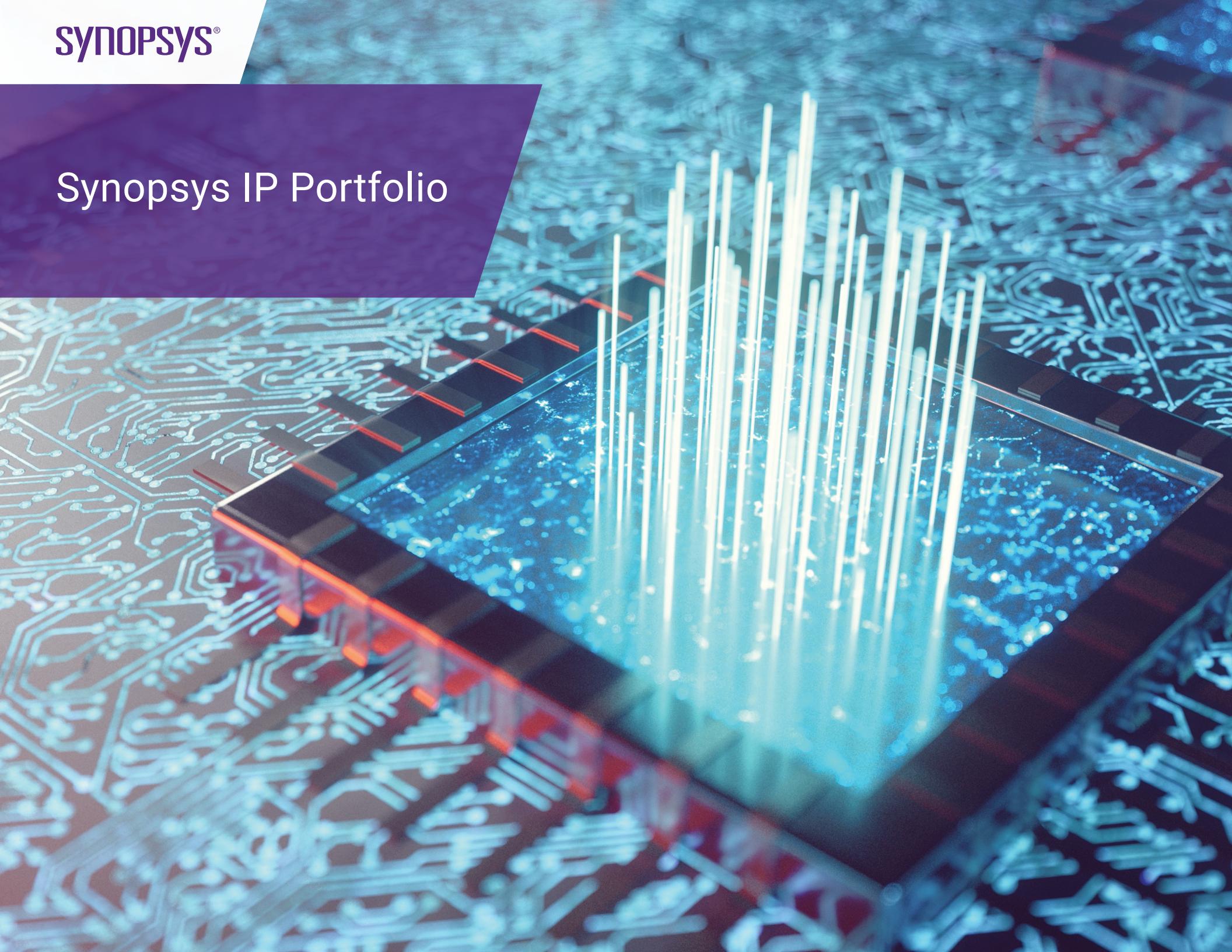


Synopsys IP Portfolio



Broad IP Portfolio

Synopsys is a leading provider of high-quality, silicon-proven semiconductor IP solutions for SoC designs. The broad Synopsys IP portfolio includes [logic libraries](#), embedded memories, [analog IP](#), wired and wireless [interface IP](#), [security IP](#), [embedded processors](#) and [subsystems](#). To accelerate IP integration, software development, and silicon bring-up, [Synopsys' IP Accelerated](#) initiative provides architecture design expertise, pre-verified and customizable IP subsystems, hardening, and signal/power integrity analysis. Synopsys' extensive investment in IP quality, comprehensive technical support and robust IP development methodology enables designers to reduce integration risk and accelerate time-to-market.

Interface IP										
Die-to-Die	Process Technologies							Controllers	Verification IP	
	16nm	12nm	7nm	6nm	5nm	3nm				
UClle					✓	✓	✓		✓	
HBI/AIB	✓		✓		✓					
112G XSR		✓	✓	✓	✓	✓		✓		

PCI Express	Process Technologies										Controllers	Configuration	IDE Security Module	HS Access & Test	Verification IP	Auto Grade
	40/45/ 55/ 65nm	28nm	22nm	20nm	12/14/ 16nm	8/10nm	7nm	6nm	5nm	4nm						
PCIe 6.0								✓		✓	Endpoint, Root Port, Dual Mode, Switch	x2, x4, x8, x16	✓	✓	✓	
PCIe 5.0					✓	✓	✓	✓	✓	✓	Endpoint, Root Port, Dual Mode, Switch, Embedded Endpoint	x1, x2, x4, x8, x16	✓	✓	✓	✓
PCIe 4.0		✓			✓		✓	✓	✓	✓	Endpoint, Root Port, Dual Mode, Switch, Embedded Endpoint	x1, x2, x4, x8, x16	✓	✓	✓	✓
PCIe 3.1		✓	✓		✓	✓	✓	✓	✓		Endpoint, Root Port, Dual Mode, Switch, Embedded Endpoint	x1, x2, x4, x8, x16	✓	✓	✓	✓
PCIe 2.1	✓	✓	✓	✓	✓		✓				Endpoint, Root Port, Dual Mode, Switch, Embedded Endpoint	x1, x2, x4, x8, x16		✓	✓	✓

Interface IP									
Ethernet	Process Technologies					PCS	Controllers	Verification IP	Auto Grade
	28nm	14/16nm	7nm	5nm	3nm				
224G Ethernet (200G/400G/800G/1.6T)					✓		✓		
112G Ethernet (100G/200G/400G/800G)			✓	✓	✓	✓	✓	✓	
56G Ethernet (100G/200G/400G)		✓	✓	✓		✓	✓	✓	
RXAUI/Double XAUI (6.25 G)	✓	✓	✓	✓		✓	✓	✓	
1000BASE-KX, 10GBASE-KR, 10GBASE-KX4	✓	✓	✓	✓		✓	✓	✓	
40GBASE-KR4, 40GBASE-CR4, XLAUI	✓	✓	✓	✓		✓	✓	✓	
100GBASE-CR10, CAUI	✓	✓	✓	✓			✓	✓	
100GBASE-DR4/CR4, CAUI4							✓	✓	
100GBASE-KR2/1		✓	✓	✓			✓	✓	
SGMII	✓	✓	✓	✓		✓	✓	✓	✓
QSGMII	✓	✓	✓	✓		✓	✓	✓	
XFI, SFI (SFF-8431)	✓	✓	✓	✓		✓	✓	✓	
GMII/MII, RGMII, RTBI, TBI, SMII, RMII, RevMII, XGMII, XLGMII						✓	✓	✓	
IEEE TSN/AVB Standards: IEEE 802.1AS, 802.1AS-Rev, 802.1Qav, 802.1Qat, 802.1Qbv, 802.1Qbu & 802.3br							✓	✓	✓
25G/50G Ethernet Consortium and IEEE specifications		✓	✓			✓	✓	✓	
2.5G/5.0G USXGMII		✓	✓			✓	✓	✓	
MACSec (1G to 25G)							✓		
MACSec (10G to 100G)							✓		
Additional Enterprise Protocols									
OIF, CEI-6G/11G	✓	✓	✓	✓					
CPRI, OBSI, JESD204 A/B	✓	✓	✓	✓				✓	
SRIO	✓	✓	✓	✓					

Interface IP												
HBM	Process Technologies				Controllers	Platform Architect Support				Verification IP		
	7nm	6nm	5nm	3nm								
HBM3			✓	✓	✓				✓		✓	
HBM2											✓	
HBM2E	✓	✓	✓								✓	

DDR	Process Technologies										Controllers	Inline Memory Encryption (IME) Security Module	Platform Architect Support	Verification IP	Auto Grade
	40/45nm	28nm	22nm	14/16nm	12nm	10nm	7nm	5nm	3nm						
LPDDR5X								✓	✓	Memory controller	✓	✓	✓	✓	✓
LPDDR5				✓	✓		✓	✓	✓	Memory controller	✓	✓	✓	✓	✓
LPDDR4		✓	✓	✓	✓	✓	✓	✓		Protocol controller, Memory controller		✓	✓	✓	✓
LPDDR4X				✓	✓		✓	✓	✓	Protocol controller, Memory controller		✓	✓	✓	✓
LPDDR3	✓	✓	✓	✓	✓	✓				Protocol controller, Memory controller		✓	✓	✓	
LPDDR2	✓	✓		✓						Protocol controller, Memory controller		✓	✓		
DDR5				✓	✓	✓	✓	✓	✓	Memory controller	✓	✓	✓		
DDR4	✓	✓	✓	✓	✓	✓	✓	✓		Protocol controller, Memory controller		✓	✓		
DDR3	✓	✓	✓	✓	✓	✓				Protocol controller, Memory controller		✓	✓		
DDR2	✓									Protocol controller, Memory controller		✓	✓		

CXL	Process Technologies					Controllers	Configurations	IDE Security Module	Verification IP
	14/16nm	10nm	7nm	6nm	5nm				
CXL 3.0						Device, Host, Dual Mode, Switch Port	x4, x8, x16	✓	✓
CXL 2.0	✓	✓	✓	✓	✓	Device, Host, Dual Mode, Switch Port	x1, x2, x4, x8, x16	✓	✓

Interface IP															
CCIX	Process Technologies					Controllers					Verification IP				
	14/16nm	12nm	7nm	6nm	5nm										
CCIX 1.1	✓	✓	✓	✓	✓	Endpoint, Root Port, Dual Mode, Switch					✓				
CCIX 1.0	✓	✓	✓	✓	✓	Endpoint, Root Port, Dual Mode, Switch					✓				
USB	Processes											Controllers/Features	HS Access & Test	Verification IP	
	55/ 65nm	40/ 45nm	28/ 22nm	20nm	14/ 16nm	12nm	10nm	7nm	6nm	5nm	4nm	3nm			
USB4						✓		✓	✓	✓			Device Router, Host Router	✓	✓
USB-C 3.2 / DisplayPort 1.4 TX						✓		✓		✓	✓	✓	Host, Dual Role, DisplayPort TX, HDCP ESM, DSC	✓	✓
USB 3.2								✓	✓	✓	✓		Host, Device, Dual Role	✓	✓
USB-C 3.1 / DisplayPort 1.4					✓	✓	✓	✓	✓	✓			Host, Dual-Role, DisplayPort TX, HDCP ESM, DSC	✓	✓
USB-C 3.1					✓	✓		✓	✓	✓			Host, Device, Dual-Role	✓	✓
USB 3.1					✓	✓		✓	✓	✓	✓		Host, Device, Dual-Role	✓	✓
USB-C 3.0			✓		✓	✓							Host, Device, Dual-Role	✓	✓
USB 3.0	✓	✓	✓	✓	✓	✓							Host, Device, Dual-Role	✓	✓
USB 2.0/USB-C 2.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		Host, Device, Dual-Role	✓	✓
eUSB2										✓	✓	✓	Host, Device, Dual-Role	✓	✓

Interface IP													
MIPI	Process Technologies									Controllers	Verification IP	Auto Grade	
	40/45nm	28nm	22nm	20nm	14/16nm	12nm	7nm	6nm	3/4/5nm				
C/D-PHY					✓	✓	✓	✓	✓	CSI-2, DSI/DSI-2	✓	✓	
D-PHY	✓	✓	✓	✓	✓	✓	✓	✓		CSI-2, DSI/DSI-2	✓	✓	
M-PHY					✓	✓	✓	✓	✓	UFS, UniPro	✓	✓	
CSI-2										Host, Device	✓	✓	
DSI										Host, Device	✓	✓	
DSC										Encoder, Decoder	✓		
DSI + DSC										DSI/DSI-2 + DSC Encoder	✓		
UniPro										v1.6, v1.8, v2.0	✓		
I3C										Multi-role, Target-Lite	✓		

Embedded Flash Storage	Process Technologies									Controllers	Verification IP	Inline Encryption	Auto Grade
	28nm	14/16nm	12nm	10nm	7nm	6nm	5nm	4nm	3nm				
UFS										✓	✓	✓	✓
UniPro										✓	✓		
M-PHY		✓	✓		✓	✓	✓	✓	✓	✓	✓		✓
eMMC	✓	✓	✓		✓	✓	✓			✓	✓	✓	
SD	✓	✓	✓		✓	✓	✓			✓	✓		
SDIO	✓	✓	✓		✓	✓	✓			✓	✓		

HDMI / DisplayPort	Process Technologies							Controllers	HDCP 2.3 Security Module	Verification IP
	40/45nm	28nm	14/16nm	12nm	7nm	5nm	3 nm			
HDMI 2.1			✓	✓	✓	✓	✓	✓	✓	✓
HDMI 2.0	✓	✓	✓	✓				✓	✓	✓
DisplayPort 2.1							✓	✓	✓	✓
DisplayPort 1.4				✓	✓	✓		✓	✓	✓

Interface IP								
Bluetooth, Thread, Zigbee	Process Technologies						Controller (Link Layer / MAC)	
	40nm			22nm				
	✓			✓				
Bluetooth 5.x RFPHY (Radio + Modem)								
Bluetooth LE 5.2 Link Layer Controller							✓	
IEEE 802.15.4 (Thread, Zigbee) MAC							✓	
Combo Bluetooth LE/IEEE 802.15.4 (LL/MAC)							✓	
Bluetooth LE 5.3 Link Layer Controller							✓	
Bluetooth LE 5.4 Link Layer Controller							✓	

SATA	Process Technologies							Controllers	Verification IP
	65nm	55nm	40/45nm	28nm	22nm	14/16nm	7nm		
SATA 6G	✓	✓	✓	✓	✓	✓	✓	Host, Device	✓
SATA 3G	✓	✓	✓	✓		✓	✓	Host, Device	✓

AMBA	Synthesizable IP				Verification IP		
	AMBA APB 3/4, AHB 2/5, AXI 3/4 interconnect fabric, bridges, interconnect matrices and infrastructure IP	AHB and AXI DMA Controllers	SSI Controller (SPI/xSPI)	I2C/SMBus Controller	AMBA Advance peripherals (I ² C, I ² S, UART, SSI)	Timers, WDT, RTC, interrupt controllers, GPIOs	
	✓						✓
	✓						✓
	✓						✓
	✓						✓
	✓						✓
	✓						✓

Datapath IP	Synthesizable IP	Simulation Models (C++, Verilog)	Verification Models
Floating Point Functions	✓	✓	✓
Fixed Point Functions	✓	✓	✓
Trigonometric Functions	✓	✓	✓

Analog IP									
Data Converters	Process Technologies						Bits	MSPS	Channel Configuration
	90nm	55nm	40nm	28nm	22nm	12/16nm			
300-1000 MSPS ADCs	✓	✓	✓	✓	✓	✓	12	320	Single, Dual
150-300 MSPS ADCs				✓	✓	✓	10, 12	160 to 250	Single, Dual
10-150 MSPS ADCs				✓	✓	✓	10, 12	80 to 125	Single, Dual
<10 MSPS ADCs	✓	✓	✓	✓	✓		10, 12, 14	1 to 5	Single
300-1000 MSPS DACs				✓	✓	✓	12	320 to 640	Single, Dual
<100 MSPS DACs			✓	✓	✓	✓	11, 12	20	Single

Foundation IP

Embedded Memories	Process Technologies												
	65nm	55nm	40/ 45nm	28nm	22nm	14/ 16nm*	12nm	10nm	8nm*	7/6nm*	5nm	4nm	3nm
Ternary Content-Addressable Memory (TCAM)	✓			✓	✓			✓		✓	✓	✓	✓
Multi-port Memories											✓		
High-Speed Single Port SRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ultra High Speed Single Port SRAM										✓			✓
High-Speed Dual Port SRAM	✓	✓	✓	✓		✓	✓	✓	✓				✓
High-Speed 1P Register File (RF) (Cache)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
High-Speed Asynchronous 2-Port Register File				✓	✓		✓						
High Performance Core (HPC) Design Kit				✓	✓	✓	✓			✓	✓	✓	✓
High Speed 2P RF									✓	✓			✓
Ultra High Speed 2P RF													✓
High Speed Pseudo 4P/QP SRAM					✓						✓		
High-Density Single Port SRAM	✓	✓	✓*	✓	✓	✓	✓		✓	✓	✓	✓	✓
High-Density Dual Port SRAM	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓
High-Density 1P RF	✓	✓	✓	✓	✓	✓*	✓	✓		✓	✓	✓	✓
High-Density 2P RF	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
High-Density 3P RF													✓
High-Density ROM	✓	✓	✓	✓	✓*	✓	✓	✓	✓	✓	✓	✓	✓
High-Speed ROM													✓
High-Density 2P,3P Async Latch Based Compiler					✓		✓				✓		
UHD 1P RF								✓			✓	✓	✓
EHD 1P RF											✓	✓	
UHD Single Port SRAM						✓*	✓	✓			✓	✓	✓
UHD 2P RF	✓	✓	✓*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HD P2P RF													✓
EHD 2P RF											✓	✓	
UHD 2P SRAM					✓	✓	✓			✓	✓	✓	✓
HS P2P SRAM													✓

*Available in Consumer and Automotive

Foundation IP

Logic Libraries	Process Technologies												
	65nm	55nm	40/45nm	28nm	22nm	14/ 16nm*	12nm	8nm*	7nm*	6nm	5nm*	4nm*	3nm
Ultra-Performance Library													✓
Ultra-Performance POK													✓
High-Speed Library	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
High-Speed POK	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
High-Density Library	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
High-Density POK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UHD Library	✓	✓	✓	✓	✓	✓		✓					✓
UHD POK	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓
Extreme High Density (EHD) Library								✓					
EHD POK								✓					
Ultra-low leakage (thick oxide)			✓		✓	✓							
High-Performance Core (HPC) Design Kit			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Available in Consumer and Automotive

I/O Products	Process Technologies						
	22nm	14/16nm	12nm	6/7nm	5nm	4nm	3nm
General-purpose I/Os	✓	✓	✓	✓	✓	✓	✓
Specialty I/Os	✓	✓	✓	✓	✓	✓	✓
Auto Grade	✓				✓		

Foundation IP

Non-Volatile Memory	Process Technologies											Bit Counts	Endurance (Write Cycles)
	150/ 180nm	110nm	130nm	80/ 90nm	55/ 65nm	40nm	28nm	22nm	16nm	12nm	5nm		
One-Time Programmable (OTP)	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	16 bit to 1 Mbit	1 per instance
Multi-Time Programmable (MTP) Medium-Density	180nm											16 bit to 512 Kbit	Up to 1,000
MTP EEPROM	180nm		✓		✓	✓						128 bit to 8 Kbit	Up to 1,000,000
MTP ULP	✓											64 bit to 4 Kbit	Up to 100,000
Few-Time Programmable (FTP) Trim	✓	✓	✓									64 bit to 4 Kbit	Up to 1,000
Auto Grade OTP			✓					✓				Up to 1 Mbit	1 per instance
Automotive AEC-Q100 Compliant OTP	✓				✓	✓	✓			✓		Up to 1 Mbit	1 per instance
Automotive AEC-Q100 Compliant MTP	✓		✓									128 bit to 8 Kbit (Up to 256Kb for Medium Density)	Up to 10,000

In-Chip PVT Monitoring IP	Process Technologies										
	28nm	16nm	14nm	12nm	7nm	7nm (Auto)	6nm	5nm	5nm (Auto)	4nm	3nm
Hard IP											
Process Detector	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Voltage Monitor	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Temperature Sensor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Distributed Thermal Sensor							✓	✓	✓	✓	✓
Thermal Diode		✓					✓	✓	✓	✓	✓
Catastrophic Trip Sensor							✓	✓		✓	✓
Soft IP											
PVT Controller	✓	✓		✓	✓	✓	✓	✓		✓	✓
Software Driver							✓	✓		✓	✓

SLM Monitors IP

Path Margin Monitor IP	In-Test						In-Field								
	Path Margin Monitor Unit (PMMU)			Path Margin Monitor Controller (PMMC)			Clock & Delay Monitor IP								
Path Margin Monitor Unit (PMMU)	✓						✓								
Path Margin Monitor Controller (PMMC)	✓						✓								
Clock & Delay Monitor IP	✓														

Security IP			
Security	Synthesizable IP	Software	Safety Compliant
Cryptography IP	✓	✓	✓
Security Protocol Accelerators	✓	✓	✓
Hardware Secure Modules with Root of Trust	✓	✓	✓
HDMI/DisplayPort/USB Type C Content Protection (HDCP 2.3)	✓	✓	
PCIe & CXL Integrity and Data Encryption (IDE)	✓	✓	
DDR/LPDDR Inline Memory Encryption (IME)	✓	✓	
Ethernet Media Access Control Security (MACsec)	✓	✓	

Accelerate Development of Performance-Efficient SoCs

Synopsys ARC® Processors are a family of 32-/64-bit CPUs and DSPs that SoC designers can optimize for a wide range of uses, from deeply embedded to high-performance host applications in a variety of market segments. Designers can differentiate their products by using patented configuration technology to tailor each ARC processor instance to meet specific performance, power and area requirements. The Synopsys ARC processors are also extensible, allowing designers to add their own custom instructions that dramatically increase performance. Synopsys' ARC processors have been used by over 275 customers worldwide who collectively ship more than 2.5 billion ARC-based chips annually.

All Synopsys ARC processors utilize a 16-/32-/64-bit ISA that provides excellent performance and code density for embedded and host SoC applications. The RISC and DSP processors are synthesizable and can be implemented in any foundry or process, and are supported by a complete suite of development tools.

Synopsys ARC processors are supported by a broad ecosystem of commercial and open source tools, operating systems and middleware. This includes offerings from leading industry vendors who are members of the ARC Access Program as well as a comprehensive suite of free and open source software available through embARC.org.

Processor IP											
ARC VPX DSP Processors	Scalar Execution Unit		Vector Execution Unit	Vector Length	Dual SIMD Multiply Units	Dual Floating Point Vector Engine (optional)	Floating Point Vector Math Engine (optional)		Safety Certified	L1 Coherency	Multicore configurations
VPX2	✓		3	128-bit	✓	✓	✓			✓	2x
VPX2FS	✓		3	128-bit	✓	✓	✓		✓	✓	2x
VPX3	✓		3	256-bit	✓	✓	✓			✓	2x
VPX3FS	✓		3	256-bit	✓	✓	✓		✓	✓	2x
VPX5	✓		3	512-bit	✓	✓	✓			✓	2x, 4x
VPX5FS	✓		3	512-bit	✓	✓	✓		✓	✓	2x, 4x
ARC NPX Neural Processors	MACs	DMA	L2 Shared Memory	L2 Controller	Tensor Accelerator	Tensor Floating Point Unit (FPU) (optional)	Trace	Memory Management Unit (MMU)	Virtualization	ASIL B/D	
NPX6-1K	1,024	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-4K	4,096	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-8K	8,192	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-16K	16,384	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-32K	32,768	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-64K	65,536	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-96K	98,304	✓	0-64 MB	✓	✓	✓	✓	✓	✓		
NPX6-1KFS	1,024	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-4KFS	4,096	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-8KFS	8,192	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-16KFS	16,384	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-32KFS	32,768	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-48KFS	49,152	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-64KFS	65,536	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	
NPX6-96KFS	98,304	✓	0-64 MB	✓	✓	✓	✓	✓	✓	✓	

Processor IP										
Embedded Vision Processors	DNN/CNN Accelerator (MACs)	Vision CPU MACs	DMA	32-bit Scalar	# of Vector DSPs	Vector DSP Bit Width	L1 Cache Coherency	Floating Point Unit (FPU)	Vector Floating Point Unit	Safety Certified
EV71	880, 1,760, or 3,520	64	✓	1	1	512		✓	✓	
EV72	880, 1,760, or 3,520	128	✓	2	2	512	✓	✓	✓	
EV74	880, 1,760, or 3,520	256	✓	4	4	512	✓	✓	✓	
EV71FS	880, 1,760, or 3,520	64	✓	1	1	512		✓	✓	✓
EV72FS	880, 1,760, or 3,520	128	✓	2	2	512	✓	✓	✓	✓
EV74FS	880, 1,760, or 3,520	256	✓	4	4	512	✓	✓	✓	✓

ARC HS 64-bit Processors	Max CCM Size	L1 Cache (I & D)	L1 Coherency	Shared L2 Cache/ Cluster Mem.	MMU	Floating Point	Trace
HS66, HS66MP	16MB	64K	✓	64MB (MP)		SIMD	✓
HS68, HS68MP	16MB	64K	✓	64MB	✓	SIMD	✓

ARC HS 32-bit Processors	Max CCM Size	L1 Cache (I & D)	DSP	Safety Certified	L1 Coherency	L2 Cache	MMU	Floating Point	Trace
HS34, HS34x2, HS34x4	16MB							✓	✓
HS36, HS36x2, HS36x4	16MB	64K			✓			✓	✓
HS38, HS38x2, HS38x4	16MB	64K			✓	8MB	✓	✓	✓
HS44, HS44x2, HS44x4	16MB							✓	✓
HS46, HS46x2, HS46x4	16MB	64K			✓			✓	✓
HS48, HS48x2, HS48x4	16MB	64K			✓	8MB	✓	✓	✓
HS45D, HS45Dx2, HS45Dx4	16MB		✓					✓	✓
HS47D, HS47Dx2, HS47Dx4	16MB	64K	✓		✓			✓	✓
HS46FS, HS46FSx4	16MB	64K		✓	✓			✓	✓
HS47DFS, HS47DFSx4	16MB	64K	✓	✓	✓			✓	✓
HS48FS, HS48FSx4	16MB	64K		✓	✓	8MB	✓	✓	✓
HS56, HS56MP	16MB	64K			✓	64MB (MP)		SIMD	✓
HS57D, HS57DMP	16MB	64K	✓		✓	64MB (MP)		SIMD	✓
HS58, HS58MP	16MB	64K			✓	64MB	✓	SIMD	✓

Processor IP										
ARC 32-bit Processors	Max CCM Size (I&D)	Cache Size (I&D)	DSP	MPU	Safety Certified	Enhanced Security Package	MMU	Floating Point	Trace	
EM4	2MB			✓		✓		✓		✓
EM6	2MB	64K		✓		✓		✓		✓
EM5D	2MB		✓	✓		✓		✓		✓
EM7D	2MB	64K	✓	✓		✓		✓		✓
EM9D	2MB		✓	✓				✓		✓
EM11D	2MB	64K	✓	✓				✓		✓
EM22FS	2MB	64K	✓	✓	✓			✓		✓
SEM110	2MB			✓				✓		
SEM120D	2MB		✓	✓				✓		
SEM130FS	2MB		✓	✓	✓			✓		
605 LE	512KB			✓						
710D	512KB		✓	✓				✓		✓
725D	512KB	64K	✓	✓				✓		✓
770D	512KB	64K	✓	✓				✓		✓
610D	512KB		✓	✓				✓		✓
625D	512KB	32K	✓	✓				✓		✓
AS211SFX	512KB	32K	✓	✓				✓		✓
AS221BD (dual-core)	512KB ea core	32K ea core	✓	✓				✓		✓

ARC Processor IP Subsystems	Supported ARC Processors	Hardware Accelerators	Integrated Peripherals	Included Software
IoT Communications IP Subsystem	EM11D	✓	SPI, UART(s), GPIO, Digital Front End (DFE), PMU, USIM, MIPI RFFE and RTC	DSP library, base communications library, device drivers
Data Fusion IP Subsystem	EM5D, EM7D, EM9D, EM11D	✓	SPI, I ² C, I ² S, UART, PDM, ADC I/F, APB I/F, GPIO	DSP library, audio processing library, peripheral I/O drivers (bare metal), reference designs
Sensor and Control IP Subsystem	EM4, EM6	✓	SPI, I ² C, PWM, UART, ADC I/F, DAC I/F, APB I/F, GPIO	DSP library, motor control library, peripheral I/O drivers (bare metal), reference designs

IP Accelerated Initiative

With IP Accelerated, Synopsys has augmented its broad portfolio of silicon-proven Synopsys IP portfolio with SoC architecture design support, IP subsystems, signal integrity/power integrity analysis, IP hardening, and comprehensive silicon bring-up support to accelerate your product development cycle.

IP Subsystems support many protocols and deliverables for IP integration including configuration scripts, test environment, test scripts, linting, CDC checks, RDC checks, synthesis scripts and implementation scripts. The subsystems also include AMBA or native bus, clock management, reset, DMA, interrupts, memory, power management, debug and test logic.

Hardening and SIPI provide a GDSII for integration in an SoC and include on-chip decoupling capacitance, power and ground pins, PHY & SDRAM termination strategy, SoC package design, PCB stack-up and trace width/spacing, performance at required data rate, read/write/address, and command/control timing budgets.

With your vision and our expertise, we can tune IP to your SoC, enabling your team to focus on product differentiation.

IP Subsystems				
Interface IP Subsystems	Supported IP	Multi-Protocol Support	Integrated Logic	Included Scripts
IP Protocol-Specific Subsystems	USB, PCIe, DDR, HBM, UCIe, Ethernet, MIPI, AMBA, Security, MACsec, PCIe switch, CXL 2.0 switch	✓	AMBA or native bus, clock management, reset, DMA, interrupts, memory, power management, debug and test logic	Configuration scripts, test environment, test scripts, linting, CDC checks, RDC checks, synthesis scripts, implementation scripts

Interface IP Subsystems	Combo Subsystems	Auto Grade	UVM	Spyglass	SRAM/MBIST	UPF	DFT
PCIe/CXL	PCIe-Ethernet, PCIe-USB, PCIe-SATA PCIe-CCIX, CXL	ASIL B	✓	✓	✓	✓	✓
DDR3/4/5	DDR4/5, LPDDR4/4X/5/5X						
HBM3							
UCIe							
Ethernet	Ethernet-PCIe, Ethernet-USB						
USB	USB-DP, USB-DP-HDMI, USB-PCIe, USB-Ethernet, eUSB						
MIPI	CSI, DSI, UFS						

Configurable IP Subsystems	Combo Subsystems	Auto Grade	UVM	Spyglass	SRAM/MBIST	UPF	DFT
CXL 2.0 switch	✓	ASIL B	✓	✓	✓	✓	✓
PCIe switch							
MACsec							

Signal/Power Integrity Analysis & IP Hardening

Supported IP	Multi-Protocol Support	Consultation Expertise
DDR, LPDDR, HBM, UClE, PCIe, USB, MIPI, Ethernet	✓	On-chip decoupling capacitance, power and ground pins, PHY & SDRAM termination strategy, SoC package design, PCB stack-up and trace width/spacing, performance at required data rate, read/write/address, command/control timing budgets

IP Hardening

Supported IP	Multi-protocol Support	Synthesis to GDSII	Floor Planning	Scan Insertion	Power Grid	Skew Balancing	RDL Routing	Bump Assignment	IR/EM-Analysis	DRC/LVS	GLS
DDR/LPDDR	✓	✓	✓	✓	✓	✓	✓	✓	✓		
HBM2E / HBM3											
UClE											
PCIe											✓

Signal/Power Integrity Analysis

Supported IP	Multi-protocol Support	Floorplan Review	Pre/Post Layout Analysis	Decap Cell Size/Placement	Power Impedance Simulations	Eye Quality Analysis	End to End Analysis	Timing Budget Analysis	Signal Quality PVT Corner Analysis	Full Report
DDR/LPDDR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HBM2E / HBM3										
UClE										
HBI										
PCIe										
MIPI										
Ethernet										

For more information on Synopsys IP, visit synopsys.com/ip.



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