

VIA QuadCore Processor



FREEDOM x4



FUN x4



FRIENDLY x4



FAST x4

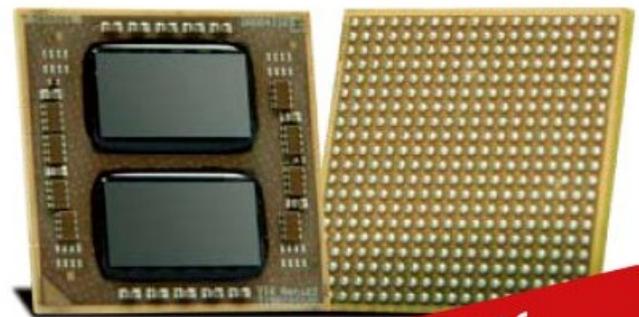


VIA QuadCore processors combine four 64-bit 'Isaiah' cores on two dies, offering enhanced multi-tasking and superb multimedia performance on a low power budget.

Featuring super scalar, out-of-order architecture, VIA QuadCore is manufactured using advanced 40 nano-meter CMOS technology. The distributed performance of the VIA QuadCore provides a highly compatible, high-performance, and low-power consumption solution for any computing market.

Product Highlights

- High-performance superscalar processing
- Out-of-order x86 architecture
- Efficient floating point unit (2 clock SP multiplies)
- Native support for 64-bit operating systems
- Hardware virtualization support
- **Advanced Cryptography Engine (ACE) delivers world's fastest AES hardware-based data encryption** offering data encryption on the fly, an essential tool in content protection and system security
- Pin-to-pin compatibility with VIA **Eden**, VIA **C7** and VIA **Nano E**, and VIA **Eden X2/Nano X2** processors



- **Lowest Power x86 Quad Core Architecture**
- **Fanless 18W**

Processor	Part No.	CPU Speed	Turbo Speed ²	FSB	TDP Power	L2 Cache	Tj Max	PWM Design Requirement
VIA QuadCore	L4700E	1.2+GHz	1.46GHz	1066MHz	27.5W	4M	90C	Dual Phase (PMON)
	U4650E	1.0+GHz (ULV)	1.2GHz	800MHz	18W	4M	90C	Single Phase (PMON)

Crypto

- Secure Hash Algorithm: SHA-1, SHA-256, SHA-384, SHA-512
- Random Number Generator
- Montgomery's Algorithm

Thermal Monitor

- Thermal Monitor 1, Thermal Monitor 2, and Catastrophic Thermal Protection

Instruction Sets

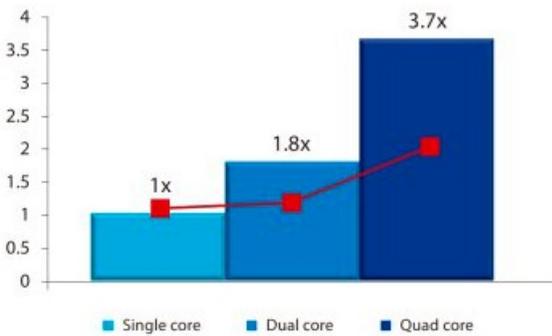
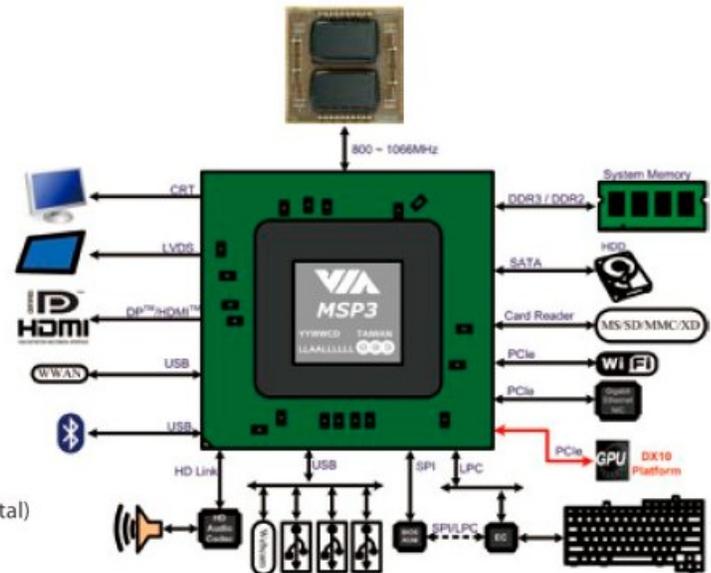
- MMX, SSE, SSE2, SSE3, SSSE3, and SSE4.1-compatible instructions

On-die Cache

- Two large (64-KB each, 16-way) Level 1 caches per core
- 1 MB Level 2 victim cache (32-way) with ECC per Core (4MB total)
- Advanced L2 Hardware Prefetch
- Two large TLBs (196 entries each, 12-way)
- Branch Target Address Cache with 4096k entries
- Unique and sophisticated branch prediction mechanisms

Package

- Flip-Chip Ball Grid Array (FCBGA)
- Pin compatible with previous generation
- Package Size: 21x21mm with a die size of 11mm x 6mm



Processor		VIA QuadCore 1.2+GHz	VIA Nano Dual core 1.2GHz	VIA Nano Single core 1.2GHz	DC/SC	QC/DC
Performance						
Nucleus Multi Core V.2.0.0	Total Score	5070	2895	1788	1.62	1.75
CINEBENCH R10	Rendering (X CPU)	3652	1973	x	N/A	1.85
PassMark V7.0 (Build 1015)	CPU	1493.8	883.1	424.9	2.08	1.69
CrystalMark 2004R3 [0.9.126.452]	ALU	18810	11103	4727	2.35	1.69
	FPU	12584	6967	3588	1.94	1.81
PCMark 05 V120	Overall	3557	2305	1488	1.55	1.54

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