



*e*SiC Diode Selection Guide 2024

Advanced Faster Semiconductor's Silicon Carbide Technology

Advantage of *e*SiC Diode over Si Diode

Features

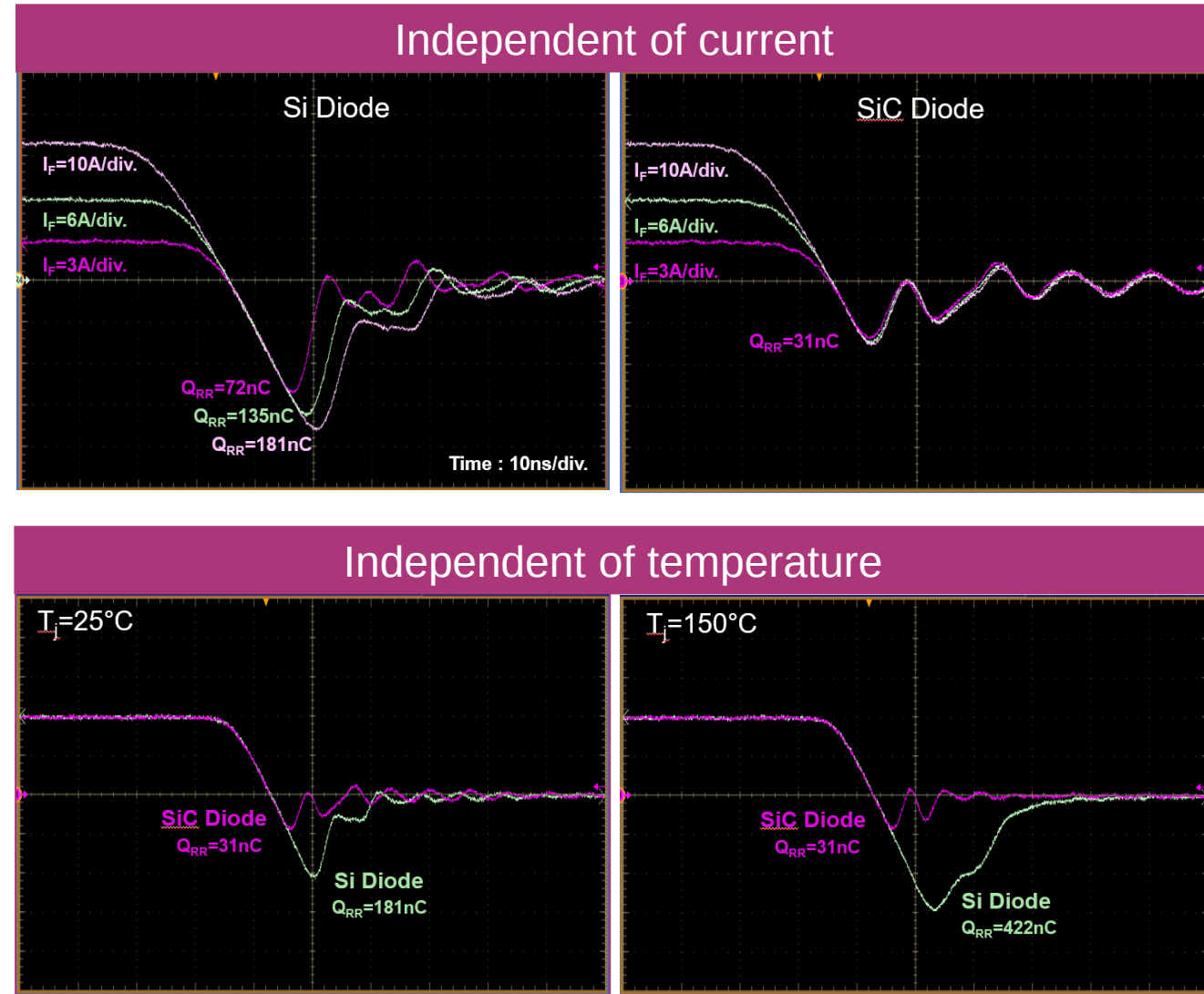
- Low forward voltage
- High surge current capability
- No reverse recovery current
- 175°C Max junction temperature
- Switching behavior independent of temp. and current

Advantages

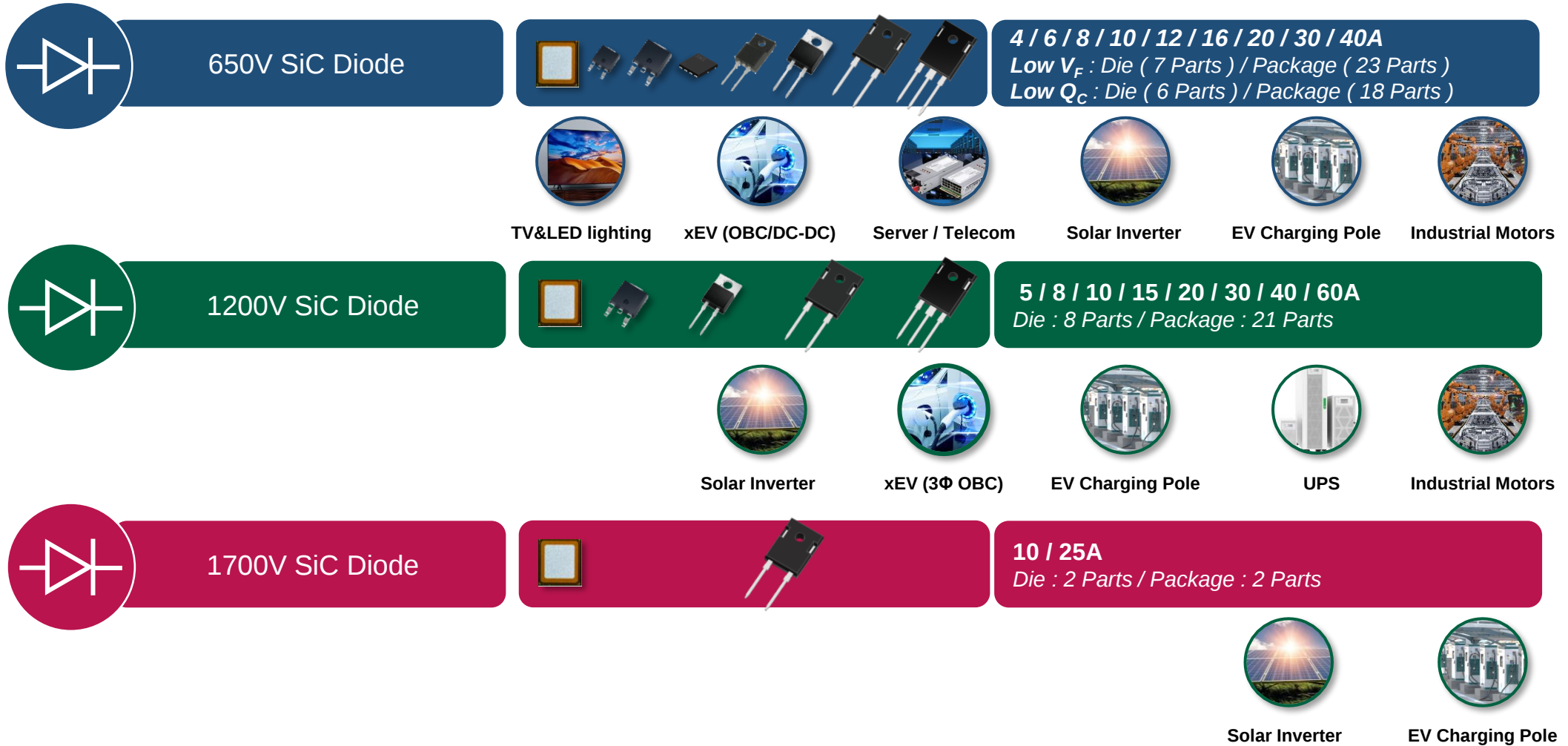
- Low Conduction loss
- High reliability capability
- Significant reduction of MOSFET or IGBT turn on loss
- Less Power loss at high temperature

System Benefits

- Higher system efficiency (CCM PFC) than Si diodes
- High Performance/Cost Ratio
- High reliability capability
- Suitable for wide range of applications
- Reduction of EMI
- Reduction of cooling requirements



Product Strategy : *e*SiC Diode



Product Differentiation

Low V_F for low frequency application

Low Q_C for high frequency application

Key Features

- Low forward voltage
- High surge current capability
- No reverse recovery current
- 175°C Max junction temperature

Key Benefits

- Low Conduction loss
- High reliability capability
- Significant reduction of MOSFET or IGBT turn on loss
- Less Power loss at high temperature

Applications



Solar Inverter



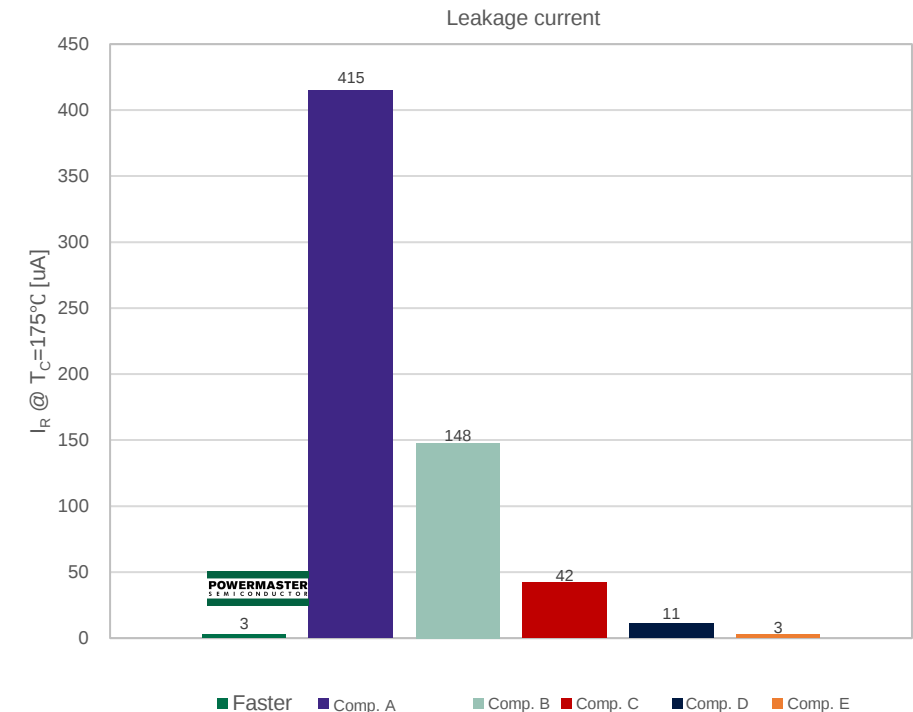
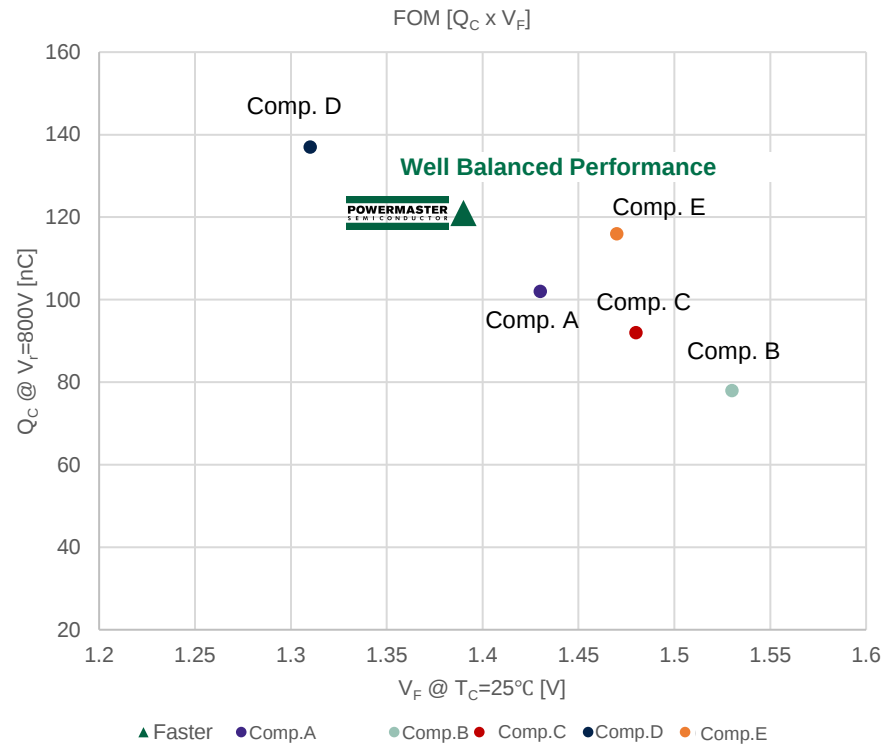
EV Charging Station



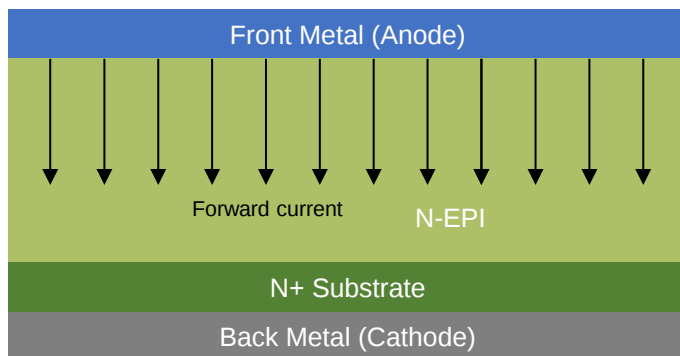
Server / Telecom Power



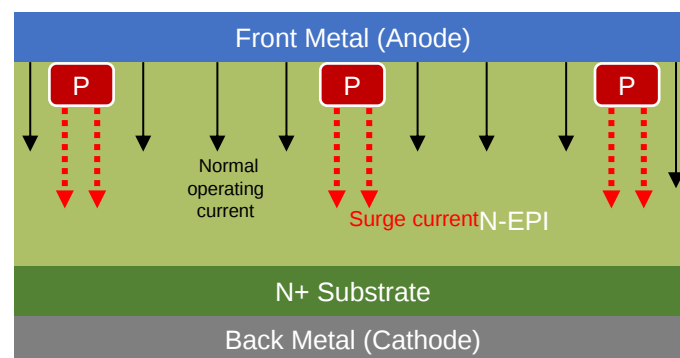
TV / LED Lighting



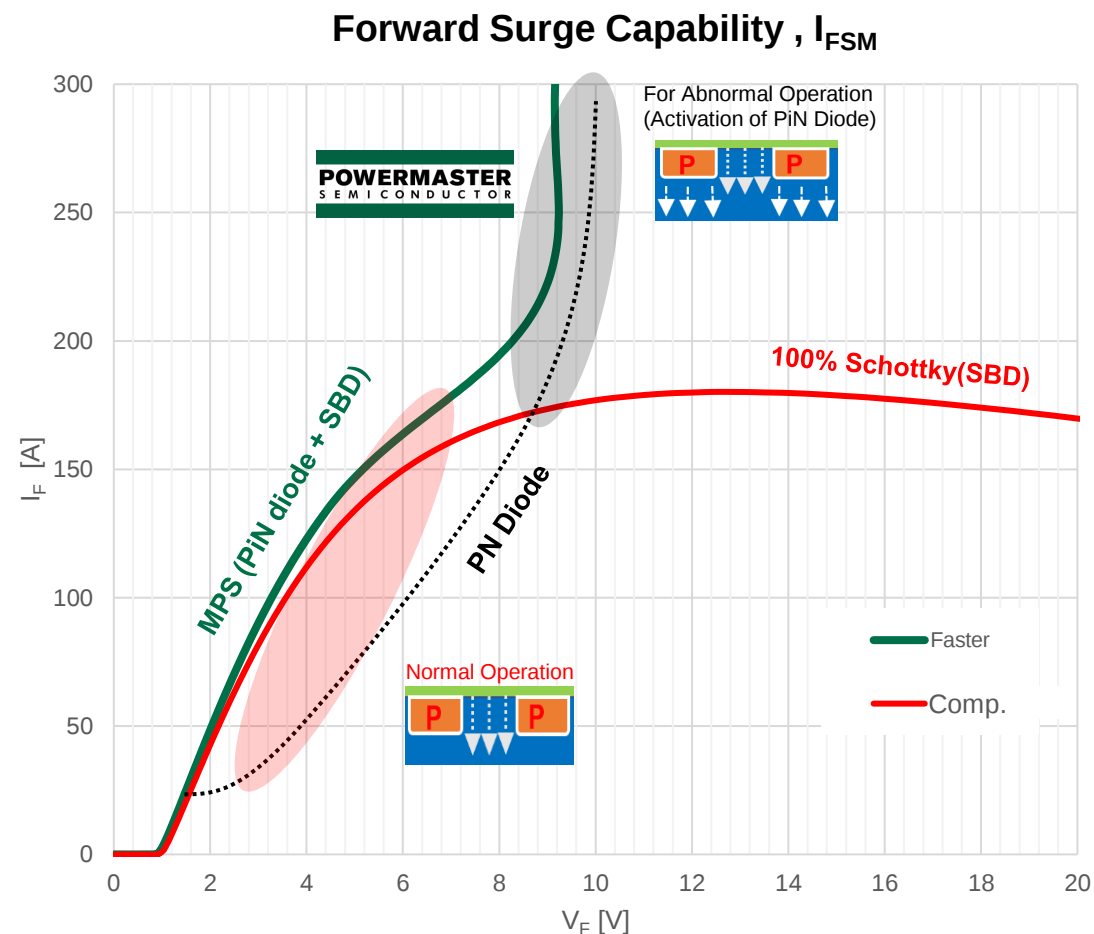
Improved Stability for Surge Current (MPS Technology)



Pure Schottky Diode

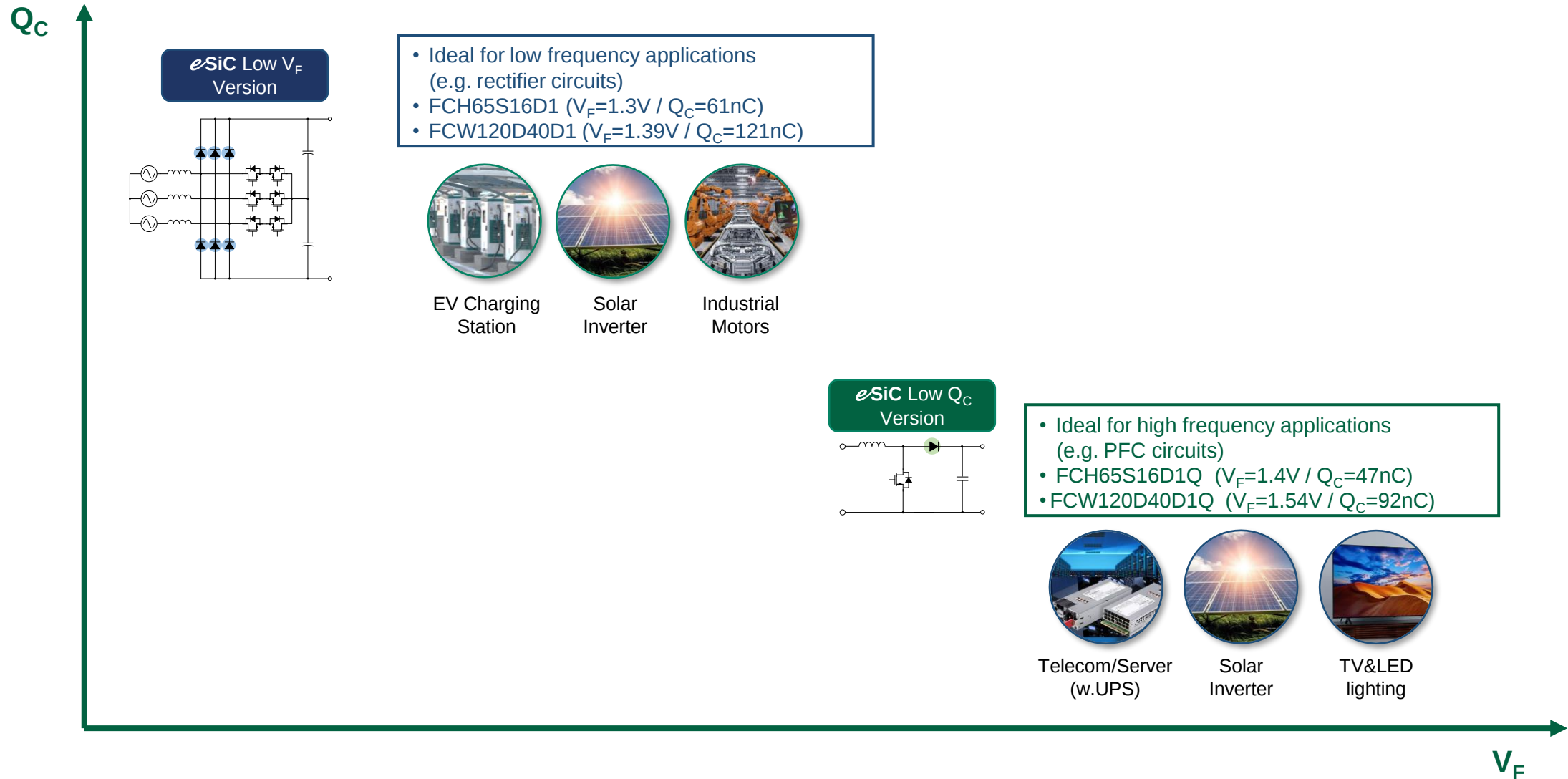


MPS(Merged PiN Schottky) Diode



Stabilization of surge current operation by minority carrier injection

Product Differentiation by Loss Simulation



650V *e*SiC Diode Gen1. Portfolio

Available now
Coming Soon



Low V_F
for Low Freq. Applications

PKG I_F	Bare Die	DPAK	D2PAK	PQFN88	TO-220F 2L	TO-220 2L	TO-247 2L	TO-247 3L
40A								FCW65D40D1
30A								FCW65D30D1
20A	FCO65S20D1	FCB65S20D1			FCF65S20D1	FCH65S20D1	FCA65S20D1	FCW65D20D1
16A	FCO65S16D1					FCH65S16D1		FCW65D16D1
12A	FCO65S12D1				FCF65S12D1	FCH65S12D1		
10A	FCO65S10D1	FCD65S10D1	FCB65S10D1		FCF65S10D1	FCH65S10D1		
8A	FCO65S08D1	FCB65S08D1			FCF65S08D1	FCH65S08D1		
6A	FCO65S06D1				FCF65S06D1	FCH65S06D1		
4A	FCO65S04D1				FCF65S04D1	FCH65S04D1		

Low Q_c
for High Freq. Applications

50A	FCA65D50D1Q							
40A								FCW65D40D1Q
30A	FCA65S30D1Q							FCW65D30D1Q
20A	FCO65S20D1Q	FCB65S20D1Q			FCF65S20D1Q	FCH65S20D1Q	FCA65S20D1Q	FCW65D20D1Q
16A	FCO65S16D1Q					FCH65S16D1Q		FCW65D16D1Q
12A	FCO65S12D1Q	FCB65S12D1Q			FCF65S12D1Q	FCH65S12D1Q		
10A	FCO65S10D1Q				FCF65S10D1Q	FCH65S10D1Q		
8A	FCO65S08D1Q				FCF65S08D1Q	FCH65S08D1Q		
6A	FCO65S06D1Q				FCF65S06D1Q	FCH65S06D1Q		

1200V / 1700V *e*SiC Diode Gen1. Portfolio

(Industrial Grade)



1200V *e*SiC Diode Lineup

Available now
Coming Soon



Package	Bare Die	D2PAK	TO-220 2L	TO-247 2L	TO-247 3L
I _F					
60A				FCA120S60D1Q	FCW120D60D1Q
40A	FCO120S40D1			FCA120S40D1	FCW120D40D1 FCW120D40D1Q
30A	FCO120S30D1			FCA120S30D1 FCA120S30D1Q	FCW120D30D1
20A	FCO120S20D1	FCB120S20D1	FCH120S20D1	FCA120S20D1	FCW120D20D1
15A	FCO120S15D1		FCH120S15D1	FCA120S15D1	FCW120D15D1
10A	FCO120S10D1	FCB120S10D1	FCH120S10D1	FCA120S10D1	FCW120D10D1
8A	FCO120S08D1		FCH120S08D1		
5A	FCO120S05D1		FCH120S05D1		

1700V *e*SiC Diode Lineup

25A	FCO170S25D1	FCA170S25D1			
10A	FCO170S10D1	FCA170S10D1			

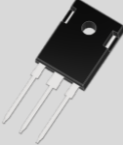
1200V / 1700V *e*SiC Diode Gen1. Portfolio

(Automotive Grade)



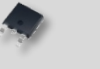
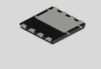
1200V *e*SiC Diode Lineup

Available now
Coming Soon

Package		TO-247 2L	TO-247 3L
I _F			
	40A	FCA120S40D1A	FCW120D40D1A FCW120D40D1QA
	30A	FCA120S30D1A FCA120S30D1QA	FCW120D30D1A
	20A	FCA120S20D1A	FCW120D20D1A
	15A	FCA120S15D1A	FCW120D15D1A
	10A	FCA120S10D1A	FCW120D10D1A

Faster *e*SiC Diode Product Portfolio



Qualification / Package Voltage / I _F		Industrial Grade						Automotive Grade							
		PAK	D2PAK	PQFN88	TO-220F 2L	TO-220 2L	TO-247 2L	TO-247 3L	PAK	D2PAK	PQFN88	TO-220F 2L	TO-220 2L	TO-247 2L	TO-247 3L
															
650V	50A						FCA65D50D1Q								
	40A							FCW65D40D1 FCW65D40D1Q							
	30A						FCA65S30D1Q	FCW65D30D1 FCW65D30D1Q							
	20A		FCB65S20D1 FCB65S20D1Q		FCF65S20D1 FCF65S20D1Q	FCH65S20D1 FCH65S20D1Q	FCA65S20D1 FCA65S20D1Q	FCW65D20D1 FCW65D20D1Q							
	16A					FCH65S16D1 FCH65S16D1Q		FCW65D16D1 FCW65D16D1Q							
	12A		FCB65S12D1Q		FCF65S12D1 FCF65S12D1Q	FCH65S12D1 FCH65S12D1Q									
	10A	FCD65S10D1	FCB65S10D1		FCF65S10D1 FCF65S10D1Q	FCH65S10D1 FCH65S10D1Q									
	8A		FCB65S08D1		FCF65S08D1 FCF65S08D1Q	FCH65S08D1 FCH65S08D1Q									
	6A				FCF65S06D1 FCF65S06D1Q	FCH65S06D1 FCH65S06D1Q									
	4A				FCF65S04D1 FCF65S04D1Q	FCH65S04D1 FCH65S04D1Q									
1200V	60A					FCH120D60D1Q	FCA120D60D1Q	FCW120D40D1 FCW120D40D1Q							
	40A						FCA120S40D1 FCA120S20D1 FCA120S30D1Q						FCA120S40D1A	FCW120D40D1A FCW120D40D1QA	
	30A							FCW120D30D1					FCA120S30D1A FCA120S30D1QA	FCW120D30D1A	
	20A		FCB120S20D1			FCH120S20D1	FCA120S20D1	FCW120D20D1					FCA120S20D1A	FCW120D20D1A	
	15A					FCH120S15D1	FCA120S15D1	FCW120D15D1					FCA120S15D1A	FCW120D15D1A	
	10A		FCB120S10D1			FCH120S10D1	FCA120S10D1	FCW120D10D1					FCA120S10D1A	FCW120D10D1A	
	8A					FCH120S08D1									
	5A					FCH120S05D1									
1700V	25A						FCA170S25D1								
	10A						FCA170S10D1								
	5A						FCA170S05D1								

Ordering System (SiC Diode)

