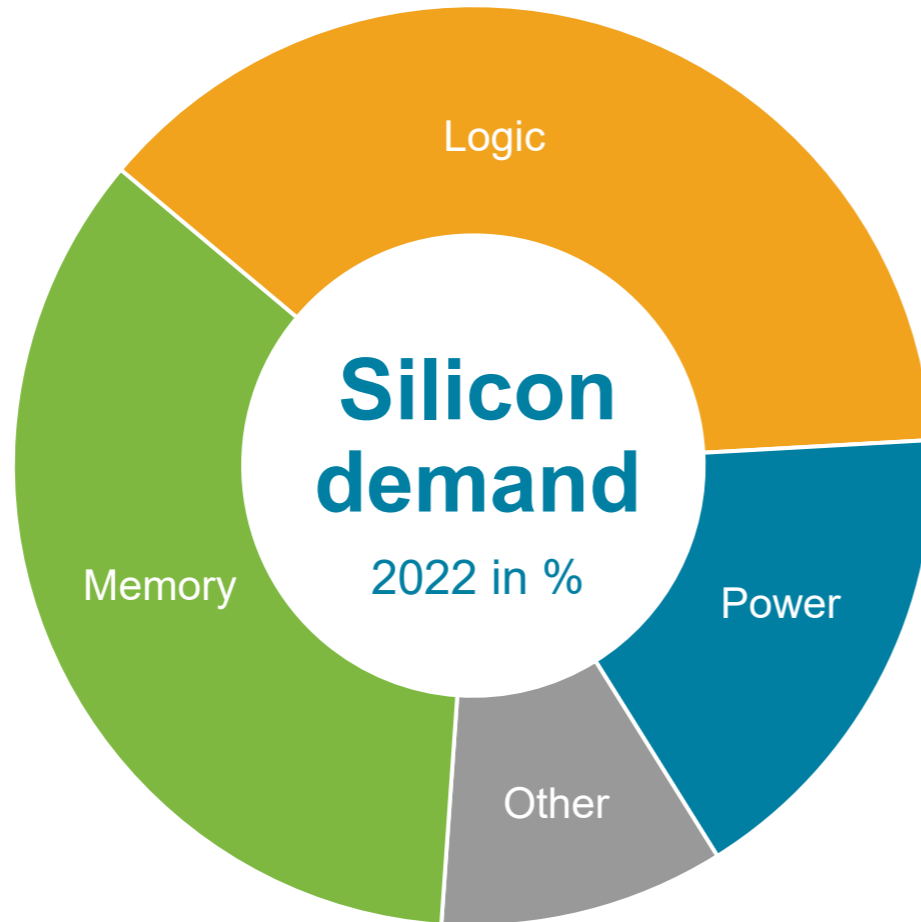


POWER OFFERS THE GREATEST MOMENTUM

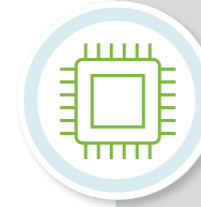
Ulrich Köhler
Director Marketing & Global Power Business
November 30, 2023

THE MARKET: 1/3 FOR MEMORY, LOGIC AND POWER



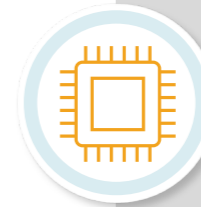
Market

roughly mirrors
Siltronic split



Memory

100% on polished
300 mm wafers



Logic

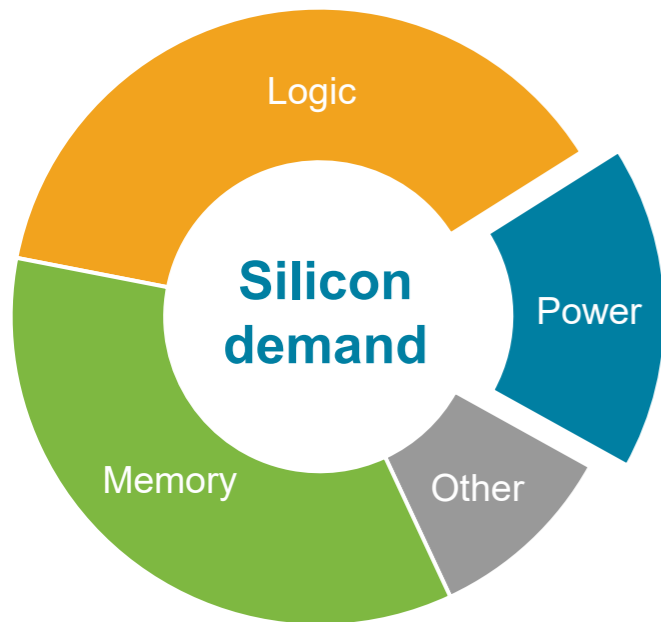
2/3 on 300 mm epi
& polished wafers
1/3 on 200 mm epi
& polished wafers

Source: Siltronic estimate Oct 2023

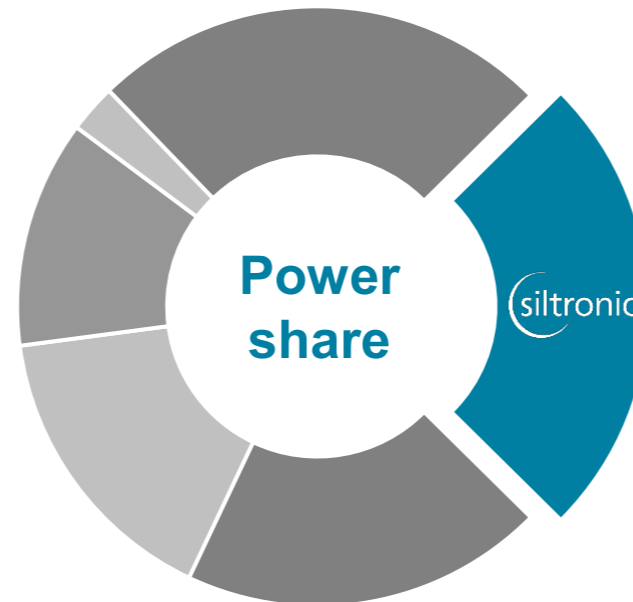
epi = epitaxial

SILTRONIC IS A LEADING POWER PLAYER

Silicon demand by device category
in 2022, in % of total



Power market share⁽¹⁾
in 2022, in % of total



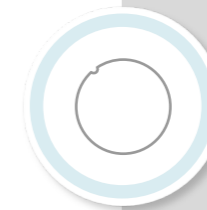
15%

of the Power market demand is on 300 mm⁽²⁾



50%

of the Power market demand is on 200 mm⁽²⁾



35%

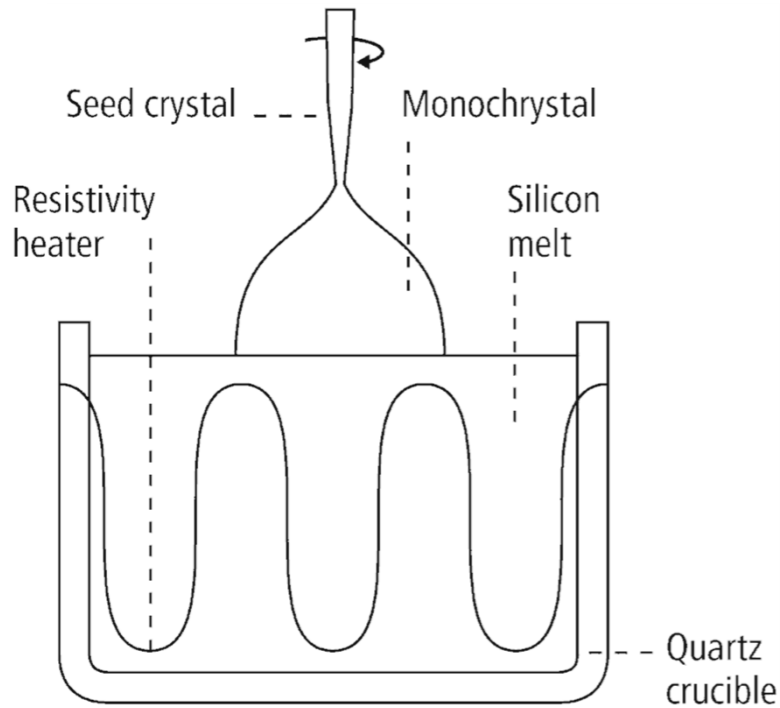
of the Power market demand is on ≤ 150 mm⁽²⁾

(1) SEMI Members only (2) Siltronic estimate Oct 2023

TWO CRYSTAL GROWTH METHODS FOR POWER WAFERS AND SILTRONIC PIONEERED IN 200 mm FZ

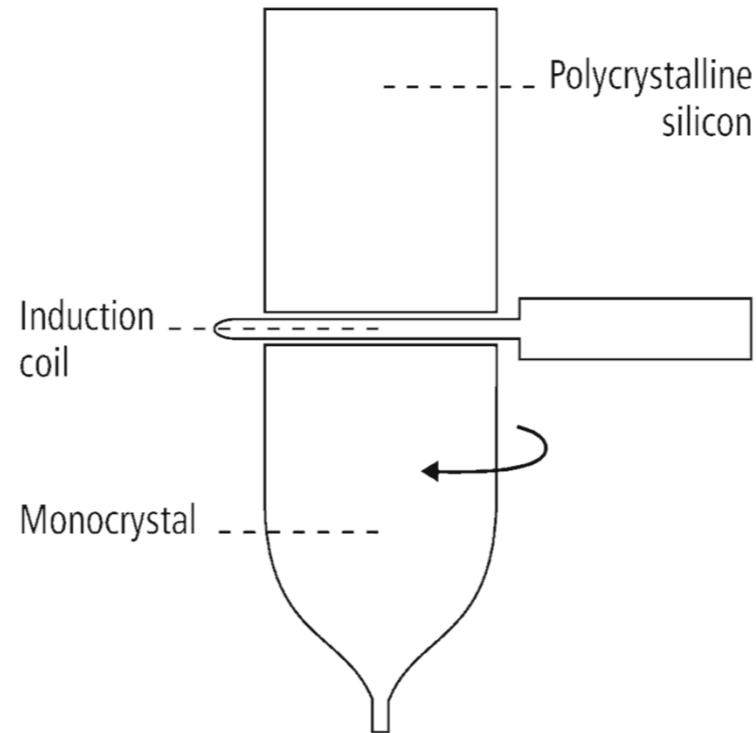
Czochralski (CZ)

Wide product portfolio based upon magnet technology and use of dopants



Float Zone (FZ)

siltronic Pioneer for 200 mm FZ | Born out of European car ecosystem



300 mm

Power wafers only on CZ



200 mm

~ 1/4 on FZ

~ 3/4 on CZ

Source: Siltronic


TWO CRYSTAL GROWTH METHODS FOR POWER WAFERS AND SILTRONIC PIONEERED IN 200 mm FZ

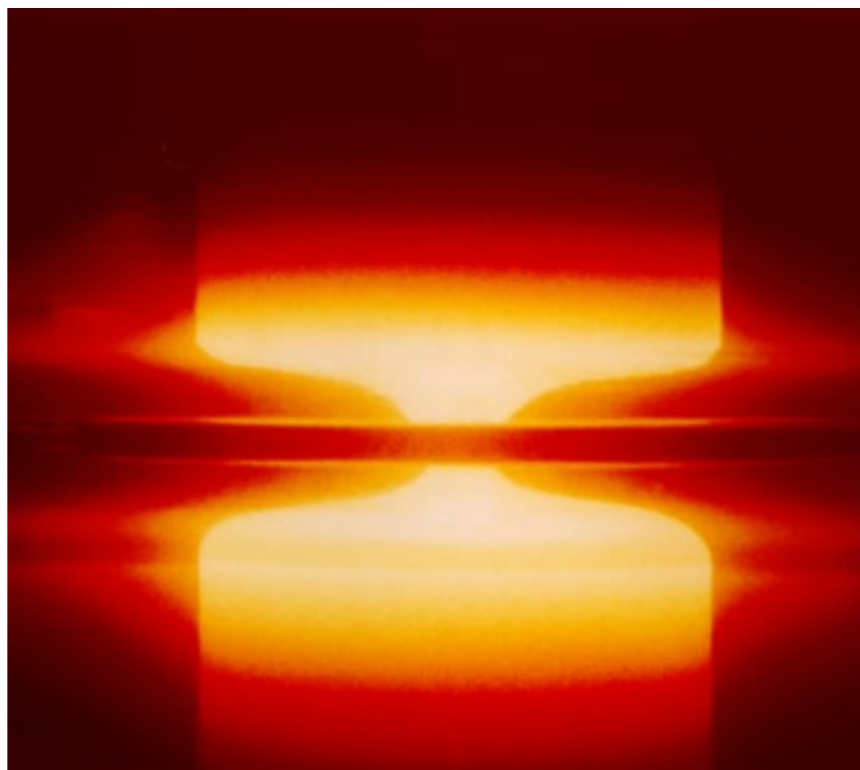
Czochralski (CZ)

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 Pioneer for 200 mm FZ | Born out of car auto ecosystem



300 mm

Power wafers only on CZ



200 mm

~ 1/4 on FZ
~ 3/4 on CZ

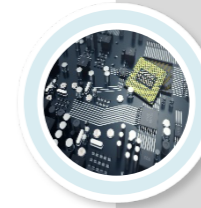
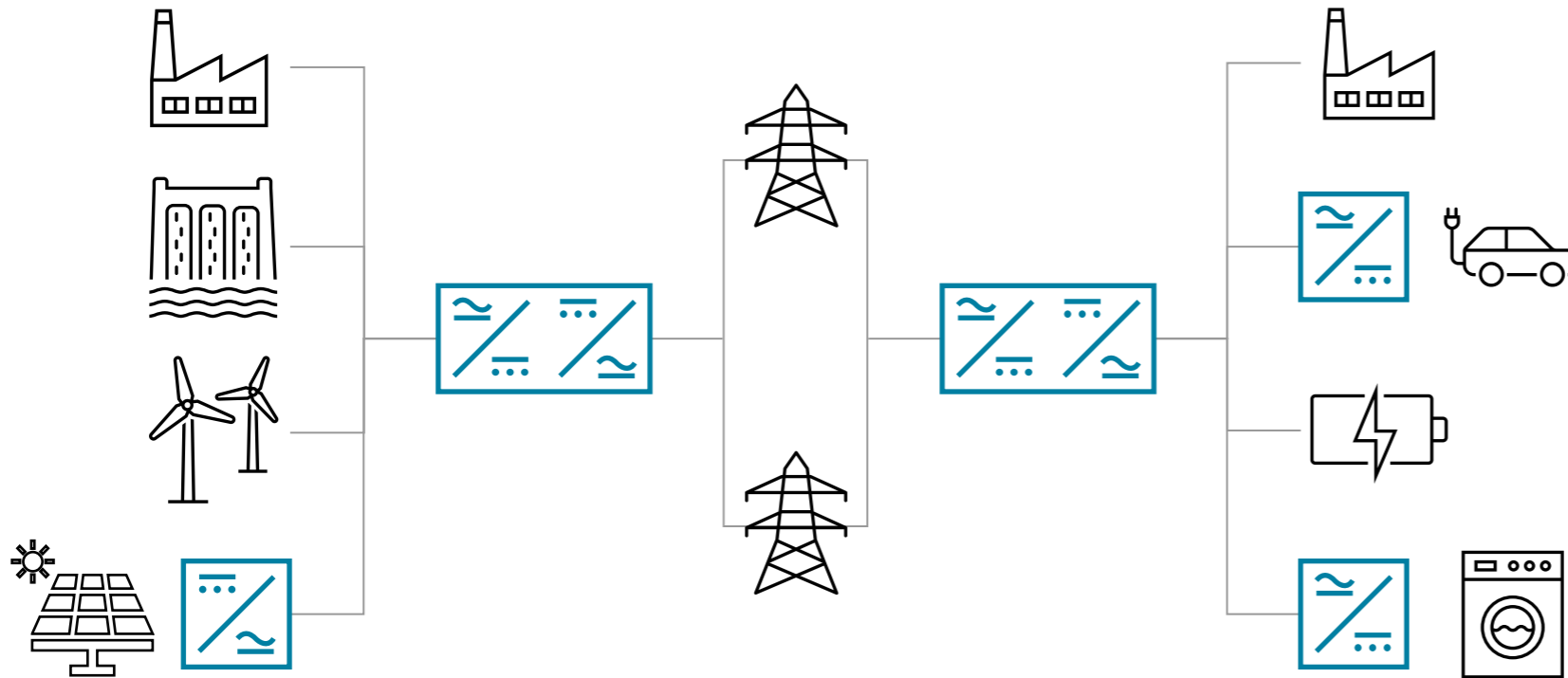
Source: Siltronic

POWER APPLICATIONS CAN BE FOUND IN ALL SUCCESS-CRITICAL ENERGY SUPPLY PROJECTS

Power Generation

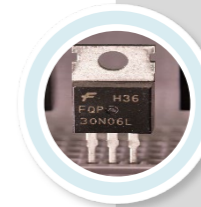
Power Transmission

Power Consumption



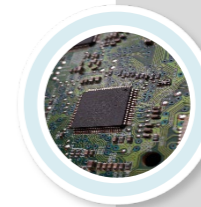
IGBTs

i.e. high power AC/DC



MOSFETs

i.e. low power DC/DC



HEMTs

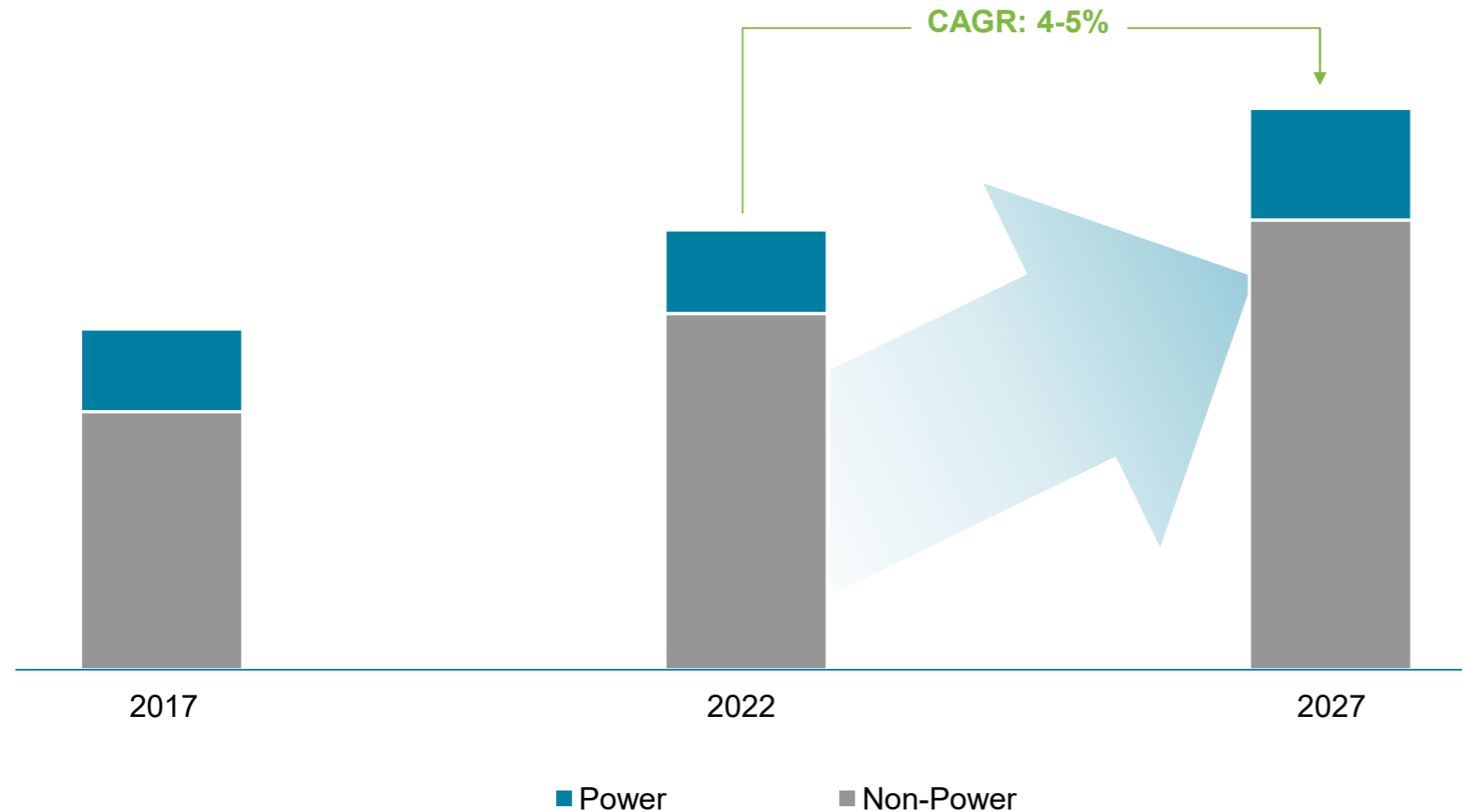
i.e. high speed switching

IGBT = Insulated Gate Bipolar Transistor
MOSFET = Metal Oxide Semiconductor Field-Effect Transistor
HEMT = High-Electron-Mobility Transistor

Source: Basics of power electronics, Point The Gap

POWER WAFER DEMAND IS EXPECTED TO GROW OVERPROPORTIONALLY WHICH BENEFITS SILTRONIC

Wafer area shipped to Non-Power and Power

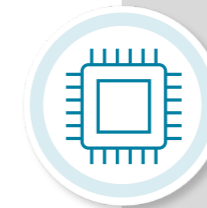


Source: Siltronic estimate Oct 2023; 2023 excluded as ending or start point due to downturn



Future

Power grows faster than Non-Power



Historically

Non-Power grows faster than Power

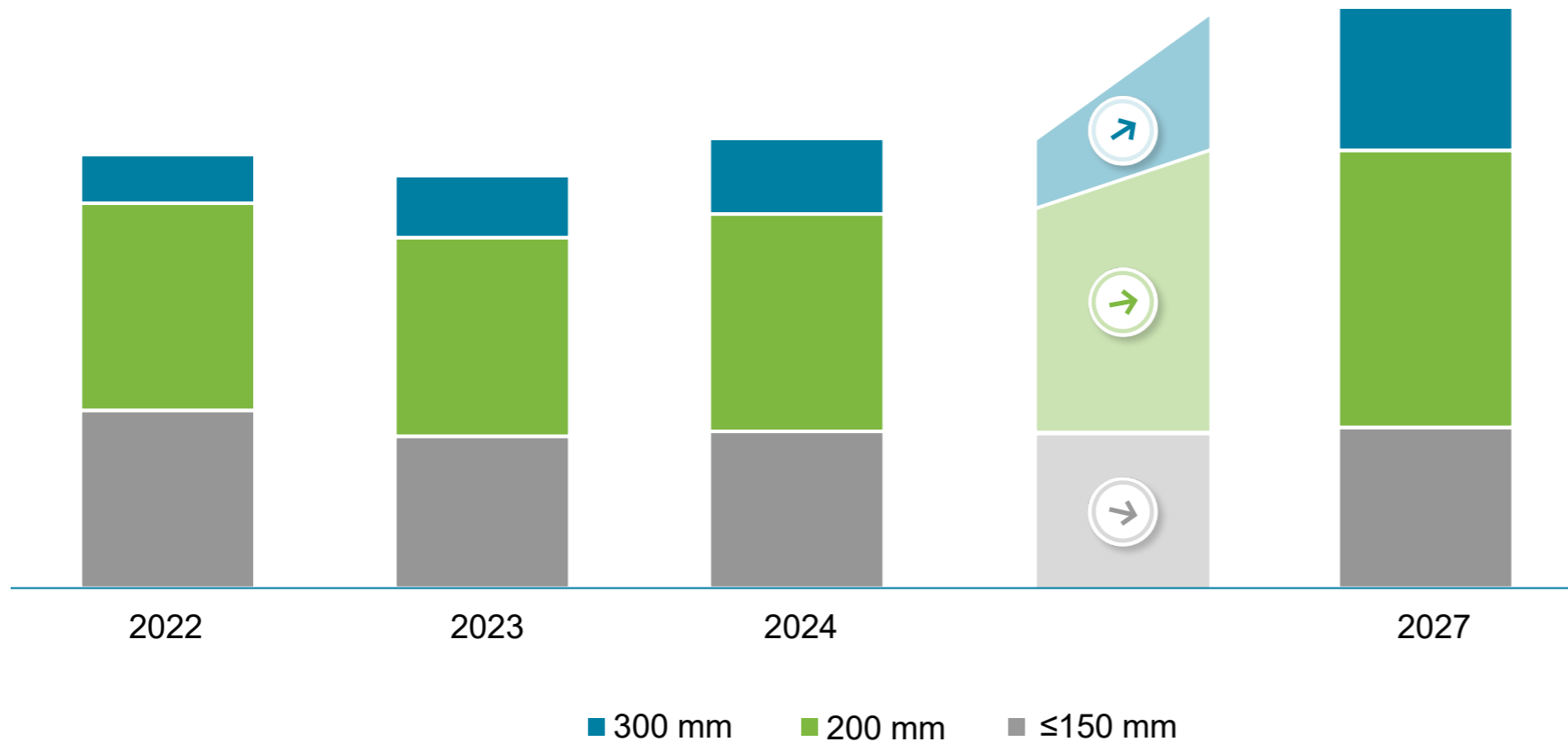


Leading

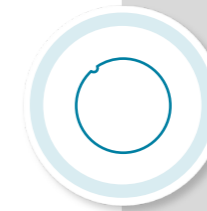
in Power – Siltronic will benefit more

HIGHEST GROWTH RATES ON OUR LEADING DIAMETER

Silicon wafer demand for Power in area



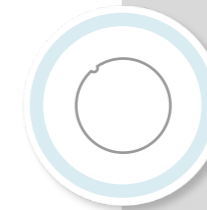
Source: Siltronic estimate Oct 2023; (1) CAGR 2022-2027F



+ ~25%
300 mm CAGR⁽¹⁾



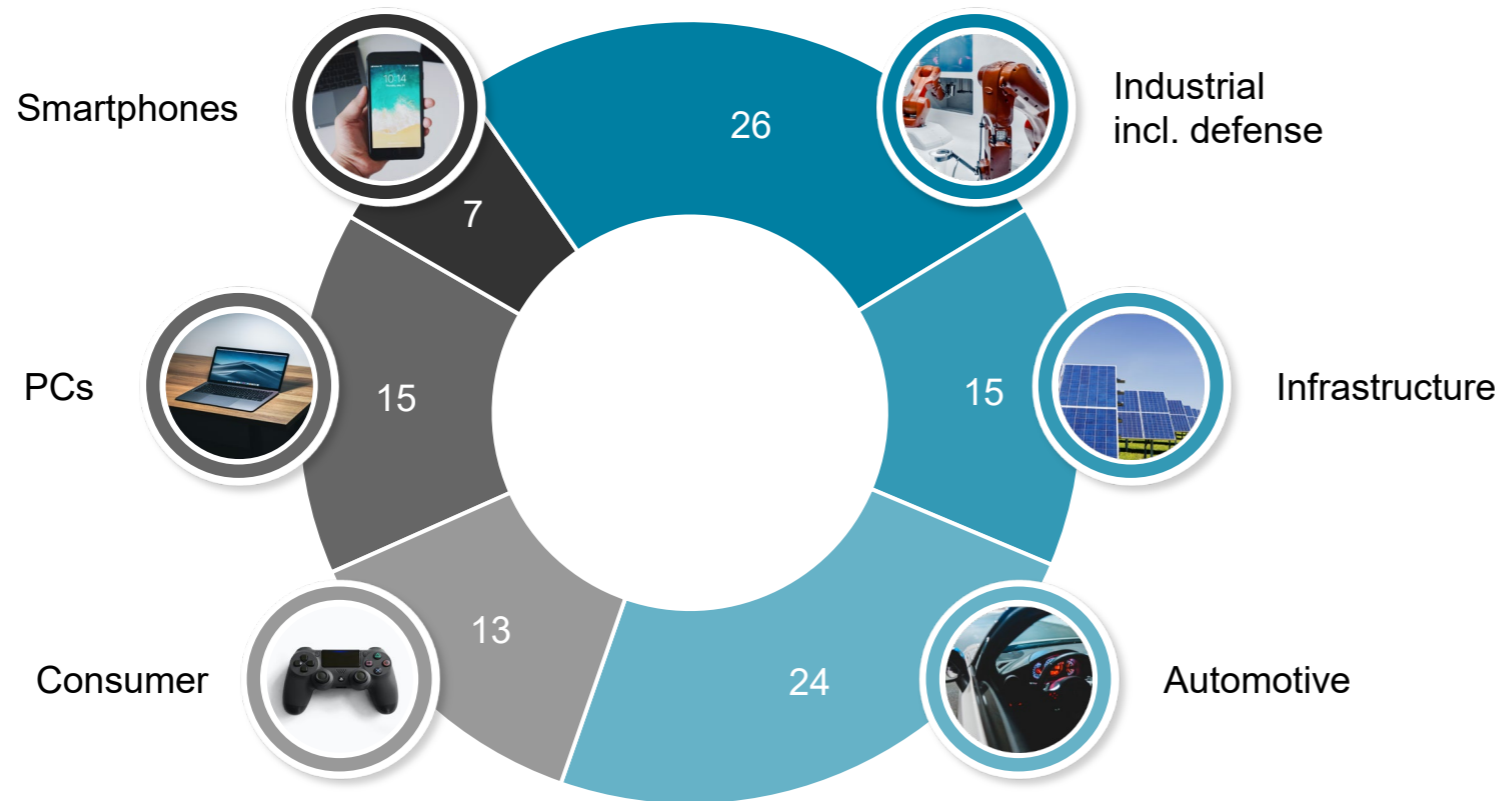
+ ~6%
200 mm CAGR⁽¹⁾



Declining
slightly: ≤150 mm⁽¹⁾

POWER BENEFITS FROM GROWTH IN DIFFERENT INDUSTRIES

Share of silicon wafer demand for Power
in % of total area



Charging
fast with GaN HEMT



PV Inverter
with silicon IGBT



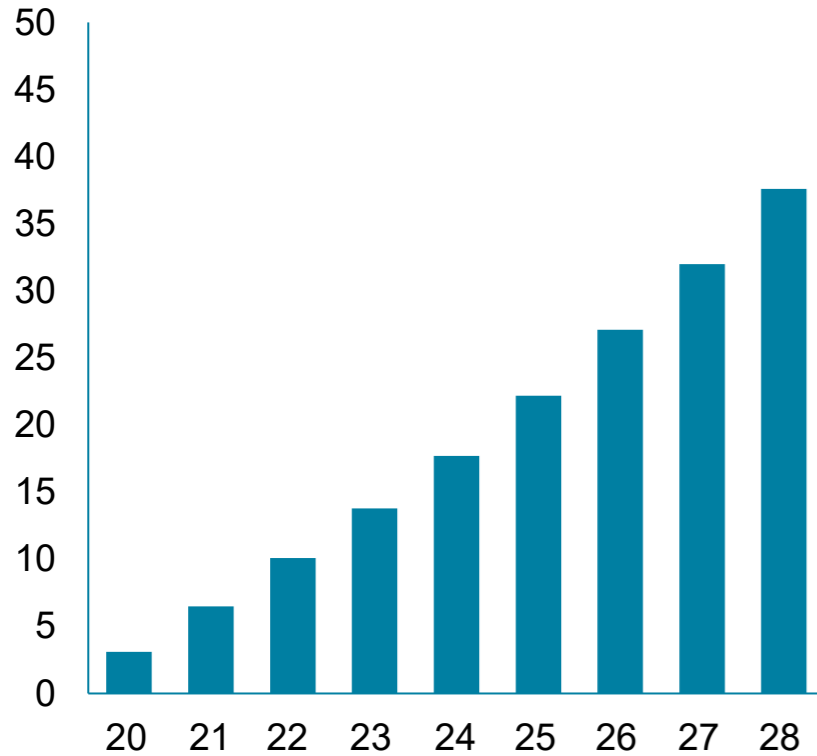
Server
power system with
silicon or GaN
transistors

Source: Siltronic estimate Aug 2023

GaN = Gallium Nitride on Silicon
PV = Photovoltaic

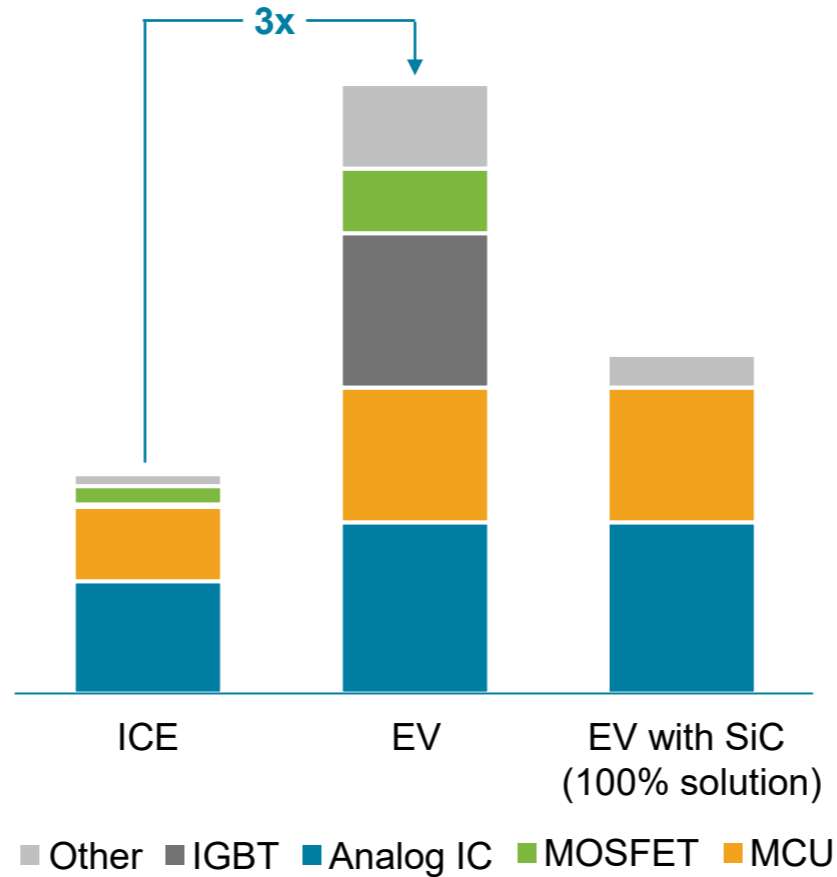
GROWTH DRIVER ELECTROMOBILITY

xEV sales FC
in mn units



UBS Sep 2023 Global I/O Semiconductors; Siltronic estimate

Silicon content in EV powertrain
(powertrain around 40% of total content)



~140 cm²
wafer area in
an electrical car



High share
of Siltronic

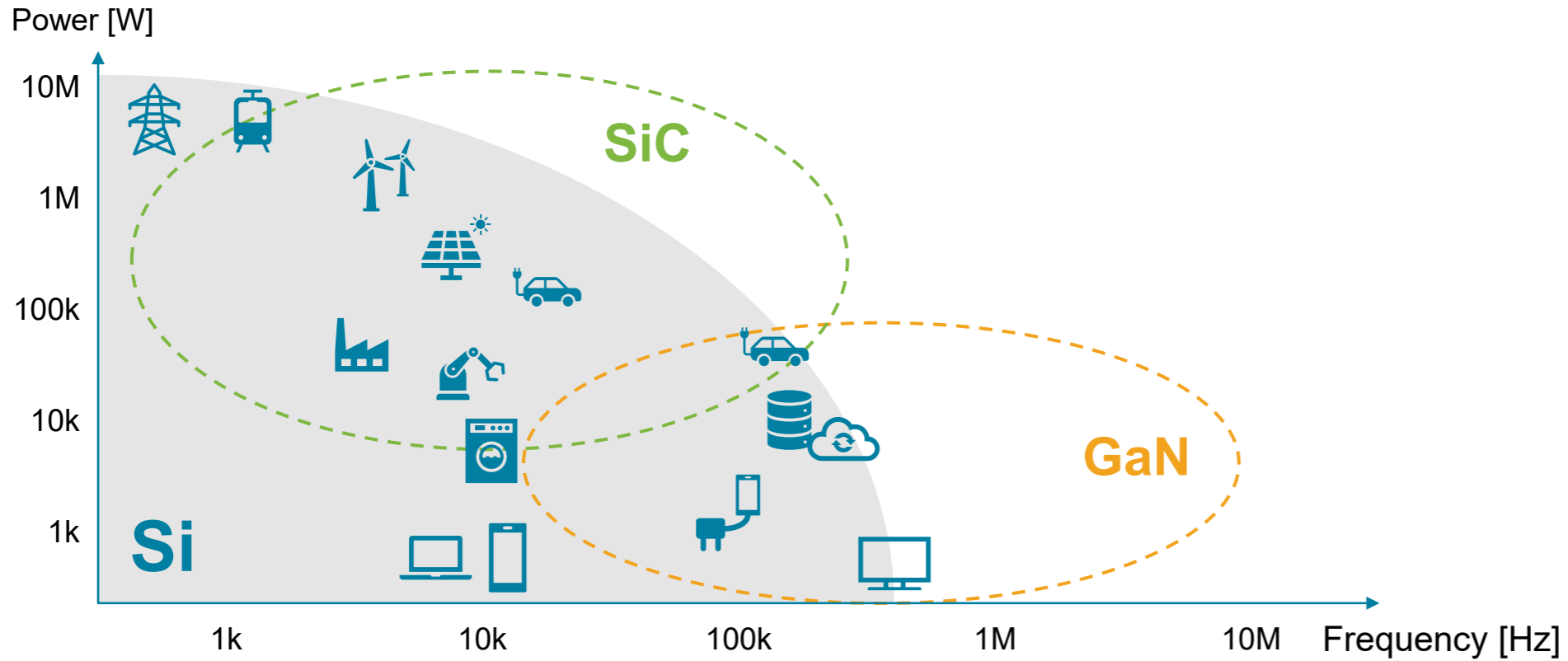


60–100%
more wafer area
in an electrical car

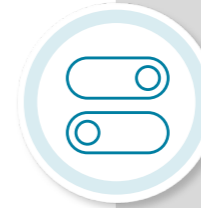
ICE= Internal Combustion Engine
EV = Electronic vehicle
MCU = Microcontroller unit
IC = Integrated circuit

FUTURE GROWTH AREAS CAN BE SERVED BY DIFFERENT WAFER TECHNOLOGIES

Power electronics landscape by application and material



SiC
for high power



GaN
for high frequency



Silicon
for the big market

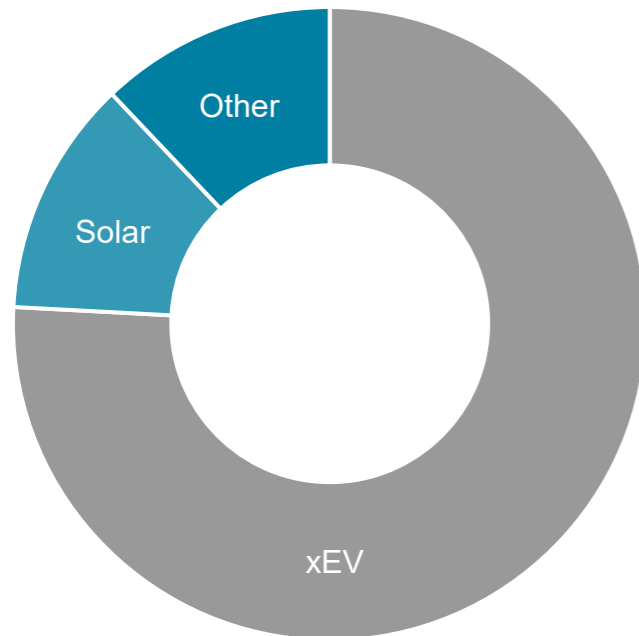
Source: Siltronic estimate

SiC = Silicon Carbide

STRATEGIC DECISION: SILTRONIC WILL NOT FOCUS ON SILICON CARBIDE

Market for SiC

CAGR: 30%



Impact on

Technical properties

- Higher thermal conductivity and higher energy bandgap lead to devices operating better under higher temperatures and voltages

Cost properties

- Challenges due to boule growth, diameter transition and sawing technologies

Customer structure

- Medium concentration and partly integrated customers

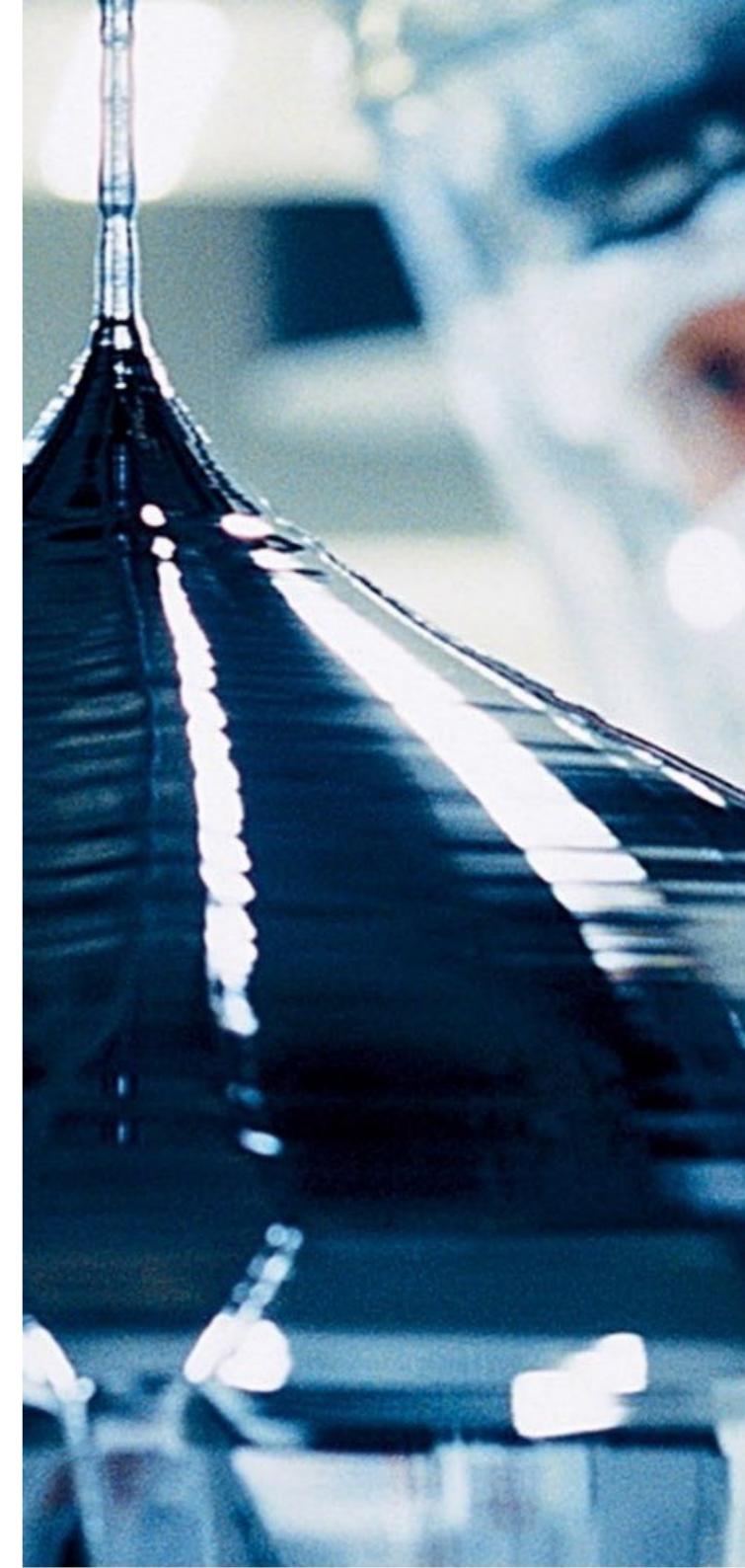
Supply and demand

- High demand growth
- Announced capacities larger than demand growth⁽¹⁾

Siltronic capabilities

- Limited experience in boule growth

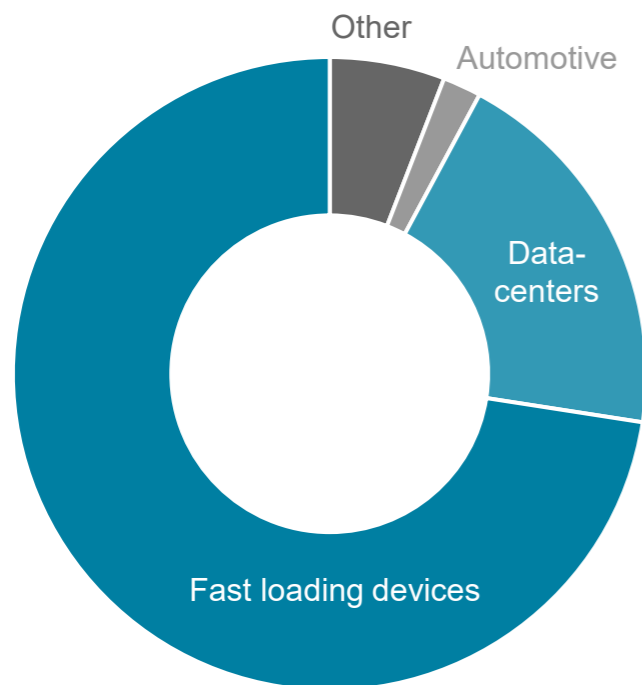
Source: Siltronic estimate Sep 2023 | (1) Yole Power America 2023



SILTRONIC HAS A STRONG R&D BASE IN GAN

Market for GaN

CAGR: 50%



Source: Siltronic estimate Sep 2023

Impact on

Technical properties

- Higher electron mobility leads to devices operating better for higher frequencies in power and radar

Cost properties

- Using silicon cost curve experience
- Additional deposition cost of GaN layer

Customer structure

- Medium concentration and partly integrated customers

Supply and demand

- High demand growth
- Starting industry structure

Siltronic capabilities

- 10 years of R&D in Burghausen & sample products



KEY TAKEAWAYS

All silicon wafer segments **promise growth potentials**, but Power offers biggest momentum

We are particularly **well positioned in supplying** the fast growing electromobility market

Siltronic is **leading** in the Power wafer segment

We **support our leading position** with a strong R&D footprint for Power wafers



QUESTIONS?



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