UNLEASHING UNPRECEDENTED PERFORMANCE

GET POWERED UP!

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UNLEASHING UNPRECEDENTED PERFORMANCE

Wolfspeed®

SILICON CARBIDE

The revolutionary semiconductor material is propelling us into a future of immense possibilities - a future where energy efficiency, sustainability, and technological advancements converge. With its transformative impact on various industries, silicon carbide is set to shape the world of tomorrow, making it smarter, more efficient and more connected than ever before.

Silicon carbide is:

10 TO **15%** MORE ENERGY EFFICIENT THAN LEGACY SILICON COUNTERPARTS

Silicon carbide enables cutting-edge power electronics:

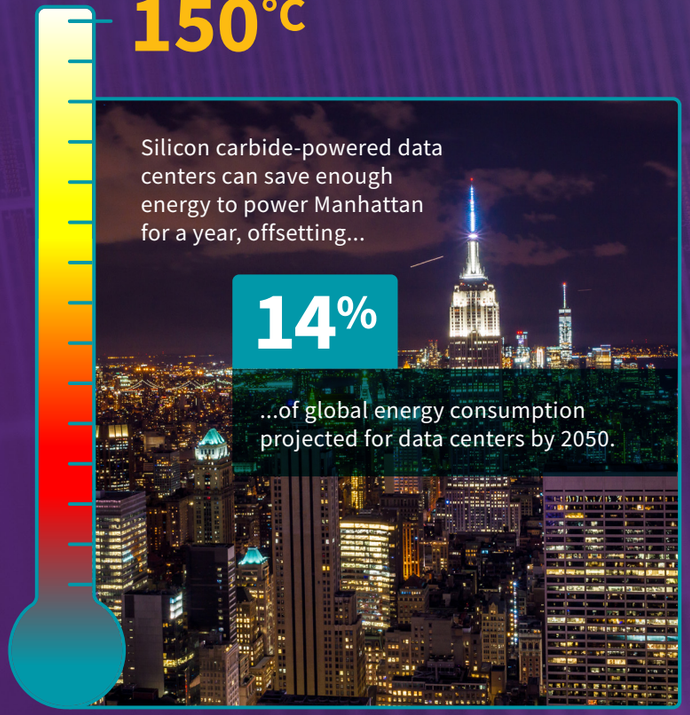
DELIVERING: **10 x** HIGHER SWITCHING FREQUENCIES

REDUCING: POWER LOSSES BY AS MUCH AS **50%**

ACHIEVING: **98%** HIGHER POWER CONVERSION EFFICIENCIES

Silicon Carbide has the possibility of operating in temperatures over...

150°C



Silicon carbide technology:

- Drives smaller, lighter, and **more efficient** power devices.
- Contributes to the acceleration of the EV market, enabling **faster charging** and **longer ranges**.
- Plays a crucial role in **optimizing energy conversion** and storage in renewable energy systems.
- Revolutionizes industrial applications, enabling **high-temperature operation** and robust components.

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ACCELERATING ELECTROMOBILITY

Silicon Carbide

Accelerating Electromobility

Powering Renewable Energy

Enabling Next-Gen Industries and Data Connectivity

Silicon carbide's game-changing properties are driving the rapid growth of electric vehicles (EVs), enabling faster charging times, extended driving ranges, and lower overall costs.

From Race to Road

Our silicon carbide semiconductor technology in the Jaguar I-TYPE 6[1] creates an **'Innovation Lab on Wheels'** to engineer **improved powertrain efficiency** in a high-performance electric vehicle.

[1]Wolfspeed is the Official Power Semiconductor Partner to Jaguar TCS Racing on the Formula E Circuit

In electric vehicles, silicon carbide provides:

3x FASTER CHARGING SPEEDS
Compared with traditional chargers

13:1 ENERGY SAVINGS
When used in EV powertrains

10% SYSTEM COST SAVINGS

$2,000 REDUCTION IN MANUFACTURING & MAINTENANCE COSTS PER VEHICLE

50% HIGHER POWER DENSITY

10% EXTENSION IN DRIVING DISTANCE
Helping alleviate range anxiety

10% LOWER LOSSES

80% REDUCTION IN POWER LOSSES

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POWERING RENEWABLE ENERGY

Silicon Carbide
Accelerating Electromobility
Powering Renewable Energy
Enabling Next-Gen Industries and Data Connectivity

Silicon carbide semiconductors enhance the efficiency of renewable energy systems, such as solar and wind power, maximizing energy conversion and reducing losses.

Solar inverters using silicon carbide can achieve over:

99% **EFFICIENCY**

Enabling far more effective utilization of solar energy

5% **IMPROVEMENT**

In power conversion efficiencies

Replacing traditional silicon with silicon carbide in three-phase inverters can create a:

50% ENHANCEMENT IN POWER DENSITY

SIMPLER CIRCUIT TOPOLOGIES

REDUCED COMPONENT COUNT

LOWER ASSEMBLY COST

Leading to a **reduction** in overall inverter size and **total system costs**

Silicon carbide MOSFETs in residential solar inverters create:

In a 7kW residential inverter, silicon carbide can provide impressive and significant improvements compared with silicon MOSFETS:

0.4% **HIGHER EFFICIENCES**

3 kW/L **SIGNIFICANT INCREASE IN POWER DENSITY**

(3kW/L vs. 2.5 kW/L)

48 kHz **SWITCHING FREQUENCY**

(a full 32 kHz higher than using silicon MOSFETs)

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UNLEASHING UNPRECEDENTED PERFORMANCE

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ENABLING NEXT-GEN INDUSTRIES AND DATA CONNECTIVITY

Silicon carbide is the cornerstone of our future, unlocking unparalleled possibilities in technology and sustainability. It supports the ever-growing demand for data connectivity by empowering more efficient, high-speed communication networks, data centers, and IoT devices.

Silicon carbide enables:

- **FASTER PROCESSING**
- **INCREASED BANDWIDTH CAPACITY**
- **ENHANCED EFFICIENCY**

2% of all electrical energy in the U.S. is consumed by data centers

From 2010 to 2020, servers running silicon carbide devices will have contributed

620 billion kWh

in energy savings.

Compared with traditional silicon devices, power devices using silicon carbide can:

Enable faster data processing with up to:

10x FASTER SWITCHING SPEEDS

Improve thermal performance to create up to:

40% SAVINGS IN ENERGY COSTS FOR DATA CENTER COOLING

Achieve switching speeds in the nanosecond range:

10^{-9}