Corporate Presentation

Q2 2021

Our Global Operations

San Jose, CA, USA
Sales and support office

Newport Beach, CA, USA

Migdal Haemek, Israel

Shanghai, China
Sales and support office

Arai, Japan

UK and France
Sales rep. office

Hsinchu, Taiwan
Sales and support office

Nagaokakyo, Japan
Sales and support office

Netanya, Israel
Worldwide Design Center

Virginia, USA
Sales and support office

Uozu, Japan

San Antonio, TX, USA

Seongnam, South Korea
Sales and support office

Agrate, Italy

Migdal Haemek, Israel

Tonami, Japan

All of Tower's facilities are:
- ISO14001 Certified
- OHSAS18001 Certified
- Compliant to ISO45001
- ISO9001 Certified
- IATF16949 Certified
- Our US facilities and Uozu, Japan are ITAR compliant.

Migdal Haemek, ISRAEL	Migdal Haemek, ISRAEL	Newport Beach, CA, USA	San Antonio, TX, USA
· 6" (150mm)	· 8" (200mm)	· 8" (200mm)	· 8" (200mm)
· CMOS, CIS, Power, Power Discrete	· CMOS, CIS, Power, Power Discrete, RF Analog, MEMS	· CMOS, CIS, RF Analog, MEMS	· Power, RF Analog
· 1μm to 0.35μm	· 0.18μm to 0.13μm	· 0.18μm to 0.13μm	· 0.18μm
· Planarized BEOL, W and Oxide CMP	· Cu and Al BEOL, EPI, 193nm Scanner	· Al BEOL, SiGe, EPI	· Al BEOL

Agrate, ITALY	Arai, JAPAN	Tonami, JAPAN	Uozu, JAPAN
· 12" (300mm)	· 8" (200mm)	· 8" (200mm)	· 12" (300mm)
· Analog RF, Power, Displays	· Analog, CIS	· Analog, Power Discrete, NVM, CCD	· Analog, CMOS, CIS, RFCMOS/ SOI
· 65nm	· 0.13μm to 0.11μm	· 0.35μm to 0.15μm	· 65nm and 45nm

Semi Market Trends

Wireless Everything
Seamless Connectivity

Green Everything
Energy Efficiency

Smart Everything
Interactive Smart Systems

36%
of corporate revenue

Mobile – up 22% 2020/19
Infrastructure – up 15% 2020/19

32%
of corporate revenue

PMIC – up 25% organic 2020/19
Discrete – down 12% 2020/19

18%
of corporate revenue

Up 7% 2020/19

High Quality and Flexibility of Worldwide Manufacturing Capabilities

Migdal Haemek, Israel	Migdal Haemek, Israel	Newport Beach, USA	San Antonio, USA
6", 150mm Sensors, Power 1µm to 0.35µm	8", 200mm Sensors, Power, RF SOI 0.18µm to 0.13µm	8", 200mm SiGe, MEMS, RF SOI 0.5µm to 0.13µm	8", 200mm RF SOI, Power 0.18µm

Tonami, Japan	Arai, Japan	Uozu, Japan	Agrate, Italy
8", 200mm Power 0.18µm	8", 200mm Sensors, RF SOI 0.13µm to 0.11µm	12", 300mm Power, Sensors, RF SOI 65nm & 45nm	12", 300mm Analog RF, Power, Displays 65nm

Enabling 200mm multi-fab wafer production

- Cross qualified platforms enabling maximized utilization and customer assurance
- Cross qualification answer customers BCP needs

Analog Technologies for Connected Automated Vehicles

Served by Tower Semiconductor

ADAS: Radar, V2X Automotive Ethernet	ADAS: LiDAR, Camera & Night Vision IR	Diagnostic, Dynamics, Comfort & Convenience	EV Battery Management & Powertrain

Application

Technology

RF & HPA

- RF-SOI
- RF CMOS
- SiGe BiCMOS
- III-V
- MEMS
- Silicon Photonics

Light Sensing

- CMOS image sensors
- CCDs
- PIN
- ToF: SPADs (LiDAR)
- SWIR image sensors
- Thermal (IR) imaging

Multi-Stimuli Sensing

- Magnetic TMR
- Biometric
- Inertial
- Temperature, Pressure
- Gas/Fluid
- Load, Torque, Speed

HV Power

- BCD (bulk, SOI)
- NVM
- MOSFETs
- IGBT
- GaN
- SiC

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RF Major Markets and Technology Solutions

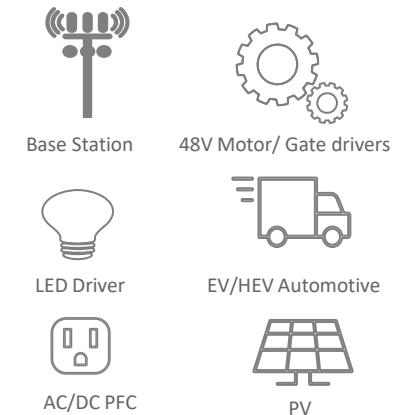| Markets	Products Enabled	Technology	
Mobile (5G Handsets)	**RF Switch; LNA; Antenna Tuner**	**RF SOI**	**200 and 300mm; 70fs Ron-Coff**
	WiFi/BT PA; LNA	**RF SiGe**	**Best-in-class noise and PAE**
Optical Transceivers (Datacenter/Telecom)	**100-800Gb/s TIA; LD; CDR**	**HP SiGe**	**>300GHz Ft; >60% market share**
	Integrated Optical Components	**SiPho**	**Production Foundry Technology** **C and O band components** **>70GHz Photo Detector, >30GHz Modulator** **Low loss waveguides and couplers**

Power Technology Fit & Roadmap

	Available		In Development

65nm BCD TPS65PM

12" Japan	5V ~ 16V LDMOS	1.2V-Only
65nm Design Rules	5V: 0.9mΩmm²@ 11.5V BV	Analog& LDMOS
5V-only & 1.2V/5V	16V: 4.5mΩmm²@ 26.5V BV	**20V, 24V** (34V BV) LDMOS
Top Cu 3.3um & 2x3.3um		**32~256Kb MTP**
5V Lib: 113kgates/mm²		**Backend eNVM** Full flash
1.2V Lib: 850kgates/mm²		
OTP, FTP		

World's Best BCD up to 24V operation

0.18um BCD TS18PM

8" Israel & Japan	5V~ 30V Gen4	5V~ 24V Gen6	kV Galvanic Capacitor
5V-only & 1.8V/5V	10mΩmm²@ 32V BV	6.3mΩmm² @ 34V BV	SiCr TFR Resistor
Top Al & Cu	30V~ 140V RESURF (HS/ISO)		Deep Trench Isolation
5V Lib: 90kgates/mm²	22mΩmm²@ 50V BV		200V RESURF (nonSOI)
1.8V Lib: 115kgates/mm²	180mΩmm² @ 140V BV		
OTP, FTP, MTP	160V SOI 200V BV		220V SOI 300V BV
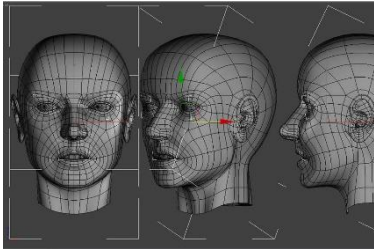
Widest offering with extensive capabilities

Mobile · Tablet · Robots/Drones · Home Monitoring · Audio · LED Driver · Smart Motors · PC / Laptop · Servers

Base Station · 48V Motor/ Gate drivers · LED Driver · EV/HEV Automotive · AC/DC PFC · PV

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Image Sensors Growing Markets

• Tower Traditional Markets

Medical and Dental X-Ray	• **Intra and Extra Oral** • **Mammography** • **Surgical** • **Up to 21cm x 21cm in one die**
High end Photography	• **Cinematography** • **Broadcasting** • **High end DSLR** • **Mirror-less**
Industrial Machine Vision	• **2-D barcode readers** • **Food inspection** • **Industrial robots** • **Screen Inspection QA** • **ITS**

• New Emerging High Growth Markets

Under Screen Fingerprint	• **Under OLED lens-type and 1:1 sensors** • **Under LCD lens-type sensors**
Time of Flight – 3D	• **Face recognition** • **Lidars** • **AR based commerce** • **Education** • **Gaming** • **iToF and dToF**

Non Imaging Sensors applications

Remote Temperature sensors
- High sensitivity and accuracy
- Broad Temperature range

- ✓ Mobile /IoT
- ✓ Industrial
- ✓ Automotive
- ✓ Medical
- ✓ Security
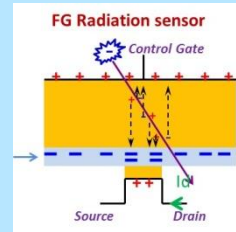
Time-temperature Indicators
- No power supply
- CMOS embedded
- Reusable

- ✓ Food Industry
- ✓ Agriculture
- ✓ Medical
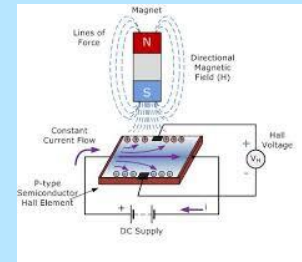
Floating Gate radiation sensors
- No power supply
- Direct: no scintillator
- Reusable

- ✓ Radiation monitors
- ✓ Badges
- ✓ Sterilization
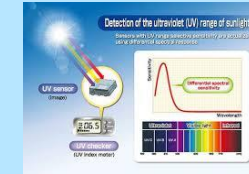- ✓ Radon detectors

Magnetic sensors
- High temperature GaN based
- High sensitivity TMR

- ✓ Industrial
- ✓ Automotive
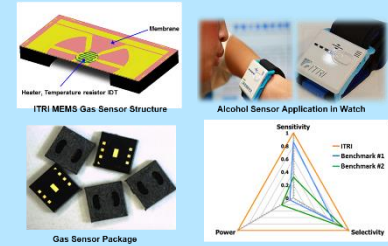- ✓ Consumer
- ✓ Space

UV sensing
- Solar blind
- Record sensitivity
- Operation at HT

- ✓ Skin protection
- ✓ Flame diagnostics
- ✓ Free space optical communication
- ✓ Sterilization
- ✓ Industrial automation

Gas and Humidity
- Operation at HT
- Easy reset
- Sensor fusion

- ✓ Automotive
- ✓ Environmental
- ✓ Industrial
- ✓ Medical

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Displays

Tower Semiconductor History

1993

Tower Semiconductor was founded with the acquisition of National Semiconductor's 150-mm wafer fabrication facility.

1994

Tower Semiconductor became a public company. Shares began to be traded on NASDAQ (TSEM).

2000

Design it once design it right: The Worldwide Design Center was established in Netanya, Israel.

2001

Tower Semiconductor shares began to be traded on Tel Aviv Stock Exchange (TSEM).

2004

Established an adjacent, state-of-the-art facility (Fab 2) in Migdal Haemek Israel, designed to operate in geometries of 0.18-micron and below, using advanced CMOS technology.

2008

Tower Semiconductor and Jazz Semiconductor merged in a stock for stock transaction and the combined companies officially launched as TowerJazz.

2014

Completed a joint venture with Panasonic Corporation. The joint venture added available capacity of approximately 800,000 wafers per year (8" equivalent) in three manufacturing facilities in Japan; one 300mm and two 200mm.

2016

Acquired Maxim Integrated's 8-inch wafer fabrication facility in San Antonio, TX, USA.

2020

On March 1st, 2020, launched a new brand identity to reflect company's global presence and strength, and highlight its focus to provide the highest value analog semiconductor solutions.

2021

Announced partnership with ST Microelectronics to accelerate Agrate, Italy 300mm analog and power fab capacity and utilization ramp-up.

Tower Semiconductor Quality Policy and Certifications

Committed to high Quality and Customer Satisfaction

✓ Meet or exceed customer expectations
✓ Provide outstanding manufacturing services with high yields and on-time delivery
✓ Continuously improve efficiency and effectiveness of processes, procedures, and systems through fast cycles of learning
✓ Meet applicable regulatory & statutory requirements

Quality	OHS Management systems	Safety	Automotive	IS
ISO 9001	ISO 45001	OHSAS 18001	IATF16949	ISO 27001

A Resilient Growth Company in a Challenging Environment

- **Well experienced**, **matured** and **strong global company** – with solid and enviable balance sheet and net cash financial position, exceptional analog technology solutions and manufacturing capabilities, high level expertise and talents.

  Excellence in leadership, partnership, impact & innovation

- **Long-term partnerships** – based upon unparalleled trust, mutual roadmap creation and shared success.

- **Leading the analog ecosystem in exciting growth markets, providing strong competitive advantage with full circle value creation.**