



Intel® Core™ i7-4650U Processor

4M Cache, up to 3.30 GHz

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Essentials

Export specifications

Product Collection	4th Generation Intel® Core™ i7 Processors
Code Name	Products formerly Haswell
Vertical Segment	Mobile
Processor Number	i7-4650U
Status	Launched
Launch Date ?	Q3'13
Lithography ?	22 nm
Recommended Customer Price ?	
Use Conditions ?	Industrial Commercial Temp

Performance

# of Cores ?	2
# of Threads ?	4
Processor Base Frequency ?	1.70 GHz
Max Turbo Frequency ?	3.30 GHz
Cache ?	4 MB SmartCache
Bus Speed ?	5 GT/s DMI2
TDP ?	15 W

Supplemental Information














Embedded Options Available ?	Yes
Datasheet	View now

Memory Specifications





Max Memory Size (dependent on memory type) ?	16 GB
Memory Types ?	DDR3L 1333/1600, LPDDR3 1333/1600
Max # of Memory Channels ?	2
Max Memory Bandwidth ?	25.6 GB/s
ECC Memory Supported ‡ ?	No

Processor Graphics





Processor Graphics ‡ ?	Intel® HD Graphics 5000
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Graphics Base Frequency 	200 MHz
Graphics Max Dynamic Frequency 	1.10 GHz
Graphics Video Max Memory 	2 GB
Graphics Output 	eDP/DP/HDMI/VGA
Max Resolution (HDMI 1.4)† 	3200x2000@60Hz
Max Resolution (DP)† 	3200x2000@60Hz
Max Resolution (VGA)† 	N/A
DirectX* Support 	11.2/12
OpenGL* Support 	4.3
Intel® Quick Sync Video 	Yes
Intel® InTru™ 3D Technology 	Yes
Intel® Flexible Display Interface (Intel® FDI) 	Yes
Intel® Clear Video HD Technology 	Yes
# of Displays Supported ‡	3
Device ID	0xA26



Expansion Options

PCI Support 	No
PCI Express Revision 	2.0
PCI Express Configurations ‡ 	4x1, 2x4
Max # of PCI Express Lanes 	12



I/O Specifications

# of USB Ports	4
USB Revision 	3.0
Total # of SATA Ports 	4
Integrated LAN 	No
Integrated IDE 	No
General Purpose IO	Yes
UART	Yes
Max # of SATA 6.0 Gb/s Ports	4

Package Specifications

Sockets Supported 	FCBGA1168
Max CPU Configuration	1
T _{JUNCTION} 	100°C
Package Size	40mm x 24mm x 1.5mm

Advanced Technologies

Intel® Turbo Boost Technology ‡ 	2.0
Intel® vPro™ Platform Eligibility ‡ 	Yes

Intel® Hyper-Threading Technology ‡ ?	Yes
Intel® Virtualization Technology (VT-x) ‡ ?	Yes
Intel® Virtualization Technology for Directed I/O (VT-d) ‡ ?	Yes
Intel® VT-x with Extended Page Tables (EPT) ‡ ?	Yes
Intel® TSX-NI ?	No
Intel® 64 ‡ ?	Yes
Instruction Set ?	64-bit
Instruction Set Extensions ?	Intel® SSE4.1, Intel® SSE4.2, Intel® AVX2
Idle States ?	Yes
Enhanced Intel SpeedStep® Technology ?	Yes
Thermal Monitoring Technologies ?	Yes
Intel® ME Firmware Version ?	9.5
Intel® HD Audio Technology ?	Yes
Intel® Identity Protection Technology ‡ ?	Yes
Intel® Rapid Storage Technology ?	Yes
Intel® Smart Connect Technology ?	Yes

Security & Reliability

Intel® AES New Instructions ?	Yes
Secure Key ?	Yes
Intel® Trusted Execution Technology ‡ ?	Yes
Execute Disable Bit ‡ ?	Yes
Anti-Theft Technology ?	Yes

More support options for Intel® Core™ i7-4650U Processor (4M Cache, up to 3.30 GHz)



Product Support



Downloads and Software



Support Community



Warranty and Replacement



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the proper ECCN or HTS. Your company as an importer and/or exporter is responsible for determining the correct classification of your transaction.

Refer to Datasheet for formal definitions of product properties and features.

“Announced” SKUs are not yet available. Please refer to the Launch Date for market availability.

Some products can support AES New Instructions with a Processor Configuration update, in particular, i7-2630QM/i7-2635QM, i7-2670QM/i7-2675QM, i5-2430M/i5-2435M, i5-2410M/i5-2415M. Please contact OEM for the BIOS that includes the latest Processor configuration update.

‡ This feature may not be available on all computing systems. Please check with the system vendor to determine if your system delivers this feature, or reference the system specifications (motherboard, processor, chipset, power supply, HDD, graphics controller, memory, BIOS, drivers, virtual machine monitor-VMM, platform software, and/or operating system) for feature compatibility. Functionality, performance, and other benefits of this feature may vary depending on system configuration.

See <http://www.intel.com/content/www/us/en/architecture-and-technology/hyper-threading/hyper-threading-technology.html?wapkw=hyper+threading> for more information including details on which processors support Intel® HT Technology.

Max Turbo Frequency refers to the maximum single-core processor frequency that can be achieved with Intel® Turbo Boost Technology. See www.intel.com/technology/turboboost/ for more information.

The Recommended Customer Price (“RCP”) is pricing guidance for Intel products. Prices are for direct Intel customers, typically represent 1,000-unit purchase quantities, and are subject to change without notice. Taxes and shipping, etc. not included. Prices may vary for other package types and shipment quantities, and special promotional arrangements may apply. If sold in bulk, price represents individual unit. Listing of these RCP does not constitute a formal pricing offer from Intel. Please work with your appropriate Intel representative to obtain a formal price quotation.

System and Maximum TDP is based on worst case scenarios. Actual TDP may be lower if not all I/Os for chipsets are used.

For benchmarking data see <http://www.intel.com/performance>.

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See <http://www.intel.com/content/www/us/en/processors/processor-numbers.html> for details.

Processors that support 64-bit computing on Intel® architecture require an Intel 64 architecture-enabled BIOS.



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