

# CoolSiC™ MOSFET discrete products



인피니언 전력반도체 솔루션  
가상부스에 오신 걸 환영합니다!



# Infineon CoolSiC™ MOSFET – a revolution to rely on



**Bringing reliable performance**  
to the broadest range of energy-  
smart applications

Giving engineers a **pathway**  
to achieve highest energy  
efficiency and meet the most  
stringent application requirements



# Silicon carbide (SiC) - new options for power conversion solutions in an energy-smart world



Improve efficiency

Save space and weight

Reduce component count and board space

Enhance lifetime and reliability

Lower system cost

Reduce operational expenses

Reduce total cost of ownership

Note: Not all benefits can be leveraged equally in every system as some might be mutually exclusive

# Silicon carbide material properties bring advantages for power electronics

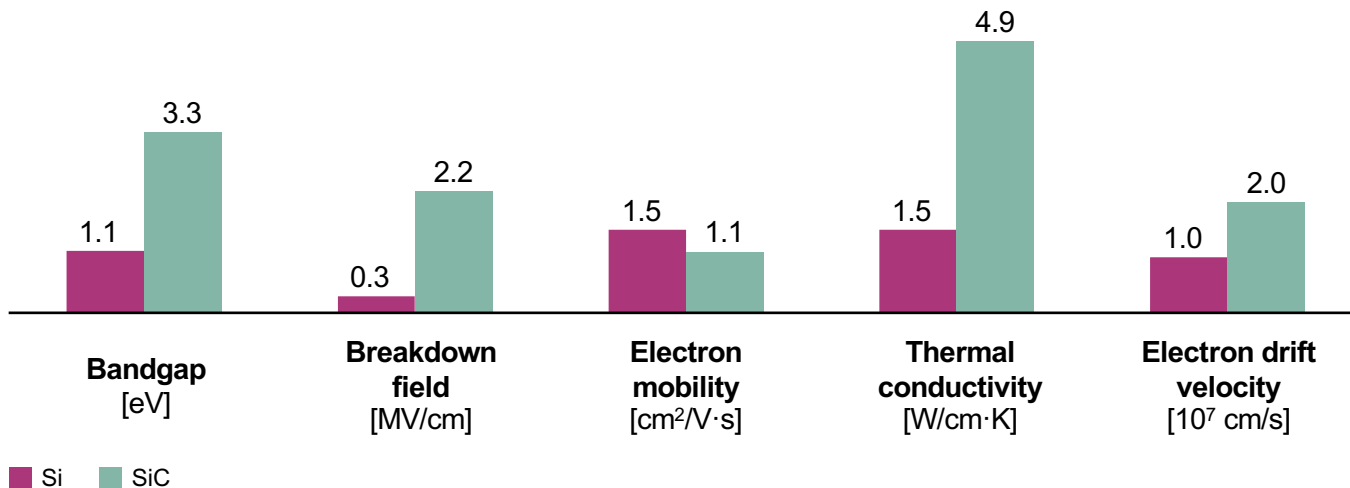
## HIGHER VOLTAGE OPERATION

EXTENDED POWER DENSITY

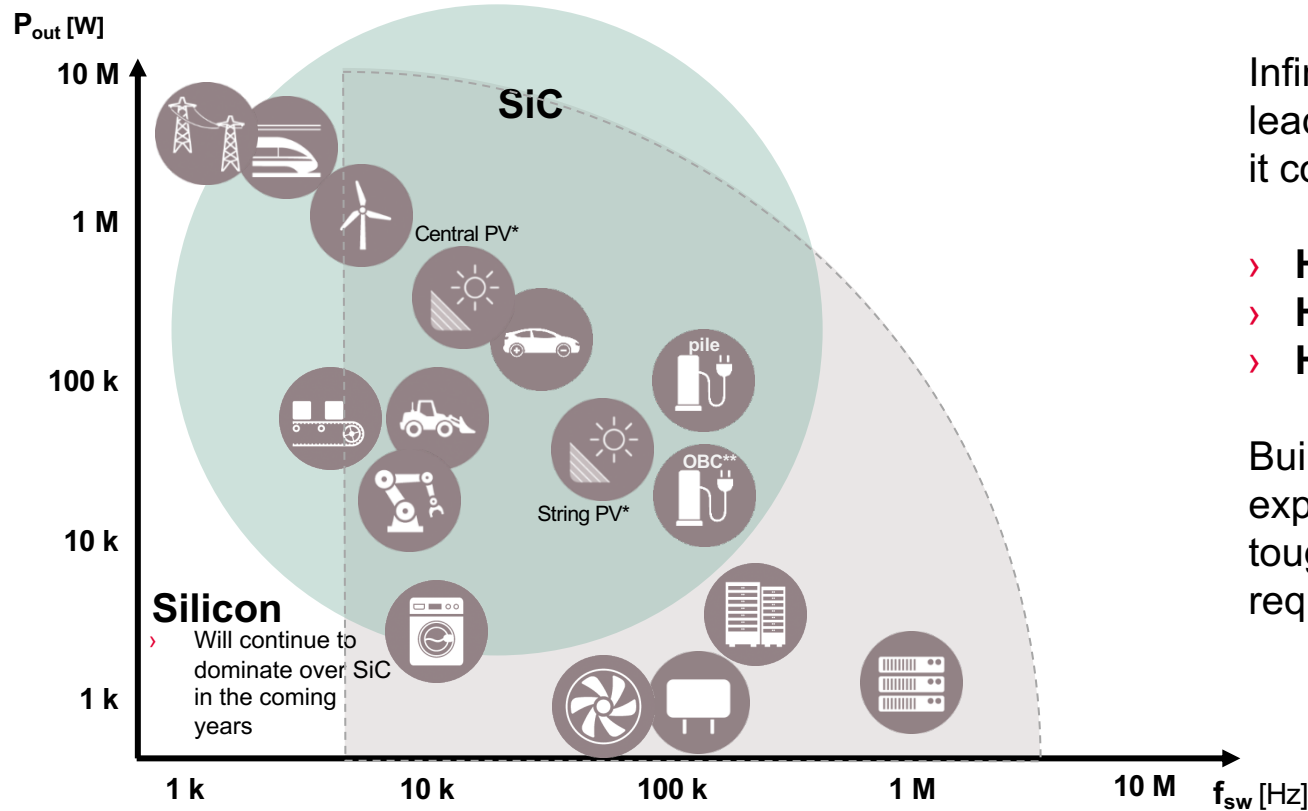
## HIGHER FREQUENCY SWITCHING

THINNER ACTIVE LAYERS

IMPROVED HEAT DISSIPATION



# Reliability and robustness assurance in SiC strongly linked to silicon mainstream technologies



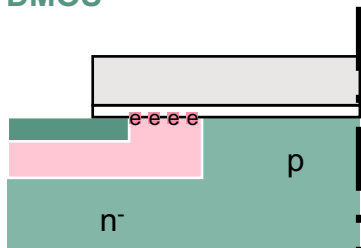
Infineon is a proven, leading supplier when it comes to

- > **High power**
- > **High reliability**
- > **High robustness**

Building on this experience, we set tough SiC MOSFET requirements

# Opportunities with modern trench CoolSiC™ technology from Infineon

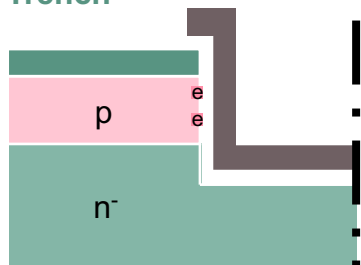
DMOS



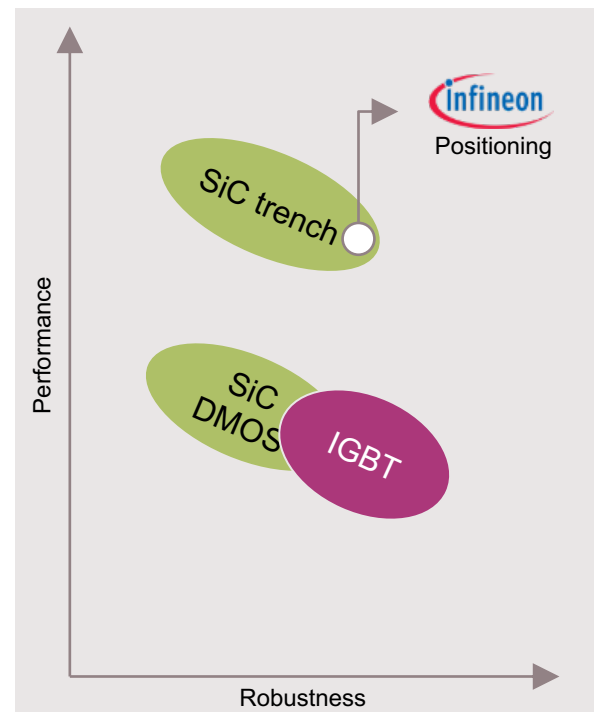
Strong trade-off between performance and gate oxide robustness in on-state

VS

Trench



Easier to reach performance targets without compromising gate oxide safe conditions



**Best performance at robustness levels equivalent to IGBT-based systems**

# CoolSiC™ MOSFETs balance all levers key to application success

## Performance

Static behavior

Dynamic behavior

## Robustness, reliability & ease of use

Gate oxide reliability

IGBT-like FIT rates

Robustness against parasitic  
turn-on

$V_{gs,th} > 4 \text{ V}$

Robust body diode

Rated for hard commutation

Ease of use

0 V turn-off  $V_{GS}$

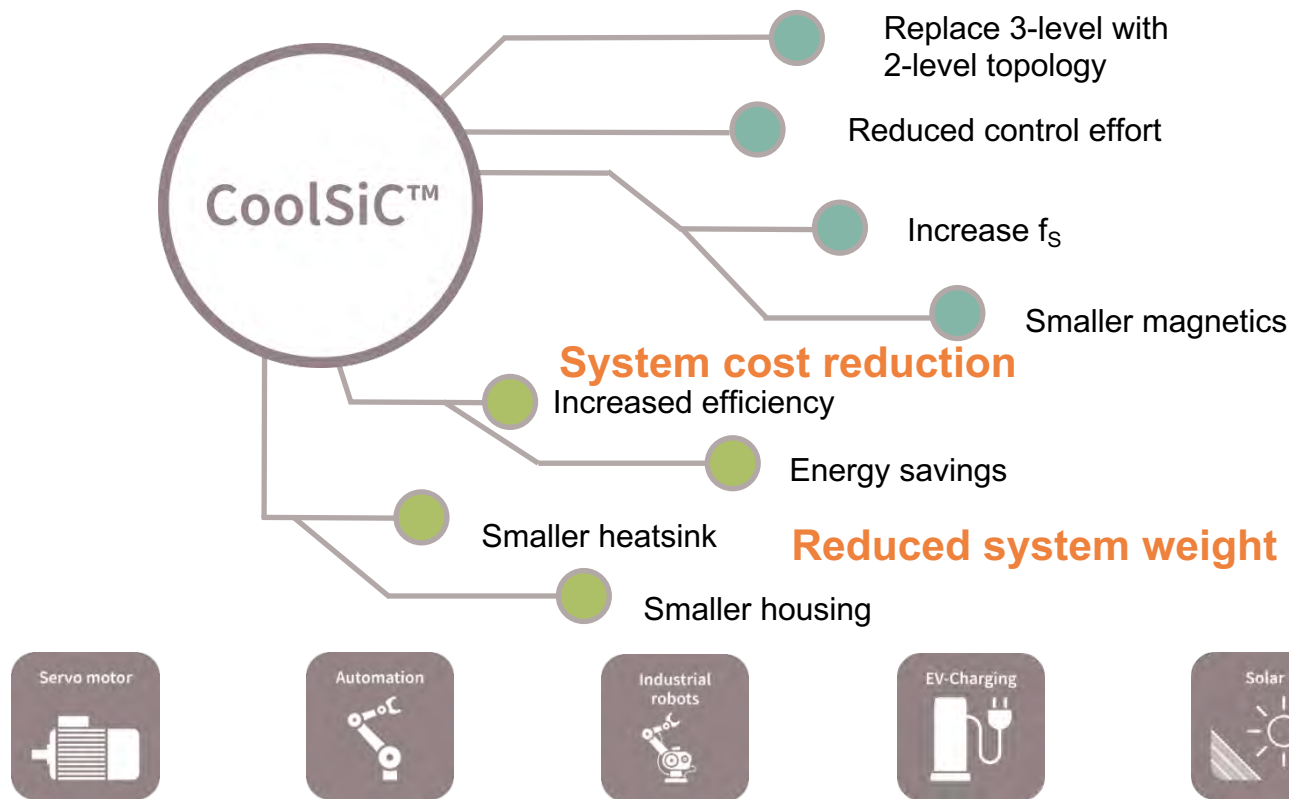
Wide  $V_{GS}$  range

Short-circuit capability

3  $\mu\text{s}$

CoolSiC™





# Value proposition for CoolSiC™ MOSFETs





# 1200 V – 1700 V CoolSiC™ MOSFET portfolio and upcoming products



	$R_{DS(on)}$ [mΩ]	TO-247 3 	TO-247 4 	D <sup>2</sup> PAK-7L  Coming Soon	D <sup>2</sup> PAK-7L extended creepage  New
1200 V	30	IMW120R030M1H	IMZ120R030M1H	IMBG120R030M1H	
	45	IMW120R045M1	IMZ120R045M1	IMBG120R045M1H	
	60	IMW120R060M1H	IMZ120R060M1H	IMBG120R060M1H	
	90	IMW120R90M1H	IMZ120R090M1H	IMBG120R090M1H	
	140	IMW120R140M1H	IMZ120R140M1H	IMBG120R140M1H	
	220	IMW120R220M1H	IMZ120R220M1H	IMBG120R220M1H	
	350	IMW120R350M1H	IMZ120R350M1H	IMBG120R350M1H	
1700 V	450				IMBF170R450M1
	650				IMBF170R650M1
	1000				IMBF170R1K0M1

Available / release Q4 2020

# Summary



CoolSiC™ solutions

As reliable as Si power transistors from Infineon

Outstanding performance and best ease of use

Comprehensive portfolio – all in mass production

This is the revolution you can rely on!

For more product information, please visit

**Webpage:** [www.infineon.com/coolsic-mosfet](http://www.infineon.com/coolsic-mosfet)

**Forum:** [www.infineonforums.com/forums/34-Silicon-Carbide-\(SiC\)-Forum](http://www.infineonforums.com/forums/34-Silicon-Carbide-(SiC)-Forum)



Part of your life. Part of tomorrow.