Designs; FPGA Development up to 3+ million gates and VHDL / Verilog RTL Development & Verification. Our Software expertise ranges from OS Porting, Firmware & Device Drivers Development and Wireless & Protocol

**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.

Virtex Ultrascale+ FPGA SOM

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

iW-G47M-BR-R1.0

INDIA
iWave Systems Technologies Pvt Ltd.
#7/B, 29th Main, BTM Layout
2nd Stage,
Bangalore - 560 076
mktg@iwavesystems.com

JAPAN
iWave Japan Inc.
8F Kannai Sumiyoshi Building,
3-29 Sumiyoshi-cho,Naka -ku,
Yokohama Kanagawa, Japan
mktg@iwavesystems.com

EUROPE
International Sales & Marketing Europe
Venkelbaan 55 2908KE Capelle
aan den Ijssel,
The Netherlands
info@iwavesystems.eu

USA
iWave USA
1692 Westmont Ave. Campbell
Ca95008
USA
info@iwavesystems.us

www.iwavesystems.com