

Driving the convergence of applications processors and MCUs

## i.MX RT Series of Crossover Processors

Combining high performance with real time functionality, the i.MX RT series of crossover processors are designed to support the next generation IoT applications with a high level of integration and security balanced with MCU-level usability at an affordable price.

### THE NEW CROSSOVER PROCESSOR MARKET

As a leading supplier of both applications processors and microcontrollers (MCUs), NXP is in a unique position to introduce a new class of embedded processors driven by the growing consumer demand for enhanced user experience in their smart, secure, high performance products.

- ▶ Greater performance
- ▶ Real-time operation
- ▶ Richer Integration
- ▶ Ease-of-use

### TARGET APPLICATIONS

- ▶ **Audio Subsystem**—professional microphone, guitar pedals
- ▶ **Consumer Products**—Smart appliances, cameras, LCDs
- ▶ **Home and Building Automation**—HVAC climate control, security, lighting control panels, IoT gateways
- ▶ **Industrial Computing Designs**—EBS, PLCs, factory automation, test and measurement, M2M, HMI control assembly line robotics
- ▶ **Motor Control and Power Conversion**—3D printers, thermal printers, unmanned autonomous vehicles, robotic vacuum cleaners

### CROSSOVER PROCESSORS



## APPLICATIONS PROCESSOR PERFORMANCE + MCU USABILITY

- ▶ **Move Fast, React Fast** with real time, low latency response
- ▶ **Create Advanced Multimedia** with advanced on-chip integration
- ▶ **Connect and Protect** with a high level of security
- ▶ **Save Time and Money** by leveraging existing MCU toolchains

### PERFORMANCE HIGHLIGHTS

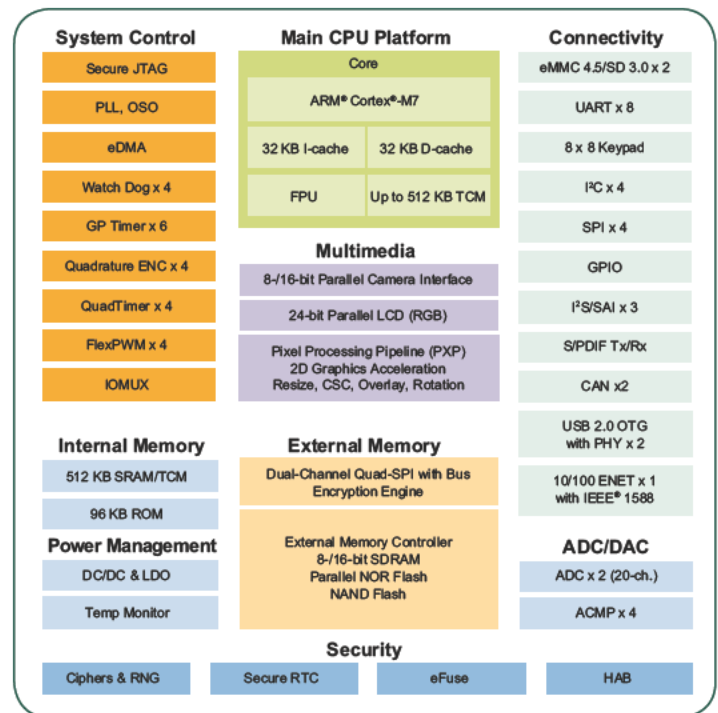
- ▶ Highest performing ARM® Cortex®-M7
  - 3015 CoreMark/1284 DMIPS @ 600 MHz
- ▶ Real-time, low-latency response
  - Up to 512KB Tightly Coupled Memory (TCM)
  - Fastest real-time response with latency as low as 20ns
- ▶ Low power Operation
  - Industry's lowest dynamic power with integrated DC-DC converter
  - Low power run modes at 24MHz

### USABILITY HIGHLIGHTS

#### Highly Integrated

- ▶ Advanced multimedia for GUI and enhanced HMI
  - 2D graphics acceleration engine
  - Parallel camera sensor interface
  - LCD display controller (up to WVGA 800x480)
  - 3x I<sup>2</sup>S for high-performance, multichannel audio
- ▶ Extensive external memory interface options
  - NAND, eMMC, QuadSPI NOR Flash, and Parallel NOR Flash
- ▶ Wireless connectivity interface for
  - Wi-Fi®, Bluetooth®, BLE, ZigBee® and Thread™

## i.MX RT1050 BLOCK DIAGRAM



#### Easy to Use

- ▶ MCU customers can leverage current toolchain
  - MCUXpresso, IAR, Keil
- ▶ Rapid and easy prototyping and development
  - FreeRTOS, SDK, ARM® mbed™, and the global ARM ecosystem
- ▶ Faster development using low-cost evaluation kit (EVK)
- ▶ Single voltage input simplifies power circuit design

#### Low BOM Cost

- ▶ DC-DC converter—eliminates need for external PMIC
- ▶ Four-layer PCB design—10x10 BGA package with .65mm pitch

[www.nxp.com/iMXRT](http://www.nxp.com/iMXRT)

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