



# TowerJazz IP Portfolio

March 2011

**The Global Specialty Foundry Leader**

# TS18SL – 0.18um Standard Logic

## STD cells

Vendor	Library
ARM	Sage X - STD Cell Library
ARM	Metro STD cell Library
TowerJazz	FS310 3.3V STD cells
TowerJazz	FS120 STD Cells
TowerJazz	FS020 STD Cells 0.18um LV 0.9-2.2v Library
TowerJazz	FS510 5V STD Cells

## Memories

Vendor	Library
ARM	RA1 Single-Port SRAM
ARM	RA2 Dual-Port SRAM
ARM	RF1 Single-Port Register File
ARM	RF2 Two-Port Register File
ARM	Via ROM Generator
TowerJazz	RS160 Single Port SRAM
TowerJazz	RD130 Dual Port SRAM
TowerJazz	RO160 Via ROM
Synopsys	ASAP – Single Port SRAM
Synopsys	ASAP - Dual-Port Register File
Synopsys	ASAP – Via ROM
Synopsys	ASAP – Dual Port SRAM

## IO Library

Vendor	Library
ARM(Artisan)	GPIO Inline I/O Pad Library
ARM(Artisan)	GPIO Staggered I/O Pad Library
TowerJazz	CIO150 1.8v Super Compact Inline I/O
TowerJazz	CIO250 3.3v Super Compact Inline I/O
TowerJazz	CIO250 3.3v Super Compact Top-Thick-Metal Inline I/O
TowerJazz	CIO150 1.8v Super Compact Top-Thick-Metal Inline I/O
TowerJazz	PIO150 1.8v Super Compact Inline Pad Over Logic I/O
TowerJazz	PIO250 3.3v Super Compact Inline Pad Over Logic I/O
TowerJazz	PIO510 5V/1.8V, 5V Only, ESD, Isolated P-Well
TowerJazz	IO510 5V/1.8V, 5V Only, ESD
ARM	USB 1.1 IO designed for 0.16

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## Analog IPs

Vendor	Library
Synopsys	WLAN baseband AFE (802.11abg)
Synopsys	16-bit, 9.6kHz, General Purpose Codec
Synopsys	Oscillator LP 32KHz
Synopsys	PLL 50-250MHz
Synopsys	PLL 25MHz-250MHz Fcomp minimum 1MHz
Synopsys	PLL 225-500MHz
Synopsys	PLL 325-700MHz
Synopsys	20B Audio Stereo DAC 2pF Load
Synopsys	20B Audio Stereo DAC 40pF Load
Synopsys	USB2.0 LS/FS (USB1.1 Transceiver)
Synopsys	USB2.0 OTG UTMI+ Level 3 PHY
Synopsys	USB2.0 PHY

## Analog IPs

Vendor	Library
Synopsys	BGAP 3V
Synopsys	Capless LDO Voltage Regulator
Synopsys	LDO Voltage Regulator
S3	10 Bit 60 MSPS Pipeline ADC
S3	10 Bit 30 MSPS Pipeline ADC
TowerJazz	Transmitter part in the RF Front End - 5GHz
TowerJazz	RF Front End Receiver - 5GHz
MOSCAD	13 bits 2.56MS/s SAR ADC
MOSCAD	Low-power Bandgap
MOSCAD	Low-noise Bandgap reference
MOSCAD	Current steering DAC
MOSCAD	Line driver 0.5A

## Analog IPs

Vendor	Library
MOSCAD	Power-on reset circuit for 1.8V and 3.3V
MOSCAD	VGA with gain 0.5 to 128
MOSCAD	120mA 3.3V to 1.8V regulator
Mixel	80 Mbps to 1Gbps data rate MIPI Transceiver
Mixel	MDDI T2 Client PHY compliant with VESA MDDI Client spec
Mixel	4 Channel LVDS Serializer with 25MHz to 165MHz input clock.
Mixel	LVDS TX up to 1.25 Gbps.
Mixel	LVDS transceiver up to 600 Mbps.
Mixel	MIPI slave compliant with 1.0 standard for D-PHY
Mixel	High performance PLL based frequency synthesizer.
CEVA	Digital PLL up to 650 MHz

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## NVM

Vendor	IP
Kilopass	XPM Module (OTP Core)
Synopsys	NOVeA 2.0
Synopsys	NOVeA
Sidense	SLP OTP Memory
Novocell	NovoBlox OTP Memory
TowerJazz	64 bit Yflash module 5V
TowerJazz	64 bit Yflash module 3.3V

## Processors

Vendor	Library
ARM	ARM7TDMI - 32B RISC Processor
ARM	ARM922T - 32B RISC Processor
Ceva	CEVA Teak 1.8v DSP Core
Ceva	CEVA Xpert-Teak 1.8v DSP Sub-System

# TS18PM – 0.18um Power Management

## STD cells

Vendor	Library
ARM	Sage X - STD Cell Library 1.8V
ARM	Metro STD cell Library 1.8V
TowerJazz	FS120 STD Cells 1.8V
TowerJazz	FS020 STD Cells 0.18um LV 0.9-2.2v Library
TowerJazz	FS510 5V STD Cells
TowerJazz	FS510PM 5V STD Cells

## Memories

Vendor	Library
ARM	RA1 Single-Port SRAM 1.8V
ARM	RA2 Dual-Port SRAM 1.8V
ARM	RF1 Single-Port Register File 1.8V
ARM	RF2 Two-Port Register File 1.8V
ARM	Via ROM Generator 1.8V
TowerJazz	RS160 Single Port SRAM 1.8V
TowerJazz	RD130 Dual Port SRAM 1.8V
TowerJazz	RO160 Via ROM 1.8V
Synopsys	ASAP – Single Port SRAM 1.8V
Synopsys	ASAP - Dual-Port Register File 1.8V
Synopsys	ASAP – Via ROM 1.8V
Synopsys	ASAP – Dual Port SRAM 1.8V

## IO Library

Vendor	Library
TowerJazz	PIO510 5V/1.8V, 5V Only, ESD, Isolated P-Well
TowerJazz	IO510 5V/1.8V, 5V Only, ESD

**NOTE:** Using the memories is limited to using the 4M1L or 5MXX metallization

# TS18PM – 0.18um Power Management

## NVM

Vendor	IP
TowerJazz	64 bit Yflash module 5V
TowerJazz	4 Kbit Yflash module 5V with Charge Pump

# TS13SL – 0.13um Standard Logic

## STD cells

Vendor	Library
ARM	Sage X2 - STD Cell Library
ARM	SC7 (Metro) library SVt
ARM	PMK (Power Management Kit) SVt/HVt
ARM	SC7 (Metro) library HVt
ARM	PMK (Power Management Kit) HVt
Synopsys	ASAP - HD STD Cells
Synopsys	ASAP - HS Metal Programmable STD Cells
TowerJazz	FS120 STD cell library

## Memories

Vendor	Library
ARM	SP SRAM
ARM	SP-SRAM HVt
ARM	DP SRAM
ARM	Via ROM Generator
ARM	RF-1P
ARM	RF-2P
Synopsys	ASAP - 1PHD 2.14 Bitcell
Synopsys	ASAP - 1PRF
Synopsys	ASAP - 2PHD
Synopsys	ASAP - 2PRF
Synopsys	STAR - 1PHD 2.14 Bitcell
Synopsys	STAR - 2PHD
Synopsys	ASAP - VROM

## IO Library

Vendor	Library
ARM	NGPIO PL 3.3V
ARM	GPIO Inline Pad Library 3.3v
ARM	GPIO Staggered Pad Library 3.3v
Synopsys	3.3v Base I/O
Aragio	ESD I/O Interface for High-speed USB OTG

# TS13SL – 0.13um Standard Logic

## Analog IPs

Vendor	Library
ARM	HSTL Class I PL 3.3V 1.5V 266MHz
ARM	HSTL Class II PL 3.3V 1.5V 266MHz
ARM	SSTL2 Class I PL 3.3V 210MHz
ARM	SSTL2 Class II PL 3.3V 250MHz
ARM	LVDS SE PL 3.3V 850MHz
Synopsys	PLL 25-250MHz
Synopsys	PLL 56.25-500MHz
Synopsys	USB2.0 OTG UTMI+ Level 3 PHY
MOSCAD	LVDS (receiver, transmitter, reference)

## NVM

Vendor	Library
Synopsys	AEON/MTP Parallel
Kilopass	XPM OTP
Novocell	NovoBlox OTP Memory

# TS13LL – 0.13um Low Leakage

## STD cells

Vendor	Library
Synopsys	ASAP - HS Metal Programmable STD Cells
Synopsys	ASAP - HD STD Cells

## Memories

Vendor	Library
Synopsys	ASAP - 1PHD 2.14 Bitcell
Synopsys	ASAP - 1PRF
Synopsys	ASAP - 2PHD
Synopsys	ASAP - 2PRF

## IO Library

Vendor	Library
Synopsys	3.3v Base I/O
Aragio	ESD I/O Interface for High-speed USB OTG

# TS13LL – 0.13um Low Leakage

## Analog IPs

Vendor	Library
Synopsys	PLL 25-250MHz
Synopsys	PLL 56.25-500MHz
Synopsys	USB2.0 OTG UTMI+ Level 3 PHY

## NVM

Vendor	Library
Synopsys	AEON/MTP Parallel

# CA18/SBC18 – 0.18um Standard Logic / RF/ SiGe

## STD cells

Vendor	Library
ARM	Sage X –STD Cell Library 1.8V
ARM	Metro – STD Cell Library 1.8V
Conexant	STD Cell Library 3.3v
Conexant	STD Cell Library 5.0v

## Memories

Vendor	Library
ARM	RA1 Single-Port SRAM 1.8V
ARM	RA2 Dual-Port SRAM 1.8V
ARM	RF1 Single-Port Register File 1.8V
ARM	RF2 Two-Port Register File 1.8V
ARM	ROD Diffusion ROM 1.8V

## IO Library

Vendor	Library
Conexant	GPIO Inline Pad Library 3.3v/1.8v
Conexant	GPIO Inline Pad Library 3.3v-only
Conexant	GPIO Inline Pad Library 5.0v-only

**NOTE:** Using the memories is limited to using the 5ML or 6ML

# CA18/SBC18 – 0.18um Standard Logic / RF/ SiGe

## Analog IPs

Vendor	Library
Cadence	12 Bit 100 MSPS ADC [AD-0030]
Cadence	10 Bit 300 MSPS DAC [DA-0023]
KT Micro	10 Bit 250 MSPS ADC 90mW [KTAD10200]
KT Micro	10 Bit 400 MSPS ADC [KTAD08400]
KT Micro	10 Bit 100 KSPS ADC [KTAD100011]
KT Micro	10 Bit 240 MSPS DAC [KTDA10240]
KT Micro	SPI Master/Slave [KSPIO40001]
KT Micro	I2C 2-Wire Interface
Tahoe RF	Sigma Delta Modulator [TRFS-261jz]
Tahoe RF	Charge Pump [TRFS-265jz]
Tahoe RF	Phase-Frequency Detector [TRFS-264jz]
Tahoe RF	Ref Divider [TRFS-263jz]

## NVM

Vendor	Library
Novocell	NVM-OTP
TowerJazz	3v, 350mA fuse

# SBC18 – 0.18um SiGe

## Analog IPs

Vendor	Library
ADSANTEC	Reconfigurable 1:16/1:8 Deserializer [ASNT2012]
ADSANTEC	Reconfigurable 16:1/8:1 Serializer [ASNT1011]
ADSANTEC	1Gbps LVDS/CMOS Converter [ASNT3010]
TowerJazz	LNA + Mixer Front-End [JZ1C030]
TowerJazz	RSSI [JZ1DE30]
TowerJazz	5.2GHz LNA [JAZ10100]
TowerJazz	IQ Modulator [JZ1EF30]
TowerJazz	AGC [JZ1EF30]
TowerJazz	Up-Converter [JZ1EF30]
TowerJazz	Quad-Current Charge Pump [JZ15X74CP]
Pacific MicroCHIP	30GHz Mixer [PMCC-IRMIX30G]
Pacific MicroCHIP	20-30GHz VCO [PMCC-VCO24]

## Analog IPs

Vendor	Library
Pacific MicroCHIP	50GHz Programmable Divider [PMCC-DIV50G1]
Pacific MicroCHIP	35GHz Output Driver [PMCC-OBUF35G]
Tahoe RF	VCO [TRFS-205jz]
Tahoe RF	Mixer (L1 & L2) [TRFS-103jz]
Tahoe RF	Receiver IF VGA [TRFS-158jz]
Tahoe RF	GPS Receiver [TRFS-159jz]
Tahoe RF	2-9GHz VCO [TRFS-206-15jz]
Tahoe RF	RF Divider [TRFS-262jz]

# CA13/SBL13 – 0.13um Standard Logic / RF/ SiGe

## STD cells

Vendor	Library
Conexant	STD Cell Library A13 1.5V
Conexant	STD Cell Library A13 1.5V HVt
Synopsys	HD STD Cell Library A13LP 1.5V
Synopsys	HD STD Cell Library A13LP 1.5V HVt

## Memories

Vendor	Library
Synopsys	SP SRAM 1.5V
Synopsys	DP SRAM 1.5V
Synopsys	DP SRAM HVt 1.5V
Synopsys	Diffusion ROM 1.5V
Synopsys	Diffusion ROM HVt 1.5V
Synopsys	RF-1P/2P 1.5V
Synopsys	RF-1P/2P HVt 1.5V

## IO Library

Vendor	Library
Conexant	GPIO Inline Pad Library 3.3v/1.5v A13

# CA25 (3.3V)

## STD cells

Vendor	Library
Conexant	STD Cell Library 3.3v

## IO Library

Vendor	Library
Conexant	GPIO Inline Pad Library 3.3v-only

# CP05, BCD25 (5V)

## STD cells

Vendor	Library
Conexant	STD Cell Library 5.0v
Nangate	HD STD Cell Library 5.0v

## IO Library

Vendor	Library
Conexant	GPIO Inline Pad Library 5.0v-only

## Analog IP

Vendor	Library
KT Micro	Bandgap 1.2V [KTM-0B01]
KT Micro	1W Class-D Audio Amplifier [KAPA00001]
KT Micro	Clock Synthesizer [KTM-0F0801]
TowerJazz	5v, 350mA fuse

# SBC35 – 0.35um SiGe

## STD cells

Vendor	Library
Conexant	STD Cell Library 3.3V
Conexant	STD Cell Library 5V

## IO Library

Vendor	Library
Conexant	GPIO Inline Pad Library 3.3v-only

# SBC35 - 0.35um SiGe

## Analog IP

Vendor	Library
TowerJazz	Bandgap 1.195V [JZ20160]
TowerJazz	Power-On Reset [JZ21280]
TowerJazz	7v, 350mA fuse
TowerJazz	LNA + Mixer [JAZ1CEA0]
TowerJazz	IF Mixer [JZ1FE70]
TowerJazz	Limiter/RSSI [JZ1GE70]
TowerJazz	1.9GHz LNA [JZ10E70]
TowerJazz	2.7GHz Prescaler [JZ15F80PRS]
TowerJazz	600MHz Prescaler [JZ25F80PRS]
TowerJazz	Phase-Frequency Detector [JZ15F80PD]
TowerJazz	Charge Pump [JZ15X70CP]
TowerJazz	IQ Modulator [JZ19E70]

## Analog IP

Vendor	Library
TowerJazz	Automatic Power Control (APC) [JZ19E70]
TowerJazz	Up-Converter [JZ19E70]
TowerJazz	PA Driver [JZ1DE70]

## NVM

Vendor	Library
TowerJazz	Y-Flash 64 bit module

# C05 – 0.5um

## STD cells

Vendor	Library
Conexant	STD Cell Library 5V

## IO Library

Vendor	Library
Conexant	GPIO Inline Pad Library 5.0v-only

**TOWERjazz**

**[www.towerjazz.com](http://www.towerjazz.com)**