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## Intel® Core™ i7-2820QM Processor (8M Cache, 2.30 GHz)

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### SPECIFICATIONS

#### Essentials

Status	Launched
Launch Date	Q1'11
Processor Number	i7-2820QM
# of Cores	4
# of Threads	8
Clock Speed	2.3 GHz
Max Turbo Frequency	3.4 GHz
Intel® Smart Cache	8 MB
Bus/Core Ratio	23
Instruction Set	64-bit
Instruction Set Extensions	AVX
Embedded Options Available	No
Lithography	32 nm
Max TDP	45 W
Recommended Channel Price	\$568.00

#### Memory Specifications

Max Memory Size (dependent on memory type)	16 GB
Memory Types	DDR3-1066/1333/1600
# of Memory Channels	2
Max Memory Bandwidth	25.6 GB/s
ECC Memory Supported	No

#### Graphics Specifications

Processor Graphics	Yes
Graphics Base Frequency	650 MHz
Graphics Max Dynamic Frequency	1.3 GHz
Graphics Output	eDP/DP/HDMI/SDVO/CRT
Intel® Quick Sync Video	Yes
Intel® InTru™ 3D Technology,	Yes
Intel® Wireless Display	Yes
Intel® Flexible Display Interface (Intel® FDI)	Yes
Intel® Clear Video HD Technology	Yes
Dual Display Capable	Yes
Macrovision* License Required	No

#### Expansion Options

PCI Express Revision	2.0
PCI Express Configurations	1x16, 2x8, 1x8+2x4
# of PCI Express Ports	1

#### Package Specifications

Max CPU Configuration	1
T <sub>JUNCTION</sub>	100 C

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### ADDITIONAL INFORMATION

#### SUPPORT AND DOWNLOADS

- [Software Downloads >](#)
- [Support Overview >](#)

#### SEARCH DISTRIBUTORS

#### PCN/MDDS INFORMATION

Package Size	37.5mm x 37.5 (rPGA998); 31.0mm x 24.0mm (BGA1224)
Graphics and IMC Lithography	32 nm
Sockets Supported	FCBGA1224, FCPGA988
Halogen Free Options Available	Yes
<b>Advanced Technologies</b>	
Intel® Turbo Boost Technology	2.0
<a href="#">Intel® Hyper-Threading Technology</a>	 Yes
<a href="#">Intel® Virtualization Technology (VT-x)</a>	 Yes
<a href="#">Intel® Virtualization Technology for Directed I/O (VT-d)</a>	 Yes
<a href="#">Intel® Trusted Execution Technology</a>	 Yes
AES New Instructions	 Yes
<a href="#">Intel® 64</a>	 Yes
Intel® Anti-Theft Technology	Yes
Intel® My WiFi Technology	Yes
4G WiMAX Wireless Technology	Yes
Idle States	Yes
<a href="#">Enhanced Intel SpeedStep® Technology</a>	 Yes
<a href="#">Intel® Demand Based Switching</a>	 No
Thermal Monitoring Technologies	Yes
<a href="#">Intel® Fast Memory Access</a>	Yes
<a href="#">Intel® Flex Memory Access</a>	Yes
<a href="#">Execute Disable Bit</a>	Yes

of Chlorine (if the Chlorine (Cl) source is from CFRs or PVC. Higher concentrations of Br and Cl are allowed in homogenous materials of components other than PCB laminates as long as their sources are not BFRs, CFRs, PVC. Although the elemental analysis for Br and Cl in homogeneous materials can be performed by any analytical method with sufficient sensitivity and selectivity, the presence or absence of BFRs, CFRs or PVC must be verified by any acceptable analytical techniques that allow for the unequivocal identification of the specific Br or Cl compounds, or by appropriate material declarations agreed to between customer and supplier.

Max Turbo Frequency refers to the maximum single-core frequency that can be achieved with Intel® Turbo Boost Technology, which requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See [www.intel.com/technology/turboboost/](http://www.intel.com/technology/turboboost/) for more information.

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

Enabling Execute Disable Bit functionality requires a PC with a processor with Execute Disable Bit capability and a supporting operating system. Check with your PC manufacturer on whether your system delivers Execute Disable Bit functionality.

64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

Hyper-Threading Technology (HT Technology) requires a computer system with an Intel® processor supporting HT Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See [www.intel.com/products/ht/hyperthreading\\_more.htm](http://www.intel.com/products/ht/hyperthreading_more.htm) for more information including details on which processors support HT Technology.

Intel® Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM) and for some uses, certain platform software, enabled for it. Functionality, performance or other benefit will vary depending on hardware and software configurations. Intel Virtualization Technology-enabled VMM applications are currently in development.

Note: Prices subject to change without notice. Prices are for direct Intel customers in 1000-unit bulk quantities and, unless specified, represent the latest technology versions of the products. Taxes and shipping, etc. not included. Prices may vary for other package types and shipment quantities, and special promotional arrangements may apply.

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/products/processor\\_number](http://www.intel.com/products/processor_number) for details.

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

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Halogen Free implies the following:

Bromine and/or chlorine in materials that may be used during processing, but do not remain within the final product are not included in this definition. The halogens fluorine (F), iodine (I), and astatine (At) are not restricted by this standard.

"BFR/CFR and PVC-Free" Definition: : All PCB laminates must meet Br and Cl requirements for low halogen as defined in IPC-4101B

For components other than PCB laminates, all homogeneous materials must contain < 900 ppm (0.09%) of Bromine (if the Bromine (Br) source is from BFRs) and < 900 ppm (0.09%)