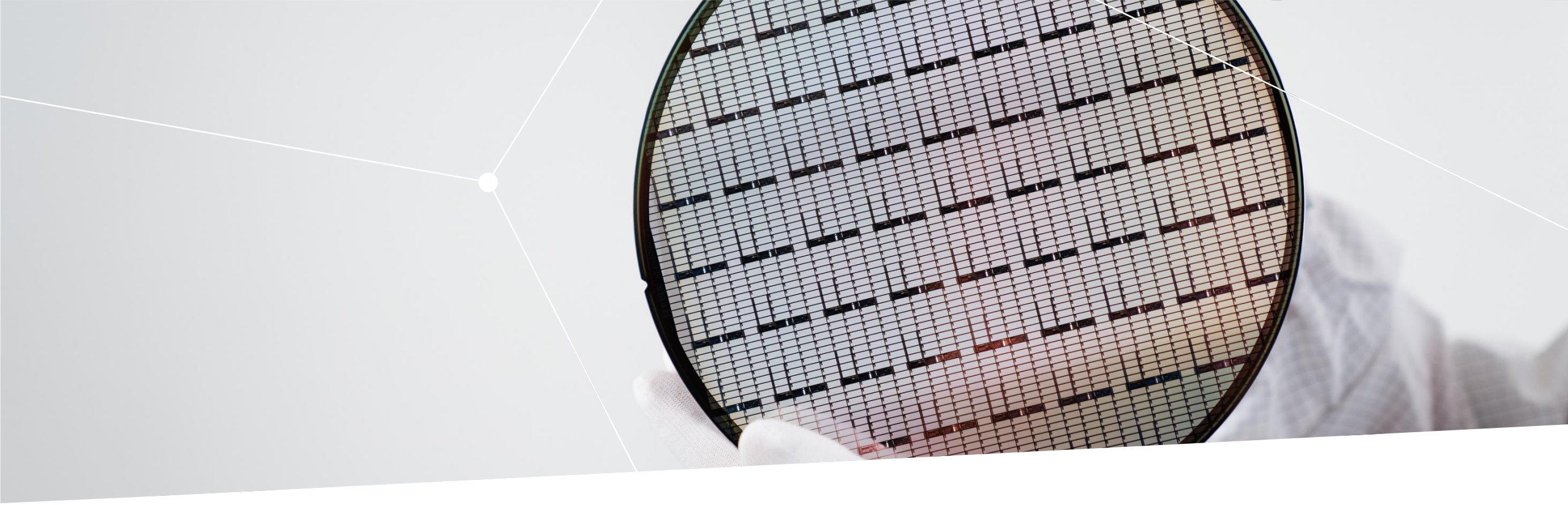

Infineon to acquire GaN Systems -

strengthening its GaN portfolio, reinforcing its global leadership in Power Systems

3 March 2023
Infineon Technologies

Overview of key investment highlights



Strengthening GaN portfolio, reinforcing global leadership in Power Systems

Addressing fast-growth applications with **highly complementary strengths** in IP, application understanding, customer access and project pipeline

Significant **roadmap acceleration** through unmatched R&D resources and application expertise

Leadership in Power Systems through mastery of all relevant power technologies – Si, SiC, GaN

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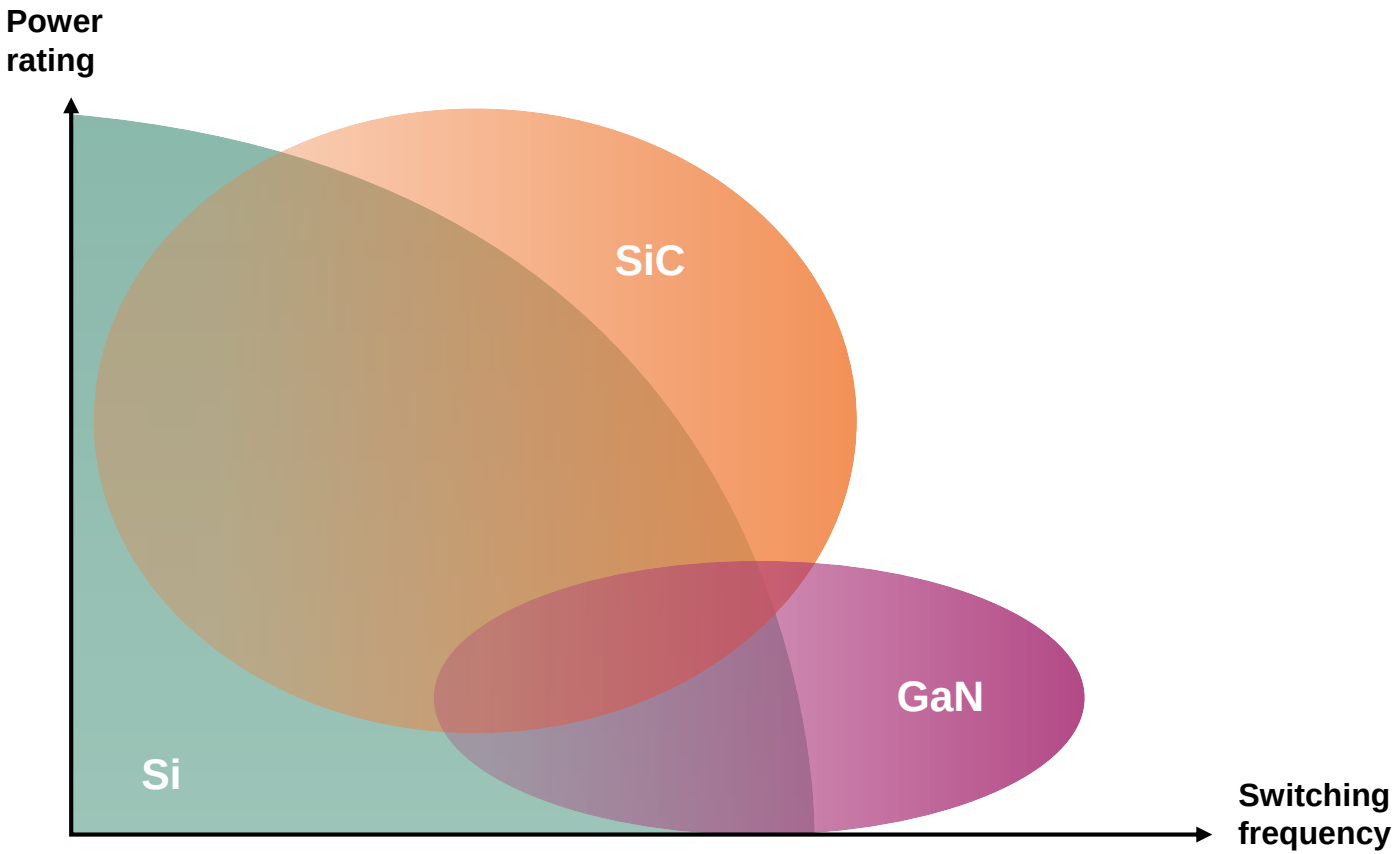
Future growth in power semiconductors: Infineon leveraging Si leadership, strengthening position in wide bandgap

Comparison of technologies



Power device market development

	Market size (today)	Market growth (predicted)
Si	■	≈
SiC	■	↗
GaN	■	↑

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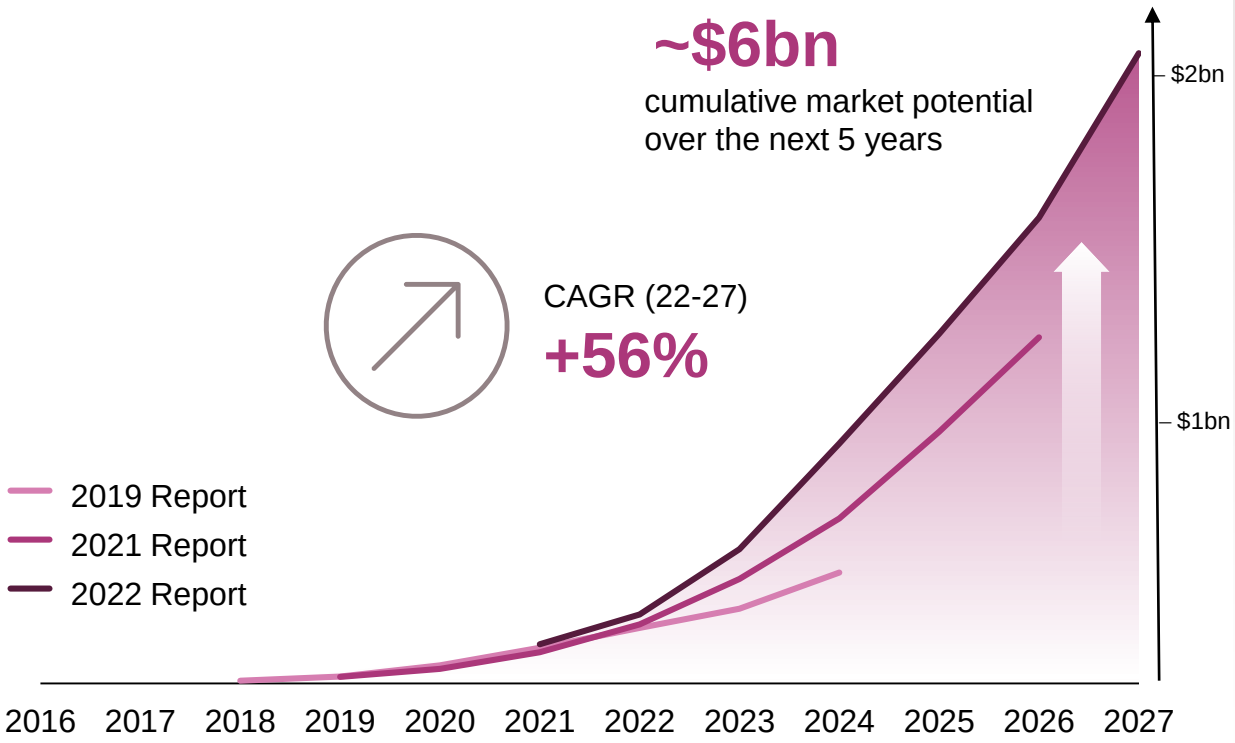
GaN market accelerating, driven by key power applications

GaN market forecasts over time



Superior switching performance results in **higher efficiency** and **lower system cost.**

Applications with **tipping point** reached or in sight:

- Charger, adapter
- Server (high voltage)
- Residential solar
- On-board charger

Source: Yole: Power GaN Report 2022 & Compound Semiconductor Market Monitor-Module I Q4 2022.

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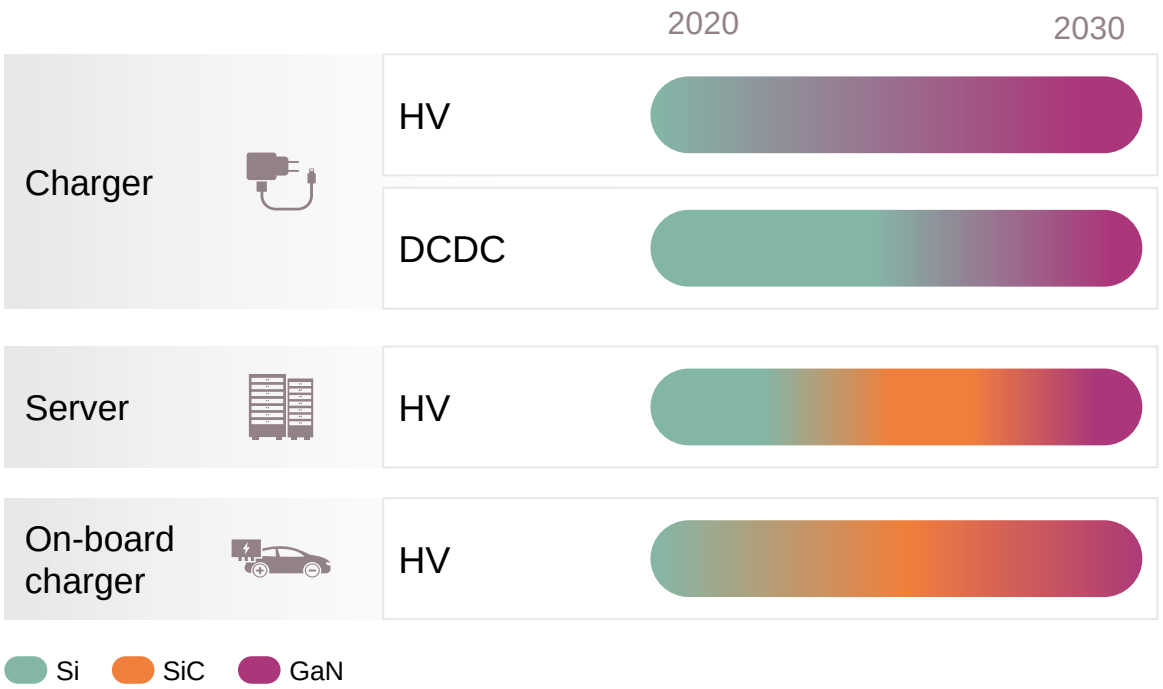
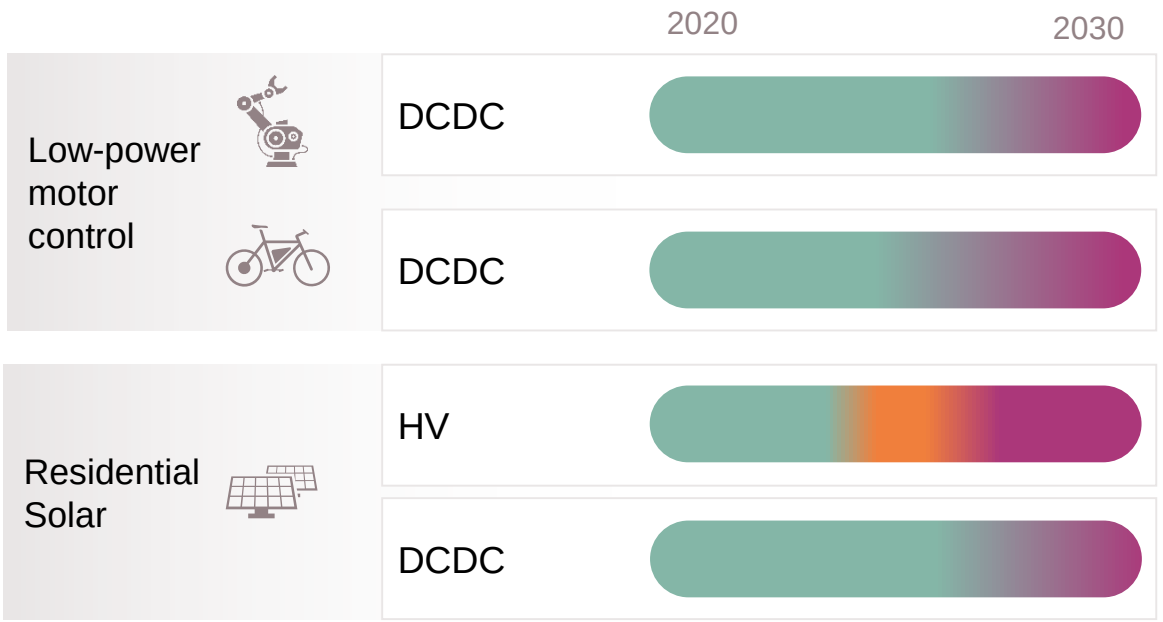
GaN expected to be the preferred technology in some of Infineon's core portfolio applications by 2030, different transition paths shaping up

GaN tipping point reached/in sight



GaN transition coming up



More applications likely to transition to GaN over time

Strong position to offer all relevant power semiconductor technologies creates clear customer benefits

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GaN Systems: Leading GaN player w/ strong product IP base, top-notch application understanding, broad product portfolio & customer access

Key facts

Founded: 2008
HQ: Ottawa, CAN
Privately held

Employees: >200
R&D: CAN, US, TW, JP
Sales: 6 locations globally

Business model:
fabless developer of GaN power devices for power conversion

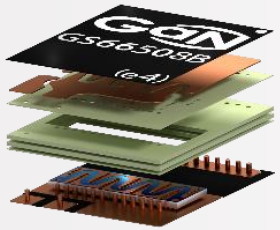
Patents:
library focused on package & device-package interaction/metal stacks

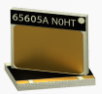
Application focus:
server/telecom, automotive, industrial, consumer

Current revenues:
low/mid double-digit USD m

Broad lineup of devices and packages, featuring fully embedded power die packaging







Top-side cooling:
Hard Switching Applications



PDFN:
Cost-Effective Solutions



Bottom-side cooling:
Lower Power Designs



Die:
Optimized For Wire Bonding

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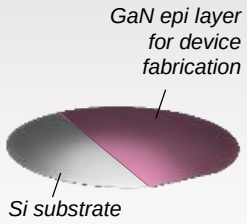
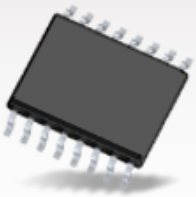
Joining forces and adding complementary strengths creates a winning formula for the GaN market

Substrates › **Epitaxy** › **Frontend Technology** › **Packaging** › **Product Portfolio** › **Application understanding** › **Customer access**

GaN fabrication starts with fully commoditized Silicon (Si) wafers













Infineon + GaN Systems

- Strong **IP portfolio**
- Dual-site **in-house** manufacturing (Villach, Kulim 3 *in construction*) **in transition to 8“**
- **Foundry** partnerships

- Full **system** offering, fast track to **GaN-specific topologies**
- High-volume standard and GaN-specific, low-parasitic packages
- **Monolithic integration** roadmap

- Broad **application** coverage to significantly accelerate roadmap
- Excellent **access** to lead customers, incl. automotive

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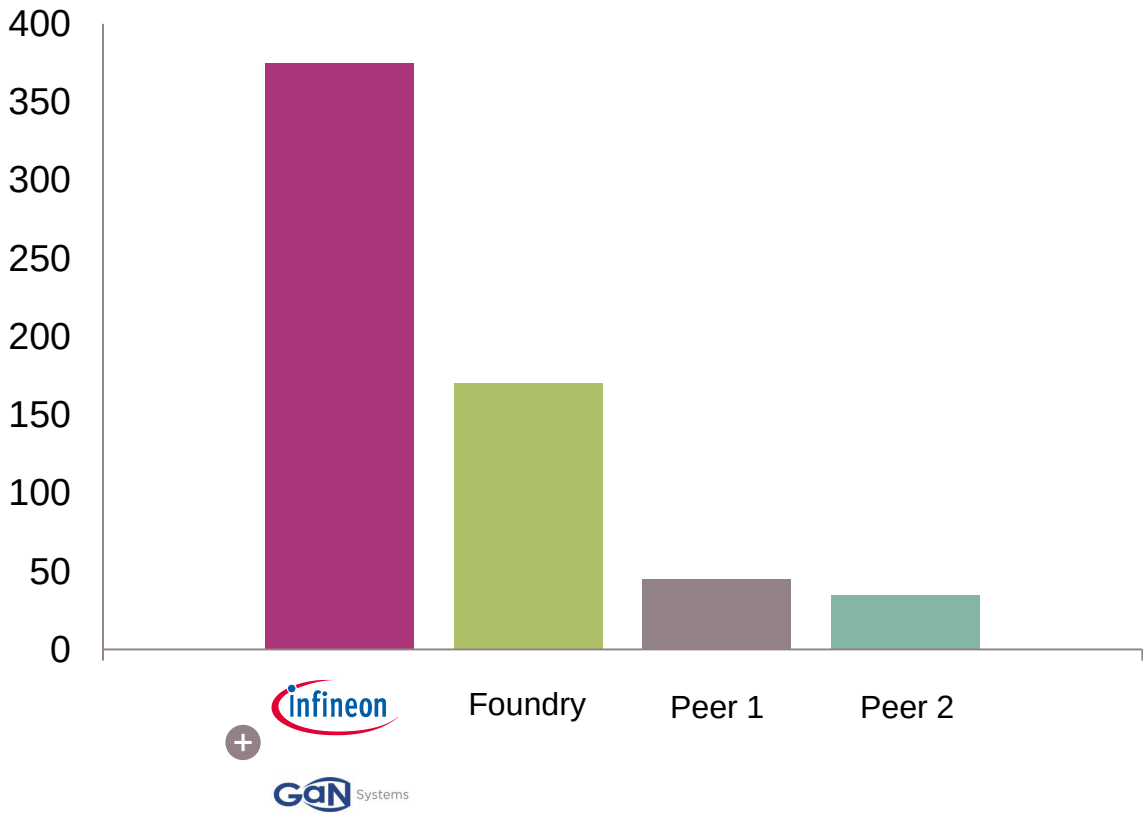
Combined platform features leading GaN IP and the industry's strongest R&D force, to speed up time-to-market

No. of patent families in GaN power



Combined team
of **~450** GaN experts

Combined R&D
budget high double-digit **USD m p.a.**

Leverage ability to scale learnings and **significantly accelerate roadmap** for shorter time-to-market

Source: Infineon analysis

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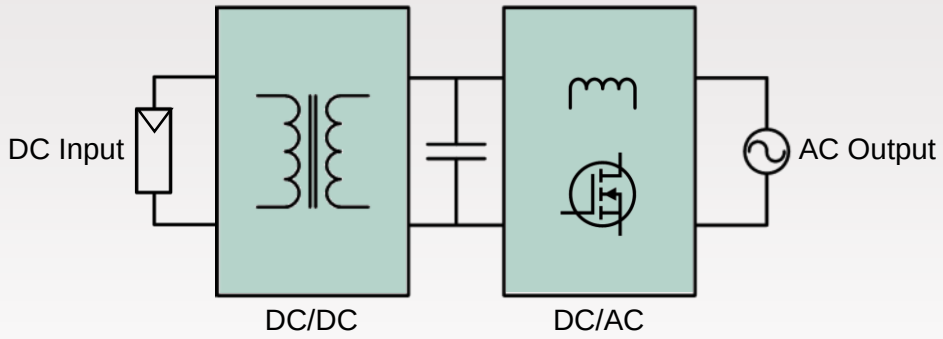
GaN is not a drop-in replacement for Si, best-in-class application know-how is critical to creating completely new and improved systems

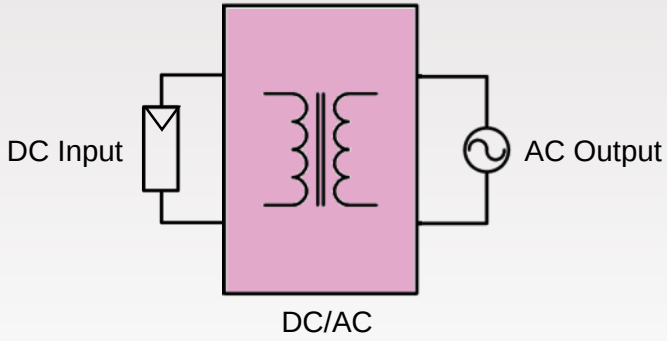
Example: different topologies for a Solar inverter

Si **Two Stages**



VS

GaN **Single Stage**



Higher power density and therefore smaller
Higher efficiency
Reduced complexity/system cost

But: system redesign required

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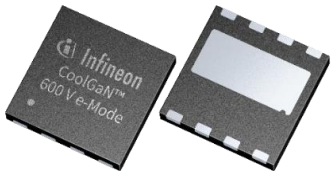
Strong engagement with market-shaping customers will support GaN market leadership

2x
available GaN products





>2000 active GaN customers
being served in Infineon focus applications

>2x design opportunity pipeline (GaN power) in focus applications of **> €3bn**

Charger/Adapter in consumer electronics	✓
Industrial/Renewables	✓
Automotive	✓

Becoming one of the **leading GaN** semiconductor companies

- ... growing with **market-shaping** OEMs and distributors
- ... creating high **financial value** through revenue and cost **synergies**
- ... and adding to Infineon's **global leadership in Power Systems** across Si, SiC, GaN

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Key facts of the transaction

GaN Systems	GaN Systems, Inc., privately held by strategic and financial investors (selection) BMW i VENTURES · DENSO · TOYOTA · vitesco TECHNOLOGIES · CYCLE CAPITAL MANAGEMENT · Fidelity INVESTMENTS
Signing date	2 March, 2023
Purchase price	USD 830 million
Closing	We expect the closing of the acquisition within this calendar year
Format	All-cash acquisition, funded from available liquidity

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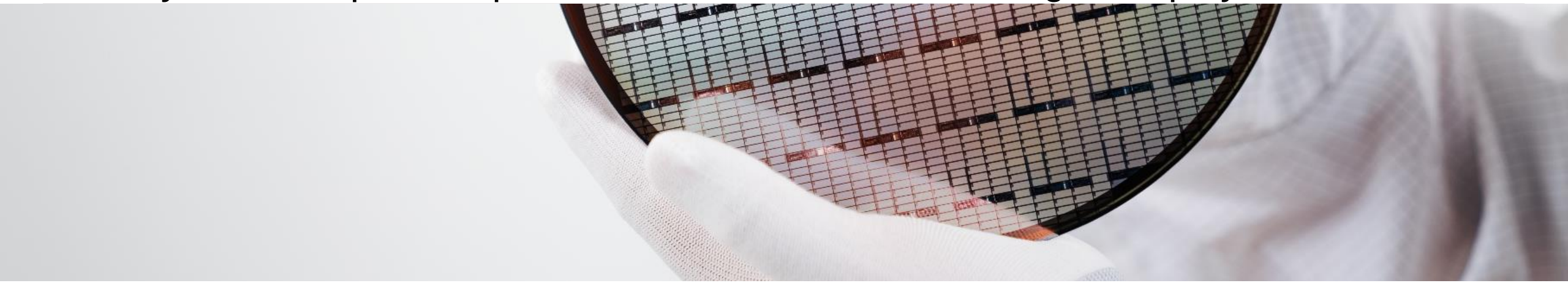
GaN Systems acquisition positions Infineon to be a leading GaN player



Leading IP & strongest R&D force

Leading patent portfolio for GaN – >350 patent families

~450 strong GaN team high double-digit USD m GaN R&D p.a.

Best-in-class application under-standing incl. automotive

Leveraging foundry + IDM advantages

We own key IP and all frontend process steps

We combine foundry partner-ships and dual-site in-house production, ready for 8''

We target a leading market position

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