

SiGe H3 260GHz, 0.18um, Third Generation SiGe BiCMOS Technology

Our industry leading SiGe process is optimized for next-generation needs for high-speed interfaces in communication protocols such as Thunderbolt, optical fiber, and high-data rate wireless by improving performance while reducing noise and power consumption of key building blocks. SBC18H3 also targets applications such as automotive collision avoidance systems, millimeter-wave radar and GHz imaging.

SBC18H3 is TowerJazz's third generation 0.18um SiGe technology and offers transistors with 240GHz Ft and 260GHz Fmax in a cost-effective and analog-friendly 0.18um node. IP of high-speed components such as TIAs, Laser Drivers, SerDes, CDRs from H2 and HX can be readily ported to the new H3 process since they are all in the same 0.18um node while power consumption and noise can be reduced and performance improved.

Power consumption is dramatically reduced with H3 where, for example, a 77GHz amplifier can be made to consume three times less DC power than was possible with older technology. At the same time, noise is improved to levels that far exceed those of prior SiGe technology and are superior to numbers typically reported for more expensive III-V material systems (minimum noise figure at 20GHz is measured at less than 1dB and at 40GHz at only 2dB).

Device	Parameter	SBC18H3
CMOS FET	Nmos (v)	1.8/3.3
	Pmos (v)	1.8/3.3
	Density (μm)	0.18
BJT NPN	Ft (GHz)	240
	Fmax (GHz)	260
	Bvceo (v)	1.16
DEEP TRENCH		Yes
SCHOTTKY DIODE		Yes
TRIPLE WELL (DNW)		Yes
P-I-N DIODE		Yes
BJT PNP	Lateral PNP	Yes
	17GHz Vertical PNP	No
	Parasitic VPNP	Yes
Capacitors	MIM CAP ($\text{fF}/\mu\text{m}^2$)	2.0
	Stacked MIM CAP ($\text{fF}/\mu\text{m}^2$)	4.0
Varactors	P+/nwell Junction	No
	High Performance PN Junction	Yes
	MOS	Yes
Resistors	Unsilicided P+ Poly resistor (Ohm/sq)	235 & 1K
	Silicided P+ Poly resistor	6
	Metal resistor (Ohm/sq)	24
	nwell resistor (Ohm/sq)	890
Inductors		Yes

SiGe Design Kit Overview

- Scalable models and p-cells for all devices
- Transmission line toolbox
- Advanced inductor toolbox (JIT)
- Advanced X-sigma corner modeling

Customer Service and Support

- <https://portal.towerjazz.com>
- Online WIP, Tape-Out and Help Ticket System
- File Exchange for design kits and online documentation
- Dedicated Sales and Engineering Support

ASIC Library Views and Features

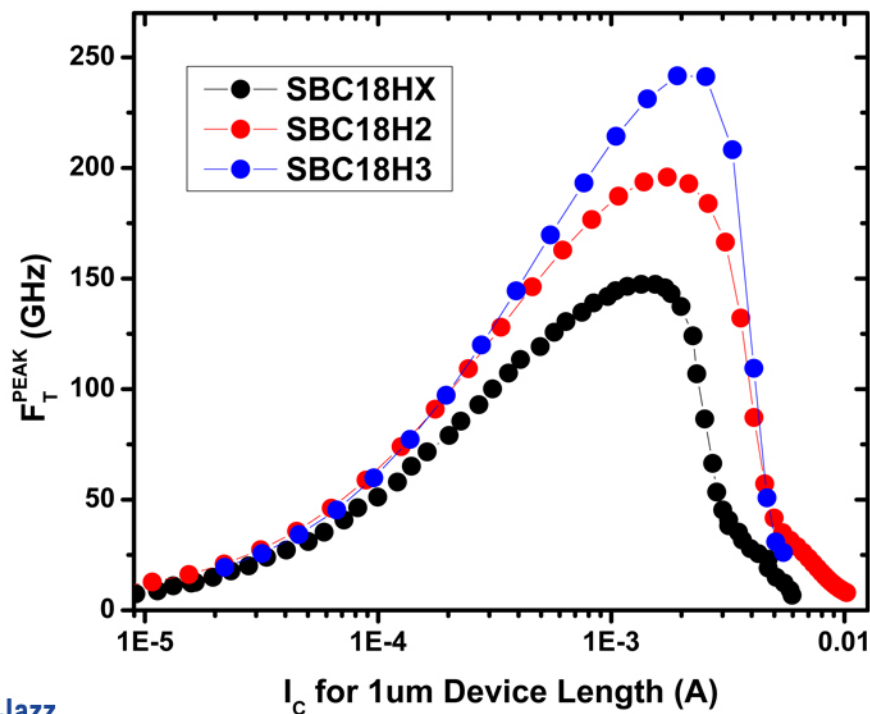
- Standard Cell Libraries/ I/O Libraries
- Memory Generators
- Synopsys and Cadence ASIC Flows

Analog Mixed-Signal Design Kit Features

- Cadence®-based Design Kit
- Support for Mentor® Calibre interactive/XRC
- Includes basic ESD structures
- Cadence® Assura™ DRC/LVS and QRC
- Support for Spectre, ADS (& RFDE), HSPICE simulators

Supported Models

- **MOSFETs:** Scalable PSP and BSIM models, RF extension model, Non-quasi-static PSP models, mismatch, statistical and noise models
- **Resistors:** Mismatch, statistical and noise models
- **NPNs:** Scalable HiCum, mismatch, statistical and noise models
- **MIM Caps:** RF models, mismatch and statistical models



About TowerJazz

Tower Semiconductor Ltd. (NASDAQ: TSEM, TASE: TSEM), the global specialty foundry leader and its fully owned U.S. subsidiary Jazz Semiconductor, operate collectively under the brand name TowerJazz, manufacturing integrated circuits with geometries ranging from 1.0 to 0.13-micron. TowerJazz provides industry leading design enablement tools to allow complex designs to be achieved quickly and more accurately and offers a broad range of customizable process technologies including SiGe, BiCMOS, Mixed-Signal and RFCMOS, CMOS Image Sensor, Power Management (BCD), and Non-Volatile Memory (NVM) as well as MEMS capabilities. To provide world-class customer service, TowerJazz maintains two manufacturing facilities in Israel and one in the U.S. with additional capacity available in China through manufacturing partnerships.

For more information, please visit www.towerjazz.com

