

Q4 and FY 2023 Financial Results Conference Call

Supporting Slides

February 14, 2024

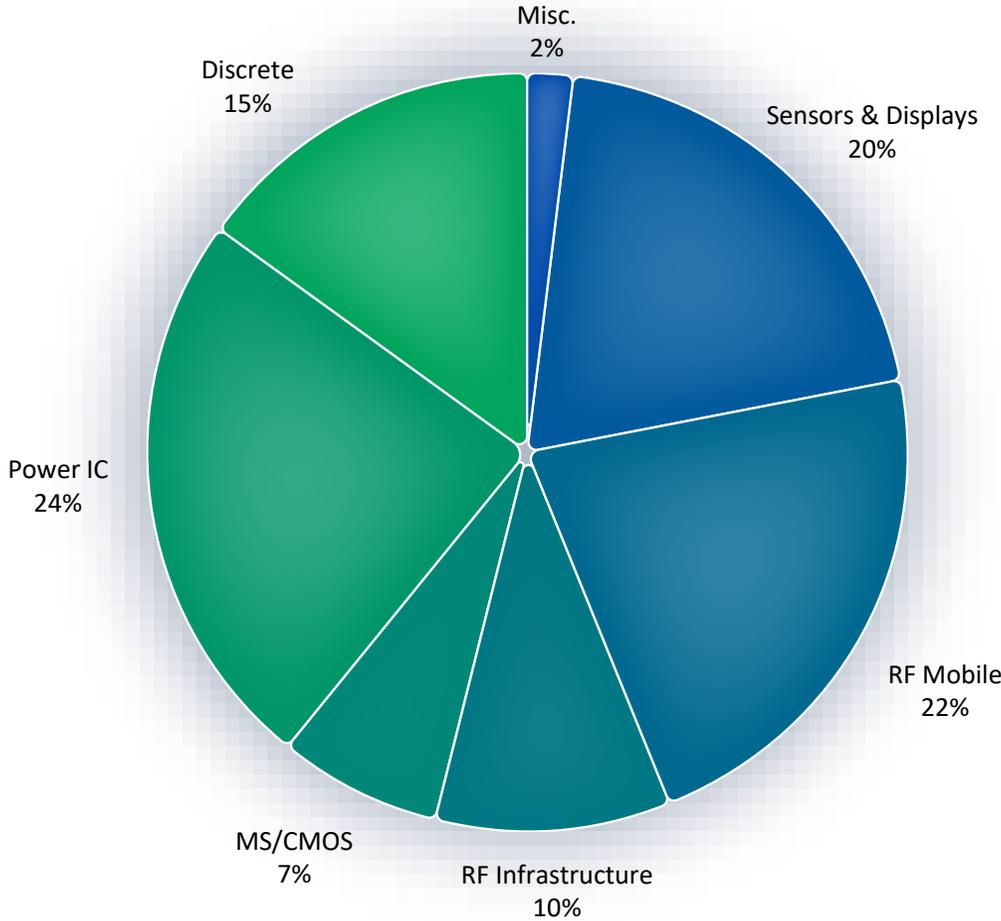
Safe Harbor

This presentation contains forward-looking statements within the meaning of the “safe harbor” provisions of the Private Securities Litigation Reform Act of 1995. These statements are based on management’s current expectations and beliefs and are subject to a number of risks, uncertainties and assumptions that could cause actual results to differ materially from those described in the forward-looking statements. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. For example, statements regarding expected (i) customer demand, (ii) utilization and cross utilization of our Fabs, (iii) demand from our end markets, (iv) market and technology trends, and (v) results regarding revenues, cash flow, margins and net profits are all forward-looking statements. Actual results may differ materially from those projected or implied by such forward-looking statements due to various risks and uncertainties applicable to Tower Semiconductor’s business as described in the reports filed by Tower Semiconductor Ltd. (“Tower”) with the Securities and Exchange Commission (the “SEC”) and the Israel Securities Authority (“ISA”), including the risks identified under the heading "Risk Factors" in Tower’s most recent filings on Forms 20-F and 6-K. No assurances can be given that any of the events anticipated by the forward-looking statements will transpire or occur, or if any of them do, what impact they will have on the results of operations or financial condition of Tower Semiconductor. In addition, some of the financial information in this presentation, is non-GAAP financial measures, including, but not limited to, EBITDA, Cash, debt and Net Cash. These non-GAAP financial measures have the same definition as appear in our previously filed quarterly financial results related announcements and/ or other public filings.

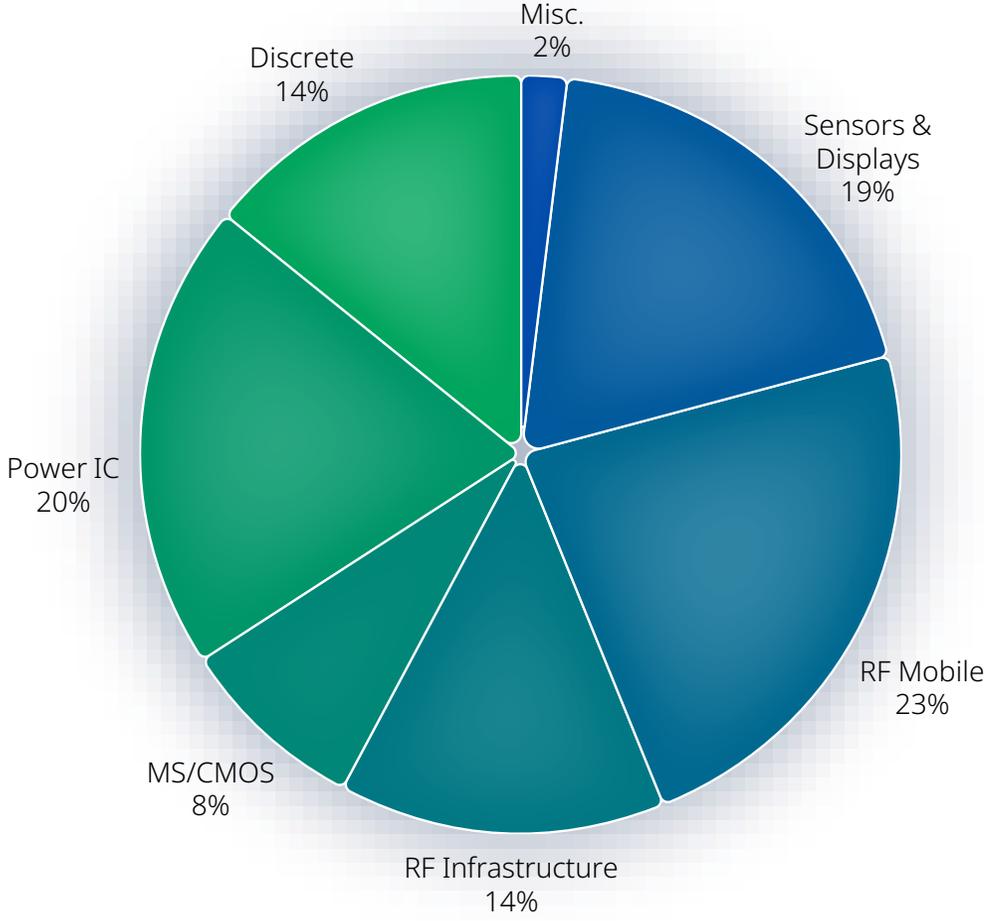
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Annual Revenue Breakdown by Technology

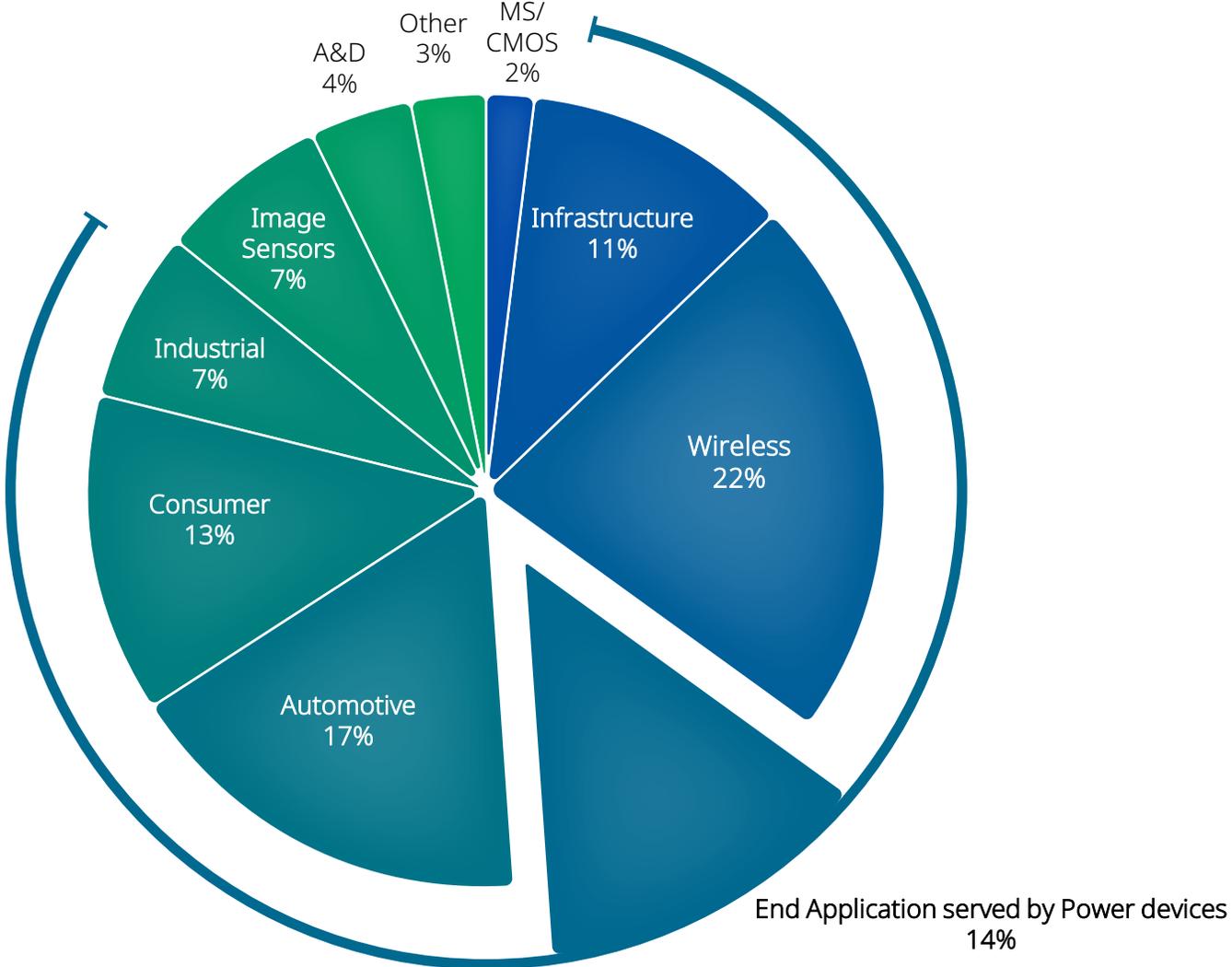
2023



2022

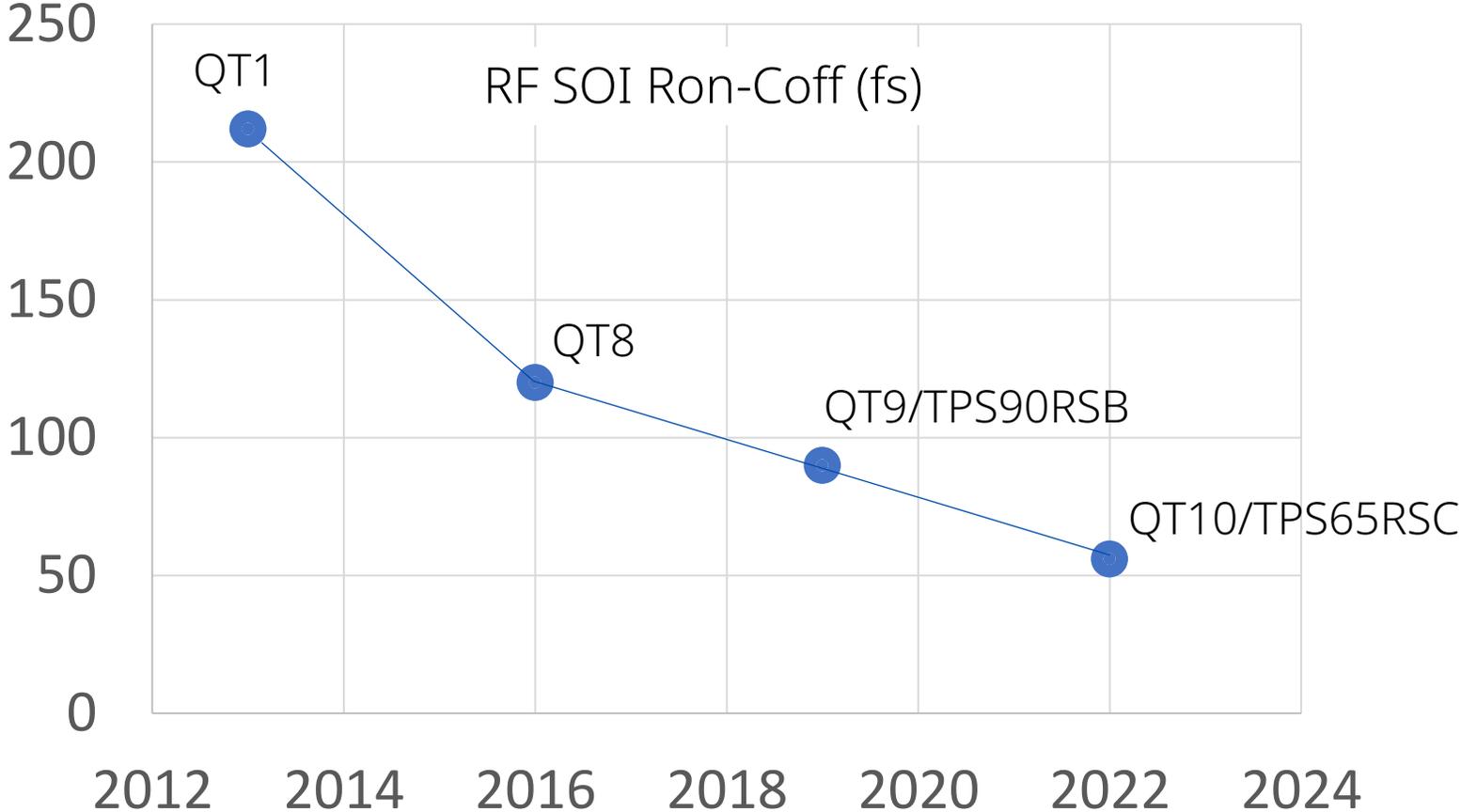


2023 Revenue Breakdown by End Market



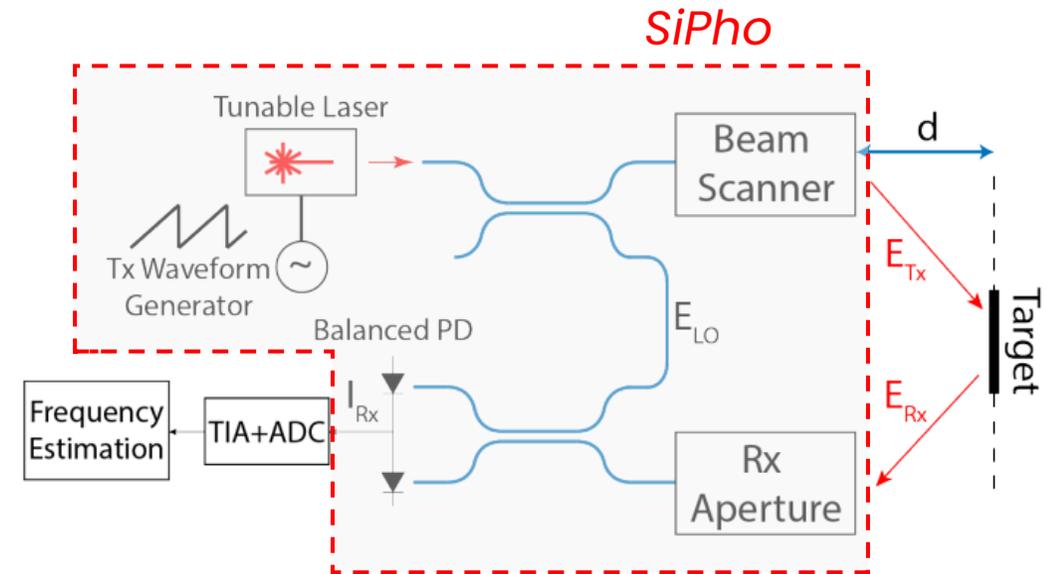
RF SOI figure of merit roadmap

- 200mm and 300mm wafer sizes
- 180nm to 65nm nodes
- 4 factories in high volume + qualifying Agrate, Italy
- Best-in-class FoM and roadmap with low Ron-Coff and high power handling



SiPho based FMCW benefit for LiDAR

- FMCW LiDAR gives both the range (x, y, and z coordinates) and the relative velocity of surrounding objects, making it best suited for automotive applications
- SiPho enables a compact integration of all optical elements of an FMCW LiDAR: laser sources, optical modulators, mux/demux, couplers and photodetectors etc.
- SiPho also enables on-chip integration of Optical Phase Arrays (OPAs) for scanning the beam with high speed and reliability (no moving parts)



Adapted from Rezaei et al, Univ. of Washington (ASHES '22)



Tower Semiconductor Collaborates with Renesas to Manufacture SiGe-based Beamforming ICs for Tier-1 Customers in Satcom, 5G, and Aerospace & Defense Applications

The Satcom terrestrial market is expected to grow to 150M users by 2031 according to Euroconsult with the expansion of global satellite-based internet services

MIGDAL HAEMEK, Israel, January 16, 2024 – [Tower Semiconductor](#) (NASDAQ/TASE: TSEM), the leader in high-value analog semiconductor foundry solutions, today announced a collaboration with Renesas, leveraging Tower’s high-volume and high-performance [SiGe BiCMOS](#) technology to manufacture SiGe-based beamforming ICs. This strategic collaboration underscores Renesas’ commitment to innovation as its broad portfolio of beamforming products has already achieved design wins by key worldwide players across 5G, satcom and Aerospace & Defense markets, positioning the company at the forefront of the industry.

The Satcom terrestrial terminal market is growing rapidly as satellite-based internet services proliferate globally. According to Euroconsult, a market research firm, 71 million people were connected to satellite broadband services in 2022. With rapid deployment of LEO satellite constellations, this number is expected to double in 2031, reaching over 150 million users. This translates to an increase of \$400M in the average yearly TAM for SiGe wafers over the coming decade.

“The unique advantages of Tower’s SiGe BiCMOS technology have empowered us to design and manufacture highly integrated and power efficient semiconductors that set new industry benchmarks,” said Naveen Yanduru, VP of RF Communications at Renesas. “As evidenced by our design wins and volume shipments, the displacement of mechanical antennas by highly agile electronically steered antennas (ESAs) is well underway and will continue to drive exponential SAM growth for beamforming ICs in the coming years. With the continuously surging demand for millimeter-wave technology, our collaboration with Tower Semiconductor has positioned Renesas as a market leader,” Mr. Yanduru added.

Renesas is a global leader in delivering cutting-edge solutions for the telecommunications industry and has made strides in the Satcom and 5G markets through its collaboration with Tower Semiconductor. This capability played a significant role in empowering Renesas to establish and solidify its market leadership.

“We are excited to partner with Renesas in bringing these breakthrough products to market leveraging our industry leadership in SiGe foundry technology along with their strong product development, talent and market presence,” noted Dr. Marco Racanelli, President at Tower Semiconductor.

“Our global capacity and engineering agility will ensure Renesas has both the ability to develop new, high-performance products and deliver these in high-volume to their Tier 1 customers.”

Satellite based internet services

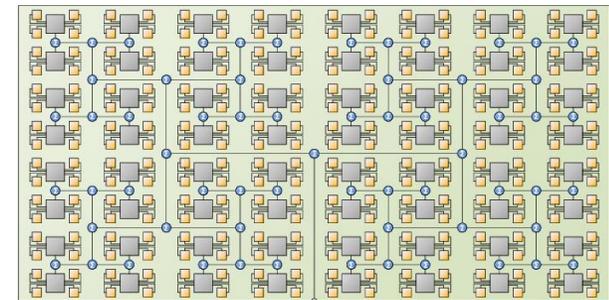
- ▶▶ Terrestrial receiver demand is growing
- ▶▶ SiGe based phased-array are key enablers
- ▶▶ ~250 phase-array ICs per terminal on average per antenna terminal
- ▶▶ Additional TAM possible as satellite service is broadly deployed to handsets
- ▶▶ Large emerging growth market for SiGe technology

User Terminal Examples

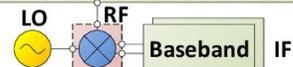


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256 Element Phased-Array Example



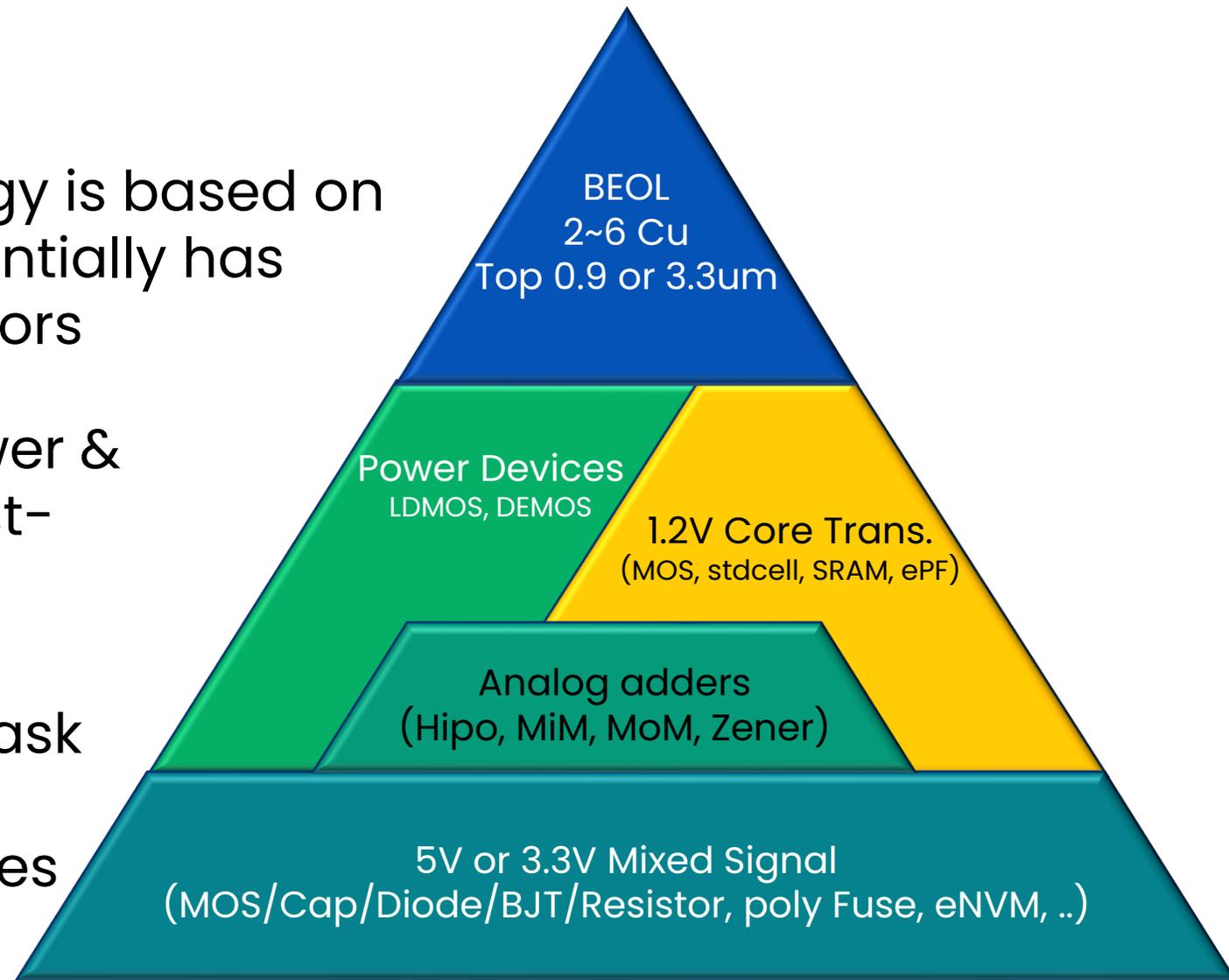
UCSD, IEEE MTT-S 2020



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TPS65PM Modularity

- Tower's 65nm BCD technology is based on a modular process that potentially has more than 1000 different flavors
- It covers a wide range of Power & Analog applications with best-in-class FOMs
- This technology has a low mask count, achieved by sharing masks across different devices



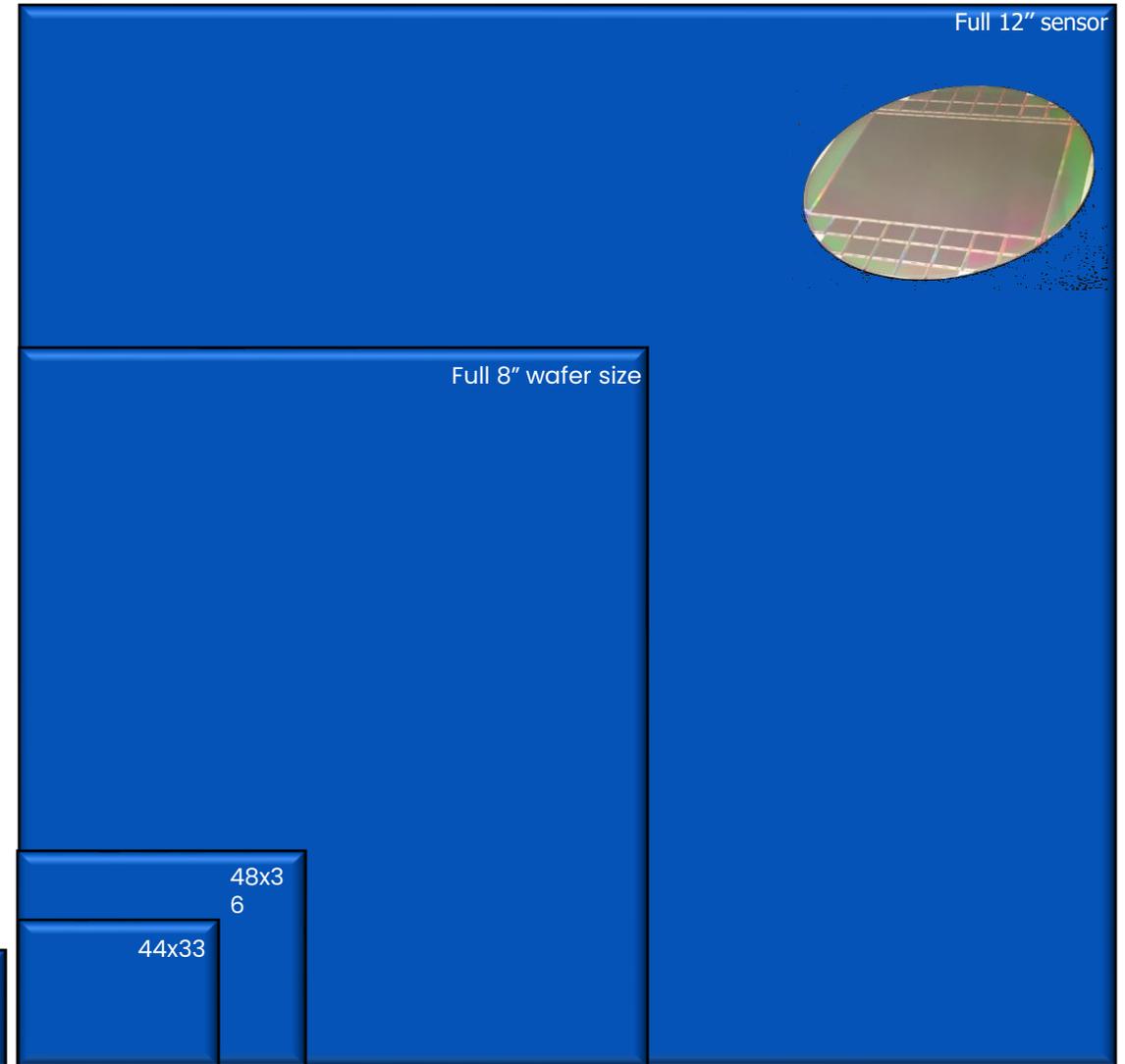
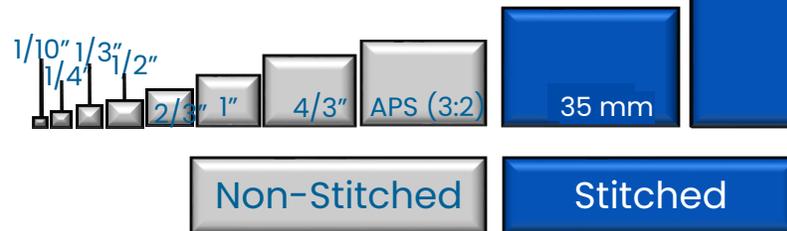
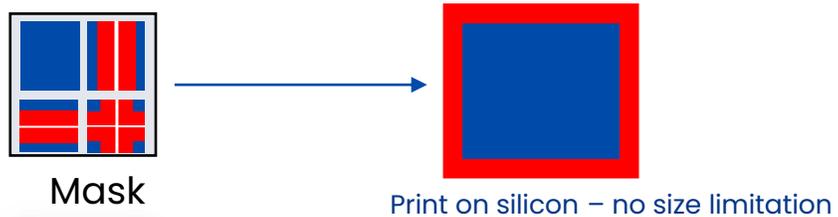
Stitching technology

- Large Scale image sensor manufacturing using stitching

- 2 masks solutions :

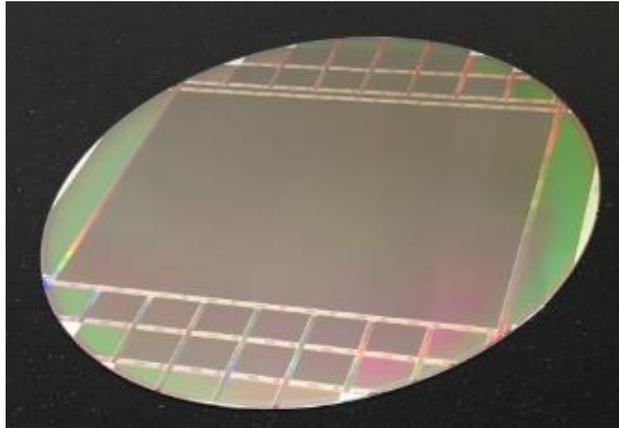


- Single mask solution

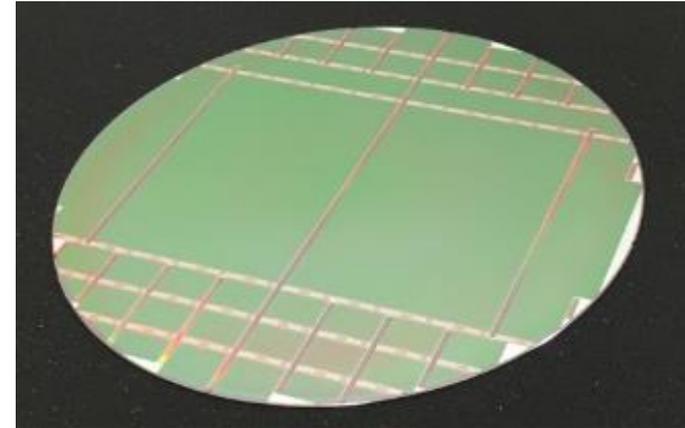


Next generation X-Ray Sensors

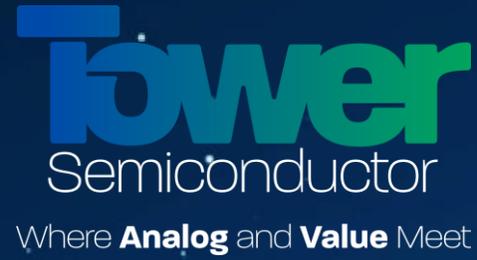
- 12" 65nm lean flow – only 20 photo layers
 - 20cm x 20cm 1 DPW or two dice per wafer of 17cm x 12cm each
 - Supports the drive for higher FOV (Field of View) – larger sensors
- Better solution than IGZO (Indium Gallium Zinc Oxide) TFT
 - Competitive price
 - Higher frame rate
 - Higher sensitivity - Lower X-Ray dose



1 die per wafer product



2 dies per wafer product



Thank You

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