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NUREMBERG, GERMANY

5th Gen SiC MOSFETs for AI Data Center Applications

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Navitas 2.0- Four focus markets

Grid & Energy Infrastructure

SSTs and PCS for AI data center power delivery, utility-scale solar, and utility-scale BESS applications.

AI Datacenters

Side-car and in-rack applications, i.e., AC-DC PSU, DC-DC PDB, and BBU.

Industrial Electrification

Industrial motor drives, transportation, induction heating, etc.

Performance Computing

High-power, high-density chargers as portable computers evolve with AI-native processing

Technology Built to Deliver Performance & Reliability

Performance

Why TAP outperforms : power semi → system

PERFORMANCE FEATURES

- Up to 20% lower $R_{DS,ON}$ at elevated junction temperatures for lower conduction losses
- Low Q_{GD} and optimized $R_{G,INT}$ for low-loss high-speed switching
- Low-ring, high-efficiency switching via optimized Q_{GD}/Q_{GS} ratio and body-diode snappiness

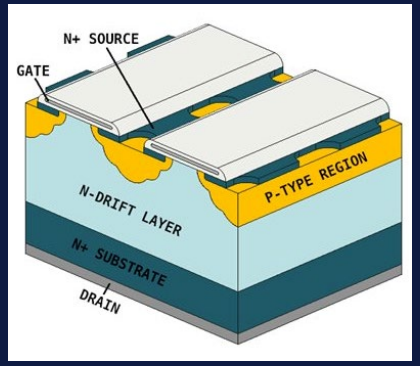
SYSTEM-LEVEL IMPACT

- Maximized power conversion efficiency through reduced conduction and switching losses across wide operating range
- Smaller, denser, and efficient power converters

TAP Architecture

What makes it different

TRENCH-ASSISTED PLANAR (TAP)



- P-type trench in source enables greater cell-pitch reduction and better unit-cell area utilization for improved performance
- Proprietary multi-point shielding distributes the electric field for improved reliability and lifetime
- 25+ TAP technology patents backed by 20+ years of SiC expertise

Reliability

Why TAP outlasts : power semi → system

RELIABILITY FEATURES

- Engineered to exceed the industry's harshest reliability testing for dynamic mission-profiles and longer life : setting the benchmark with industry-first 'AEC-Plus' qualified products
- Robust TAP SiC MOSFET technology delivering stable performance with minimal parametric drift
- Advanced packaging technology engineered to endure extreme power and temperature cycling stresses

SYSTEM-LEVEL IMPACT

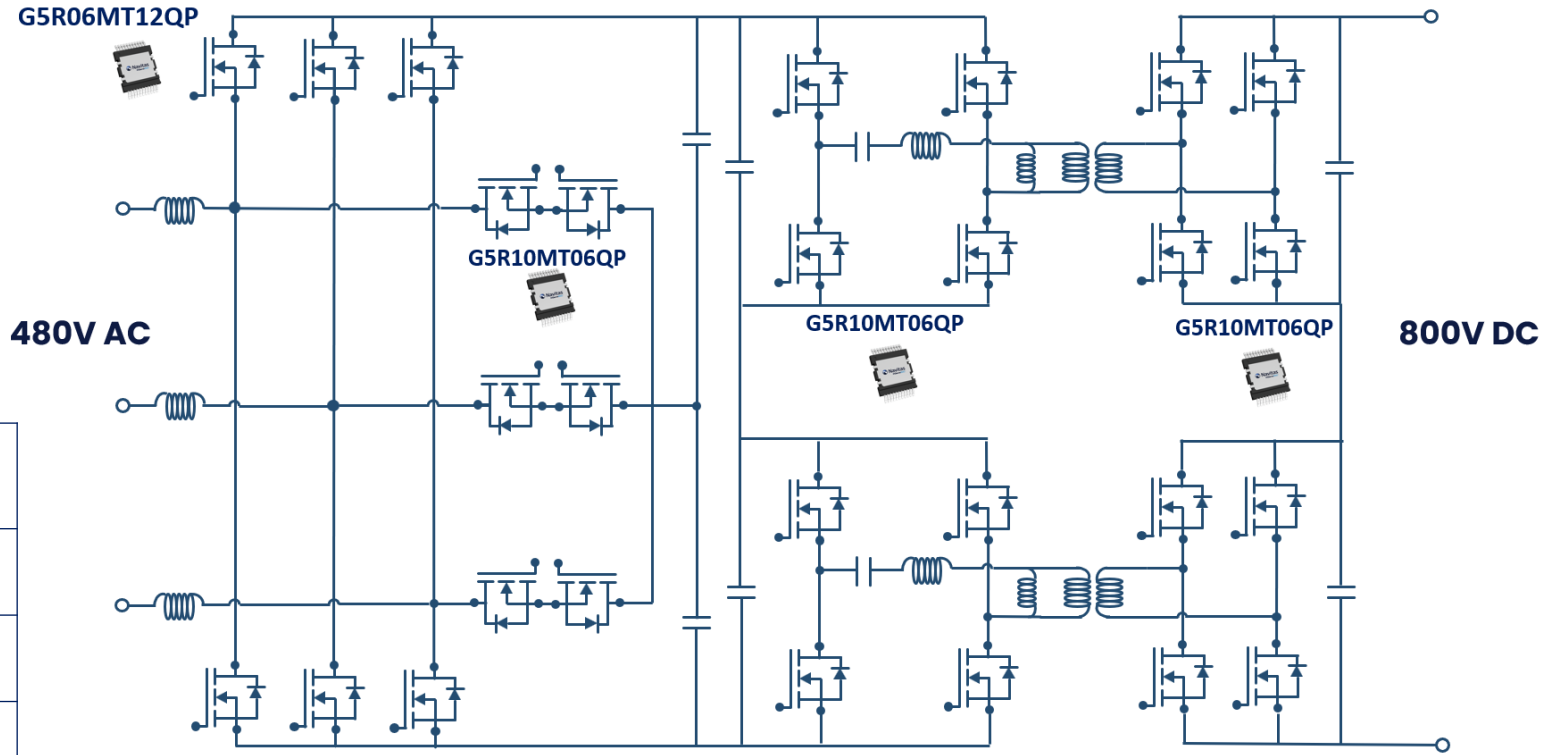
- Technology and products rigorously qualified to target application mission-profile and life-time requirements
- Improved power converter reliability and uptime

Scalable and flexible trench-assisted planar (TAP) SiC MOSFET technology platform adaptable to high-voltage (HV) and ultra-high-voltage (UHV) power semiconductor classes (from 1.2kV to 10kV)

18kW–30kW AIDC PSUs (480V AC to 800V DC)

5th Gen Portfolio optimized for 18kW to 30kW AI Data Center PSUs

Voltage Rating	$R_{DS,ON}$ Rating *(Typical @ 25°C) (V_{GS} = 18 V)*	Package	Part Number
1200 V	6.5 mΩ	QDPAK	G5R06MT12QP
		TO-247-4-LP	G5R06MT12LK
	12 mΩ	QDPAK	G5R12MT12QP
		TO-247-4-LP	G5R12MT12LK
650 V	5.5 mΩ	TO-247-4-LP	G5R05MT06LK
	10 mΩ	QDPAK	G5R10MT06QP
	10 mΩ	TO-247-4-LP	G5R10MT06LK



Improvement of 5th Gen Technology

DEVICE-LEVEL PERFORMANCE

More to 20% $R_{ON,SP}$ improvement at 175°C
Improvement of cost-performance FoM

25% lower switching loss
Low Q_{GD}, optimized $R_{G,INT}$ — fast, clean high-speed switching

Low-ring, soft recovery
Optimized Q_{GD}/Q_{GS} ratio, soft body diode, low Q_{rr}

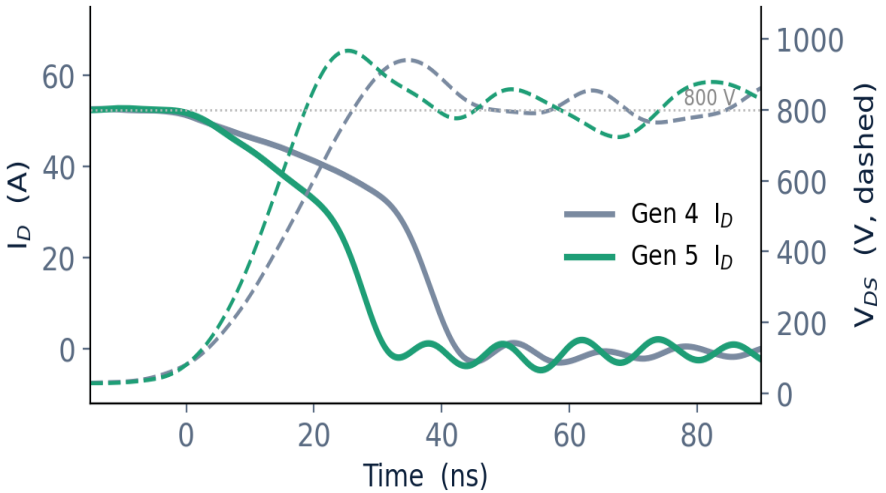
Higher current capability
Improvement of A/mm² and introduction of high new current packages

SYSTEM-LEVEL IMPACT

Maximized power-conversion efficiency
Higher efficiency across the full operating range

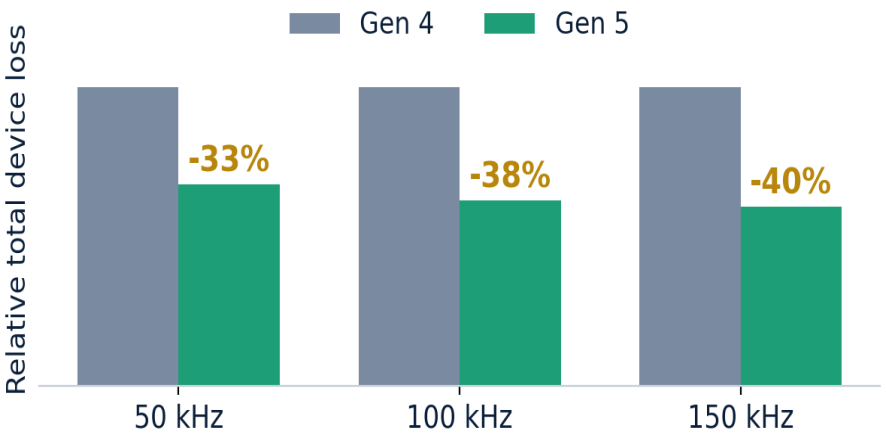
Smaller, denser converters
More efficient power converters with higher power density

Measured turn-off — Gen 5 switches faster



Measured turn-off at matched 50 A, 800 V — Gen 5 commutates faster

27kW 3-Ph AC-DC PSU for AIDC



Lower total device loss across the operating range — benefit grows with switching frequency.

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Thank you for your attention!

This presentation is available at the PCIM website

I‘m pleased to answer your questions:

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