



GaN & SiC Technologies Enable Next-Gen AI Data Centers

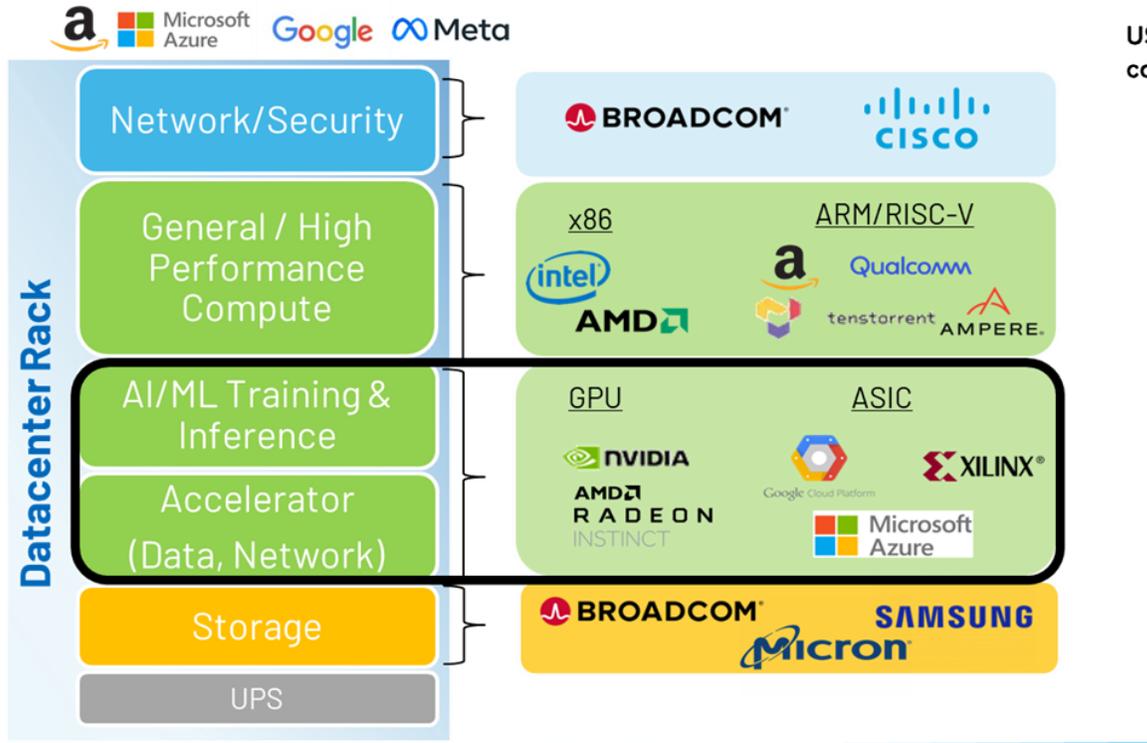
*Alfred Hesener, Senior Director Industrial & Consumer,
Navitas Semiconductor*

**Bodo's
Wide Bandgap
Event 2024**

Making WBG Designs Happen

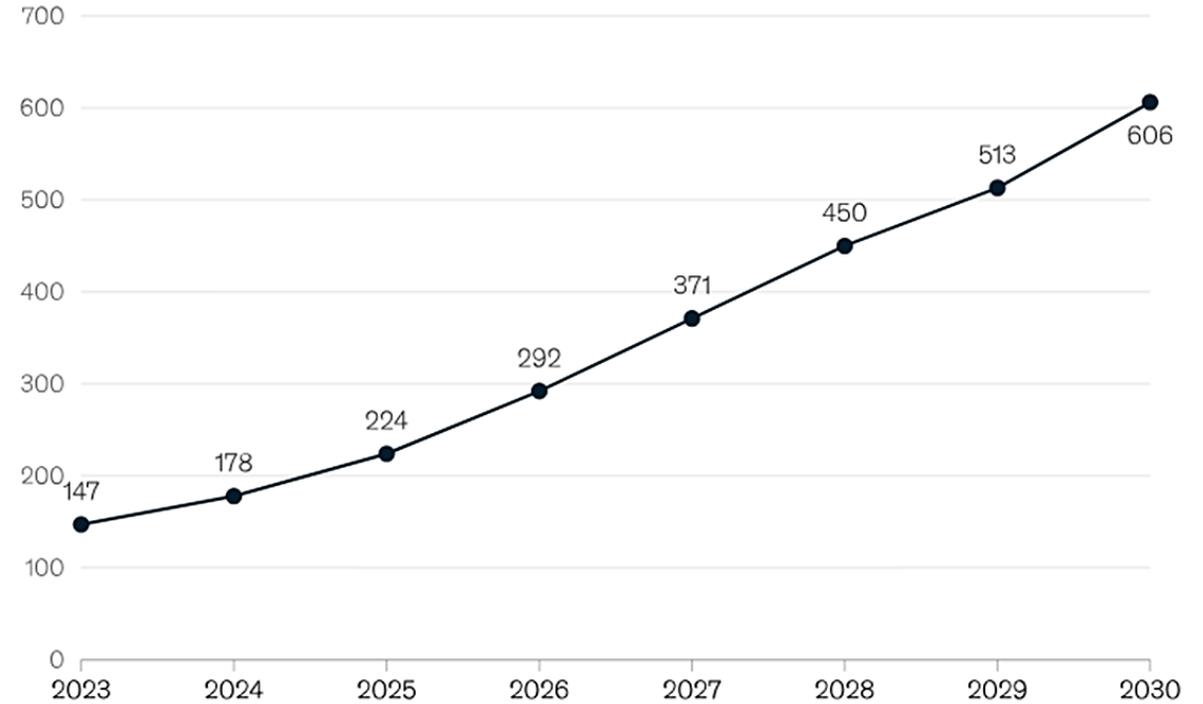
SiC

Dramatic Growth in Data Center Power Consumption



Terawatt-hours (TWh) of electricity demand, medium scenario

US data center energy consumption, TWh

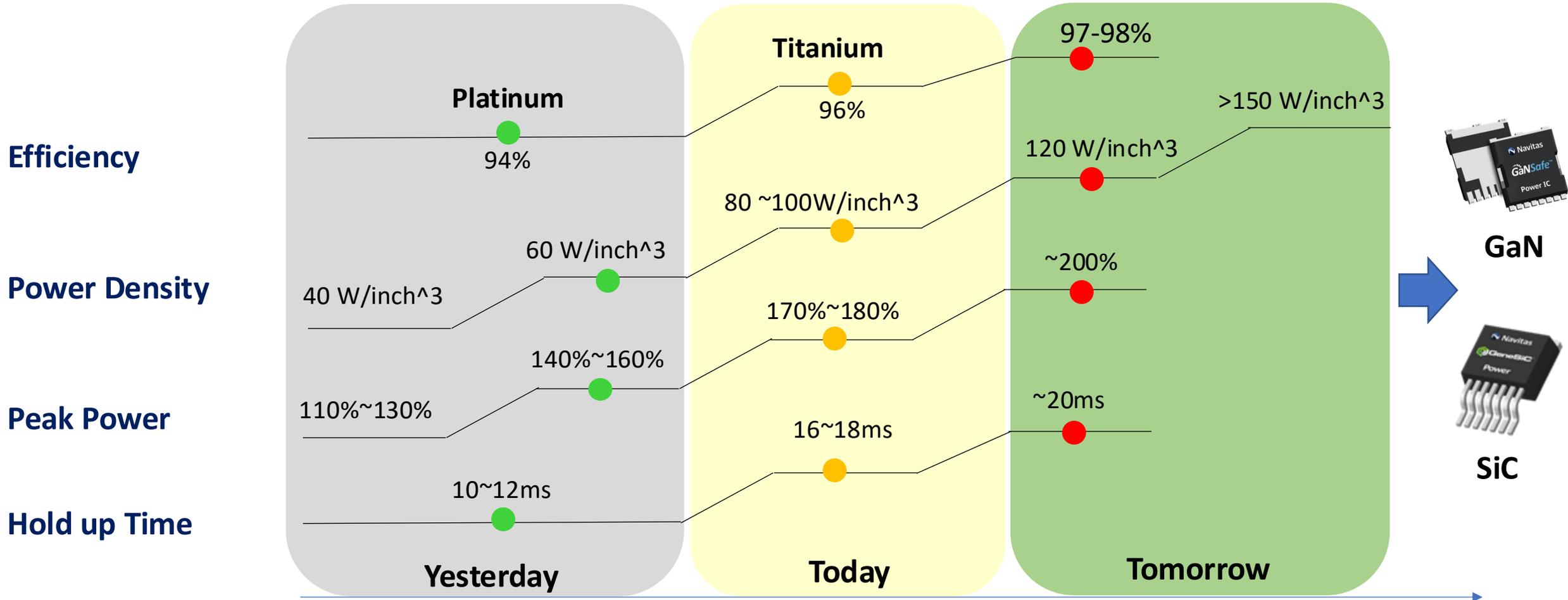


Share of total US power demand, %



Source: Global Energy Perspective 2023, McKinsey, October 18, 2023; McKinsey analysis

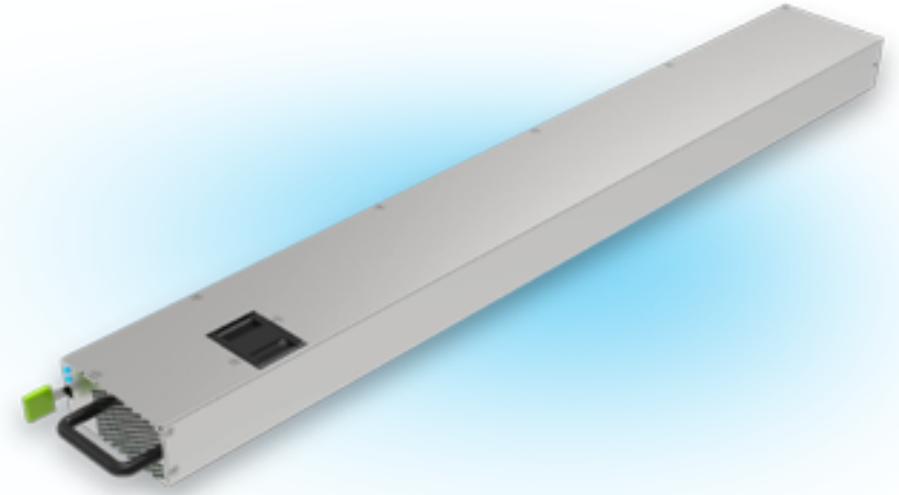
SiC/GaN: Essential for Higher Power Density and Efficiency



- Higher power density, Higher Efficiency, Larger peak power, Long Hold up time
- SiC/GaN is one key technology to meet data center PSU roadmap

8.5 kW, 54 V_{OUT}, 98% peak efficiency

3-Phased Interleaved CCM Totem Pole PFC & 3-Phase LLC provides the highest efficiency, performance, with lowest component count.

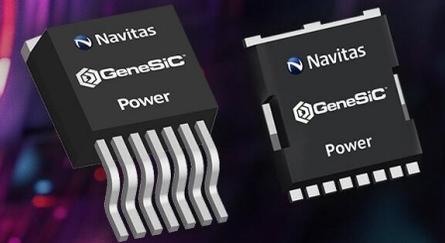


IntelliWeave

GaNSafe™



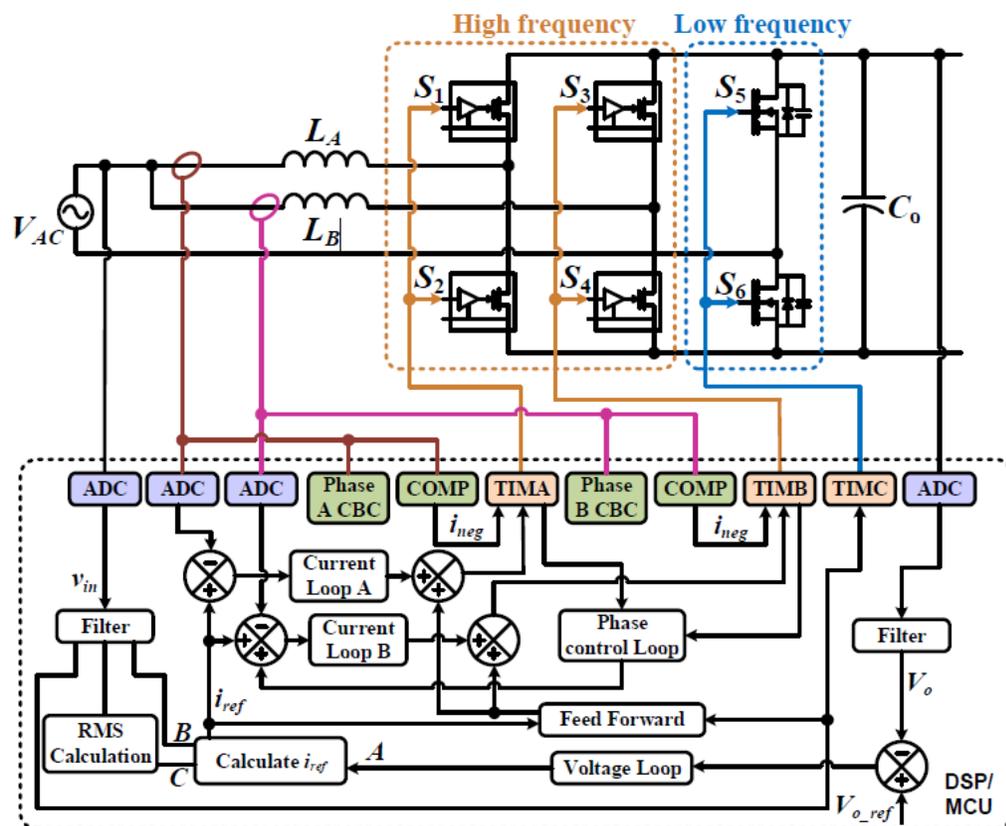
Gen-3 FastSiC™



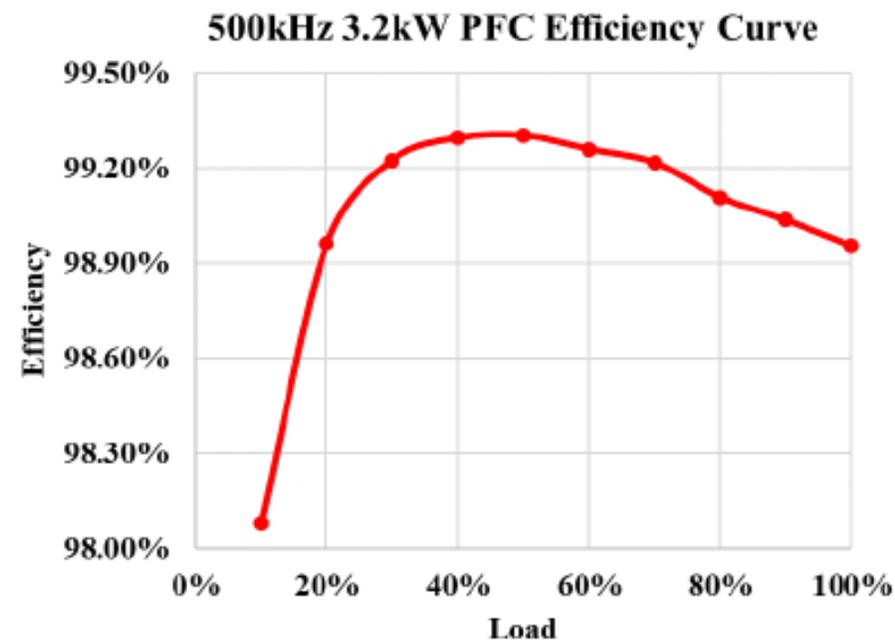
Navitas

Electrify Our World™

Interleaving PFC Dual-Loop & Dual Feedforward Control System

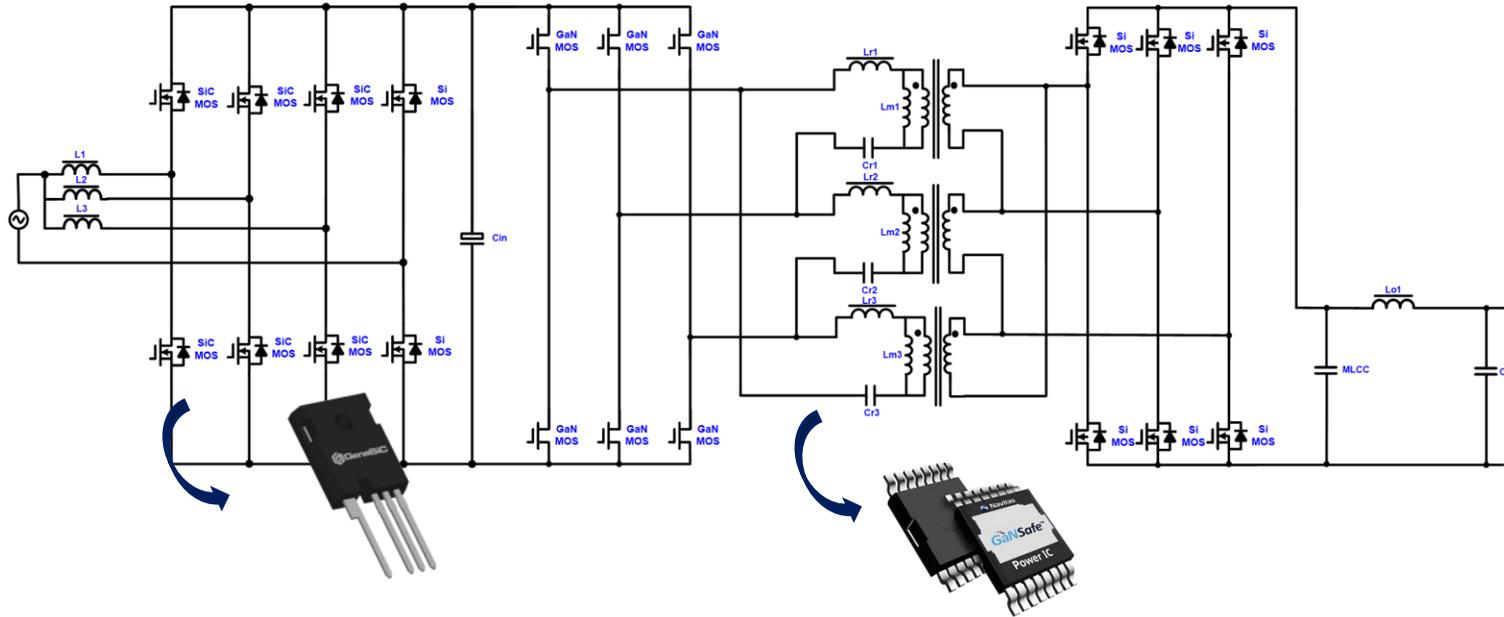


Interleaving PFC dual-loop & dual feedforward control system



Measured efficiency of 3.2kW prototype.

Highest-Performance Interleaved LLC using GaNSafe™



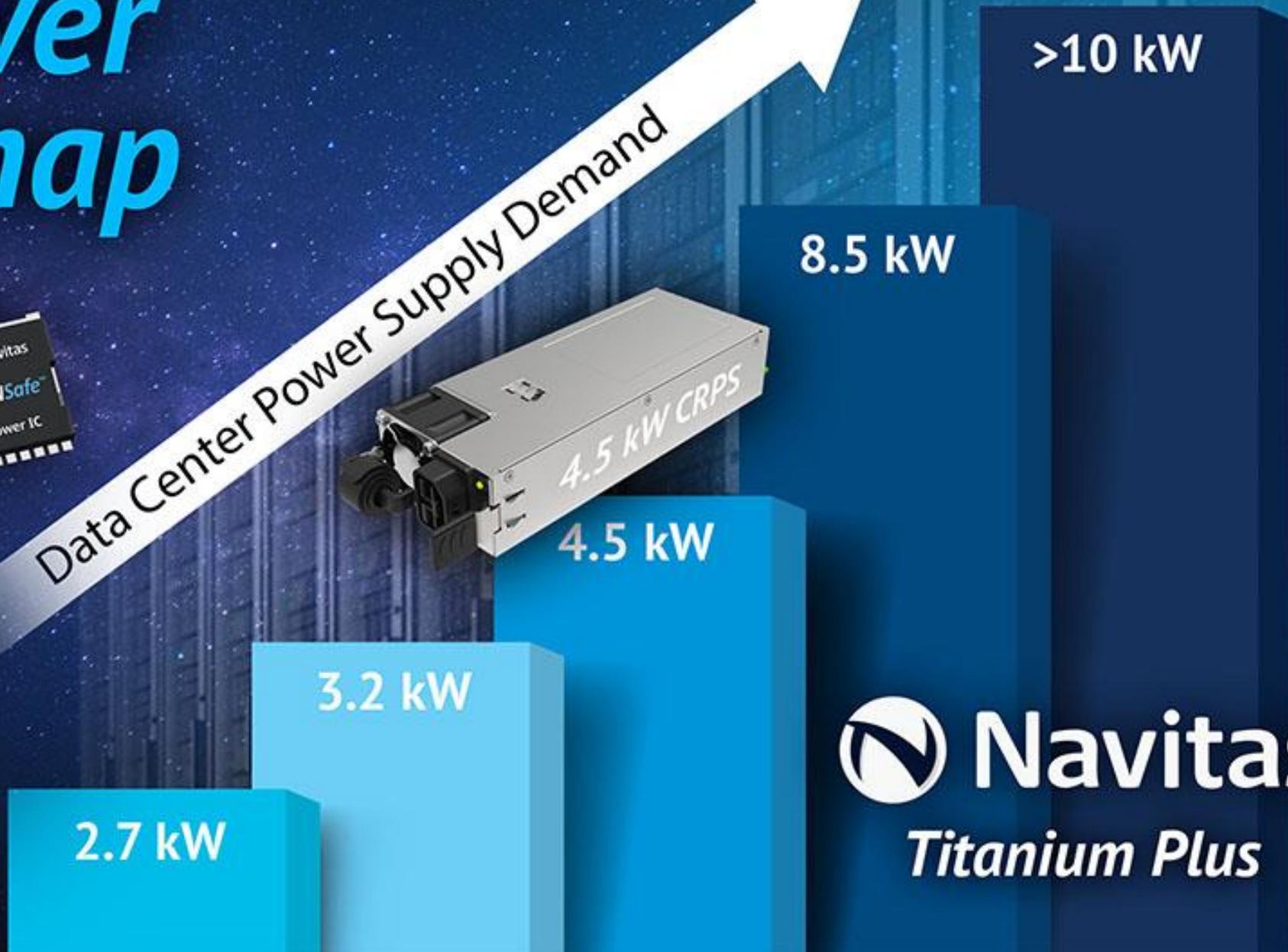
- ✓ Desat detect Short Circuit Protection with ultra-fast 300ns latency
- ✓ Robust, thermally enhanced packaging: ultra-low $R_{\Theta_JUNC-AMB}$ and BLTC Reliability
- ✓ 4th Gen integrated GaN gate drive with positive TempCo V_{GS} regulation
- ✓ Integrated Miller Clamp (no negative gate bias, higher 3rd quadrant efficiency)
- ✓ Programmable dV/dt Turn-ON/OFF slew rate control for ease of design

Family	Part Number	$V_{DS(CONT)}$ (V)	$V_{DS(TRAN)}$ (V)	$R_{DS(ON)}$ (max, m Ω)	$I_{DS(CONT)}$ (A)	Package
 	NV6511	650	800	98	22	 TOLL-4L, 10x10 mm
	NV6512C			55	34	
	NV6513			45	48	
	NV6515			35	57	
	NV6514C			25	80	
	NV6522			55	34	 TOLT-16L, 10x15 mm
	NV6523			45	48	
	NV6525			35	57	
	NV6524			25	80	

AI Power Roadmap



Data Center Power Supply Demand



 **Navitas**
Titanium Plus

Discover more at
navitassemi.com

