

# POWER MASTER SEMICONDUCTOR

## PRODUCT CATALOG

Power Master Semiconductor's product portfolio covers high and medium voltage solutions for converters and inverters especially in energy, cloud, xEV, and industrial applications.



**Power Master Semiconductor's Advanced Technology**



Power Master Semiconductor Co., Ltd

**POWERMASTER**  
SEMICONDUCTOR  
Masters of Power Solution

# About Power Master Semiconductor

Power Master Semiconductor was founded in January 2018 by a group of experts with more than 20 year's experience of design, application, process and marketing area at leading semiconductor companies. Power Master Semiconductor is Korean integrated power device manufacturer with FAB and R&D center in Korea.



## Power Device Technology Leadership in Korea



**Silicon Carbide** SiC MOSFET / SiC Diode



**Silicon** Super Junction MOSFET / MV MOSFET

## Corporate Information

- IDM of SiC & Si Power Device : Design and Mass Production
- Employees: Approximately +250
- Address: Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, Korea

## Reliability Lab

- Reliability Lab ( Automotive / Industrial Qualification)
- Established Equipment and Failure Analysis Systems
- IATF 16949, ISO 9001/14001 Certification

## Product Development and Achievements

- 2019 : 600V / 650V SJ MOSFET
- 2021 : 650V / 1200V / 1700V SiC Diode
- 2022 : 1200V SiC MOSFET G1
- 2023 : 1700V SiC Diode / Automotive 650 / 1200V SiC Diode
- 2024 : 650V SiC MOSFET G1 / 1200V SiC MOSFET G2, Automotive 1200V SiC MOSFET G1/G2 New Top-side Cooling Package (TSPAK), 200V Trench MOSFET
- 2025 : Automotive 1200V SiC MOSFET G2 / 1200V SiC MOSFET G3 1700V SiC MOSFET G1 / 150V & 250V Trench MOSFET

## Advantages and Strengths

- In-house Technological Leadership for Core Process
- AEC-Q101 Certification of SiC Power Semiconductors
- In-house Capacity Ramp-Up
- World Class Failure Analysis and Application Engineering Support

# Company History

To deliver SiC and Si power device solutions in power market, dominated by leading players, we will continuously develop innovative products for efficiency-driven market such as cloud, computing, server/telecom, renewable energy, industrial and electric vehicle applications.

## 2022

- Reliability Lab Setup
- 1200V G1 SiC MOSFET

## 2021

- Set up whole SiC line
- 650V / 1200V SiC Diode

## 2019

- Established CJ Fab
- 600V SJ MOSFET

## 2018

- Established R&D center

## 2023

- China Sales office
- 1700V SiC Diode
- Auto 650V & 1200V SiC Diode

## 2024

- Expand 6-inch line : 40Kwf/Y
- 650V G1 SiC MOSFET
- 1200V G2 SiC MOSFET
- Auto 1200V G1 SiC MOSFET
- 200V Trench MOSFET
- Top-side Cooling Package Release

## 2025

- 1200V G3 SiC MOSFET
- Auto 1200V G2 SiC MOSFET
- 150V Trench MOSFET
- 250V Trench MOSFET

## 2027

- Expand 6 & 8-inch line > 100Kwf/Y
- 2300V G1 SiC MOSFET
- 3300V G1 SiC MOSFET
- 1200V JFET
- 750V G3 SiC MOSFET
- Auto 750V G3 SiC MOSFET
- 800V G1 Trench MOSFET
- 80 / 100V / 120V SGT MV MOS

## 2026

- India Sales Office
- 1200V G5 Trench MOSFET
- 1700V G1 SiC MOSFET
- Auto 1200V G3 SiC MOSFET
- Auto 650V G1 SiC MOSFET
- SiC Module (P1B / P2B)
- 650V SJ MOSFET G2

## Location



**JiaXing, China** 🇨🇳  
Package (Group Company)



**Cheongju, Korea** 🇰🇷  
FAB & HQ



**Shenzhen, China** 🇨🇳  
Sales Office



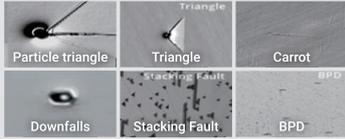
**Incheon, Korea** 🇰🇷  
R&D / Sales & Marketing



**Pune, India** 🇮🇳  
Sales Office

# SiC Quality Improvement Activities

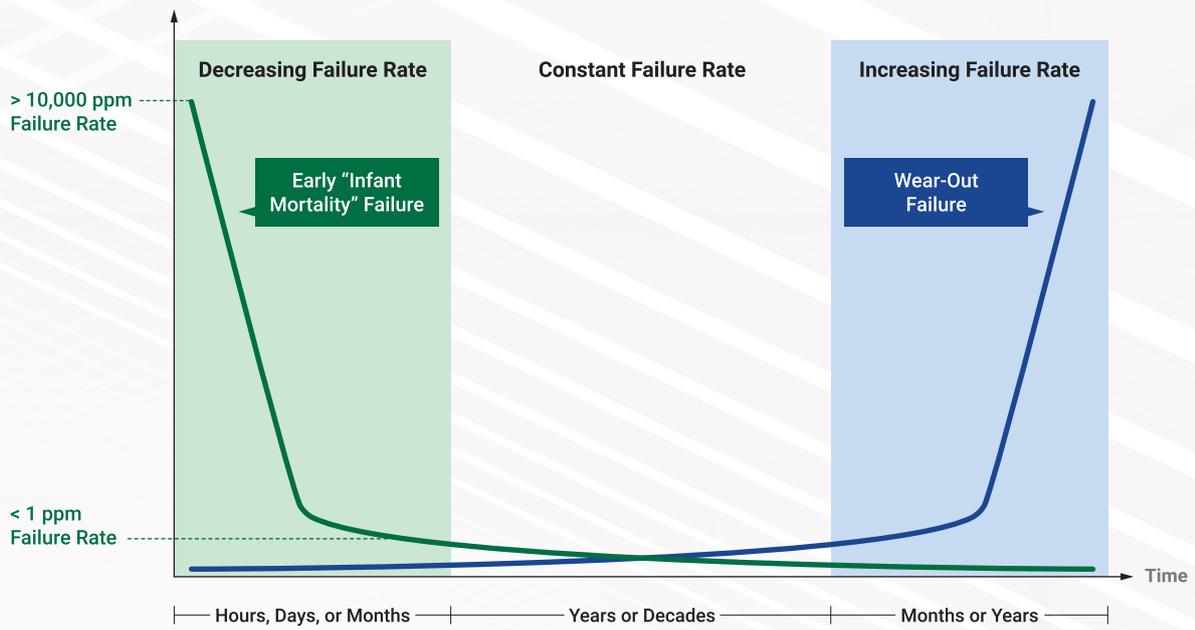
## Post Epi Scan for Quality Improvement



\* For Burn-in test, either WLBI or PLBI is performed depending on the package and purpose.

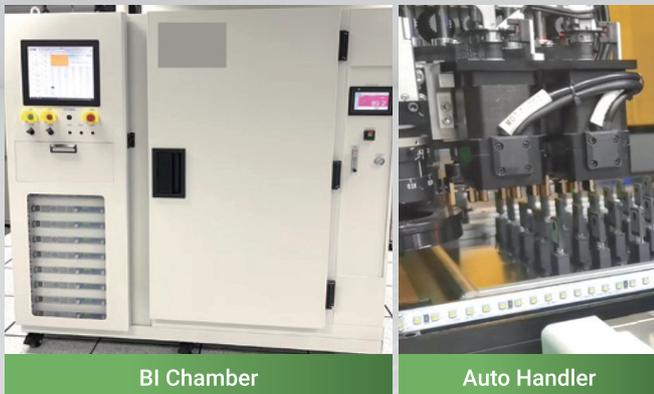
## Burn-In System for SiC MOSFET

Screen out "Infant Mortality" failure prior to the components



### Package Level

Burn-in for SiC MOSFET Products



### Wafer Level

Burn-in for SiC MOSFET Products



# Quality and Reliability Capability

## Reliability Laboratory

Rel Equipment	Capability
HTRB, HTGB	~200°C, ~2000V
H3TRB	85°C/85%RH, ~2000V
HAST	130°C/85%RH ~2000V
TC	-55~150C, -65~150C
HTSL/LTSL	-50~200C
THU	85°C/85%
IOL	delta Tj 100C
Reflow	260°C peak
WLR	1 wafer/once
PCT	12pcs
PLBI	2560pcs
WLBI	1350ch

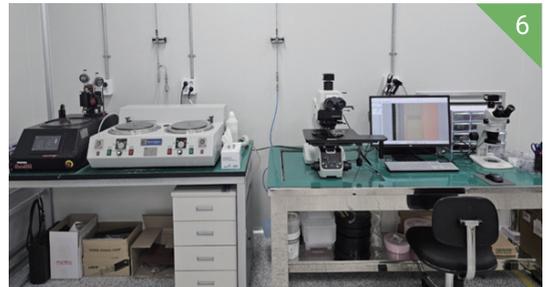
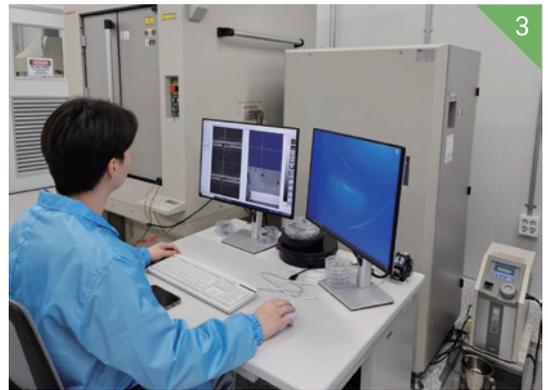
1. Monitoring all power supplies
2. Chamber Room
3. Chamber Room
4. Intelligent Chambers (HTRB/HTGB)
5. Wafer Level Reliability
6. Power Cycling Test
7. IOL Test
8. Electrical Test



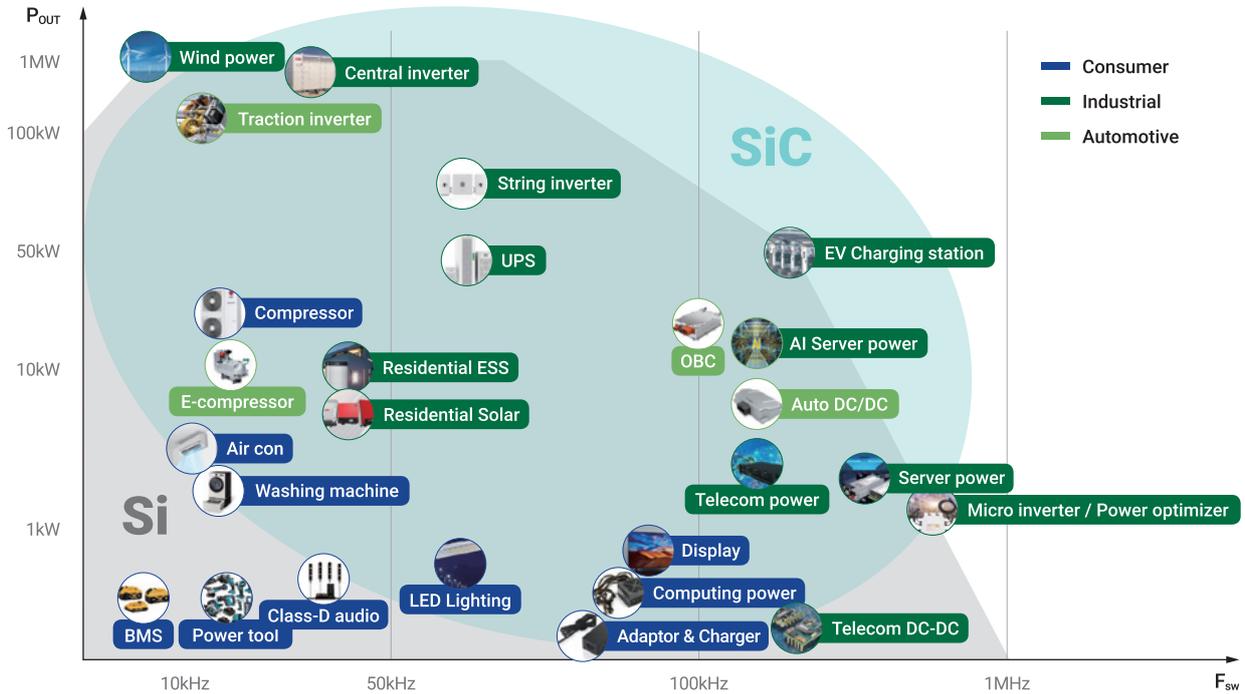
# Failure Analysis Laboratory

FA Equipment
High magnification scope
Low magnification scope
Auto & Manual Grinder
Mechanical Grinder
Decap station
EMMI
SEM
FIB

1. FA Room (Coming more systems)
2. Decapsulation Station
3. EMMI Analysis
4. SEM Analysis
5. SRP Analysis
6. Grinding / Scope



# SiC & Si Applications



# Product Portfolio

Power Master Semiconductor provides HV (SiC & SJ) & MV product solutions especially for energy, cloud, xEV and industrial applications.



$BV_{DSS}$	650V	750V	1200V	1700V		
Silicon Carbide Products <i>e</i> SiC	<ul style="list-style-type: none"> <li>650V <i>e</i>SiC MOSFET</li> <li>Indus : 15~45mΩ</li> <li>Auto : 19~58mΩ</li> <li>Consumer : 130~500mΩ</li> </ul>	<ul style="list-style-type: none"> <li>750V <i>e</i>SiC MOSFET</li> <li>Auto : 11~60mΩ</li> </ul>	<ul style="list-style-type: none"> <li>1200V <i>e</i>SiC MOSFET G2 &amp; G3</li> <li>Indus : 16~80mΩ</li> <li>Auto : 16~80mΩ</li> <li>New Package : TSAPK / QDPAK</li> </ul>	<ul style="list-style-type: none"> <li>1700V <i>e</i>SiC MOSFET G1</li> <li>Indus : 25~1000mΩ</li> </ul>		
	<ul style="list-style-type: none"> <li>650V <i>e</i>SiC Diode</li> <li>Indus : Low <math>V_f</math> &amp; Low <math>Q_c</math> : 4~50A</li> <li>Auto : Low <math>V_f</math> &amp; Low <math>Q_c</math> : 16~40A</li> </ul>		<ul style="list-style-type: none"> <li>1200V <i>e</i>SiC Diode G1</li> <li>New Package : TSAPK</li> <li>Indus : 5~60A</li> <li>Auto : 10~60A</li> </ul>	<ul style="list-style-type: none"> <li>1700V <i>e</i>SiC Diode G1</li> <li>Indus : 10~25A</li> </ul>		
$BV_{DSS}$	60~250V MOSFET		600V/650V SJ MOSFET		800/950V SJ MOSFET	
Silicon Products <i>e</i> MOS	<ul style="list-style-type: none"> <li>MV <i>e</i>MOS</li> <li>Normal Trench : 5.9~17.5mΩ</li> <li>SGT MOSFET : 1.3~38mΩ</li> <li>Low <math>R_{DS(on)}</math> Performance</li> <li>High Ruggedness</li> <li>Low Switching Noise</li> </ul>		<ul style="list-style-type: none"> <li>600/650V <i>e</i>MOS E7</li> <li>23 products : 28~1200mΩ</li> <li>Hard switching topologies</li> </ul>		<ul style="list-style-type: none"> <li>600/650V <i>e</i>MOS UF7</li> <li>8 products : 30~645mΩ</li> <li>Improved Body Diode</li> <li>Soft switching topologies</li> </ul>	<ul style="list-style-type: none"> <li>800/950V <i>e</i>MOS E7</li> <li>26 products / 65~650mΩ</li> <li>Flyback topology</li> </ul>
$BV_{CES}$	650V IGBT		1200V IGBT			
Silicon Products <i>e</i> FS IGBT	<ul style="list-style-type: none"> <li>FS <i>e</i>IGBT</li> <li>15~75A FS IGBT</li> <li>High Ruggedness</li> <li>Low Switching Noise</li> </ul>		<ul style="list-style-type: none"> <li>FS <i>e</i>IGBT</li> <li>15~150A FS IGBT</li> <li>High Ruggedness</li> <li>Low Switching Noise</li> </ul>			

# 1200V *e*SiC MOSFET



## 1200V Gen2 *e*SiC MOSFET (Industrial Grade)

Voltage	Package $R_{DS(ON),typ}$	Bare Die	D2PAK-7L	TO-247-3L	TO-247-4L	TO-247-4L Notch	TSPAK-DBC	TSPAK-LF
1200V	16mΩ	PCO120N16M2		PCW120N16M2	PCZ120N16M2	PCZN120N16M2		
	21mΩ	PCO120N21M2	PCBF120N21M2	PCW120N21M2	PCZ120N21M2	PCZN120N21M2	PCRZ120N21M2	PCR120N21M2
	31mΩ	PCO120N31M2	PCBF120N31M2	PCW120N31M2	PCZ120N31M2	PCZN120N31M2	PCRZ120N31M2	PCR120N31M2
	40mΩ	PCO120N40M2	PCBF120N40M2	PCW120N40M2	PCZ120N40M2	PCZN120N40M2	PCRZ120N40M2	PCR120N40M2
	60mΩ	PCO120N60M2	PCBF120N60M2	PCW120N60M2	PCZ120N60M2	PCZN120N60M2	PCRZ120N60M2	PCR120N60M2
	80mΩ	PCO120N80M2	PCBF120N80M2	PCW120N80M2	PCZ120N80M2	PCZN120N80M2	PCRZ120N80M2	PCR120N80M2

## 1200V Gen2 *e*SiC MOSFET (Automotive Grade)

Voltage	Package $R_{DS(ON),typ}$	Bare Die	D2PAK-7L	TO-247-4L Notch	TSPAK-DBC	TSPAK-LF
1200V	16mΩ	PCO120N16M2A		PCZN120N16M2A		
	21mΩ	PCO120N21M2A	PCBF120N21M2A	PCZN120N21M2A	PCRZ120N21M2A	PCR120N21M2A
	31mΩ	PCO120N31M2A	PCBF120N31M2A	PCZN120N31M2A	PCRZ120N31M2A	PCR120N31M2A
	40mΩ	PCO120N40M2A	PCBF120N40M2A	PCZN120N40M2A	PCRZ120N40M2A	PCR120N40M2A
	60mΩ	PCO120N60M2A	PCBF120N60M2A		PCRZ120N60M2A	PCR120N60M2A
	80mΩ	PCO120N80M2A	PCBF120N80M2A		PCRZ120N80M2A	PCR120N80M2A

## 1200V Gen3 *e*SiC MOSFET (Industrial Grade)

Voltage	Package $R_{DS(ON),typ}$	Bare Die	D2PAK-7L	TO-247-3L	TO-247-4L Notch	TO-247-4L Notch Thin	TSPAK-DBC	TSPAK-LF	QDPAK-LF
1200V	12.5mΩ	PCO120N12M3		PCW120N12M3	PCZN120N12M3	PCZNT120N12M3			
	17mΩ	PCO120N17M3	PCBF120N17M3	PCW120N17M3	PCZN120N17M3	PCZNT120N17M3	PCRZ120N17M3	PCR120N17M3	PCQ120N17M3
	24mΩ	PCO120N24M3	PCBF120N24M3	PCW120N24M3	PCZN120N24M3	PCZNT120N24M3	PCRZ120N24M3	PCR120N24M3	PCQ120N24M3
	32mΩ	PCO120N32M3	PCBF120N32M3	PCW120N32M3	PCZN120N32M3	PCZNT120N32M3	PCRZ120N32M3	PCR120N32M3	PCQ120N32M3
	40mΩ	PCO120N40M3	PCBF120N40M3	PCW120N40M3	PCZN120N40M3	PCZNT120N40M3	PCRZ120N40M3	PCR120N40M3	PCQ120N40M3
	60mΩ	PCO120N60M3	PCBF120N60M3	PCW120N60M3	PCZN120N60M3	PCZNT120N60M3	PCRZ120N60M3	PCR120N60M3	PCQ120N60M3

## 1200V Gen3 *e*SiC MOSFET (Automotive Grade)

Voltage	Package $R_{DS(ON),typ}$	Bare Die	D2PAK-7L	TO-247-4L Notch	TO-247-4L Notch Thin	TSPAK-DBC	TSPAK-LF	QDPAK-LF
1200V	12.5mΩ	PCO120N12M3A		PCZN120N12M3A	PCZNT120N12M3A			
	17mΩ	PCO120N17M3A	PCBF120N17M3A	PCZN120N17M3A	PCZNT120N17M3A	PCRZ120N17M3A	PCR120N17M3A	PCQ120N17M3A
	24mΩ	PCO120N24M3A	PCBF120N24M3A	PCZN120N24M3A	PCZNT120N24M3A	PCRZ120N24M3A	PCR120N24M3A	PCQ120N24M3A
	32mΩ	PCO120N32M3A	PCBF120N32M3A	PCZN120N32M3A	PCZNT120N32M3A	PCRZ120N32M3A	PCR120N32M3A	PCQ120N32M3A
	40mΩ	PCO120N40M3A	PCBF120N40M3A	PCZN120N40M3A	PCZNT120N40M3A	PCRZ120N40M3A	PCR120N40M3A	PCQ120N40M3A
	60mΩ	PCO120N60M3A	PCBF120N60M3A	PCZN120N60M3A	PCZNT120N60M3A	PCRZ120N60M3A	PCR120N60M3A	PCQ120N60M3A

CHARGE

# 1200V *e*SiC MOSFET



## 1200V Gen5 *e*SiC Trench MOSFET (Industrial Grade) Development

Voltage	Package $R_{DS(ON)_{typ}}$	Bare Die	D2PAK-7L	TO-247-3L	TO-247-4L Notch	TO-247-4L Notch Thin	TSPAK-DBC	TSPAK-LF	QDPAK-LF
1200V	10mΩ	PCO120N10M5	PCBF120N10M5	PCW120N10M5	PCZN120N10M5	PCZNT120N10M5	PCRZ120N10M5	PCR120N10M5	PCQ120N10M5
	14mΩ	PCO120N14M5	PCBF120N14M5	PCW120N14M5	PCZN120N14M5	PCZNT120N14M5	PCRZ120N14M5	PCR120N14M5	PCQ120N14M5
	20mΩ	PCO120N20M5	PCBF120N20M5	PCW120N20M5	PCZN120N20M5	PCZNT120N20M5	PCRZ120N20M5	PCR120N20M5	PCQ120N20M5
	26mΩ	PCO120N26M5	PCBF120N26M5	PCW120N26M5	PCZN120N26M5	PCZNT120N26M5	PCRZ120N26M5	PCR120N26M5	PCQ120N26M5

## 1200V Gen5 *e*SiC Trench MOSFET (Automotive Grade) Development

Voltage	Package $R_{DS(ON)_{typ}}$	Bare Die	D2PAK-7L	TO-247-3L	TO-247-4L Notch	TO-247-4L Notch Thin	TSPAK-DBC	TSPAK-LF	QDPAK-LF
1200V	10mΩ	PCO120N10M5A	PCBF120N10M5A	PCW120N10M5A	PCZN120N10M5A	PCZNT120N10M5A	PCRZ120N10M5A	PCR120N10M5A	PCQ120N10M5A
	14mΩ	PCO120N14M5A	PCBF120N14M5A	PCW120N14M5A	PCZN120N14M5A	PCZNT120N14M5A	PCRZ120N14M5A	PCR120N14M5A	PCQ120N14M5A
	20mΩ	PCO120N20M5A	PCBF120N20M5A	PCW120N20M5A	PCZN120N20M5A	PCZNT120N20M5A	PCRZ120N20M5A	PCR120N20M5A	PCQ120N20M5A
	26mΩ	PCO120N26M5A	PCBF120N26M5A	PCW120N26M5A	PCZN120N26M5A	PCZNT120N26M5A	PCRZ120N26M5A	PCR120N26M5A	PCQ120N26M5A

## 1200V *e*SiC JFET Development

Voltage	Package $R_{DS(ON)_{typ}}$	Bare Die	QDPAK-LF	TO-247-4L Notch
1200V	3.0mΩ		PJQ120N3P0M1	
	5.5mΩ	PJO120N5P0M1	PJQ120N5P5M1	PJZN120N5P5M1

# 650V / 1700V *e*SiC MOSFET



## 650V Gen1 *e*SiC MOSFET (Industrial Grade)

Voltage	Package $R_{DS(ON),typ}$	Bare Die	TOLL	TOLT	D2PAK-7L	TO-247-3L	TO-247-4L	TSPAK-LF
650V	15mΩ	PCO65N15M1B	PCT65N15M1B	PCLT65N15M1B	PCBF65N15M1B	PCW65N15M1B	PCZ65N15M1B	PCR65N15M1B
	22mΩ	PCO65N22M1B	PCT65N22M1B	PCLT65N22M1B	PCBF65N22M1B	PCW65N22M1B	PCZ65N22M1B	PCR65N22M1B
	27mΩ	PCO65N27M1B	PCT65N27M1B	PCLT65N27M1B	PCBF65N27M1B	PCW65N27M1B	PCZ65N27M1B	PCR65N27M1B
	39mΩ	PCO65N39M1B	PCT65N39M1B	PCLT65N39M1B	PCBF65N39M1B	PCW65N39M1B	PCZ65N39M1B	PCR65N39M1B
	45mΩ	PCO65N45M1B	PCT65N45M1B	PCLT65N45M1B	PCBF65N45M1B	PCW65N45M1B	PCZ65N45M1B	PCR65N45M1B

## 650V Gen1 *e*SiC MOSFET (Automotive Grade) Development

Voltage	Package $R_{DS(ON),typ}$	Bare Die	D2PAK-7L	TSPAK-DBC	TSPAK-LF
650V	19mΩ	PCO65N19M1BA	PCBF65N19M1BA	PCRZ65N19M1BA	PCR65N19M1BA
	29mΩ	PCO65N29M1BA	PCBF65N29M1BA	PCRZ65N29M1BA	PCR65N29M1BA
	35mΩ	PCO65N35M1BA	PCBF65N35M1BA	PCRZ65N35M1BA	PCR65N35M1BA
	52mΩ	PCO65N52M1BA	PCBF65N52M1BA	PCRZ65N52M1BA	PCR65N52M1BA

## High $R_{DS(on)}$ 650V Gen1 *e*SiC MOSFET (Consumer Grade)

Voltage	$I_D$	Package $R_{DS(ON),typ}$	Bare Die	DPAK	TO-220F	PQFN56	PQFN88
650V	25A	130mΩ [ $V_{GS}=18V$ ] 175mΩ [ $V_{GS}=15V$ ]	PCO65N130M1	PCD65N130M1	PCF65N130M1	PCS65N130M1	PCL65N130M1
		170mΩ [ $V_{GS}=18V$ ] 230mΩ [ $V_{GS}=15V$ ]	PCO65N170M1	PCD65N170M1	PCF65N170M1	PCS65N170M1	PCL65N170M1
	15A	245mΩ [ $V_{GS}=18V$ ] 331mΩ [ $V_{GS}=15V$ ]	PCO65N245M1	PCD65N245M1	PCF65N245M1	PCS65N245M1	PCL65N245M1
		325mΩ [ $V_{GS}=18V$ ] 439mΩ [ $V_{GS}=15V$ ]	PCO65N325M1	PCD65N325M1	PCF65N325M1	PCS65N325M1	PCL65N325M1
	8.5A	500mΩ [ $V_{GS}=18V$ ] 675mΩ [ $V_{GS}=15V$ ]	PCO65N500M1	PCD65N500M1	PCF65N500M1	PCS65N500M1	PCL65N500M1

## 1700V Gen1 *e*SiC MOSFET (Industrial Grade)

Voltage	Package $R_{DS(ON),typ}$	Bare Die	D2PAK-7L	TO-247-3L	TO-247-4L Notch
1700V	25mΩ	PCO170N25M1	PCBF170N25M1	PCW170N25M1	PCZN170N25M1
	32mΩ	PCO170N32M1	PCBF170N32M1	PCW170N32M1	PCZN170N32M1
	1000mΩ	PCO170N1K0M1	PCBF170N1K0M1	PCW170N1K0M1	PCZN170N1K0M1

# 650V / 1200V / 1700V *e*SiC Diode



## 650V *e*SiC Diode (Industrial Grade) - Low $V_F$ for Low Switching Freq. Applications

Package	Bare Die	DAK	D2PAK	TO-220F-2L	TO-220-2L	TO-247-2L	TO-247-3L
$I_F$							
40A							PCW65D40D1
30A							PCW65D30D1
20A	PCO65S20D1		PCB65S20D1	PCF65S20D1	PCH65S20D1	PCA65S20D1	PCW65D20D1
16A	PCO65S16D1				PCH65S16D1		PCW65D16D1
12A	PCO65S12D1			PCF65S12D1	PCH65S12D1		
10A	PCO65S10D1	PCD65S10D1	PCB65S10D1	PCF65S10D1	PCH65S10D1		
8A	PCO65S08D1		PCB65S08D1	PCF65S08D1	PCH65S08D1		
6A	PCO65S06D1			PCF65S06D1	PCH65S06D1		
4A	PCO65S04D1			PCF65S04D1	PCH65S04D1		

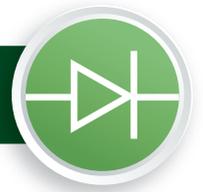
## 650V *e*SiC Diode (Industrial Grade) - Low $Q_C$ for High Switching Freq. Applications

Package	Bare Die	DAK	D2PAK	TO-220F-2L	TO-220-2L	TO-247-2L	TO-247-3L
$I_F$							
50A						PCA65D50D1Q	
40A							PCW65D40D1Q
30A							PCW65D30D1Q
20A	PCO65S20D1Q		PCB65S20D1Q	PCF65S20D1Q	PCH65S20D1Q	PCA65S20D1Q	PCW65D20D1Q
16A	PCO65S16D1Q				PCH65S16D1Q		PCW65D16D1Q
12A	PCO65S12D1Q		PCB65S12D1Q	PCF65S12D1Q	PCH65S12D1Q		
10A	PCO65S10D1Q			PCF65S10D1Q	PCH65S10D1Q		
8A	PCO65S08D1Q			PCF65S08D1Q	PCH65S08D1Q		
6A	PCO65S06D1Q			PCF65S06D1Q	PCH65S06D1Q		

## 1200V *e*SiC Diode (Industrial Grade)

Package	Bare Die	D2PAK	TO-220-2L	TO-247-2L	TO-247-3L	TSPAK-DBC	TSPAK-LF
$I_F$							
60A				PCA120S60D1Q	PCW120D60D1Q		
50A						PCRZ120S50D1Q	PCR120S50D1Q
40A	PCO120S40D1			PCA120S40D1	PCW120D40D1 PCW120D40D1Q	PCRZ120S40D1	PCR120S40D1Q
30A	PCO120S30D1			PCA120S30D1 PCA120S30D1Q	PCW120D30D1		
20A	PCO120S20D1	PCB120S20D1	PCH120S20D1	PCA120S20D1	PCW120D20D1		
15A	PCO120S15D1		PCH120S15D1	PCA120S15D1	PCW120D15D1		
10A	PCO120S10D1	PCB120S10D1	PCH120S10D1	PCA120S10D1	PCW120D10D1		
8A	PCO120S08D1		PCH120S08D1				
5A	PCO120S05D1		PCH120S05D1				

# 650V / 1200V / 1700V *e*SiC Diode



## 1700V *e*SiC Diode (Industrial Grade)

Package	Bare Die	TO-247-2L
$I_F$		
25A	PCO170S25D1	PCA170S25D1
10A	PCO170S10D1	PCA170S10D1

## 650V *e*SiC Diode (Automotive Grade)

Package	Bare Die	TO-247-2L	TO-247-3L
$I_F$			
40A	PCO65D40D1A PCO65D40D1QA		PCW65D40D1A PCW65D40D1QA
30A	PCO65D30D1A PCO65D30D1QA		PCW65D30D1A PCW65D30D1QA
20A	PCO65D20D1A PCO65D20D1QA	PCA65S20D1A PCA65S20D1QA	PCW65D20D1A PCW65D20D1QA
16A	PCO65D16D1A PCO65D16D1QA		PCW65D16D1A PCW65D16D1QA

## 1200V *e*SiC Diode (Automotive Grade)

Package	Bare Die	TO-247-2L	TO-247-3L	TSPAK-DBC	TSPAK-LF
$I_F$					
50A				PCRZ120S50D1QA	PCR120S50D1QA
40A	PCO120S40D1A	PCA120S40D1A	PCW120D40D1A PCW120D40D1QA	PCRZ120S40D1A	PCR120S40D1A
30A	PCO120S30D1A PCO120S30D1QA	PCA120S30D1A PCA120S30D1QA	PCW120D30D1A		
20A	PCO120S20D1A	PCA120S20D1A	PCW120D20D1A		
15A	PCO120S15D1A	PCA120S15D1A	PCW120D15D1A		
10A	PCO120S10D1A	PCA120S10D1A	PCW120D10D1A		



# 600V / 650V / 800V / 950V *e*MOS E7 SJ MOSFET



## 600V *e*MOS E7 MOSFET

Package	Die	DKPAK	PQFN88	TOLL	TO-220	TO-220F	TO-247-3L	TO-247-4L
$R_{DS(ON),max}$								
28mΩ	PMO60N028E7						PMW60N028E7	PMZ60N028E7
40mΩ	PMO60N040E7						PMW60N040E7	
70mΩ	PMO60N070E7						PMW60N070E7	
99mΩ	PMO60N099E7				PMP60N099E7	PMF60N099E7	PMW60N099E7	
105mΩ			PML60N105E7	PMT60N105E7				
180mΩ	PMO60N180E7				PMP60N180E7	PMF60N180E7		
280mΩ	PMO60N280E7	PMD60N280E7			PMP60N280E7	PMF60N280E7		
380mΩ	PMO60N380E7	PMD60N380E7			PMP60N380E7	PMF60N380E7		
600mΩ	PMO60N600E7	PMD60N600E7				PMF60N600E7		

## 650V *e*MOS E7 MOSFET

Package	Die	TO-220F
$R_{DS(ON),max}$		
180mΩ	PMO65N180E7	PMF65N180E7
280mΩ	PMO65N280E7	PMF65N280E7
380mΩ	PMO65N380E7	PMF65N380E7
600mΩ	PMO65N600E7	PMF65N600E7
1200mΩ	PMO65N12KE7	

## 800V *e*MOS E7 MOSFET

Package	DKPAK	D2PAK	TO-220F	TO-247-3L
$R_{DS(ON),max}$				
65mΩ				PMW80N065EM7 (54A)
130mΩ			PMF80N130EM7 (32A)	PMW80N130EM7 (32A)
165mΩ			PMF80N165EM7 (28A)	PMW80N165EM7 (28A)
180mΩ		PMB80N180EM7 (24A)	PMF80N180EM7 (24A)	PMW80N180EM7 (24A)
240mΩ		PMB80N240EM7 (20A)	PMF80N240EM7 (20A)	PMW80N240EM7 (20A)
395mΩ	PMD80N395EM7 (15A)		PMF80N395EM7 (15A)	
500mΩ	PMD80N500EM7 (11A)		PMF80N500EM7 (11A)	
830mΩ	PMD80N830EM7 (7A)		PMF80N830EM7 (7A)	

## 950V *e*MOS E7 MOSFET

Package	DKPAK	TO-220F	TO-247-3L
$R_{DS(ON),max}$			
130mΩ			PMW95N130EM7 (36A)
760mΩ	PMD95N760EM7 (9A)	PMF95N760EM7 (9A)	
1000mΩ	PMD95N1K0EM7 (7A)	PMF95N1K0EM7 (7A)	
3200mΩ	PMD95N3K2EM7Z (3A)	PMF95N3K2EM7Z (3A)	
6500mΩ	PMD95N6K5EM7Z (2A)	PMF95N6K5EM7Z (2A)	

# 600V / 650V *e*MOS UF7 SJ MOSFET



## 600V *e*MOS UF7 MOSFET (Fast recovery body-diode)

$R_{DS(ON),max}$	Package	Die	TO-220F	TO-247-3L
30mΩ		PMO60N030UF7		PMW60N030UF7
43mΩ		PMO60N043UF7		PMW60N043UF7
75mΩ		PMO60N075UF7		PMW60N075UF7
105mΩ		PMO60N105UF7		PMW60N105UF7
193mΩ		PMO60N193UF7	PMF60N193UF7	

## 650V *e*MOS UF7 MOSFET (Fast recovery body-diode)

$R_{DS(ON),max}$	Package	Die	TO-247-3L
45mΩ		PMO65N045UF7	PMW65N045UF7
310mΩ		PMO65N310UF7	
645mΩ		PMO65N645UF7	

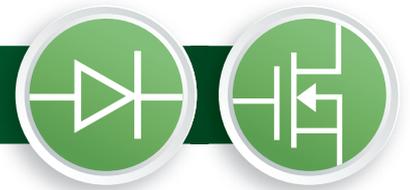
# 650V - 1000V *e*MOS Planar MOSFET



## 650V - 1000V *e*MOS Planar MOSFET

Voltage	$I_b$	Package	DPAK	TO-220F
650V	7A			PDF7N65U
	10A			PDF10N65U
800V	5A		PDD5N80U	
	7A			PDF7N80C
900V	10A			PDF10N80U
	4A			PDF4N90U
900V	9A			PDF9N90U
	11A			PDF11N90U
1000V	5A		PDD5N100U	

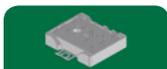
# eSiC Power Module



## P1B SiC Module (SiC MOSFET Module)

Development

Package	1200V (Industrial Grade)			650V (Industrial Grade)		
$R_{DS(ON),max}$						
4mΩ	P1BS120H04G3S / P					
5 - 7mΩ	P1BA120H05G2S / P P1BS120H05G2S / P			P1BA65H07G1S		
8 - 9mΩ	P1BA120H08G2S / P			P1BA120F08G2S		
11 - 13mΩ	P1BA120H10G2S / P					
14 - 19mΩ	P1BA120H16G2S / P	P1BA120F16G2S	P1BA120S16G2S	P1BA65H15G1S	P1BA65F15G1S	P1BA65S15G1S
20mΩ ~	P1BA120H21G2S / P P1BA120H31G2S / P P1BA120H40G2S / P	P1BA120F21G2S P1BA120F31G2S P1BA120F40G2S	P1BA120S21G2S P1BA120S31G2S P1BA120S40G2S		P1BA65F22G1S P1BA65F27G1S	P1BA65S22G1S P1BA65F27G1S



## P2B SiC Module (SiC MOSFET Module)

Development

Package	1200V (Industrial Grade)			650V (Industrial Grade)		
$R_{DS(ON),max}$						
3mΩ	P2BS120H03G3P			P2BA65H3P8G1S		
4 - 5mΩ	P2BA120H04G2S / P P2BS120H04G2S / P			P2BA120F05G2S		
6 - 7mΩ				P2BA65H07G1S		
8 - 9mΩ	P2BA120H08G2S / P			P2BA120F08G2S		
10mΩ ~	P2BA120H10G2S / P			P2BA120S16G2S		
				P2BA65H15G1S		



## P3ED SiC Module (SiC MOSFET and Full-SiC Module)

Development

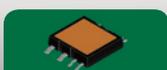
Package	1200V (Industrial Grade)		1700V (Industrial Grade)	
$R_{DS(ON),max}$				
1.3mΩ	P3EDS120H1P3G3S		P3EDS120HD1P3G3S	
1.6mΩ	P3EDS120H1P6G3S		P3EDS120HD1P6G3S	
2.0 - 2.9mΩ	P3EDS120H2P1G3S		P3EDS120HD02G2S P3EDS120HD2P1G3S	
3.0mΩ ~			P3EDS120HD03G2S	
			P3EDS170H3G1S	
			P3EDS170HD3G1S	



## P6M SiC Module (SiC MOSFET and Full-SiC Module)

Development

Package	1200V (Industrial Grade)		1700V (Industrial Grade)	
$R_{DS(ON),max}$				
1.6mΩ	P6MN120H1P6G3			
2.0 - 2.9mΩ			P6MN120HD02G3	
3.0 - 3.9mΩ			P6MN120HD03G3	
4.0mΩ ~			P6MN170H3P1G1	
			P6MN170HD04G1	



## PTM [TS-MPAK] SiC Module (SiC MOSFET Module)

Development

Package	1200V (Automotive Grade)		650V (Automotive Grade)		650V (Industrial Grade)	
$R_{DS(ON),max}$						
11 - 15mΩ	PTMZ120H11G2A	PTMZ120B11G2A			PTMZ65H15G1X1	PTMZ65B15G1
16 - 19mΩ	PTMZ120H16G2A PTMZ120H16G2AX1	PTMZ120B16G2A	PTMZ65H19G1AX1	PTMZ65B19G1A		
20 - 29mΩ			PTMZ65H29G1AX1		PTMZ65H27G1X1	
30mΩ ~	PTMZ120H40G2A PTMZ120H40G2AX1					

# 60V / 85V *e*MOS MV MOSFET

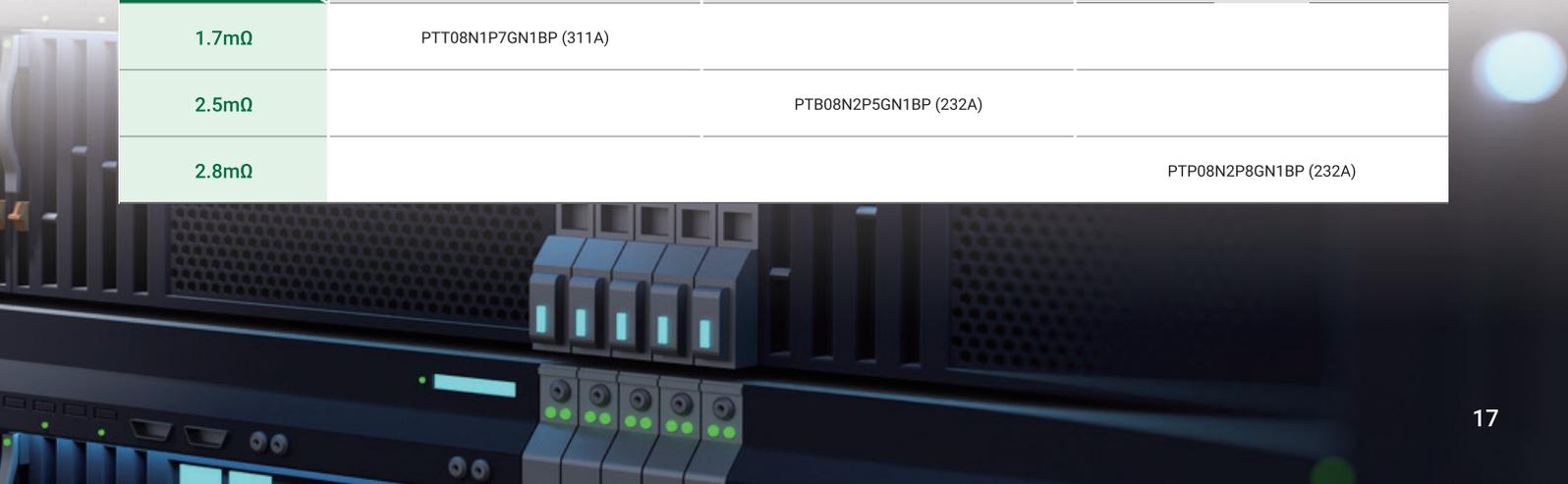


## 60V *e*MOS MV MOSFET

Package	PQFN56	DPAK	TOLL	D2PAK	TO-220
$R_{DS(ON),max}$					
1.1m $\Omega$	PTS06N1P1GN1BP (277A) PTS06N1P1LGN1BP				
1.3 - 1.5m $\Omega$	PTS06N1P3GS1BP (252A) PTS06N1P5GN1BP (219A)		PTT06N1P4GN1BP (327A)		
1.9m $\Omega$	PTT06N1P9GN1BP (257A)				
2.1 - 2.2m $\Omega$	PTS06N2P1LGN1BP (165A) PTS06N2P1LGN1BPA (175A) PTS06N2P2GN1BP (162A)		PTB06N2P2GN1BP (209A)		
2.5m $\Omega$	PTS06N2P5LGN1BP (148A)				
2.9m $\Omega$	PTS06N2P9LGN1BP (143A)	PTD06N2P9GN1BP (131A)			
3.4 - 3.5m $\Omega$					PTP06N3P4LGN1BM (151A) PTP06N3P5GN1BP (148A)
3.9m $\Omega$	PTD06N3P9GN1BP (107A)				
4.1 - 4.2m $\Omega$	PTS06N4P1LGN1BP (104A) PTS06N4P2GN1BP (102A)				
6.6m $\Omega$	PTD06N6P6LGN1BP (73A)				
7.1m $\Omega$	PTS06N7P1LGN1BP (65A)				
11.4m $\Omega$	PTD06N11P4LGN1BPA (45A)				
15.0 - 15.5m $\Omega$	PSS06N15P5LGN1BM (44A)	PSD06N15PLGN1BM (48A)			
30m $\Omega$	PSS06N30PLGN1BM (28A)	PSD06N30PLGN1BM (25A)			

## 85V *e*MOS MV MOSFET

Package	TOLL	D2PAK	TO-220
$R_{DS(ON),max}$			
1.7m $\Omega$	PTT08N1P7GN1BP (311A)		
2.5m $\Omega$	PTB08N2P5GN1BP (232A)		
2.8m $\Omega$	PTP08N2P8GN1BP (232A)		



# 100V *e*MOS MV MOSFET



## 100V *e*MOS MV MOSFET

Package	PQFN56	DPAK	D2PAK	D2PAK-7L	TOLL	TO-220
$R_{DS(ON),max}$						
1.2mΩ					PTT10N1P2GN1BS (412A)	
1.35 - 1.4mΩ					PTT10N1P3GN1BP(385A) PTT10N1P4GN1BM(375A) PTT10N1P4GN1BS(429A) PTT10N1P4GN1BPA(378A)	
1.5 - 1.6mΩ				PTBF10N1P6GN1BP(324A) PTBF10N1P6GN1BPA(324A)	PTT10N1P5GN1BP(399A)	
1.7 - 1.8mΩ				PTBF10N1P8GN1BP(297A)	PTT10N1P7GN1BM(344A) PTT10N1P8GN1BP(315A)	
1.9mΩ			PTB10N1P9GN1BP(289A)		PTT10N1P9GN1BP(292A)	
2.1mΩ			PTB10N2P1GN1BP(274A)	PTBF10N2P1GN1BP(297A)	PTT10N2P1GN1BP(288A)	PTP10N2P3GN1BP(289A)
2.3 - 2.4mΩ				PTBF10N2P3GN1BP(239A)	PTT10N2P4GN1BP(249A)	
2.6mΩ			PTB10N2P6GN1BP(225A)			PTP10N2P9GN1BP(225A)
2.9mΩ			PTB10N2P9GN1BP(205A)		PTT10N2P9GN1BP(205A)	PTP10N3P1GN1BP(205A)
3.1 - 3.5mΩ	PTS10N3P5GN1BP(136A)		PTB10N3P3GN1BP (186A) PTB10N3P5GN1BP (183A)		PTT10N3P3GN1BP(195A)	
3.6 - 3.9mΩ	PTS10N3P8GN1BP(135A)					PTP10N3P6GN1BP(184A) PTP10N3P8GN1BP(183A)
4.0 - 4.9mΩ	PTS10N4PGN1BP (129A) PTS10N4P1LGN1BP(119A) PTS10N4P4GN1BP (113A)		PTB10N4P1GN1BP(148A) PTB10N4P3GN1BP(173A)			PTP10N4P3GN1BP(173A)
5.3 - 6.3mΩ	PTS10N5P5LGN1BP(97A) PTS10N5P8GS1BP(106A) PTS10N6P3GN1BP(91A)					
7.1 - 7.5mΩ	PTS10N7P1LGN1BP(82A) PTS10N7P5GN1BPA(83A)	PTD10N7P4LGN1BP(73A)				
8.0 - 8.8mΩ	PTS10N8PLGN1BP(74A) PTS10N8PLGN1BPA(74A) PTS10N8P6GN1BP(71A) PTS10N8P8GN1BPA(74A)					
9.5 - 10.8mΩ	PTS10N10P8LGN1BP(59A)	PTD10N9P5LGN1BP(62A)	PTB10N9P6GN1BP(76A)			PTP10N9P8GN1BP(76A)
15.4 - 20mΩ	PTS10N15P9LGN1BP(45A) PTS10N18P6LGN1BP(40A)	PTD10N15P4LGN1BP(43A) PTD10N20PLGN1BP(32A)				

## 100V *e*MOS MV MOSFET

Package	TOLT	TO-247-3L
$R_{DS(ON),max}$		
1.3mΩ	PTLT10N1P3GN1BM(385A)	
2.0mΩ	PTW10N2PGN1BP (290A)	

# 120V / 150V / 200V *e*MOS MV MOSFET



## 120V *e*MOS MV MOSFET

Package	PQFN56	D2PAK	TOLL	TO-220
$R_{DS(ON),max}$				
1.6 - 1.7mΩ			PTT12N1P6GN1BP (393A) PTT12N1P7GN1BP (374A)	
3.3mΩ			PTT12N3P3GN1BP (201A)	
3.6mΩ		PTB12N3P6GN1BP (189A)		
3.9mΩ				PTP12N3P9GN1BP (189A)
6.6 - 6.7mΩ	PTS12N6P6LGN1BP (89A) PTS12N6P7GN1BP (88A)			
6.9mΩ		PTB12N6P9GN1BP (105A)		
7.1mΩ				PTP12N7P1GN1BP (105A)

## 150V *e*MOS MV MOSFET

Package	PQFN56	DPAK	D2PAK	TOLL	D2PAK-7L	TO-220	TO-247-3L
$R_{DS(ON),max}$							
2.6mΩ				PTT15N2P6GN1BP(302A)			
4.1 - 4.2mΩ				PTT15N4P1GN1BP(240A) PTT15N4P1GN1BPA(240A)			PTW15N4P2GN1BP(189A)
4.3 - 4.8mΩ			PTB15N4P6GN1BP(176A)	PTT15N4P3GN1BP(240A)	PTBF15N4P6GN1BP(183A)	PTP15N4P8GN1BP(176A)	
5.2 - 5.4mΩ	PTS15N5P2GN1BP(116A)					PTP15N5P4GN1BP(164A)	
6.4 - 6.6mΩ			PTB15N6P4GN1BP(134A)			PTP15N6P6GN1BP(134A)	
9.0 - 9.9mΩ	PTS15N9GS1BP(87A) PTS15N9P9GN1BP(71A)		PTB15N9P1GN1BP(99A)			PTP15N9P3GN1BP(99A)	PTW15N9P2GN1BP(112A)
11.5mΩ	PTS15N11P5GN1BP(71A)						
60mΩ		PTD15N60PGN1BM(19.5A)					

## 200V *e*MOS MV MOSFET

Package	PQFN56	TOLL	D2PAK	TO-220	TO-247-3L
$R_{DS(ON),max}$					
9.4mΩ			PTB20N9P4GN1BP(112A)		
9.6 - 9.8mΩ		PTT20N9P8GN1BP(134A)		PTP20N9P6GN1BP(113A)	PTW20N9P6GN1BP(114A)
10 - 10.2mΩ			PTB20N10PGN1BM(110A)	PTP20N10P2GN1BM(110A)	
15.7mΩ			PTB20N15P7GN1BP(81A)		
20 - 24mΩ	PTS20N24PGN1BP(45A)			PTP20N23PGN1BP(61A)	PTW20N21P6GN1BP(69A)

# 150V / 200V / 250V *e*MOS Single Trench MOSFET



## Single Trench MV MOSFET

Voltage	Package	Die	TO-247-3L
$R_{DS(ON),typ}$			
150V	5.9mΩ	PSO15N5P9G1	PSW15N5P9G1
200V	9.7mΩ	PSO20N9P7G1	PSW20N9P7G1
250V	17.5mΩ	PSO25N17P5G1	PSW25N17P5G1

# 650V / 1200V *e*FS-IGBT Portfolio



## 650V *e*FS-IGBT

Package	DPAK	D2PAK	TO-247-3L
$I_c@100^\circ\text{C}$			
75A			PGW65N75KS1SD*
50A			PGW65N50KS1SD*
40A			PGW65N40KS1SD*
30A			PGW65N30KS1SD*
20A			PGW65N20KS1SD*
15A		PGB65N15KS1SD*	
6A	PGD65N06KS1SD*		

## 1200V *e*FS-IGBT

Package	TO-247-3L	TO-247-4L
$I_c@100^\circ\text{C}$		
150A		PGZ120N150KS1ND
75A	PGW120N75KS1ND	
40A	PGW120N40KL1SD*	
25A	PGW120N25KL1SD*	

Note : SD\* - Short Circuit Version

# Ordering Information

## eSiC MOSFET

**P C Z 120 N 12 M3 A**

- **MOSFET / Grade**
  - A : Automotive Grade
  - None : Industrial Grade
  - W : Wafer Level Burn-In
- **MOSFET / Generation**
  - M1 : Gen1
  - M2 : Gen2
  - M3 : Gen3
- **$R_{DS(ON)}$  Typ [mΩ]**
- **Channel Polarity**
- **Voltage Rating (x10)**
- **Package**
  - BF : D2PAK-7L
  - T : TOLL
  - F : TO-220-3L, Full pack
  - W : TO-247-3L
  - Z : TO-247-4L
  - ZN : TO-247-4L, Notch
  - ZNT : TO-247-4L, Notch Thin
  - RZ : TSPAK-DBC
  - O : Wafer ( Unsawn )
  - OS : Wafer ( Sawn )
  - Q : QDPAK
  - LT : TOLT
  - P : TO-220-3L
- **C : SiC MOSFET / J : SiC JFET**
- **PMS Semiconductor**

## eSiC Diode

**P C P 120 S 20 D1(Q) A**

- **Diode / Product Grade**
  - A : Automotive Grade
  - None : Industrial Grade
- **Diode / Generation**
  - D1 : The 1<sup>st</sup> Gen. Low  $V_F$
  - D1Q : The 1<sup>st</sup> Gen. Low  $Q_C$
- **Current [A]**
- **S : Single Die / D : Dual Die**
- **Voltage Rating (x10)**
- **Package**
  - B : D2-PAK 2L
  - H : TO-220 2L
  - P : TO-220 3L
  - L : PQFN88
  - D : D-PAK ( Center Lead Type )
  - M : D-PAK ( No Center Lead Type )
  - W : TO-247 3L
  - A : TO-247 2L
  - O : Wafer ( Unsawn )
  - OS : Wafer ( Sawn )
- **SiC Technology**
- **PMS Semiconductor**

## eMOS SJ MOSFET

**P M P 60 N 180 E 7 Z A**

- **MOSFET / Grade**
  - A : Automotive Grade
  - None : Industrial Grade
- **Zener Diode**
- **Generation**
- **Switching Characteristic**
  - E : Efficient
  - F : FRFET
  - UF : Ultra FRFET
  - H : High Efficiency
- **$R_{DS(ON)}$  Max [mΩ]**
- **Channel Polarity**
- **Voltage Rating (x10)**
- **Package**
  - B : D2-PAK
  - D : D-PAK
  - E : ISOTOP
  - F : TO-220F
  - FN : Narrow lead
  - FW : Wide pitch
  - I : I2-PAK
  - L : PQFN88
  - N : SOT-223
  - P : TO-220
  - T : TOLL
  - U : I-PAK
  - W : TO-247
  - Z : TO-247 4L
  - S : PQFN56
  - O : Wafer ( Unsawn )
  - OS : Wafer ( Sawn )
- **Super Junction MOSFET Technology**
- **PMS Semiconductor**

# Ordering Information

## eMOS MV MOSFET

**P S P 10 N 4P5 L Z G1 BP A**

- **MOSFET / Grade**
  - A : Automotive Grade
  - None : Industrial Grade
- **Application**
  - BH : Hot Swap
  - BM : Motor Drive
  - BP : High Freq
  - BS : BMS & PDU
- **Generation**
- **Zener Diode**
- **Specific Characteristic**
  - L : Logic Level
  - F : Fast Recovery Diode
  - W : Wide SOA
- **R<sub>DS(ON)</sub> Max [mΩ] , P : Point**
- **N : N Channel , P : P Channel**
- **Voltage Rating ( x10 )**
- **Package**
  - A : TO-3P
  - B : TO-263-3L
  - BF : TO-263-7L
  - D : TO-252-3L
  - F : TO-220F-3L
  - FN : Narrow lead
  - C : PQFN33
  - FW : Wide pitch
  - I : I2PAK
  - L : PQFN88
  - LD : PQFN88 Dual Cool
  - LT : TOLT
  - N : SOT-223
  - P : TO-220-3L
  - T : TOLL
  - U : I-PAK
  - W : TO-247-3L
  - Z : TO-247-4L
  - S : PQFN56
  - SD : PQFN56 Dual Cool
  - G : PQFN Leaded
  - O : Wafer ( Unsawn )
  - OS : Wafer ( Sawn )
- **Si MV MOSFET Technology**
  - S : Gate Trench
  - T : Split Gate Trench
- **PMS Semiconductor**

## eFS IGBT

**P G W 65 N 40 KS 1 ND A**

- **IGBT / Grade**
  - A : Automotive Grade
  - None : Industrial Grade
- **IGBT & FRD type**
  - ND : Non SCWT & Full Current
  - NH : Non SCWT & Half Current
  - NT : Non SCWT & Small Current
  - NN : Non SCWT & No FRD
  - NF : Non SCWT & SiC Diode
  - SD : SCWT & Full Current
  - SH : SCWT & Half Current
  - ST : SCWT & Small Current
  - SN : SCWT & No FRD
  - SF : SCWT & SiC Diode
- **Generation**
- **Switching Frequency**
- **Current [A]**
- **N : N Channel**
- **Voltage Rating ( x10 )**
- **Package**
  - A : TO-3P
  - B : D2PAK
  - BF : D2PAK-7L
  - W : TO-247-3L
  - WP : TO-247-3L PLUS
  - Z : TO-247-4L
- **IGBT**
- **PMS Semiconductor**





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