

AMD Phenom X3 8650 specifications

General information

Type	CPU / Microprocessor
Market segment	Desktop
Family	AMD Phenom X3
Model number ?	8650
CPU part numbers	HD8650WCJ3BGH is an OEM/tray microprocessor <ul style="list-style-type: none">HD8650WCGHBOX is a boxed microprocessor with fan and heatsink
Stepping codes	JAAAB AA JAAFBB AA JAAHBA AA JAAPBA AA LAAPBA AA
Frequency ?	2300 MHz
Bus speed ?	One 1800 MHz 16-bit HyperTransport link (3.6 GT/s)
Clock multiplier ?	11.5
Package	940-pin organic micro-PGA
Sockets	Socket AM2 Socket AM2+
Weight	1.4oz / 39.2g (CPU) 15.8oz / 446.9g (Box)
Introduction date	Apr 23, 2008
Price at introduction	\$165

Architecture / Microarchitecture

Microarchitecture	K10
Platform	Cartwheel (mainstream platform with AMD 780G chipset) Spider (performance platform with AMD 790FX/790GX chipsets)
Processor core ?	Toliman
Core stepping ?	DR-B3
CPUID	100F23
Manufacturing process	0.065 micron silicon-on-insulator (SOI) technology
Die	285mm ²
Data width	64 bit
The number of CPU cores	3
The number of threads	3
Floating Point Unit	Integrated
Level 1 cache size ?	3 x 64 KB 2-way set associative instruction caches 3 x 64 KB 2-way set associative data caches
Level 2 cache size ?	3 x 512 KB 16-way set associative caches
Level 3 cache size	2 MB 32-way set associative shared cache
Multiprocessing	Uniprocessor
Extensions and Technologies	<ul style="list-style-type: none">MMX instructionsExtensions to MMX3DNow! technologyExtensions to 3DNow!SSE / Streaming SIMD ExtensionsSSE2 / Streaming SIMD Extensions 2SSE3 / Streaming SIMD Extensions 3SSE4a ?AMD64 / AMD 64-bit technology ?EVP / Enhanced Virus Protection ?AMD-V / AMD Virtualization technology
Low power features	<ul style="list-style-type: none">Cool'n'Quiet 2.0CoolCore technology ?Independent Dynamic Core Technology ?Dual Dynamic Power Management ?Core C1 and C1E statesPackage S1, S3, S4 and S5 states

Integrated peripherals / components

Integrated graphics	None
Memory controller	The number of controllers: 1 Memory channels: 2 Channel width (bits): 72 Supported memory: DDR2-1066 DIMMs per channel: up to 2 Maximum memory bandwidth (GB/s): 17.1
Other peripherals	HyperTransport 3.0 technology

Electrical / Thermal parameters

V core ?	1.2V - 1.25V
V NorthBridge	1.25V
Maximum operating temperature ?	55°C - 71°C
Thermal Design Power ?	95 Watt

Notes on AMD Phenom X3 8650

- On socket AM2+ platforms in the minimum performance state the processor runs at 1150 MHz / 1.05 Volt core voltage, and has TDP 54.6 Watt
- On socket AM2 platforms in the minimum performance state the processor runs at 1150 MHz / 1.2 - 1.25 Volt core voltage, and has TDP 72.2 Watt