HP Intel Core i5-4590 processor 3.3 GHz 6 MB Smart Cache

Brand : HP **Product code:** 769736-001

Product name : Intel Core i5-4590

Intel Core i5-4590, 6M Cache, 3.3 GHz, 5 GT/s DMI2

HP Intel Core i5-4590 processor 3.3 GHz 6 MB Smart Cache:

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HP Intel Core i5-4590. Processor family: Intel® Core™ i5, Processor socket: LGA 1150 (Socket H3), Processor lithography: 22 nm. Memory channels: Dual-channel, Maximum internal memory supported by processor: 32 GB, Memory types supported by processor: DDR3-SDRAM, DDR3L. On-board graphics card model: Intel® HD Graphics 4600, Maximum on-board graphics card memory: 2 GB, On-board graphics card outputs supported: DisplayPort, Embedded DisplayPort (eDP), HDMI, VGA (D-Sub). Market segment: Desktop, PCI Express configurations: 1x16, 1x8+2x4, 2x8, Supported instruction sets: AVX 2.0, SSE4.1, SSE4.2. Compatibility: PROMO 400G1PD MT

Processor	
Processor generation	4th gen Intel® Core™ i5
Processor model *	i5-4590
Processor base frequency *	3.3 GHz
Processor family *	Intel® Core™ i5
Processor cores *	4
Processor socket *	LGA 1150 (Socket H3)
Component for	PC
Processor lithography *	22 nm
Processor series	Intel Core i5-4500 Desktop Series
Processor threads	4
System bus rate	5 GT/s
Processor operating modes *	64-bit
Processor boost frequency	3.7 GHz
Processor cache	6 MB
Processor cache type	Smart Cache
Thermal Design Power (TDP)	84 W
Stepping	C0
Bus type	DMI2
Memory bandwidth supported by processor (max)	25.6 GB/s

Memory	
Maximum internal memory supported by processor	32 GB
Memory types supported by processor	DDR3-SDRAM, DDR3L
Memory clock speeds supported by processor	1333,1600 MHz
Memory voltage supported by processor	1.5 V
Memory channels *	Dual-channel
ECC	✗

Graphics	
On-board graphics card *	✓
On-board graphics card model *	Intel® HD Graphics 4600
Maximum on-board graphics card memory	2 GB
On-board graphics card outputs supported	DisplayPort, Embedded DisplayPort (eDP), HDMI, VGA (D-Sub)
On-board graphics card base frequency	350 MHz

Graphics	
On-board graphics card refresh rate at maximum resolution (VGA)	60 Hz

Features	
Execute Disable Bit	✓
Idle States	✓
Thermal Monitoring Technologies	✓
Market segment	Desktop
Maximum number of PCI Express lanes	16
PCI Express slots version	3.0
PCI Express configurations	1x16, 1x8+2x4, 2x8
Supported instruction sets	AVX 2.0, SSE4.1, SSE4.2
Scalability	1S
CPU configuration (max)	1
Embedded options available	✗
Graphics & IMC lithography	22 nm
Thermal solution specification	PCG 2013D

Processor special features	
Intel® Anti-Theft Technology (Intel® AT)	✓
Intel® Hyper Threading Technology (Intel® HT Technology)	✗
Intel® Identity Protection Technology (Intel® IPT)	✓
Intel® Turbo Boost Technology	2.0
Intel® Quick Sync Video Technology	✓
Intel® InTru™ 3D Technology	✓
Intel® Wireless Display (Intel® WiDi)	✓
Intel FDI Technology	✓
Intel® Clear Video HD Technology (Intel® CVT HD)	✓
Intel® AES New Instructions (Intel® AES-NI)	✓
Enhanced Intel SpeedStep Technology	✓
Intel Trusted Execution Technology	✓
Intel VT-x with Extended Page Tables (EPT)	✓
Intel® Secure Key	✓

Graphics	
On-board graphics card dynamic frequency (max)	1150 MHz
Number of displays supported (on-board graphics)	3
On-board graphics card DirectX version	11.2/12
On-board graphics card OpenGL version	4.3
On-board graphics card maximum resolution (DisplayPort)	3840 x 2160 pixels
On-board graphics card maximum resolution (eDP - Integrated Flat Panel)	3840 x 2160 pixels
On-board graphics card maximum resolution (HDMI)	4096 x 2304 pixels
On-board graphics card maximum resolution (VGA)	1920 x 1200 pixels
On-board graphics card refresh rate at maximum resolution (DisplayPort)	60 Hz
On-board graphics card refresh rate at maximum resolution (eDP - Integrated Flat Panel)	60 Hz
On-board graphics card refresh rate at maximum resolution (HDMI)	24 Hz

Processor special features	
Intel TSX-NI	✗
Intel Stable Image Platform Program (SIPP)	✔
Intel® OS Guard	✔
Intel® Small Business Advantage (Intel® SBA)	✔
Intel 64	✔
Intel Virtualization Technology (VT-x)	✔
Intel Virtualization Technology for Directed I/O (VT-d)	✔
Conflict-Free processor	✔
Intel® vPro™ Platform Eligibility	✔

Operational conditions	
Tcase	72.72 °C

Other features	
Compatibility	PROMO 400G1PD MT

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