

Product Collection	12th Generation Intel® Core™ i7 Processors
Code Name	Products formerly Alder Lake
Vertical Segment	Desktop
Processor Number	i7-12700K
Status	Launched
Launch Date	Q4'21
Lithography	Intel 7
Recommended Customer Price	\$450.00 - \$460.00
Use Conditions	PC/Client/Tablet, Workstation

CPU Specifications

Total Cores	12
# of Performance-cores	8
# of Efficient-cores	4
Total Threads	20
Max Turbo Frequency	5.00 GHz
Intel® Turbo Boost Max Technology 3.0 Frequency †	5.00 GHz
Performance-core Max Turbo Frequency	4.90 GHz
Efficient-core Max Turbo Frequency	3.80 GHz
Performance-core Base Frequency	3.60 GHz

Efficient-core Base Frequency	2.70 GHz
Cache	25 MB Intel® Smart Cache
Total L2 Cache	12 MB
Processor Base Power	125 W
Maximum Turbo Power	190 W

Supplemental Information

Embedded Options Available	No
Datasheet	View now

Memory Specifications

Max Memory Size (dependent on memory type)	128 GB
Memory Types	Up to DDR5 4800 MT/s Up to DDR4 3200 MT/s
Max # of Memory Channels	2
Max Memory Bandwidth	76.8 GB/s
ECC Memory Supported †	Yes

Processor Graphics

Processor Graphics †	Intel® UHD Graphics 770
Graphics Base Frequency	300 MHz
Graphics Max Dynamic Frequency	1.50 GHz
Graphics Output	eDP 1.4b, DP 1.4a, HDMI 2.1
Execution Units	32

Max Resolution (HDMI) [†]	4096 x 2160 @ 60Hz
Max Resolution (DP) [‡]	7680 x 4320 @ 60Hz
Max Resolution (eDP - Integrated Flat Panel) [‡]	5120 x 3200 @ 120Hz
DirectX* Support	12
OpenGL* Support	4.5
OpenCL* Support	3.0
Multi-Format Codec Engines	2
Intel® Quick Sync Video	Yes
Intel® Clear Video HD Technology	Yes
# of Displays Supported [†]	4
Device ID	0x4680

Expansion Options

Direct Media Interface (DMI) Revision	4.0
Max # of DMI Lanes	8
Scalability	1S Only
PCI Express Revision	5.0 and 4.0
PCI Express Configurations [†]	Up to 1x16+4, 2x8+4
Max # of PCI Express Lanes	20

Package Specifications

Sockets Supported	FCLGA1700
Max CPU Configuration	1
Thermal Solution Specification	PCG 2020A

T _{JUNCTION}	100°C
Package Size	45.0 mm x 37.5 mm

Advanced Technologies

Intel® Gaussian & Neural Accelerator	3.0
Intel® Thread Director	Yes
Intel® Deep Learning Boost (Intel® DL Boost)	Yes
Intel® Optane™ Memory Supported †	Yes
Intel® Speed Shift Technology	Yes
Intel® Turbo Boost Max Technology 3.0 †	Yes
Intel® Turbo Boost Technology †	2.0
Intel® Hyper-Threading Technology †	Yes
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® Volume Management Device (VMD)	Yes

Security & Reliability

Intel vPro® Eligibility †	Intel vPro® Enterprise
Intel® Threat Detection Technology (TDT)	Yes
Intel® Active Management Technology (AMT) †	Yes

Intel® Standard Manageability (ISM) †	Yes
Intel® One-Click Recovery †	Yes
Intel® Hardware Shield Eligibility †	Yes
Intel® Control-Flow Enforcement Technology	Yes
Intel® Total Memory Encryption - Multi Key	Yes
Intel® Total Memory Encryption	Yes
Intel® AES New Instructions	Yes
Secure Key	Yes
Intel® OS Guard	Yes
Intel® Trusted Execution Technology †	Yes
Execute Disable Bit †	Yes
Intel® Boot Guard	Yes
Mode-based Execute Control (MBEC)	Yes
Intel® Stable IT Platform Program (SIPP)	Yes
Intel® Virtualization Technology with Redirect Protection (VT-rp) †	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