Intel Core i9-12900K processor 30 MB Smart Cache

Brand : Intel

Product family: Core

Product code: CM8071504549230

Product name : Intel® Core™ i9-12900K Processor (30M Cache, up to 5.20 GHz)

Intel® Core™ i9-12900K Processor (30M Cache, up to 5.20 GHz) FC-LGA16A, Tray
Intel Core i9-12900K. Processor family: Intel® Core™ i9, Processor socket: LGA 1700, Processor manufacturer: Intel. Memory channels: Dual-channel, Maximum internal memory supported by processor: 128 GB, Memory types supported by processor: DDR4-SDRAM, DDR5-SDRAM. On-board graphics card model: Intel UHD Graphics 770, On-board graphics card base frequency: 300 MHz, On-board graphics card dynamic frequency (max): 1550 MHz. Market segment: Desktop, Use conditions: PC/Client/Tablet, Workstation, PCI Express slots version: 5.0, 4.0. Intel® Turbo Boost Max Technology 3.0 frequency: 5.2 GHz

Processor	
Processor manufacturer *	Intel
Processor generation	12th gen Intel® Core™ i9
Processor model *	i9-12900K
Processor family *	Intel® Core™ i9
Processor cores *	16
Processor socket *	LGA 1700
Component for	PC
Processor threads	24
Processor operating modes *	64-bit
Performance cores	8
Efficient cores	8
Processor boost frequency	5.2 GHz
Performance-core boost frequency	5.1 GHz
Performance-core base frequency	3.2 GHz
Efficient-core boost frequency	3.9 GHz
Efficient-core base frequency	2.4 GHz
Processor cache	30 MB
Processor cache type	Smart Cache
Box *	✗
Processor base power	125 W
Maximum turbo power	241 W
Bus type	DMI4
Maximum number of DMI lanes	8
Memory bandwidth supported by processor (max)	76.8 GB/s
Processor codename	Alder Lake
Processor ARK ID	134599

Memory	
Maximum internal memory supported by processor	128 GB
Memory types supported by processor	DDR4-SDRAM, DDR5-SDRAM
Memory channels *	Dual-channel
ECC	✓
Memory bandwidth (max)	76.8 GB/s

Graphics	
On-board graphics card *	✓
Discrete graphics card *	✗
On-board graphics card model *	Intel UHD Graphics 770
On-board graphics card base frequency	300 MHz

Features	
Thermal solution specification	PCG 2020A
Export Control Classification Number (ECCN)	5A992CN3
Commodity Classification Automated Tracking System (CCATS)	G167599

Processor special features	
Intel® Hyper Threading Technology (Intel® HT Technology)	✓
Intel® Turbo Boost Technology	2.0
Intel® Quick Sync Video 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® Speed Shift Technology	✓
Intel® Turbo Boost Max Technology 3.0 frequency	5.2 GHz
Intel® Total Memory Encryption	✓
Intel® Control-flow Enforcement Technology (CET)	✓
Intel® Thread Director	✓
Intel VT-x with Extended Page Tables (EPT)	✓
Intel® Secure Key	✓
Intel® Active Management Technology (Intel® AMT)	✓
Intel Stable Image Platform Program (SIPP)	✓
Intel® OS Guard	✓
Intel 64	✓
Intel Virtualization Technology (VT-x)	✓
Intel Virtualization Technology for Directed I/O (VT-d)	✓
Intel Turbo Boost Max Technology 3.0	✓
Intel® Optane™ Memory Ready	✓
Intel® Boot Guard	✓
Intel® Deep Learning Boost (Intel® DL Boost)	✓

Graphics	
On-board graphics card dynamic frequency (max)	1550 MHz
Number of displays supported (on-board graphics)	4
On-board graphics card DirectX version	12.0
On-board graphics card OpenGL version	4.5
On-board graphics card maximum resolution (DisplayPort)	7680 x 4320 pixels
On-board graphics card maximum resolution (eDP - Integrated Flat Panel)	5120 x 3200 pixels
On-board graphics card maximum resolution (HDMI)	4096 x 2160 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)	120 Hz
On-board graphics card refresh rate at maximum resolution (HDMI)	60 Hz
On-board graphics card ID	0x4680
Discrete graphics card model *	Not available
Number of execution units	32

Features	
Execute Disable Bit	✓
Idle States	✓
Thermal Monitoring Technologies	✓
Market segment	Desktop
Use conditions	PC/Client/Tablet, Workstation
Maximum number of PCI Express lanes	20
PCI Express slots version	5.0, 4.0
PCI Express configurations	1x16+1x4, 2x8+1x4
Supported instruction sets	SSE4.1, SSE4.2, AVX 2.0
Scalability	1S
CPU configuration (max)	1
Embedded options available	✗

Processor special features	
Intel® Volume Management Device (VMD)	✓
Mode-based Execute Control (MBE)	✓
Intel® vPro™ Platform Eligibility	✓
Intel® Standard Manageability (ISM)	✓
Intel® One-Click Recovery	✓
Intel® Virtualization Technology with Redirect Protection (VT-rp)	✓
Intel vPro® Enterprise Platform Eligibility	✓
Intel® Threat Detection Technology (TDT)	✓
Intel® Hardware Shield Eligibility	✓
Intel® Total Memory Encryption - Multi Key	✓

Operational conditions	
Tjunction	100 °C

Technical details	
Target market	Gaming, Content Creation
OpenCL version	2.1
Launch date	Q4'21
Status	Launched

Logistics data	
Harmonized System (HS) code	85423119

Packaging data	
Package type	Tray

Weight & dimensions	
Processor package size	45 x 37.5 mm

Other features	
Maximum internal memory	128 GB
Graphics output	eDP 1.4b, DP 1.4a, HDMI 2.1

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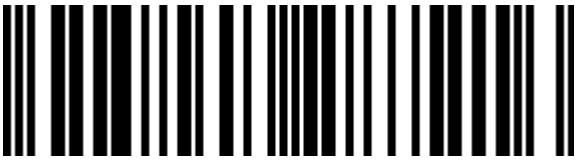

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