

11/2/2023 0:00

Intel® Core™ i9-13900K Processor (36M Cache- up to 5.80 GHz)

Essentials

Product Collection

Code Name

Vertical Segment

Processor Number

Lithography

Recommended Customer Price

Use Conditions

13th Generation Intel® Core™ i9 Processors

Products formerly Raptor Lake

Desktop

i9-13900K

Intel 7

\$589.00-\$599.00

PC/Client/Tablet | Workstation

CPU Specifications

Total Cores

24

of Performance-cores

8

of Efficient-cores

16

Total Threads

32

Max Turbo Frequency

5.80 GHz

Intel® Thermal Velocity Boost Frequency

5.80 GHz

Intel® Turbo Boost Max Technology 3.0 Frequency ‡

5.70 GHz

Performance-core Max Turbo Frequency

5.40 GHz

Efficient-core Max Turbo Frequency

4.30 GHz

Performance-core Base Frequency

3.00 GHz

Efficient-core Base Frequency

2.20 GHz

Cache

36 MB Intel® Smart Cache

Total L2 Cache

32 MB

Processor Base Power

125 W

Maximum Turbo Power

253 W

Supplemental Information

Marketing Status

Launched

Launch Date

Q4'22

Embedded Options Available

No

Datasheet

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Memory Specifications

Max Memory Size (dependent on memory type)

192 GB

Memory Types

Up to DDR5 5600 MT/s Up to DDR4 3200 MT/s

Max # of Memory Channels

2

Max Memory Bandwidth

89.6 GB/s

ECC Memory Supported ‡

Yes

GPU Specifications

Processor Graphics ‡

Intel® UHD Graphics 770

Graphics Base Frequency

300 MHz

Graphics Max Dynamic Frequency

1.65 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

Multi-Format Codec Engines

2

Intel® Quick Sync Video

Yes

Intel® Clear Video HD Technology

Yes

of Displays Supported ‡

4

Device ID

0xA780

Expansion Options

Direct Media Interface (DMI) Revision

4

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
TJUNCTION	100°C
Package Size	45.0 mm x 37.5 mm

Advanced Technologies

Intel® Gaussian & Neural Accelerator	3
Intel® Thread Director	Yes
Intel® Deep Learning Boost (Intel® DL Boost) on CPU	Yes
Intel® Speed Shift Technology	Yes
Intel® Adaptive Boost Technology	Yes
Intel® Thermal Velocity Boost	Yes
Intel® Turbo Boost Max Technology 3.0 ‡	Yes
Intel® Turbo Boost Technology ‡	2
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 vPro® Essentials Intel vPro® Platform
Intel® Threat Detection Technology (TDT)	Yes
Intel® Active Management Technology (AMT) ‡	Yes
Intel® Standard Manageability (ISM) ‡	Yes
Intel® Remote Platform Erase (RPE) ‡	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® 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