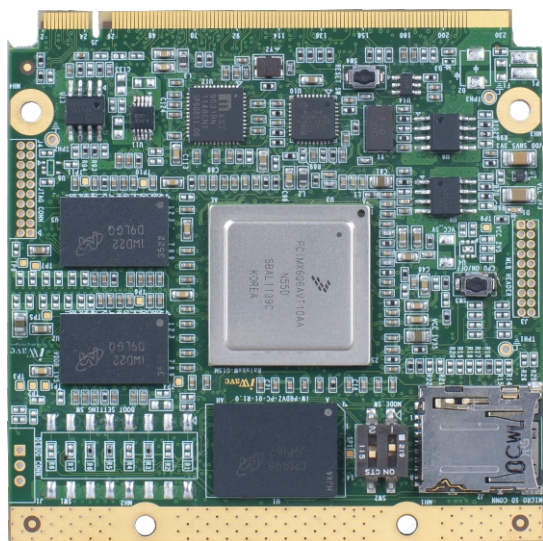# iWave
Embedding Intelligence

System On Module RainboW-G15M-Q7
Qseven Compatible i.MX6 Module

iWave Systems launching high performance Qseven SOM module based on Freescale's i.MX6 ARM Cortex-A9 processor for faster and multimedia focused applications. With extreme peripheral integration, the CPU supports industry latest high-performance interfaces, such as PCIe Gen2, Gigabit Ethernet, SATA 3.0, HDMI 1.4, SDXC, MIPI CSI/DSI and 64-Bit DDR3 interfaces.

The module is compatible to Qseven R1.20 ARM specification and features 1GHz ARM Cortex A9 Dual or Quad core CPU, on-board 1GB DDR3 RAM, eMMC Flash, Micro SD slot and JTAG headers.

APPLICATIONS : Industrial HMI, Automotive IVI, Video & Navigation, Graphical Instrument Clusters, Portable Medical Devices, Intelligent Industrial Control Systems and Home Energy Management Systems

iW-RainboW-G15M-Q7 HIGHLIGHTS

ARM Cortex A9@ 1GHz Dual/Quad core

64-bit DDR3-1066 support

OpenGL® ES 2.0 3D, OpenVG™ 1.1 graphics accelerators

Multi format HD1080p HW decode and encode

Four simultaneous display support

Integrated high bandwidth connectivity peripherals

Industry latest HDMI1.4, SDXC, MIPI CSI/DSI interfaces

Technical & quick customization support

5+ years, Long term support

SPECIFICATIONS

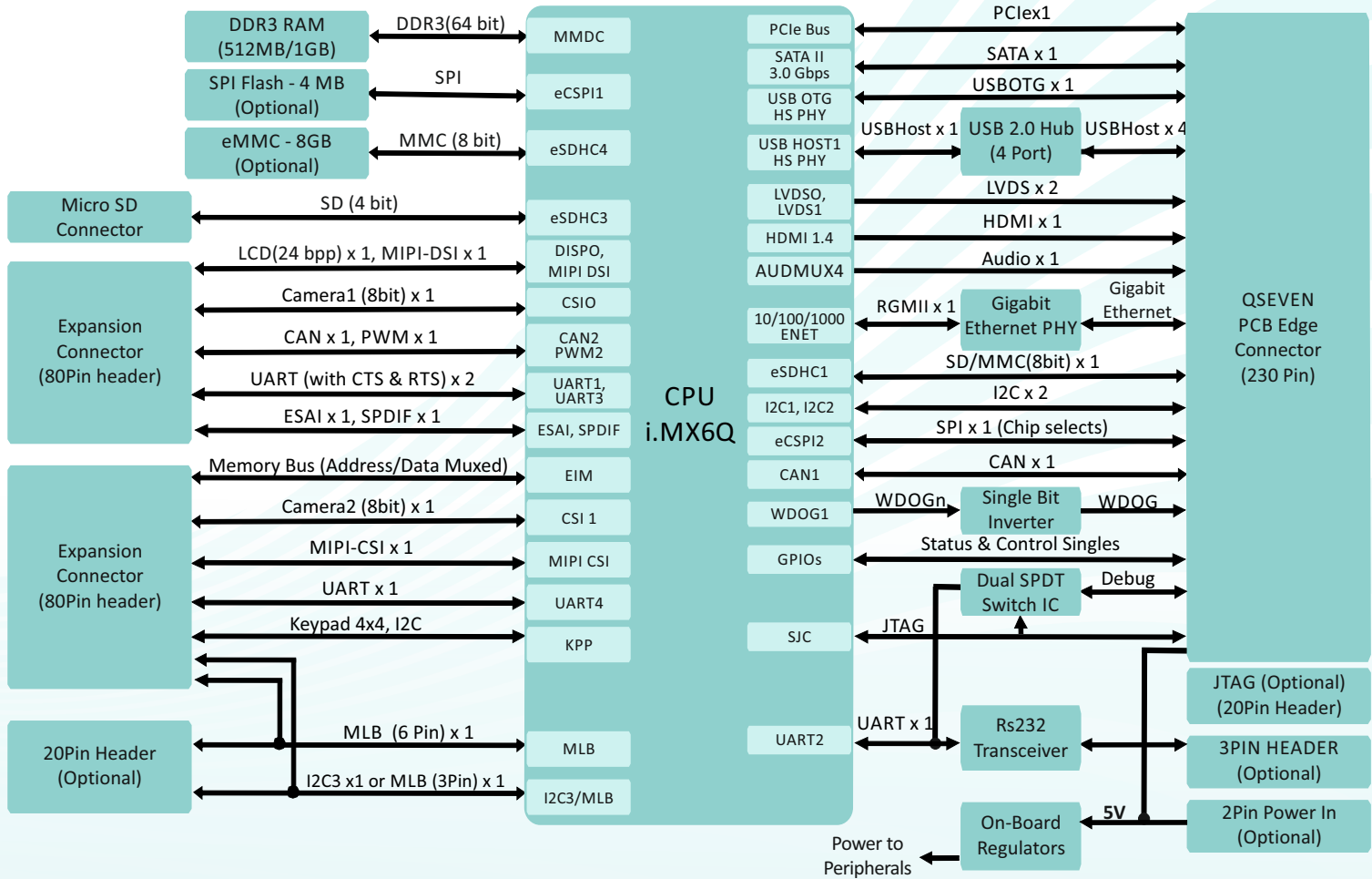| CPU	Expansion Connector**
i.MX6 1GHz/800MHz Cortex A9 Q/D/U/S	Camera CSIx2 (8-bit)
Memory	MIPI CSI, DSI
512MB/1GB DDR3 SDRAM [Expandable]$^{+}$	24-Bit RGB LCD IF
4GB eMMC Flash	Dual UART
Optional SPI Flash*	4x4 Key, Memory Bus
On-board Micro SD Slot**	ESAI, SPDIF
Qseven Edge Connector	MLB, CAN2
PCIe v2.0 x 1 lane	I2C2, PWM, GPIO
HDMI 1.4	**Temperature**
SATA 3.0 x 1	-40°C to 85°C
Gigabit Ethernet	**Board Form Factor**
Dual LVDS	Qseven R1.20 Compatible
USB2.0 Host x4	**Power Input**
USB2.0 Device	5V, 1A Typical
AC97 Audio	**Operating Systems**
8-bit SD/MMC	Linux 3.0.35
CAN1	Android 4.0.4
SPI, I2C	WEC7*
UART	**Debug Support**
PWM	Onboard JTAG Header**

$^{+}$ 512MB DDR3 supported for i.MX6 Solo SOMs and for other CPU configurations 1GB DDR3 is supported
*Optional features not supported by default
** Not populated in mass production SOM
Note: device drivers provided are for specific interface chipsets which are used in iWave's carrier board

iWave
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i.MX6 Qseven MODULE BLOCK DIAGRAM

Block diagram connections:

- DDR3 RAM (512MB/1GB) — DDR3(64 bit) — MMDC
- SPI Flash - 4 MB (Optional) — SPI — eCSPI1
- eMMC - 8GB (Optional) — MMC (8 bit) — eSDHC4
- Micro SD Connector — SD (4 bit) — eSDHC3
- Expansion Connector (80Pin header):
  - LCD(24 bpp) x 1, MIPI-DSI x 1 — DISPO, MIPI DSI
  - Camera1 (8bit) x 1 — CSIO
  - CAN x 1, PWM x 1 — CAN2 PWM2
  - UART (with CTS & RTS) x 2 — UART1, UART3
  - ESAI x 1, SPDIF x 1 — ESAI, SPDIF
- Expansion Connector (80Pin header):
  - Memory Bus (Address/Data Muxed) — EIM
  - Camera2 (8bit) x 1 — CSI 1
  - MIPI-CSI x 1 — MIPI CSI
  - UART x 1 — UART4
  - Keypad 4x4, I2C — KPP
- 20Pin Header (Optional):
  - MLB (6 Pin) x 1 — MLB
  - I2C3 x1 or MLB (3Pin) x 1 — I2C3/MLB

CPU i.MX6Q

- PCIe Bus — PCIex1 — QSEVEN PCB Edge Connector (230 Pin)
- SATA II 3.0 Gbps — SATA x 1
- USB OTG HS PHY — USBOTG x 1
- USB HOST1 HS PHY — USBHost x 1 — USB 2.0 Hub (4 Port) — USBHost x 4
- LVDS0, LVDS1 — LVDS x 2
- HDMI 1.4 — HDMI x 1
- AUDMUX4 — Audio x 1
- 10/100/1000 ENET — RGMII x 1 — Gigabit Ethernet PHY — Gigabit Ethernet
- eSDHC1 — SD/MMC(8bit) x 1
- I2C1, I2C2 — I2C x 2
- eCSPI2 — SPI x 1 (Chip selects)
- CAN1 — CAN x 1
- WDOG1 — WDOGn — Single Bit Inverter — WDOG
- GPIOs — Status & Control Singles
- SJC — JTAG — Dual SPDT Switch IC — Debug
- UART2 — UART x 1 — Rs232 Transceiver
- JTAG (Optional) (20Pin Header)
- 3PIN HEADER (Optional)
- 2Pin Power In (Optional) — 5V
- On-Board Regulators — Power to Peripherals

OS SUPPORT

Linux 3.0.35
Android 4.0.4
WEC7*

Optional

DELIVERABLES

i.MX6 Qseven SOM Module
Board Support Packages
User Manual

OPTIONAL KITS

RainboW-G15D-Q7
(i.MX6 Development Kit)

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, Freescale, Intel Atom, Marvell and TI Processors.

iWave Systems 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.

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

Optional items not included in the standard deliverables

Ordering the i.MX6 Qseven Module
The SOM Module can be ordered online from the iWave Website
http://www.iwavesystems.com/webforms

IW-G15M-Q7-BR-R1.0