

# ARMADA® 38x Family

## High-Performance Dual Core CPU System on Chip

### Technical Product Brief



## PRODUCT OVERVIEW

The Marvell® ARMADA® 38x Family is a complete system-on-chip (SoC) solution based on the ARM V7 high-performance dual core CPU technology, ideally suited for innovative home and enterprise products. The ARMADA® 38x Family brings a new level of performance, integration, and efficiency, raising the performance-to-power and performance-to-cost bar. Designed for high-volume products, such as Network Attached Storage (NAS), Wi-Fi Access Point (WAP), Surveillance Video Recorders (DVR / NVR / Hybrid) and high-performance networking products such as control planes and line cards.

The ARMADA® 38x Family offers two Encryption acceleration options:

- The 88F6810, 88F6820, and 88F6828 devices provide full encryption and security capabilities
- The 88F6825 device without encryption support

### KEY FEATURES

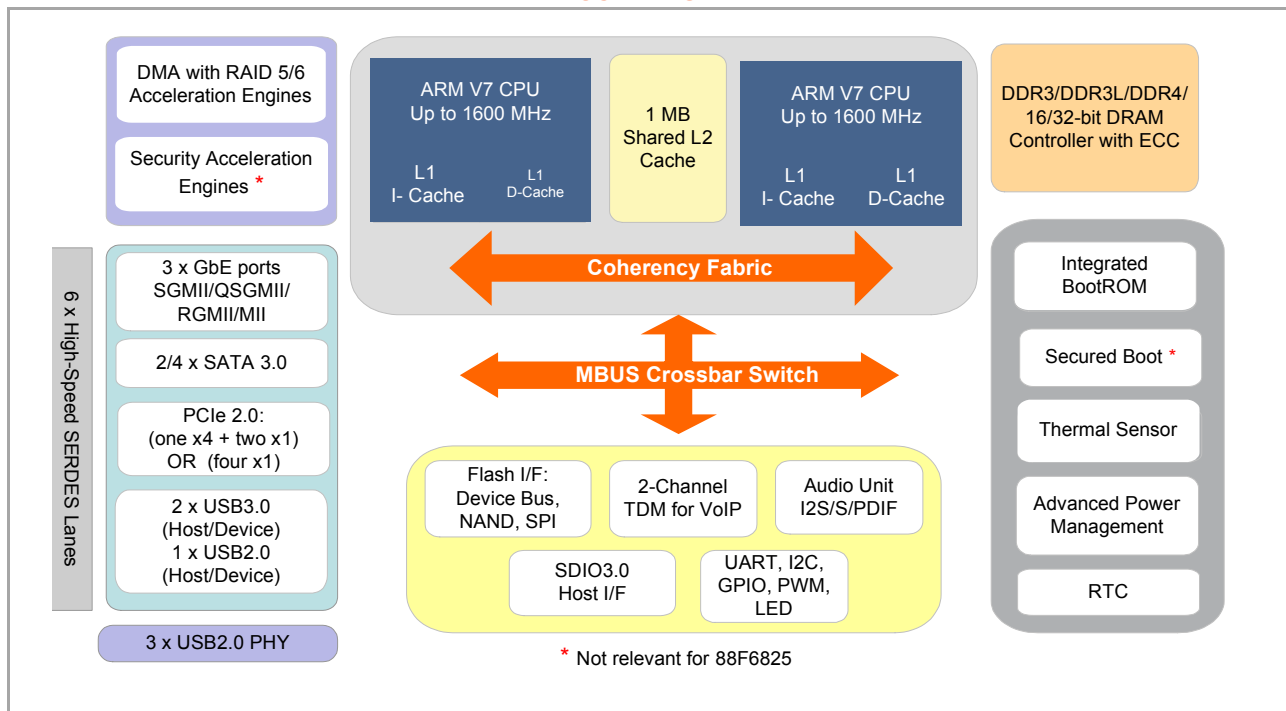
- Dual core ARM V7 CPU with NEON SIMD and Floating Point Unit (FPU)
- Operating speed of up to 1.6 GHz per core
- Symmetrical/Asymmetric Multiprocessing (SMP/AMP) operational modes
- 32KB-Instruction / Data (4-way), set-associative L1 cache per core

- Up to 1 MB shared and unified 16-way, set associative L2 cache
- High-bandwidth, low-latency Coherency Fabric
- High-speed, low-latency, tightly coupled DDR3/3L/ DDR4 DRAM memory controller with advanced transaction re-ordering and prefetch engine
- 6 shared high-speed SERDES interfaces
- Advanced I/O peripherals including PCI Express (PCIe) Gen 2.0, USB 3.0, SATA 3.0, and Gigabit Ethernet ports
- Audio, TDM, SDIO 3.0, and flash interfaces
- Acceleration engines for storage, networking, and security (for 88F6810/88F6820/88F6828 devices only)
- Advanced power management
- RTC and Thermal sensor
- FCBGA 17 x 17 mm, 0.8 mm ball pitch, green-compliant package
- 28 nm low power process

### COMPREHENSIVE DEVELOPMENT TOOLS

The ARMADA® 38x Family is the 5th generation of Marvell ARM-based SoC products, offering 3 software and pin-compatible device variants. Marvell offers complete development platforms for ARMADA® 38x Family series SoCs, enabling customers to start system development without waiting for their own hardware. Complete reference design platforms include software drivers and board support packages to help accelerate customer product development cycles.

### BLOCK DIAGRAM



## DETAILED FEATURES

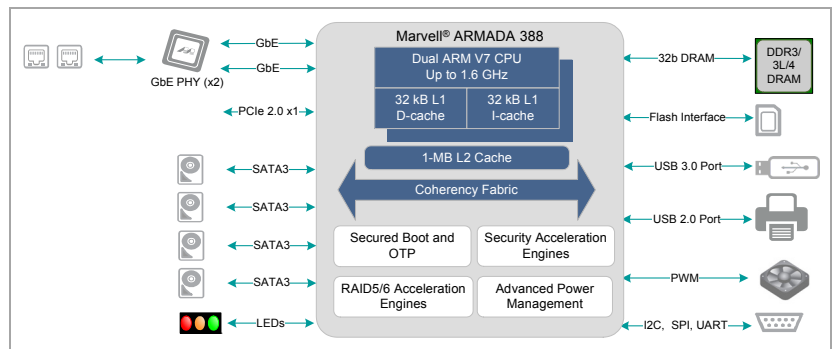
### ARMADA® 38x Family Series

FEATURES	88F6825	88F6828	88F6820	88F6810
<b>CPU</b>	Dual Core	Dual Core	Dual Core	Single Core
<b>L2 Cache</b>	1 MB			
<b>DDR3/DDR3L/DDR4</b>	16/32-bits + ECC			
<b>PCIe 2.0</b>	1 Port x4 + 2 Ports x1 or 4 Ports x1	1 Port x4 + 2 Ports x1 or 4 Ports x1	1 Port x4 + 2 Ports x1 or 4 Ports x1	3 ports x1
<b>Gigabit Ethernet Ports</b>	3 GbE Ports	3 GbE Ports	3 GbE Ports	2 GbE Ports
<b>SERDES Lanes</b>	6 Lanes PCIe/SGMII/QSGMII/SATA/ sETM	6 Lanes PCIe/SGMII/QSGMII/SATA/ sETM	6 Lanes PCIe/SGMII/QSGMII/SATA/ sETM	5 Lanes PCIe/SGMII/QSGMII/SATA/ sETM
<b>Encryption</b>	No	Yes	Yes	Yes
<b>Local Bus</b>	16-bit			
<b>USB</b>	2 x USB3 (Host/Device) 1 x USB2 (Host/Device)			
<b>SATA</b>	4 x SATA3	4 x SATA3	2 x SATA3	2 x SATA3
<b>Power (approximately)</b>	4W	4W	4W	3W
<b>Package</b>	FCBGA 17x17, 0.8mm pitch			

### APPLICATION EXAMPLES

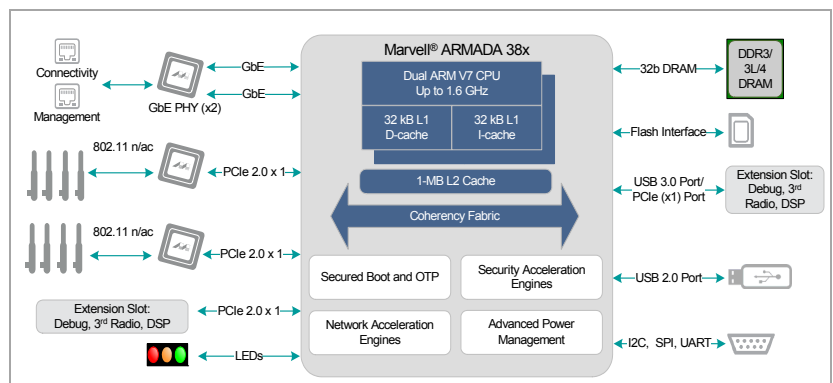
#### 4-Bay Network Attached Storage (NAS)

Paired with Marvell's industry-leading storage controllers and networking solutions, the ARMADA® 38x Family delivers the right combination of performance and storage capacity, along with an energy-efficient design to support small form factors and quiet, low-cost operation



#### Wireless Access Point (WAP)

Paired with Marvell's industry-leading wireless and wired networking solutions, the ARMADA® 38x Family is perfectly suited for dual-band 802.11 SMB/Enterprise class Access Point applications delivering the right balance between performance, power and price.



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