Processor Base Frequency – 2.90 Ghz

Processor Base Frequency describes the rate at which the processor's transistors open and close. The processor base frequency is the operating point where TDP is defined. Frequency is typically measured in gigahertz (GHz), or billion cycles per second.

## Max Turbo Frequency – 4.10GHz

Max turbo frequency is the maximum single core frequency at which the processor is capable of operating using Intel® Turbo Boost Technology and, if present, Intel® Thermal Velocity Boost. Frequency is typically measured in gigahertz (GHz), or billion cycles per second.

9 MB Intel® Smart Cache

CPU Cache is an area of fast memory located on the processor. Intel® Smart Cache refers to the architecture that allows all cores to dynamically share access to the last level cache.

A bus is a subsystem that transfers data between computer components or between computers. Types include front-side bus (FSB), which carries data between the CPU and memory controller hub; direct media interface (DMI), which is a point-to-point interconnection between an Intel integrated memory controller and an Intel I/O controller hub on the computer’s motherboard; and Quick Path Interconnect (QPI), which is a point-to-point interconnect between the CPU and the integrated memory controller.

8 GT/s

In computer technology, transfers per second and its more common secondary terms gigatransfers per second (abbreviated as **GT**/**s**) and megatransfers per second (MT/**s**) are informal language that refer to the number of operations transferring data that occur in each second in some given data-transfer channel.

## Intel® Turbo Boost Technology 2.0 Frequency‡

4.10 GHz

Intel® Turbo Boost Technology 2.0 Frequency is the maximum single core frequency at which the processor is capable of operating using Intel® Turbo Boost Technology. Frequency is typically measured in gigahertz (GHz), or billion cycles per second.

Thermal Design Power

Thermal Design Power (TDP) represents the average power, in watts, the processor dissipates when operating at Base Frequency with all cores active under an Intel-defined, high-complexity workload. Refer to Datasheet for thermal solution requirements.

# of cores - 6

Cores is a hardware term that describes the number of independent central processing units in a single computing component (die or chip).

# of threads - 6

A Thread, or thread of execution, is a software term for the basic ordered sequence of instructions that can be passed through or processed by a single CPU core.

Max memory size – 128 gb

Max memory size refers to the maximum memory capacity supported by the processor.

Memory types DDR4-2666

Intel® processors come in four different types: a Single Channel, Dual Channel, Triple Channel, and Flex Mode.

Max # of memory channels – 2

The number of memory channels refers to the bandwidth operation for real world application.

41.6 GB/s giga bytes per second

Max Memory bandwidth is the maximum rate at which data can be read from or stored into a semiconductor memory by the processor (in GB/s).

No ECC

ECC Memory Supported indicates processor support for Error-Correcting Code memory. ECC memory is a type of system memory that can detect and correct common kinds of internal data corruption. Note that ECC memory support requires both processor and chipset support.

## Expansion Options

* Scalability1S Only
* PCI Express Revision3.0
* PCI Express Configurations ‡Up to 1x16, 2x8, 1x8+2x4
* Max # of PCI Express Lanes16

PCI Express Revision is the supported version of the PCI Express standard. Peripheral Component Interconnect Express (or PCIe) is a high-speed serial computer expansion bus standard for attaching hardware devices to a computer. The different PCI Express versions support different data rates.

PCI Express (PCIe) Configurations describe the available PCIe lane configurations that can be used to link to PCIe devices.

A PCI Express (PCIe) lane consists of two differential signaling pairs, one for receiving data, one for transmitting data, and is the basic unit of the PCIe bus. Max # of PCI Express Lanes is the total number of supported lanes.

**Package Specifications**

* Sockets SupportedFCLGA1151
* Max CPU Configuration1
* Thermal Solution SpecificationPCG 2015C (65W)
* TJUNCTION100°C
* Package Size37.5mm x 37.5mm

The socket is the component that provides the mechanical and electrical connections between the processor and motherboard.

Thermal Solution Specification

Intel Reference Heat Sink specification for proper operation of this processor.

Tjunction

Junction Temperature is the maximum temperature allowed at the processor die.

**Advanced Technologies**

* Intel® Optane™ Memory Supported ‡Yes
* Intel® Turbo Boost Technology ‡2.0
* Intel vPro® Platform Eligibility ‡No
* Intel® Hyper-Threading Technology ‡No
* 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® Transactional Synchronization ExtensionsNo
* Intel® 64 ‡Yes
* Instruction Set64-bit
* Instruction Set ExtensionsIntel® SSE4.1, Intel® SSE4.2, Intel® AVX2
* Idle StatesYes
* Enhanced Intel SpeedStep® TechnologyYes
* Thermal Monitoring TechnologiesYes
* Intel® Identity Protection Technology ‡Yes
* Intel® Stable Image Platform Program (SIPP)No

Intel Optane Memory supported -yes

Intel® Optane™ memory is a revolutionary new class of non-volatile memory that sits in between system memory and storage to accelerate system performance and responsiveness. When combined with the Intel® Rapid Storage Technology Driver, it seamlessly manages multiple tiers of storage while presenting one virtual drive to the OS, ensuring that data frequently used resides on the fastest tier of storage. Intel® Optane™ memory requires specific hardware and software configuration. Visit [www.intel.com/OptaneMemory](http://www.intel.com/OptaneMemory) for configuration requirements.

Intel® Turbo Boost Technology dynamically increases the processor's frequency as needed by taking advantage of thermal and power headroom to give you a burst of speed when you need it, and increased energy efficiency when you don’t.

The Intel vPro® platform is a set of hardware and technologies used to build business computing endpoints with premium performance, built-in security, modern manageability and platform stability.  
[Learn more about Intel vPro®](https://www.intel.com/content/www/us/en/architecture-and-technology/vpro/what-is-vpro.html)

Intel® Hyper-Threading Technology (Intel® HT Technology) delivers two processing threads per physical core. Highly threaded applications can get more work done in parallel, completing tasks sooner.

Intel® Virtualization Technology (VT-x) allows one hardware platform to function as multiple “virtual” platforms. It offers improved manageability by limiting downtime and maintaining productivity by isolating computing activities into separate partitions.

Intel® Virtualization Technology for Directed I/O (VT-d) continues from the existing support for IA-32 (VT-x) and Itanium® processor (VT-i) virtualization adding new support for I/O-device virtualization. Intel VT-d can help end users improve security and reliability of the systems and also improve performance of I/O devices in virtualized environments.

Intel® VT-x with Extended Page Tables (EPT), also known as Second Level Address Translation (SLAT), provides acceleration for memory intensive virtualized applications. Extended Page Tables in Intel® Virtualization Technology platforms reduces the memory and power overhead costs and increases battery life through hardware optimization of page table management.

Intel® Transactional Synchronization Extensions (Intel® TSX) are a set of instructions that add hardware transactional memory support to improve performance of multi-threaded software.

Intel® 64 architecture delivers 64-bit computing on server, workstation, desktop and mobile platforms when combined with supporting software.¹ Intel 64 architecture improves performance by allowing systems to address more than 4 GB of both virtual and physical memory.

An instruction set refers to the basic set of commands and instructions that a microprocessor understands and can carry out. The value shown represents which Intel’s instruction set this processor is compatible with.

Instruction Set Extensions are additional instructions which can increase performance when the same operations are performed on multiple data objects. These can include SSE (Streaming SIMD Extensions) and AVX (Advanced Vector Extensions).

Idle States (C-states) are used to save power when the processor is idle. C0 is the operational state, meaning that the CPU is doing useful work. C1 is the first idle state, C2 the second, and so on, where more power saving actions are taken for numerically higher C-states.

Enhanced Intel SpeedStep® Technology is an advanced means of enabling high performance while meeting the power-conservation needs of mobile systems. Conventional Intel SpeedStep® Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. Enhanced Intel SpeedStep® Technology builds upon that architecture using design strategies such as Separation between Voltage and Frequency Changes, and Clock Partitioning and Recovery.

Thermal Monitoring Technologies protect the processor package and the system from thermal failure through several thermal management features. An on-die Digital Thermal Sensor (DTS) detects the core's temperature, and the thermal management features reduce package power consumption and thereby temperature when required in order to remain within normal operating limits.

Intel® Identity Protection Technology is a built-in security token technology that helps provide a simple, tamper-resistant method for protecting access to your online customer and business data from threats and fraud. Intel® IPT provides a hardware-based proof of a unique user’s PC to websites, financial institutions, and network services; providing verification that it is not malware attempting to login. Intel® IPT can be a key component in two-factor authentication solutions to protect your information at websites and business log-ins.

The Intel® Stable Image Platform Program (Intel® SIPP) aims for zero changes to key platform components and drivers for at least 15 months or until the next generational release, reducing complexity for IT to effectively manage their computing endpoints.  
[Learn more about Intel® SIPP](https://www.intel.com/content/www/us/en/computer-upgrades/pc-upgrades/sipp-intel-stable-image-platform-program.html)