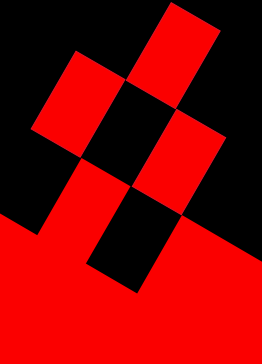






TSMC

IP & Library Alliance



# TSMC's Five Star IP Alliance Program Simplifies Design Integration

IP Vendors	Core Type	Pre-Silicon ★	Verification ★★★	Production VCX Tradable ★★★★★
<b>Embedded Processor</b>				
ARC International	ARCTagent A4/A5 (32-bit RISC)	0.25G/0.18G	0.25G/0.18G	0.25G/0.18G
ARM	ARM7TDMI: 32-bit RISC Processor	0.25G/0.18G/0.18LP/0.13G	0.25G/0.18G/0.18LP/0.13G	0.25G/0.18G
	ARM922T: 32-bit RISC Processor	0.18G/0.13G	0.18G	0.18G
	ARM946: 16/32-bit RISC Processor	0.18G	0.18G	
	ARM1022: 32/64-bit RISC Processor	0.13LV □ □	0.13LV	
MIPS	MIPS32 4Kc (32 bit) Processor	0.18G	0.18G	
	MIPS32 5Kc (64 bit) Processor	0.18G	0.18G	
	MIPS64 20Kc (64 bit) Processor	0.18G/0.13LV	0.18G/0.13LV	
Tensilica	Xtensa CPU	0.25G/0.18G	0.25G/0.18G □	0.25G/0.18G
<b>DSP</b>				
3DSP	Configurable DSP	0.18G	0.18G	
DSP Group	Oak Core	0.25G/0.18G	0.25G/0.18G	0.25G
	Teak Core	0.25G	0.25G	0.25G
	Teak Lite Core	0.18G	0.18G	0.18G
	Palm Core	0.18LP	0.18LP	0.18LP
Global UniChip	Hi Performance 16-bit DSP	0.18G	0.18G	
LSI Logic	ZSP400 Dual MAC Superscalar DSP	0.18G/0.13G	0.18G/0.13G	0.18G/0.13G
<b>Networking and Communications</b>				
MystiCom	10/100 Fast Ethernet PHY	0.18G	0.18G	
TriCN	System Physical IF Level 4 Phase 2 (SPI-4.2)	0.18G/0.13LV(low-k)	0.18G/0.13LV(low-k)	0.18G/0.13LV(low-k)
TSMC	USB 1.1	0.25G/0.18G/0.18LV/ 0.15G/0.13G	0.25G/0.18G/0.18LV/0.15G 0.13G	0.25G/0.18G
<b>Mixed-Signal</b>				
Artisan/NurLogic	PLL, AGP, PLL, ADC, DAC	0.25G/0.18G	0.25G/0.18G	0.25G/0.18G
	PCI-X / 66MHZ	0.15G	0.15G	
	LVDS, HSTL, PECL, SSTL □ □	0.15G/0.13G	0.15G/0.13G □ □	0.25G/0.18G
Barcelona	Miro Class PLL Engine	0.25G/0.18G/0.13G	0.25G/0.18G/0.13G	
Cadence/Tality	PLL, DAC, ADC	0.25G/0.18G/0.13G	0.25G/0.18G/0.13G	0.25G/0.18G/0.13G
Global UniChip	PLL, DAC	0.25G/0.18G	0.25G/0.18G	0.25G
InnoChip	ADC, DAC	0.18G	0.18G	
LEDA Systems	PLL, ADC, DAC	0.25G/0.18G/0.15G/0.13G	0.25G/0.18G/0.15G	0.25G/0.18G
	LVDS, HSTL, SSTL, PECL	0.18G/0.15G/0.13G	0.18G/0.15G	0.18G/0.15G/0.13G
Nordic VLSI	ADC, DAC	0.25G/0.18G	0.25G/0.18G	0.25G/0.18G
ParthusCeva	PLL Compiler	0.25G/0.18G/0.13G	0.25G/0.18G/0.13G	
TriCN	PLL	0.13LV (low-k)	0.13LV (low-k)	
TSMC	SSTL_2	0.18G/0.13G/0.13LV	0.18G/0.13G	0.13LV (low-k)
	HSTL, LVDS	0.18G	0.18G	
	PCIX	0.18G/0.13G	0.18G/0.13G	
	PLL	0.25G/0.25E/0.18G/0.18LV/ 0.15G/0.15LV/0.13G/0.13LV	0.25G/0.25E/0.18G/0.18LV/ 0.15LV/0.13G/0.13LV	0.25G/0.18G/0.18LV
	DAC	0.25G/0.18G/0.18LV/0.15LV/ 0.13G/0.13LV	0.25G/0.18G/0.18LV/0.15LV/ 0.13G/0.13LV	
	ADC	0.18G	0.18G	
Virtual Silicon	PLL Compiler	0.15G/0.18G	0.15G/0.18G □	0.15G/0.18G
<b>Radio Frequency (RF)</b>				
Cadence/Tality	Bluetooth PHY	0.25G □ □	0.25G	
Ericsson	Bluetooth Baseband	0.18G □ □	0.18G	
InProComm	WLAN 802.11b Baseband	0.18G □ □	0.18G	
NewLogic	Bluetooth transceiver, Bluetooth Baseband	0.18MiM	0.18MiM	
<b>High-Speed Interface</b>				
ARC International	USB Highspeed (OTG)	0.18G	0.18G	0.18G □
Cadence/Tality	LVDS, 1.25G / 2.5G / 3.125GB Ser Des	0.18G/0.13G	0.18G/0.13G □	
Global UniChip	USB 2.0 PHY	0.25G □ □	0.25G	
Innovative Semiconductors	USB 2.0 PHY	0.25G/0.18G	0.25G	0.25G 
Rambus	RAC (Rambus ASIC Cell)	0.25G/0.18G/0.13LV	0.25G/0.18G □	0.25G
	5-10G Ser Des	0.13G	0.13G	
	2.5/3.125G Quad SerDes	0.18G/0.13G/0.13LV	0.18G/0.13G/0.13LV	0.18G
Synopsys / InSilicon	USB 2.0 Controller & PHY	0.18G	0.18G	0.25G 
	USB 1.1 Controller & PHY	0.25G/0.18G	0.25G/0.18G □	0.25G/0.18G 
	1394 Device Controller	0.25G/0.18G	0.25G/0.18G □	0.25G/0.18G 
Silicon Bridge	0.6-3.2G Quad SerDes for 10GE/10GFC. XAUI	0.13G	0.13G	0.13G
	Low Power 10/100-Base-TX PHY	0.25G	0.25G □ □	
TriCN	SSTL-2, DDR SDRAM, LVDS, SPI-4.2, HSTL, PCI-X	0.18G/0.13LV (low-k)	0.18G/0.13LV (low-k)	0.18G/0.13LV (low-k)
<b>Multimedia</b>				
Global UniChip	JPEG Encoder & Codec	0.25G □ □	0.25G □ □	0.25G
	NTSC/PAL Encoder	0.25G	0.25G □	0.25G
Zoran	NTSC/PAL SECAM Decoder	0.25G, 0.18G □	0.25G, 0.18G □	0.25G, 0.18G
	NTSC/PAL TV Encoder	0.25G, 0.18G	0.25G, 0.18G □	0.25G, 0.18G
	Progressive Out TV Encoder, Video Deinterlacer	0.18G	0.18G	0.18G
<b>Programmable Logic</b>				
eASIC	Programmable Logic Core	0.18G/0.13G	0.18G	
Leopard Logic	HyperBlox FPGA	0.25G/0.13G	0.18G □	

Note: For the most up-to-date roster of TSMC IP Partners, visit our web site at [www.tsmc.com](http://www.tsmc.com).

# Library Availability by Process Family

## 24/7 Access Through TSMC-Online

TSMC SPECIFIC LIBRARIES	0.25-MICRON	0.18-MICRON	0.15-MICRON	0.13-MICRON	90-NM
Artisan Components	Available Now	Available Now	Available Now	Available Now	Available Now
Dolphin Technology	N/A	In Development	In Development	Available Now	In Development
NurLogic	Available Now	Available Now	Available Now	Available Now	Available Now
TSMC	Available Now	Available Now	Available Now	Available Now	Available Now
Virage Logic	Available Now	Available Now	Available Now	Available Now	Available Now
Virtual Silicon	Available Now	Available Now	N/A	N/A	N/A

## The Semiconductor Industry's Only Structured Library Evaluation Process

### Library Service

### Descriptions

#### 3rd Party Business Model

- TSMC enables access to a portfolio of quality libraries.
- TSMC manages business and technical programs with 3rd party library vendors.
- TSMC facilitates relationships between customers and library vendors to ensure successful new tape outs, time-to-market, and time-to-volume.
- Business and financial ownership is between customer and 3rd party vendor.



#### Library Fact Sheets

- TSMC is neutral.
- TSMC only presents facts.
- Library fact sheets are not benchmarks.
- Use Fact Sheets as a starting point for technical understanding of a partner's capability.



#### TSMC-9000™ Compliance

- TSMC has taken a leadership role in setting standards.
- TSMC-9000™ ensures:
  - Library completeness.
  - Library quality.
  - Library silicon validation.



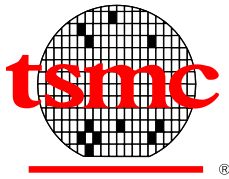
#### Library Evaluation

TSMC has developed this reference document to help ensure the library meets specific design requirements.



#### Design Requirements Document

Design requirements document enables trade-off analysis to determine that at least two libraries closely match design requirements.



## Empowering Innovation

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