




## Intel® Core™ i7-4770R Processor (6M Cache, up to 3.90 GHz)

### Specifications


#### - Essentials

Status	Launched
Launch Date	Q2'13
Processor Number	i7-4770R
Intel® Smart Cache	6 MB
DMI2	5 GT/s
# of QPI Links	0
Instruction Set	64-bit
Instruction Set Extensions	SSE4.1/4.2, AVX 2.0
Embedded Options Available	 No
Lithography	22 nm
Scalability	1S Only
Recommended Customer Price	TRAY: \$358.00
Datasheet	<a href="#">Link</a>

#### - Performance









# of Cores	4
# of Threads	8
Processor Base Frequency	3.2 GHz
Max Turbo Frequency	3.9 GHz
TDP	65 W

#### - Memory Specifications

Max Memory Size (dependent on memory type)	32 GB
Memory Types	DDR3 and DDR3L 1333/1600 at 1.5V
Max # of Memory Channels	2
Max Memory Bandwidth	25.6 GB/s
ECC Memory Supported †	 No

#### - Graphics Specifications

Processor Graphics †	Intel® Iris™ Pro Graphics 5200
Graphics Base Frequency	200 MHz
Graphics Max Dynamic Frequency	1.3 GHz
Graphics Video Max Memory	2 GB
Graphics Output	eDP/DP/HDMI/VGA

Execution Units		40
Max Resolution (HDMI 1.4)‡		3840x2160@60Hz
Max Resolution (DP)‡		3840x2160@60Hz
DirectX* Support		11.2/12
OpenGL* Support		4.3
Intel® Quick Sync Video		Yes
Intel® InTru™ 3D Technology		Yes
Intel® Insider™		Yes
Intel® Wireless Display		Yes
Intel® Flexible Display Interface (Intel® FDI)		Yes
Intel® Clear Video HD Technology		Yes
# of Displays Supported †		3
Device ID		0xD22
<b>- Expansion Options</b>		
PCI Express Revision		3.0
PCI Express Configurations †		Up to 1x16, 2x8, 1x8/2x4
Max # of PCI Express Lanes		16
<b>- Package Specifications</b>		
Max CPU Configuration		1
Package Size		37.5mm x 32mm x 1.65mm
Graphics and IMC Lithography		22nm
Sockets Supported		FCBGA1364
Low Halogen Options Available		See MDDS
<b>- Advanced Technologies</b>		
Intel® Turbo Boost Technology ‡		2.0
Intel® vPro Technology †		No
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
Intel® My WiFi Technology		Yes
Idle States		Yes
Enhanced Intel SpeedStep® Technology		Yes
Thermal Monitoring Technologies		Yes
Intel® Identity Protection Technology †		Yes

Intel® Stable Image Platform Program (SIPP)	No
- Intel® Data Protection Technology	
Intel® AES New Instructions	 Yes
Secure Key	Yes
- Intel® Platform Protection Technology	
OS Guard	Yes
Trusted Execution Technology ‡	 No
Execute Disable Bit ‡	Yes
Anti-Theft Technology	Yes

## Compatible Products

- Chipsets					
Compare	Product Name	Status	Embedded Options Available	TDP	Recommended Customer Price
Compare All +					
	<a href="#">Intel® Z97 Chipset (Intel® DH82Z97 PCH)</a>	Launched	No	4.1 W	N/A
	<a href="#">Intel® H97 Chipset (Intel® DH82H97 PCH)</a>	Launched	No	4.1 W	N/A
	<a href="#">Intel® Z87 Chipset (Intel® DH82Z87 PCH)</a>	Launched	No	4.1 W	N/A
	<a href="#">Intel® Q87 Chipset (Intel® DH82Q87 PCH)</a>	Launched	Yes	4.1 W	T&R: \$47.00
	<a href="#">Intel® H87 Chipset (Intel® DH82H87 PCH)</a>	Launched	No	4.1 W	T&R: \$32.00
	<a href="#">Intel® B85 Chipset (Intel® DH82B85 PCH)</a>	Launched	No	4.1 W	T&R: \$28.00
	<a href="#">Intel® Q85 Chipset (Intel® DH82Q85 PCH)</a>	Launched	No	4.1 W	N/A
	<a href="#">Intel® H81 Chipset (Intel® DH82H81 PCH)</a>	Launched	Yes	4.1 W	T&R: \$26.00

## Ordering and Spec Information

### Trade Compliance Information

ECCN	CCATS	US HTS
5A992C	G077159	8542310000-HYBRD

### Ordering and Spec Information

Spec Code	Ordering Code	Step	RCP
Intel® Core™ i7-4770R Processor (6M Cache, up to 3.90 GHz) FC-BGA12F, Tray			
SR18K	CL8064701508001	CO	\$358.00

## Download Drivers

**Intel® Graphics Driver for Windows 7\*/8.1\* [15.36]**

Installs the Intel® Graphics Driver version 15.36.31.4414 for Windows 7\* and Windows 8.1\*.

**Version:** 15.36.31.4414 (Latest)

**Date:** 5/13/2016

**Operating Systems:** Windows 7, 64-bit\*, Windows 8.1, 64-bit\*

**Intel® Graphics Driver for Windows® 10 [15.40][4th Gen]**

This driver (version 15.40.18.4380) for Windows® 10 fixes some hangs, graphics corruption, and functional issues seen across a number of games.

**Version:** 15.40.22.4424 (Latest)

**Date:** 4/29/2016

**Operating Systems:** Windows® 10, 64-bit

**Intel® Management Engine (Intel® ME) software for systems based on 3rd generation Intel® Processors or above.**

Intel® Management Engine (Intel® ME) software 11.0.2.1002 for systems based on 3rd generation Intel® Processors or above.

**Version:** 11.0.2.1002 (Latest)

**Date:** 3/29/2016

**Operating Systems:** Windows Vista\*, Windows Vista Beta 1\*, Windows Vista Business, 32-bit\*, 37 more

**BIOS Implementation Test Suite (BITS)**

This download installs version build 2073 of the BIOS Implementation Test Suite (BITS).

**Version:** Build 2073 (Latest)

**Date:** 2/2/2016

**Operating Systems:** OS Independent

**Intel® Processor Diagnostic Tool**

This download installs the Intel® Processor Diagnostic Tool release 3.0.0.25, which is compatible with multiprocessor systems.

**Version:** 3.0.0.25 (Latest)

**Date:** 1/25/2016

**Operating Systems:** Linux\*, Windows 7\*, Windows Server 2008 R2\*, 5 more

**Intel® Processor Identification Utility - Windows\* Version**

This download installs version 5.40 of the Intel® Processor Identification Utility for Windows\*.

**Version:** 5.40 (Latest)

**Date:** 12/23/2015

**Operating Systems:** Windows Vista\*, Windows Server 2008\*, Windows XP\*, 8 more

**Intel® Processor Identification Utility - Bootable Version**

The Intel® Processor Identification Utility is provided by Intel to identify characteristics of a processor inside a system.

**Version:** 5.30 (Latest)

**Date:** 8/13/2015

**Operating Systems:** OS Independent

**SCS200 User Guide**

Intel® Industrial Solutions System Consolidation Series – SCS200 User Guide

**Version:** 1.0 (Latest)

**Date:** 6/17/2015

**Operating Systems:** OS Independent

**Intel® Graphics Driver for Windows® 10 [15.40][4th Gen]**

This driver (version 15.40.18.4380) for Windows® 10 fixes some hangs, graphics corruption, and functional issues seen across a number of games.

**Version:** 15.40.18.4380 (Previously Released)

**Date:** 3/8/2016

**Operating Systems:** Windows® 10, 64-bit

**Intel® Beta Graphics Driver for Windows® 10 and Windows 7\*/8.1\* [15.40]**

This is a BETA Graphics Driver (versions 15.40.12.64.4326 and 15.40.12.4326) for Windows\*.

**Version:** Beta 15.40.12.4326 (Previously Released)

**Date:** 11/20/2015

**Operating Systems:** Windows 7, 32-bit\*, Windows 7, 64-bit\*, Windows 8.1, 32-bit\*, 3 more

**Intel® Graphics Driver for Windows® 10 [15.40][4th Gen]**

This installer provides Intel® Graphics Driver version 15.40.10.4300 for the Windows® 10 operating system.

**Version:** 15.40.10.4300 (Previously Released)

**Date:** 10/26/2015

**Operating Systems:** Windows® 10, 64-bit

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 64bit**

This download installs the Intel® Iris™, Iris™ Pro and Intel® HD Graphics Driver version 15.36.24.64.4264 for Windows\* 7/8/8.1, 64-bit

**Version:** 15.36.24.64.4264 (Previously Released)

**Date:** 8/19/2015

**Operating Systems:** Windows 7, 64-bit\*, Windows 8.1, 64-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32bit**

Installs the Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32-bit version 15.36.23.4264 (10.18.14.4264)

**Version:** 15.36.23.4264 (Previously Released)

**Date:** 8/19/2015

**Operating Systems:** Windows 7, 32-bit\*, Windows 8.1, 32-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Production Driver for Windows® 10 64-bit**

This download installs the Intel® Iris™ graphics, Iris™ Pro graphics, and Intel® HD Graphics production driver version 15.40.4.64.4256 for Windows® 10, 64-bit, adding new Windows 10 features.

**Version:** 15.40.4.64.4256 (Previously Released)

**Date:** 8/5/2015

**Operating Systems:** Windows® 10, 64-bit

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 64bit**

Installs the Intel® Iris™, Iris™ Pro and HD Graphics Driver for Windows\* 7/8/8.1 64-bit version 15.36.23.64.4251 (10.18.14.4251)

**Version:** 15.36.23.64.4251 (Previously Released)

**Date:** 7/27/2015

**Operating Systems:** Windows 7, 64-bit\*, Windows 8, 64-bit\*, Windows 8.1, 64-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32bit**

Installs the Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32-bit version 15.36.23.4251 (10.18.14.4251)

**Version:** 15.36.23.4251 (Previously Released)

**Date:** 7/23/2015

**Operating Systems:** Windows 7, 32-bit\*, Windows 8, 32-bit\*, Windows 8.1, 32-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 64bit**

Installs the Intel® Iris™, Iris™ Pro and HD Graphics Driver for Windows\* 7/8/8.1 64-bit version 15.36.21.64.4222(10.18.10.4222)

**Version:** 15.36.21.64.4222 (Previously Released)

**Date:** 5/29/2015

**Operating Systems:** Windows 7, 64-bit\*, Windows 8, 64-bit\*, Windows 8.1, 64-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32bit**

Installs the Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32-bit version 15.36.21.4222 (10.18.10.4222)

**Version:** 15.36.21.4222 (Previously Released)

**Date:** 5/29/2015

**Operating Systems:** Windows 7, 32-bit\*, Windows 8, 32-bit\*, Windows 8.1, 32-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 64bit**

This download installs version 15.36.19.64.4170 of the Intel® Iris™ and HD Graphics Driver for Windows\* 7/8/8.1, 64-bit.

**Version:** 15.36.19.64.4170 (Previously Released)

**Date:** 4/10/2015

**Operating Systems:** Windows 7, 64-bit\*, Windows 8, 64-bit\*, Windows 8.1, 64-bit\*

**Intel® Iris™, Iris™ Pro, and HD Graphics Driver for Windows\* 7/8/8.1 32bit**

Installs the Intel® Iris™ and HD Graphics Driver for Windows\* 7/8/8.1 32-bit version 15.36.19.4170 (10.18.10.4170)

**Version:** 15.36.19.4170 (Previously Released)

**Date:** 4/10/2015

**Operating Systems:** Windows 7, 32-bit\*, Windows 8, 32-bit\*, Windows 8.1, 32-bit\*

All information provided is subject to change at any time, without notice. Intel may make changes to manufacturing life cycle, specifications, and product descriptions at any time, without notice. The information herein is provided "as-is" and Intel does not make any representations or warranties whatsoever regarding accuracy of the information, nor on the product features, availability, functionality, or compatibility of the products listed. Please contact system vendor for more information on specific products or systems.

"Intel classifications" consist of Export Control Classification Numbers (ECCN) and Harmonized Tariff Schedule (HTS) numbers. Any use made of Intel classifications are without recourse to Intel and shall not be construed as a representation or warranty regarding the proper ECCN or HTS. Your company may be the exporter of record, and as such, your company is responsible for determining the correct classification of any item at the time of export.

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.

"Conflict free" and "conflict-free" means "DRC conflict free", which is defined by the U.S. Securities and Exchange Commission rules to mean products that do not contain conflict minerals (tin, tantalum, tungsten and/or gold) that directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo (DRC) or adjoining countries. Intel also uses the term "conflict-free" in a broader sense to refer to suppliers, supply chains, smelters and refiners whose sources of conflict minerals do not finance conflict in the DRC or adjoining countries. Intel processors manufactured before January 1, 2013 are not confirmed conflict free. The conflict free designation refers only to product manufactured after that date. For Intel Boxed Processors, the conflict free designation refers to the processor only, not to any additional included accessories, such as heatsinks/coolers.

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/](http://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.

Low Halogen: Applies only to brominated and chlorinated flame retardants (BFRs/CFRs) and PVC in the final product. Intel components as well as purchased components on the finished assembly meet JS-709 requirements, and the PCB / substrate meet IEC 61249-2-21 requirements. The replacement of halogenated flame retardants and/or PVC may not be better for the environment.

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.

[Send us your feedback!](#)

---