12th Generation Intel® Core™ Processors—
Desktop 65W Series

Leadership performance, unparalleled value.

Transformational productivity

Faster work—done smarter

Optimized workflows

Performance cores (P-cores) and Efficient cores (E-cores)

Intelligence in the core

Intel® Thread Director optimizes workflows

12th Gen Intel Core Processors—Desktop 65W Series

12th Gen Intel Core mobile processor	Processor cores	Processor threads	Number of P-cores	Number of E-cores	Intel Smart Cache	Max turbo frequency (GHz) up to		Base frequency (GHz)		Processor graphics	Max graphics frequency (GHz) up to	Compare to this processor
						P-core	E-core	P-core	E-core			
i3-12100	4	8	4	0	12 MB	4.3	Not applicable (N/A)	3.3	N/A	Intel UHD Graphics 730	1.40	**N/A**
i3-12100F	4	8	4	0	12 MB	4.3	N/A	3.3	N/A	Intel UHD Graphics 730	N/A	**N/A**
i3-12300	4	8	4	0	12 MB	4.4	N/A	3.5	N/A	Intel UHD Graphics 730	1.45	**N/A**
i5-12400	6	12	6	0	18 MB	4.4	N/A	3.3	N/A	Intel UHD Graphics 730	1.45	**AMD Ryzen 5 5600X**
i5-12500	6	12	6	0	18 MB	4.6	N/A	3.0	N/A	Intel UHD Graphics 770	1.45	**AMD Ryzen 7 5700G**
i5-12600	10	12	6	0	20 MB	4.8	N/A	2.5	N/A	Intel UHD Graphics 770	1.45	**AMD Ryzen 7 5800X**
i7-12700	12	20	8	4	25 MB	4.8	3.6	2.1	1.6	Intel UHD Graphics 770	1.5	**AMD Ryzen 9 5900X**
i7-12700F	12	20	8	4	25 MB	4.8	3.6	2.1	1.6	Intel UHD Graphics 770	N/A	**AMD Ryzen 9 5900X**
i9-12900	16	24	8	8	30 MB	5.0	3.8	2.4	1.8	Intel UHD Graphics 770	1.55	**AMD Ryzen 9 5900X**
i9-12900F	16	24	8	8	30 MB	5.0	3.8	2.4	1.8	Intel UHD Graphics 770	N/A	**Ryzen 9 5900X**

intel CORE i9

12th Gen Intel Core i9-12900 up to **41%** faster WebXPRT compared to 9th Gen Intel Core i9-9900

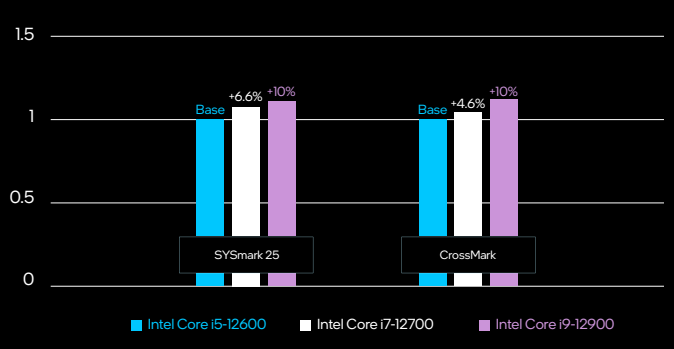
intel CORE i7

12th Gen Intel Core i7-12700 up to **41%** faster WebXPRT compared to 9th Gen Intel Core i7-9700

intel CORE i5

12th Gen Intel Core i5-12600 up to **47%** faster WebXPRT compared to 9th Gen Intel Core i5-9500

12th Gen Intel Core i5 vs. 12th Gen Intel Core i7 vs. 12th Gen Intel Core i9



Workloads

Testing by Intel as of 10/14/2021.

SYSmark 25 is a benchmark from the BAPCo consortium that measures the performance of Windows platforms. SYSmark 25 tests three usage scenarios: Productivity, Creativity, and Responsiveness. SYSmark contains real applications from ISVs such as Microsoft and Adobe.

CrossMark is an easy-to-run native cross-platform benchmark that measures overall system performance and system responsiveness using models of real-world applications. CrossMark supports devices running Windows, iOS, and macOS platforms. CrossMark is available for download in the Windows Store, iTunes, and the Mac App Store.

WebXPRT 4 is a browser benchmark that compares the performance of almost any web-enabled device. It contains HTML5, JavaScript, and WebAssembly-based scenarios created to mirror the tasks you do every day: Photo Enhancement, Organize Album Using AI, Stock Option Pricing, Encrypt Notes and OCR Scan using WASM, Sales Graphs, and Online Homework.

Configurations

Processor: Intel Core i5-12600 processor (up to 4.8 GHz, 6 cores, 12 threads); Motherboard: PRIME Z690-A; Graphics: NVIDIA GeForce RTX 3080; GPU firmware: 94.02.42.C0.14; Memory: 64 GB DDR5, 4,400 MHz; Storage: 1 TB Samsung NVMe SSD; Display Resolution: 1920*1080; PC BIOS: 703; OS: Windows 11 21H2; Power Mode: High Performance.

Processor: Intel Core i7-12700 processor (up to 4.9 GHz, 12 cores, 20 threads); Motherboard: PRIME Z690-A; Graphics: NVIDIA GeForce RTX 3080; GPU firmware: 94.02.42.C0.14; Memory: 64 GB DDR5, 4,400 MHz; Storage: 1 TB Samsung NVMe SSD; Display Resolution: 1920*1080; PC BIOS: 703; OS: Windows 11 21H2; Power Mode: High Performance.

Processor: Intel Core i9-12900 processor (up to 5.2 GHz, 16 cores, 24 threads); Motherboard: PRIME Z690-A; Graphics: NVIDIA GeForce RTX 3080; GPU firmware 94.02.42.C0.14; Memory: 64 GB DDR5, 4,400 MHz; Storage: 1 TB Samsung NVMe SSD; Display Resolution: 1920*1080; PC BIOS: 703; OS: Windows 11 21H2; Power Mode: High Performance.

Processor: Intel Core i5-9500 processor (up to 4.4 GHz, 6 Cores, 12 threads); Motherboard: PRIME Z390-A; Graphics: NVIDIA GeForce RTX 3080; GPU firmware: 94.02.42.C0.14; Memory: 64 GB DDR5, 4,400 MHz; Storage: 1 TB Samsung NVMe SSD; Display Resolution: 1920*1080; PC BIOS: 1903; OS: Windows 11 21H2; Power Mode: High Performance.

Processor: Intel Core i7-9700 processor (up to 4.7GHz, 8 Cores, 16 threads); Motherboard: PRIME Z390-A; Graphics: NVIDIA GeForce RTX 3080; GPU firmware: 94.02.42.C0.14; Memory: 64 GB DDR5, 3,200 MHz; Storage: 1 TB Samsung NVMe SSD; Display Resolution: 1920*1080; PC BIOS: 1903; OS: Windows 11 21H2; Power Mode: High Performance.

Processor: Intel Core i9-9900 processor (up to 5.0GHz, 8 Cores, 16 threads); Motherboard: PRIME Z390-A; Graphics: NVIDIA GeForce RTX 3080; GPU firmware: 94.02.42.C0.14; Memory: 64 GB DDR5, 3,200 MHz; Storage: 1 TB Samsung NVMe SSD; Display Resolution: 1920*1080; PC BIOS: 1903; OS: Windows 11 21H2; Power Mode: High Performance.

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