

# The Next Big Step: Shaping the Future

Dr. Marco Racanelli, President



January 18, 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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# Tower Semiconductor (NASDAQ/TASE: TSEM)

## Pure play foundry

- Manufacturing analog integrated circuits
- Serving over 300 customers globally

## Analog technology leadership

- Focus on RF, Power, Sensors & Displays

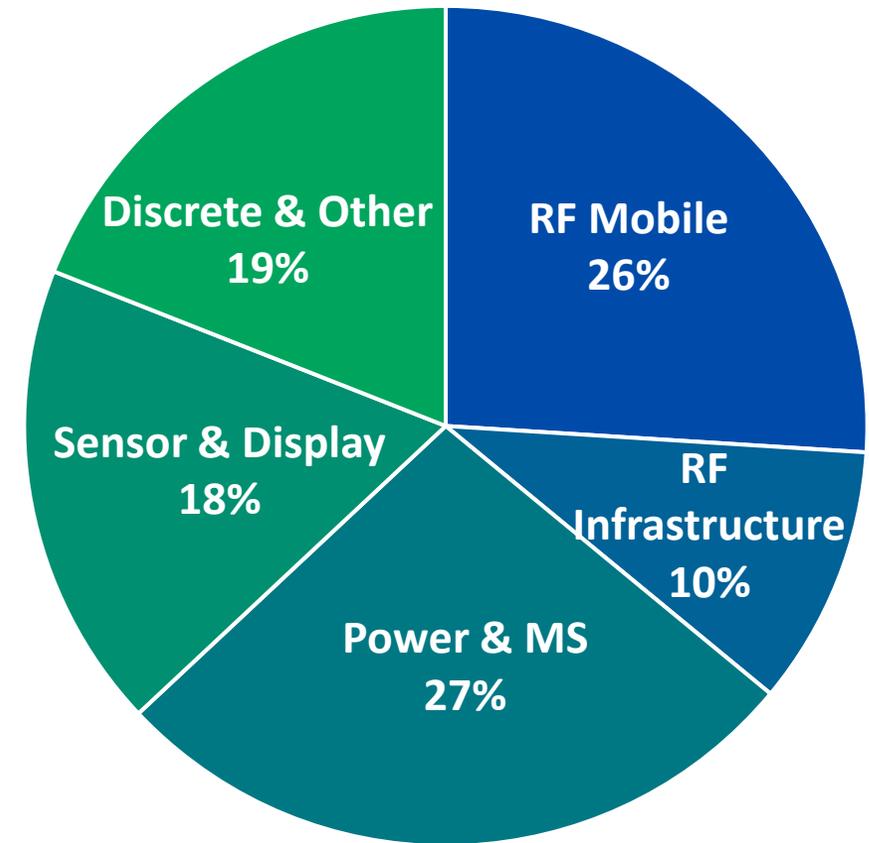
## Serving a wide range of end-markets

- Infrastructure, automotive, mobile, medical, industrial, consumer, aerospace and defense

## Manufacturing Excellence

- Multi-fab production options across three geographic regions

## Q3 Revenue Split (\$358M)



Automotive: 17%



# Adding significant 300mm capacity to grow scale

- Six manufacturing factories in high-volume production
- Two additional 300mm manufacturing factories being qualified to meet forecasted growing demand

Migdal Haemek, Israel



6", 150mm  
Sensors, Power  
1 $\mu$ m to 0.35 $\mu$ m

Migdal Haemek, Israel



8", 200mm  
RF SOI, Sensors, Power  
0.18 $\mu$ m to 0.13 $\mu$ m

Newport Beach, USA



8", 200mm  
SiGe, SiPho, RF SOI  
0.5 $\mu$ m to 0.13 $\mu$ m

San Antonio, USA



8", 200mm  
RF SOI, Power, SiGe  
0.18 $\mu$ m

Tonami, Japan



8", 200mm  
Power  
0.18 $\mu$ m

Uozu, Japan



12", 300mm  
RF SOI, Power, Sensors  
65nm & 45nm

## New 12" Capacity

Agrate, Italy



12", 300mm  
RF SOI, Displays, Power  
65nm

Albuquerque, USA



12", 300mm  
Power, RF SOI  
65nm

# Financial Model (\$M) Inclusive of New Capacity

	Q3 2023 Annualized Run Rate	Built-out capacity@85% utilization*	Incremental		
			\$M	% of Incremental Revenue	
Revenue	1,432	1.9X	2,660	1,228	
Gross Profit	347	2.1X	740	393	32%
Operating Profit	195	2.9X	560	365	30%
Net Profit	208 **	2.4X	500	292	24%

\* Including New Mexico capacity corridor and Agrate capacity based on previously announced Cap-Ex investments

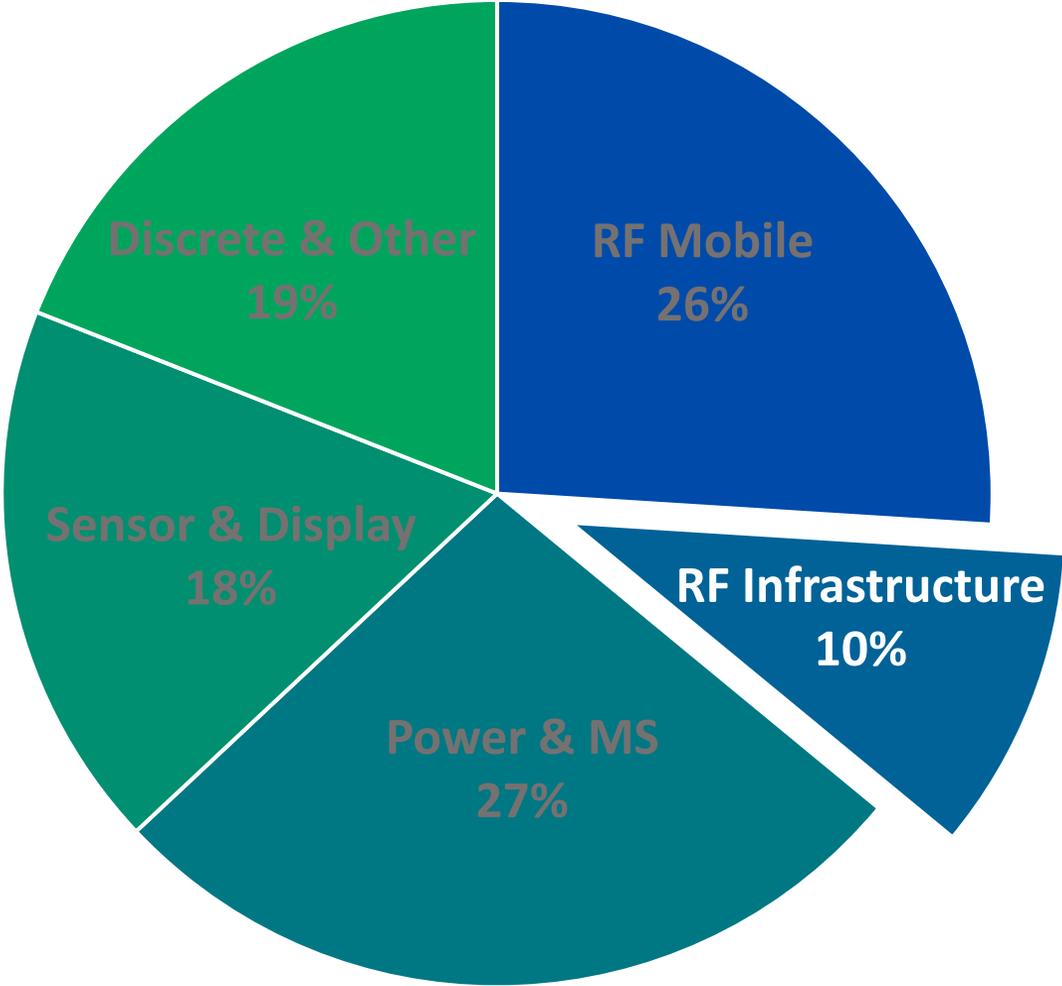
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# TSEM Markets: RF Infrastructure

Artificial Intelligence, Datacom  
and Telecom



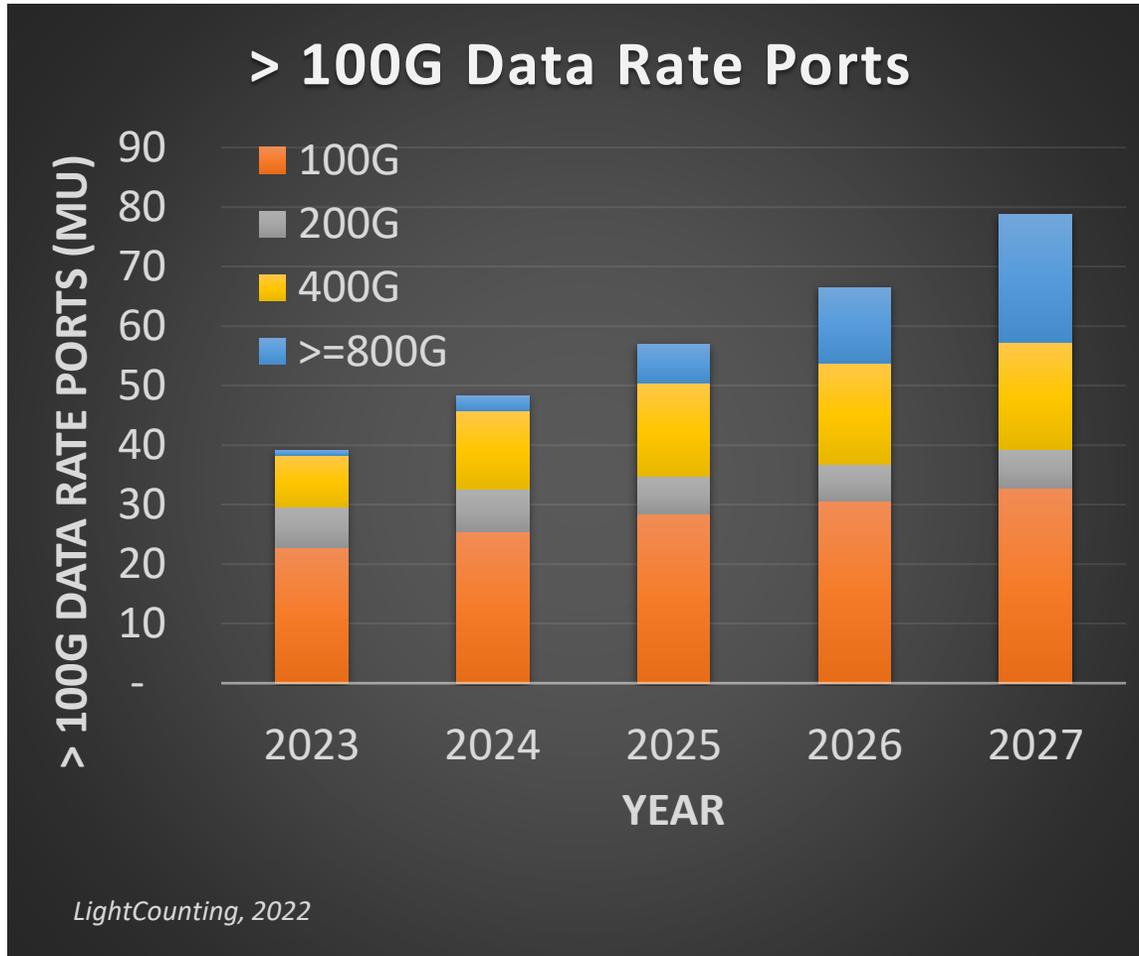
**Optical Fiber Transceivers**  
HP SiGe and Si Photonics



Automotive: 17%



# Growth of Optical Transceivers



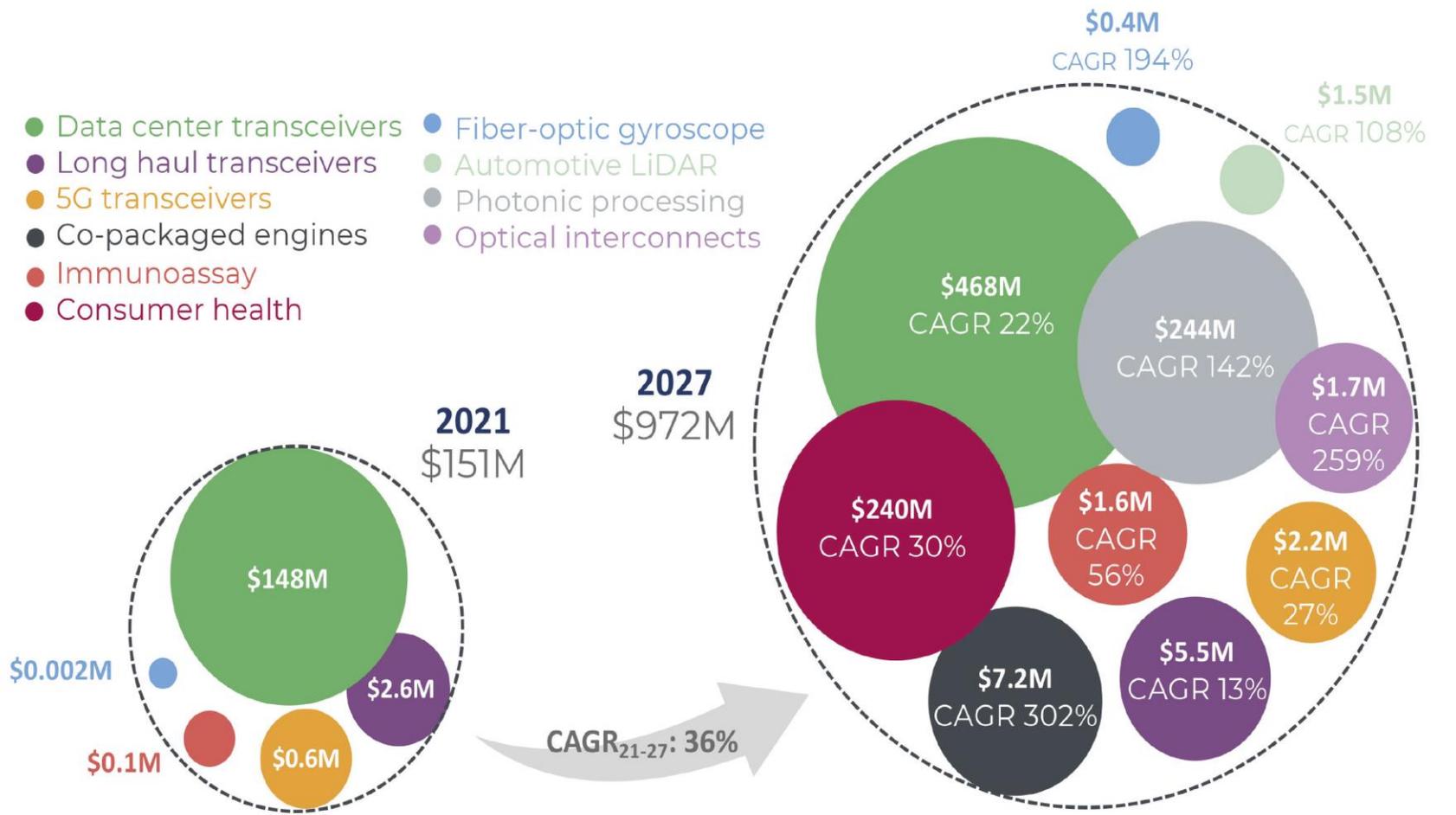
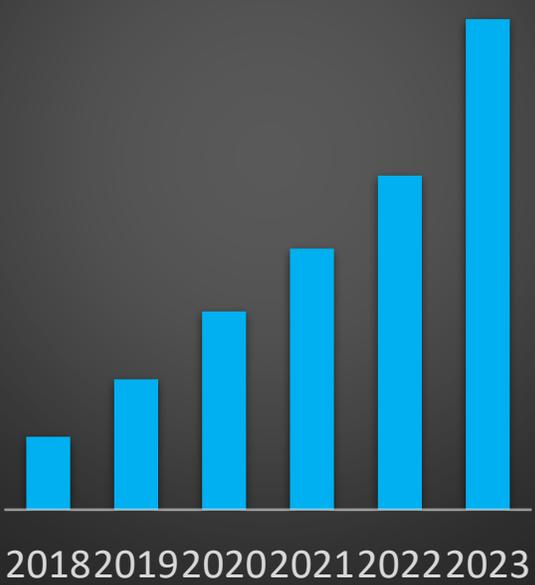
- Historically our market has been exclusively of **SiGe** optical transceiver components (drivers, TIAs, CDRs)
- Today, we are adding **Silicon Photonics** components at higher data-rates (400/800 G)
- Working with >50 active Silicon Photonics customers, announced production and partnerships with **Innolight** (#1 optical module provider) and **Marvell** (Tier 1 optical transceiver IC provider)

# Silicon Photonics Market

## 2021-2027 SILICON PHOTONIC DIE FORECAST BY APPLICATION

Source: Silicon Photonics 2022 Report, Yole Intelligence, 2022

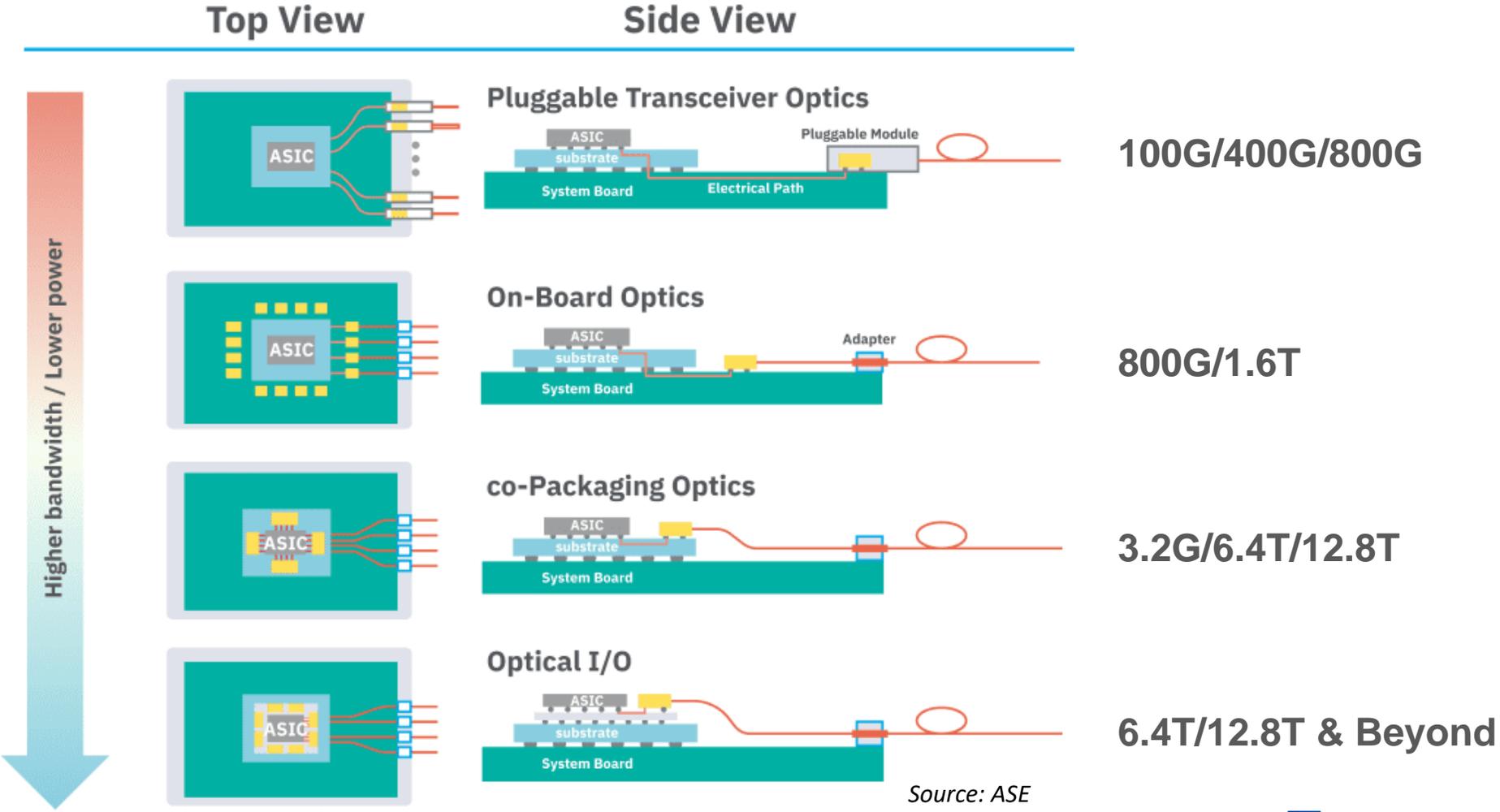
### Tower New Sipro Design Tapeouts Rate (per month)



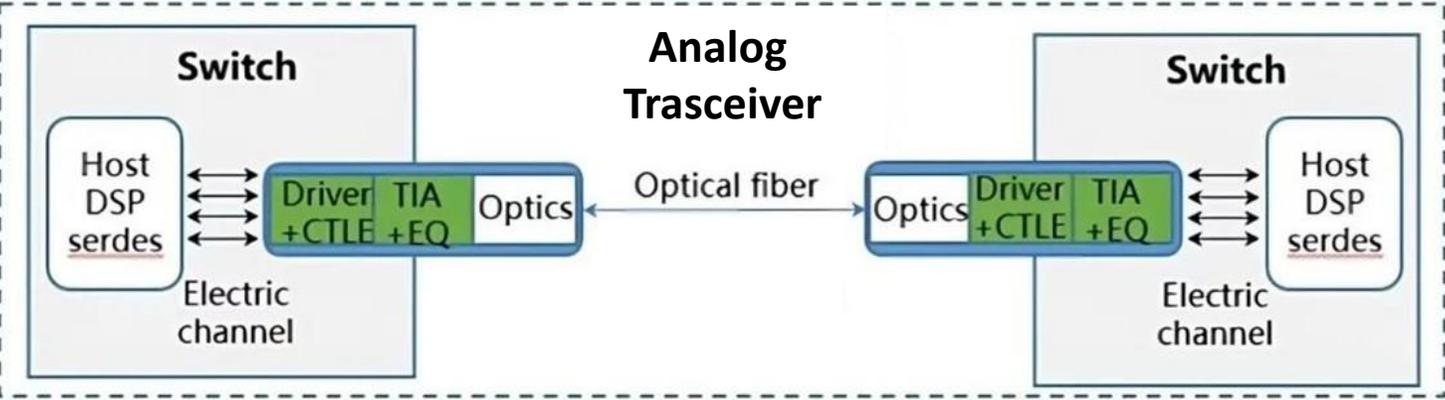
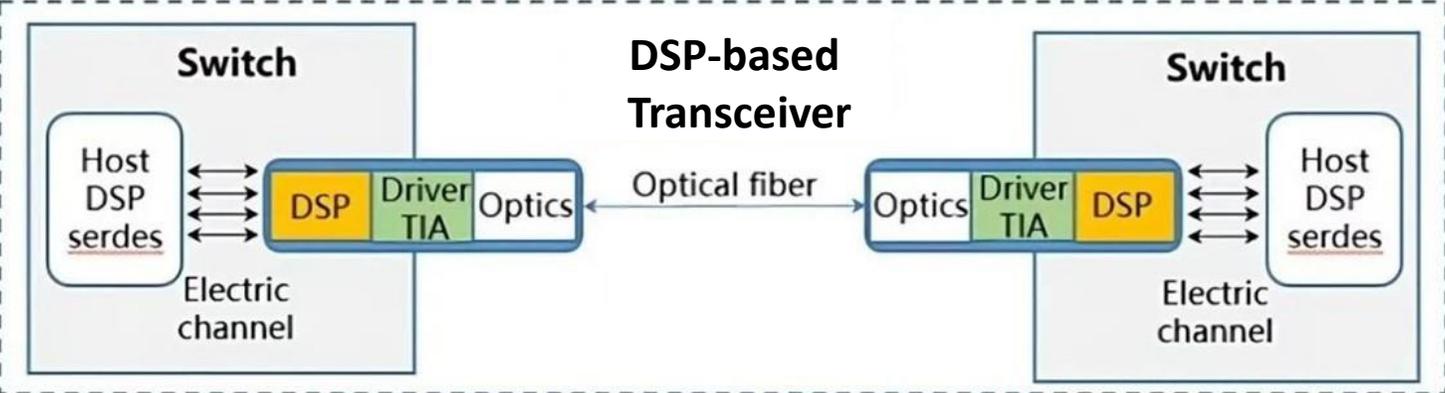
# Silicon Photonics: From Pluggable to CPO to Optical I/O

## Silicon Photonics enables

- Higher Bandwidth (Gbps)
- Lower Power (pJ/bit)
- Lower Cost (\$/Gbps)



# Silicon Germanium: Linear Pluggable Optics (LPO) boosting SiGe opportunity



Linear Drive (no DSP)  
Lower Cost  
Lower Power  
Lower Latency  
↓  
Larger market for SiGe

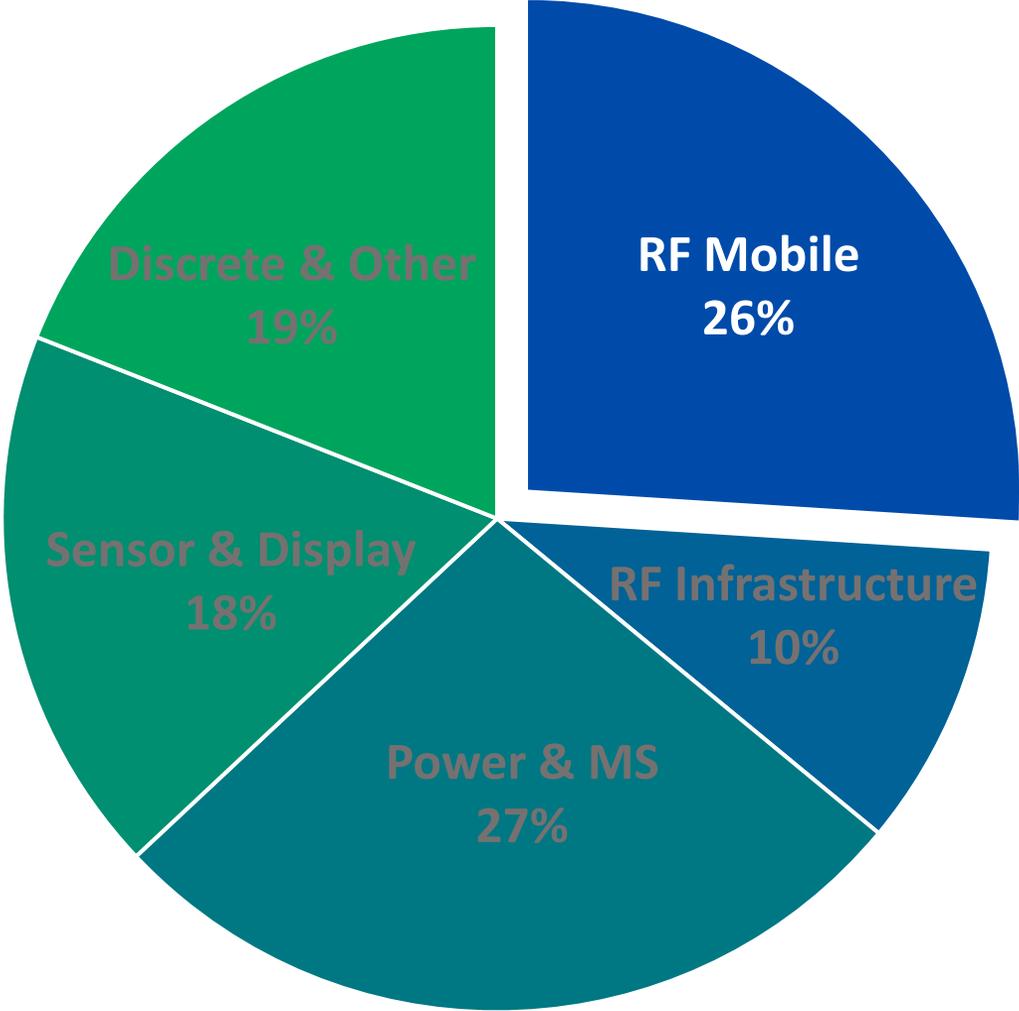
Source: Ruijie Networks



# TSEM Markets: RF Mobile

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Wireless Front-End Components  
Built on RF SOI and RF SiGe



Automotive: 17%



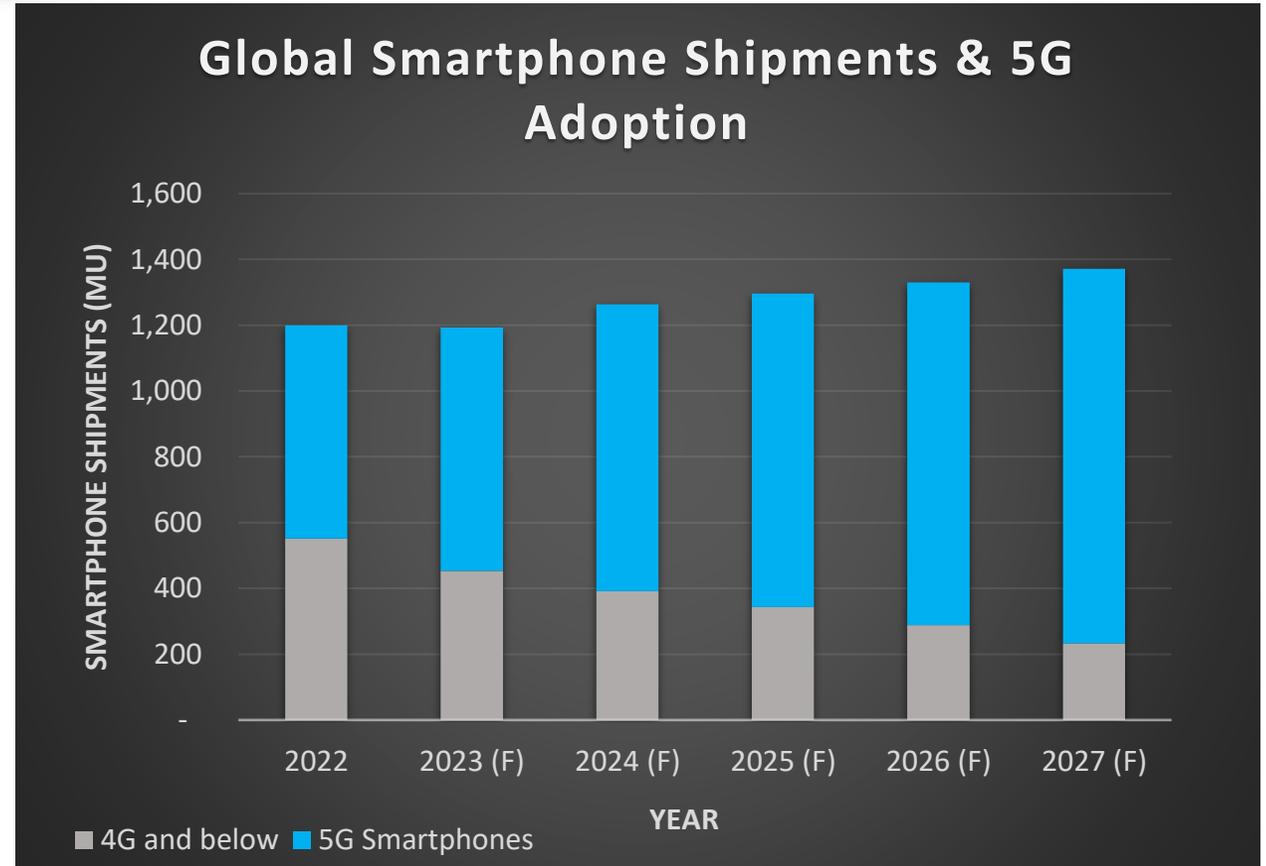
# RF Mobile Market

## Wireless Front-End Built on RF SOI and RF SiGe Platforms

RF Switch	RF SOI
Antenna Tuner	RF SOI
Low-noise Amplifier	SiGe / RF SOI
Power Amplifiers	SiGe / RF SOI
mmWave	SiGe / RF SOI



**5G adoption drives steady growth in RF content with 6G coming by 2030**



# Satellite based internet services

- Terrestrial receiver demand is growing
- SiGe based phased-array are key enablers
- ~250 phase-array ICs per terminal on average
- 80M\* new users expected over the next decade can drive an additional ~\$400M/year SiGe market

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

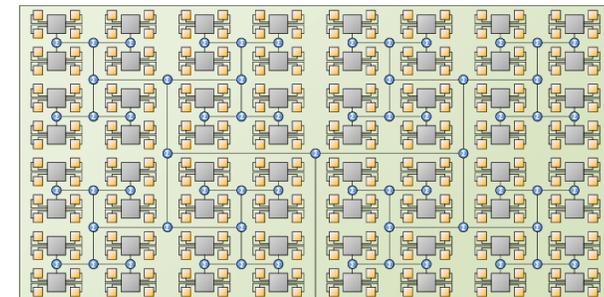
\* Euroconsult

## User Terminal Examples



*Shown for illustrative purpose only. Not an indication of Tower's content.*

## 256 Element Phased-Array Example



*Shown for illustrative purpose only. Not an indication of Tower's content.*

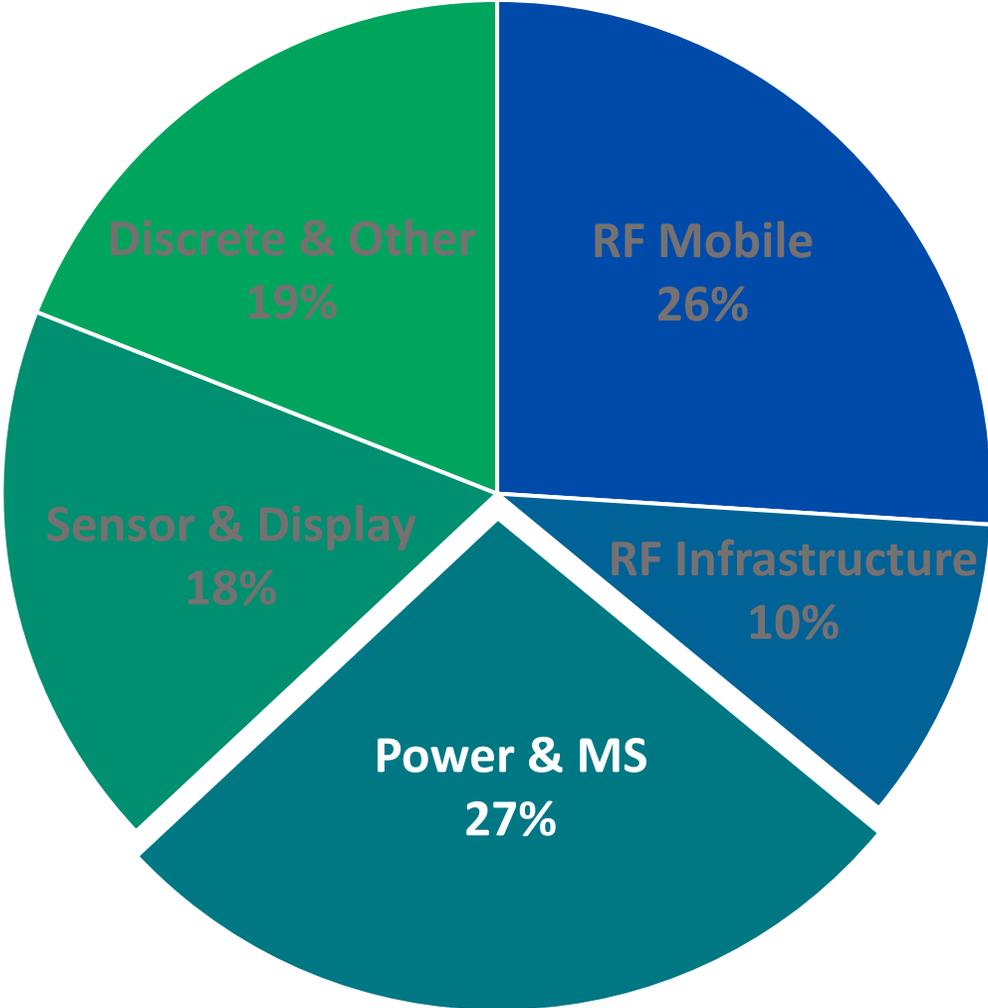
# TSEM Markets: Power and Mixed-Signal

## Largest Analog Market

- \$24B 2024 Power IC market per Yole

## Serving all major Semi Segments

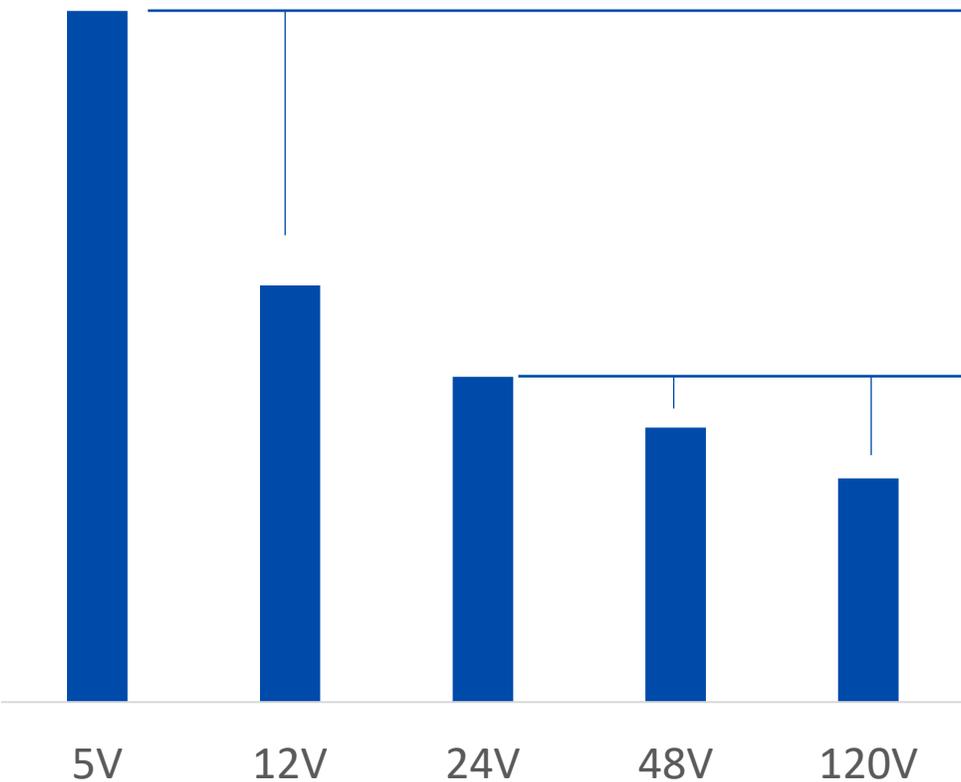
- Automotive
- Industrial
- Consumer
- Infrastructure



Automotive: 17%



# Power IC Market (~\$24B\* Total)



Market Size vs. Operating Voltage

\* Yole: 2024 Power IC market

## Newer 300mm Markets for Tower

- 65nm BCD with best-in-class Rdson/efficiency
- Mobile, battery operated applications

## Traditional 200mm Markets for Tower

- 180nm BCD with rich analog features
- Automotive, Industrial, and Infrastructure applications

Poised for strong market share gains in this large market with announced 300mm capacity, 65nm technology, and customers



# TSEM Markets: Sensors and Displays

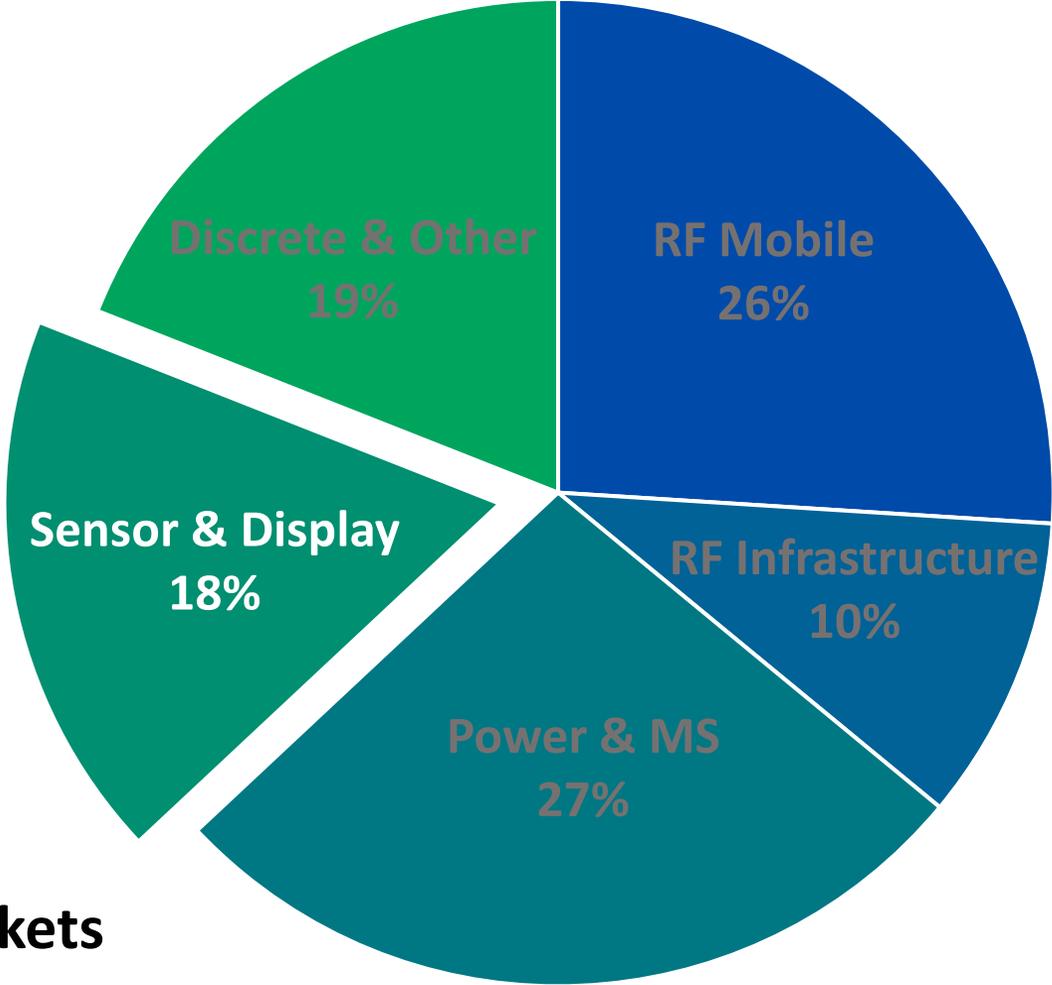
## CMOS Image Sensors High-Value Markets

- Medical
- Industrial
- Automotive



## uLED Display Solutions Emerging, Growth Markets

- AR/VR
- High Resolution Displays

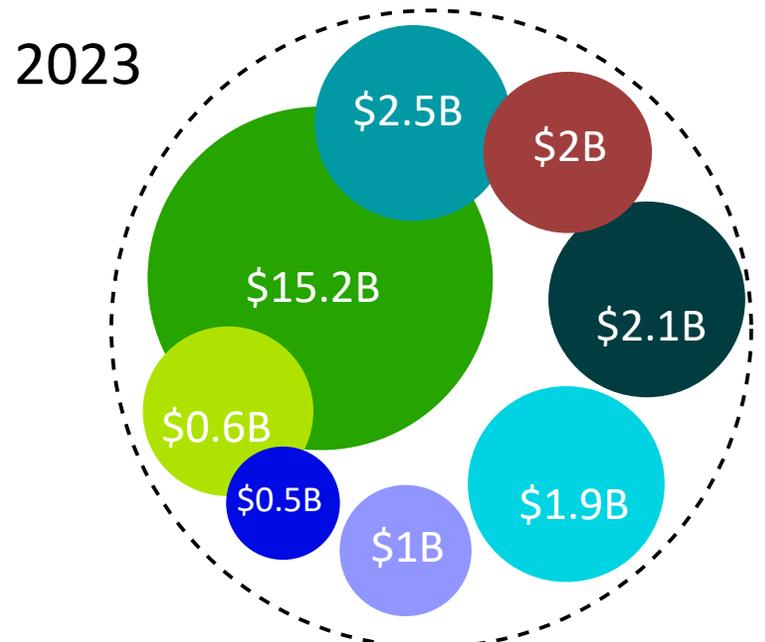


Automotive: 17%

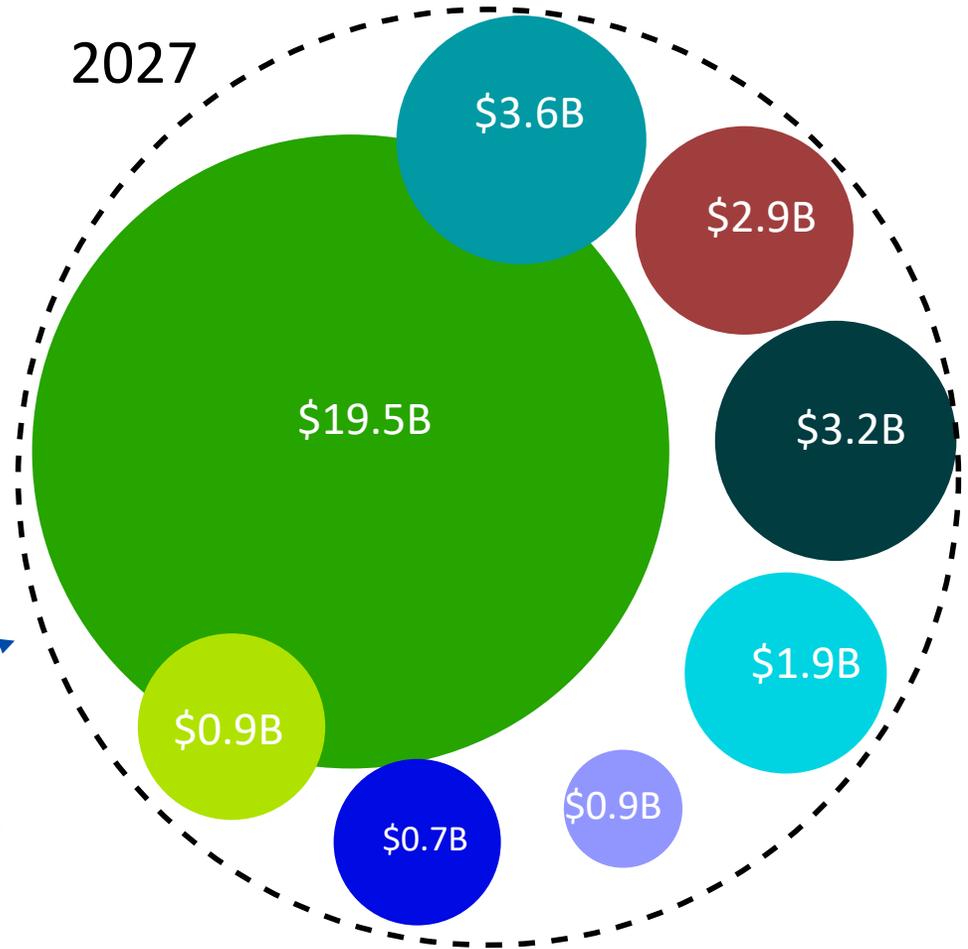


# CMOS Image Sensor market overview

<span style="color: green;">■</span> Mobile	CAGR: 6.5	%
<span style="color: purple;">■</span> Consumer (incl. DSLR)	CAGR: -2.1	%
<span style="color: cyan;">■</span> Computing	CAGR: -0.5	%
<span style="color: darkgrey;">■</span> Automotive	CAGR: 11	%
<span style="color: limegreen;">■</span> Medical	CAGR: 12.4	%
<span style="color: teal;">■</span> Security (incl. ITS)	CAGR: 10	%
<span style="color: brown;">■</span> Industrial	CAGR: 9.5	%
<span style="color: blue;">■</span> Defense & aerospace	CAGR: 6.8	%



CAGR 6.7%



Source: Yole



# High Value CIS Markets



## Medical and Dental X-Ray

**High value wafers** due to unique stitching technology for large sensors

- Intra and Extra Oral
- Mammography
- Surgical
- Up to 21cm x 21cm (1 DPW)



## High-end Photography

**High value wafers** due to unique pixel IP, stitch field for full-frame sensors and stacked BSI technology

- Cinematography
- Broadcasting
- High end photography



## Industrial Machine Vision

**High value wafers** due to unique global shutter, stitch field and stacked BSI

- 2-D barcode readers
- Food inspection
- Industrial robots
- Display / solar cell inspection
- ITS



# Emerging High Growth Sensor and Display Markets



## Biometrics

Driven mainly by the mobile market

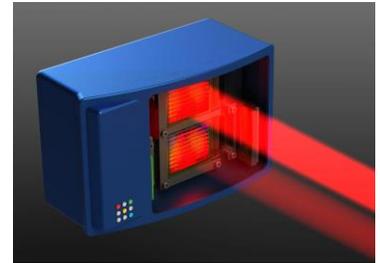
- Optical fingerprint lens-type sensors
- Face recognition (iToF)
- Palm recognition



## 3D sensing

Driven by high growing markets such as automotive (LiDARs) and AR (3D mapping)

- Automotive (dToF)
- Gaming (iToF/dToF)
- AR/VR depth sensors
- Robotics / Home Robotics (dToF)
- Fast camera autofocus

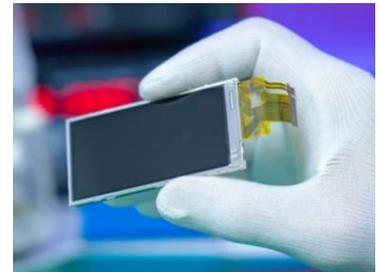


## Displays

Very high growth market (VR Displays)



- uOLED displays for VR goggles
- uLED on Silicon for next generation displays



# Summary: Financial Model (\$M)

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Where **Analog** and **Value** Meet

**Thank You**

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