P2S120EP100M34N

Silicon Carbide Schottky Diode Power Module

Product Summary

V_R	1200V
$I_{F\ (@75^{\circ}C)}$	95A*
Q_C	355nC

Features

- Low Conduction and Switching Loss
- Zero Reverse Recovery
- Temperature Independent Switching Behavior
- Positive Temperature Coefficient Device
- High Surge Current Capability
- RoHS Compliant and Halogen Free
- Copper Baseplate and AlN-AMB Insulator

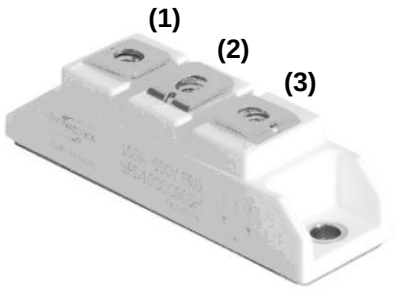
Benefits

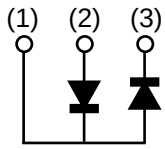
- Higher System Efficiency
- Increase Parallel Device Convenience
- Temperature Independent Switching Behavior
- Allow High Frequency Operation
- Realize Compact and Lightweight Systems

Applications

- Switching Mode Power Supply
- PFC
- UPS
- Motor Drives
- Flywheel diode in Power Inverters
- Solar/Wind Renewable Energy

Product Overview





Description

P2S120EP100M34N 1200V, 100A SiC power module is a full SiC Schottky diode power module. Exploiting the outstanding wide bandgap material properties, this module shows better current density and zero reverse recovery charge & temperature-independent dynamic behavior compare to conventional Si Fast-Recovery diodes.

Absolute Maximum Ratings (T_c = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	T_J = 25°C	1200	V
Peak Reverse Surge Voltage	V_{RSM}	T_J = 25°C	1200	V
DC Blocking Voltage	V_R	T_J = 25°C	1200	V
Continuous Forward Current	I_F	T_C = 25°C	120*	A
		T_C = 75°C	95*	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	T_C = 25°C, T_P = 10 ms, Half Sine Wave	>500*	A
		T_C = 125°C, T_P = 10 ms, Half Sine Wave	>200*	
Repetitive Peak Forward Surge Current	I_{FRM}	T_C = 25°C, T_P = 10 ms Half Sine Wave, D = 0.1	317*	A
		T_C = 125°C, T_P = 10 ms Half Sine Wave, D = 0.1	>200*	
Power Dissipation	P_D	T_C = 25°C	535*	W
		T_C = 125°C	178*	
Junction & Storage Temperature	T_j , T_{stg}		-55 to 175	°C
Soldering Temperature	T_L		260	

Electrical Characteristics (T_c = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	I_R = 500μA, T_J = 25°C	>1200			V
Forward Voltage	V_F	I_F = 60A, T_J = 25°C		1.55	1.8	V
		I_F = 60A, T_J = 175°C		2.3	2.7	V
Reverse Current	I_R	V_R = 1200V, T_J = 25°C		12	500	μA
		V_R = 1200V, T_J = 175°C		60	1000	μA
Total Capacitive Charge	Q_C	V_R = 800V, T_J = 25°C		355*		nC
Total Capacitance	C_j	V_R =1V, T_J=25°C, f = 1MHz V_R =400V, T_J=25°C, f = 1MHz V_R =800V, T_J=25°C, f = 1MHz		3780* 322* 272*		pF
Capacitance Stored Energy	E_C	V_R = 800V		142*		μJ

Thermal Characteristics

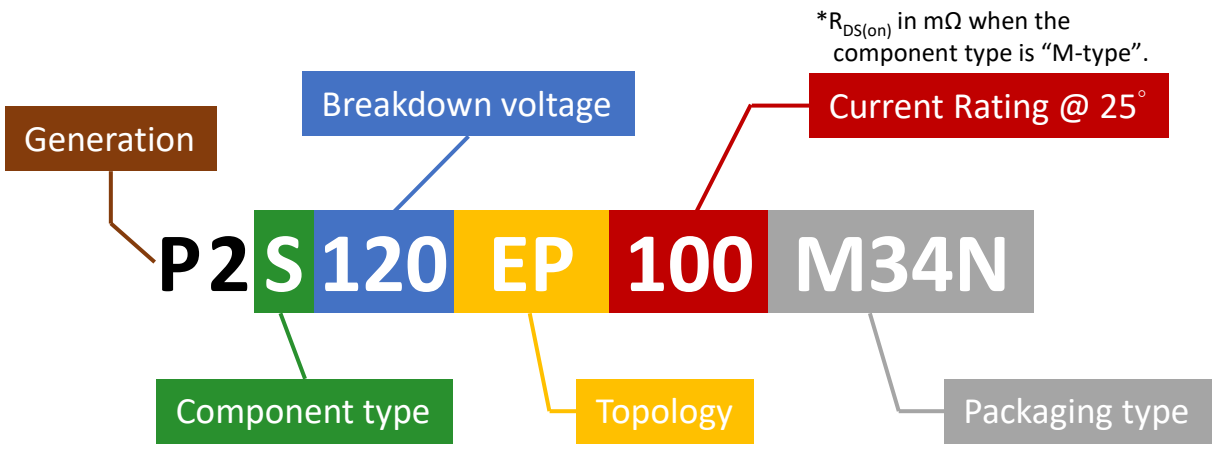
Parameter	Symbol	Test Conditions	Value	Unit
Max. MOSFET Junction Temperature	T_{Jmax_MOS}		175	°C
Max. Diode Junction Temperature	T_{Jmax_Di}		175	
Operating Temperature	T_{Jop}		-55~175	
Storage Temperature	T_{stg}		-55~175	
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	JESD51-14	0.28*	°C/W

*By estimation

Mechanical Characteristics

Parameter	Symbol	Test Conditions	Value	Unit
Isolation Breakdown Voltage	V_{iso}	AC, 50Hz (R.M.S), t=1minute	2500	V
Comparative Tracking Index	CTI		TBD	
Terminal connection Torque	τ_{tc}	Recommended (M4 screw)	1.3	Nm
Weight	W		30	g

Naming Rule



Typical Device Performance

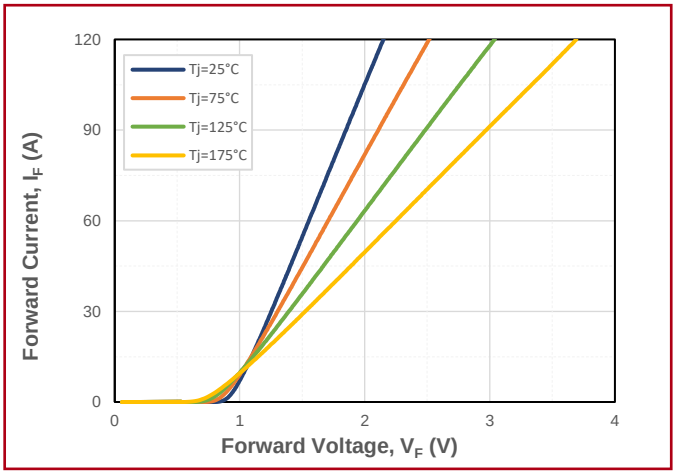


Fig.1 Forward Characteristics

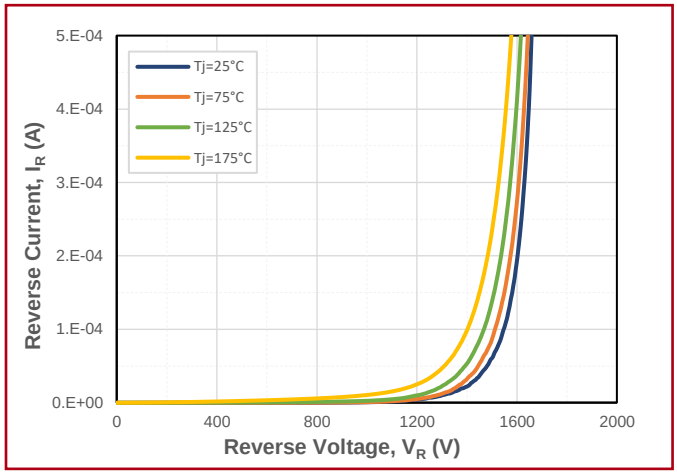


Fig.2 Reverse Characteristics

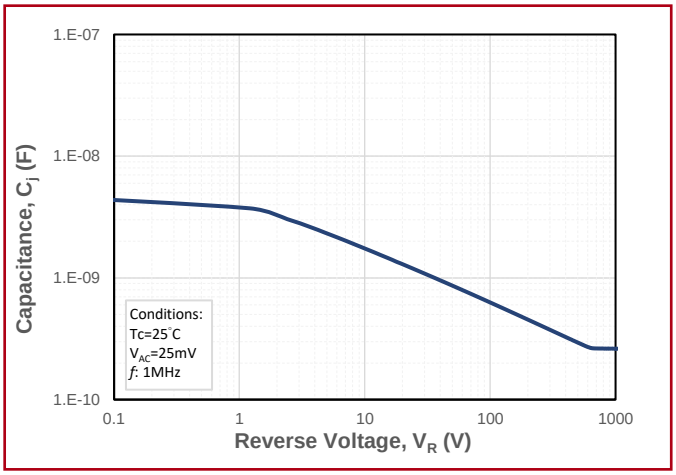


Fig.3 Junction Capacitance vs. Reverse Voltage

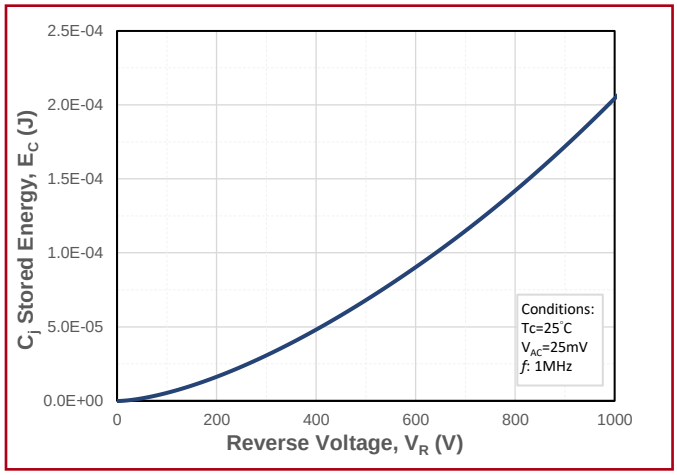


Fig.4 Capacitance Stored Energy

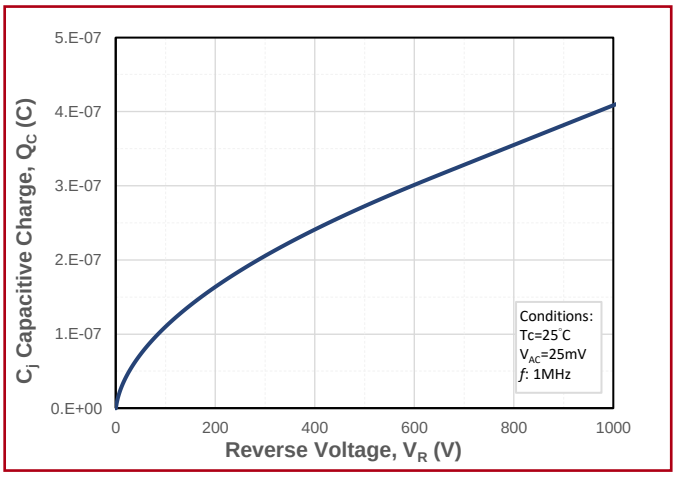


Fig.5 Recovery Charge vs. Reverse Voltage

Typical Device Performance

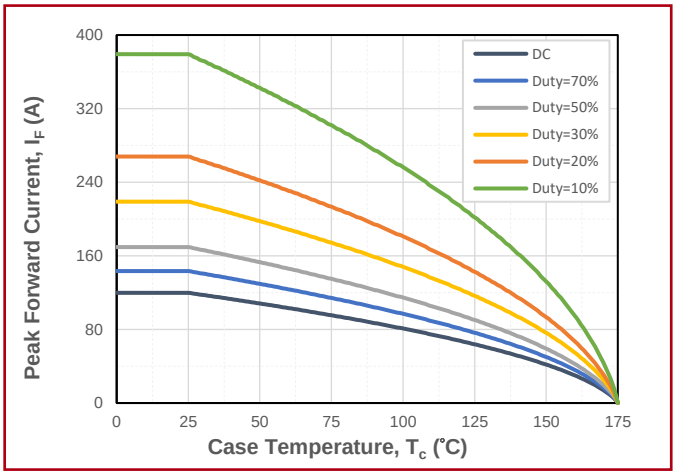


Fig.6 Maximum Forward Current Derating vs. Case Temperature

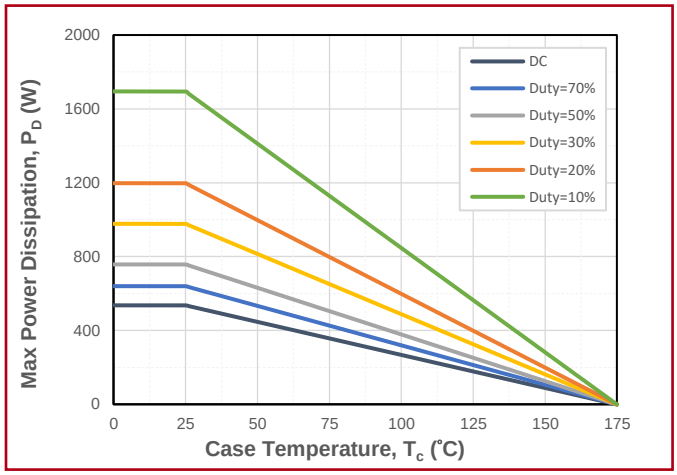
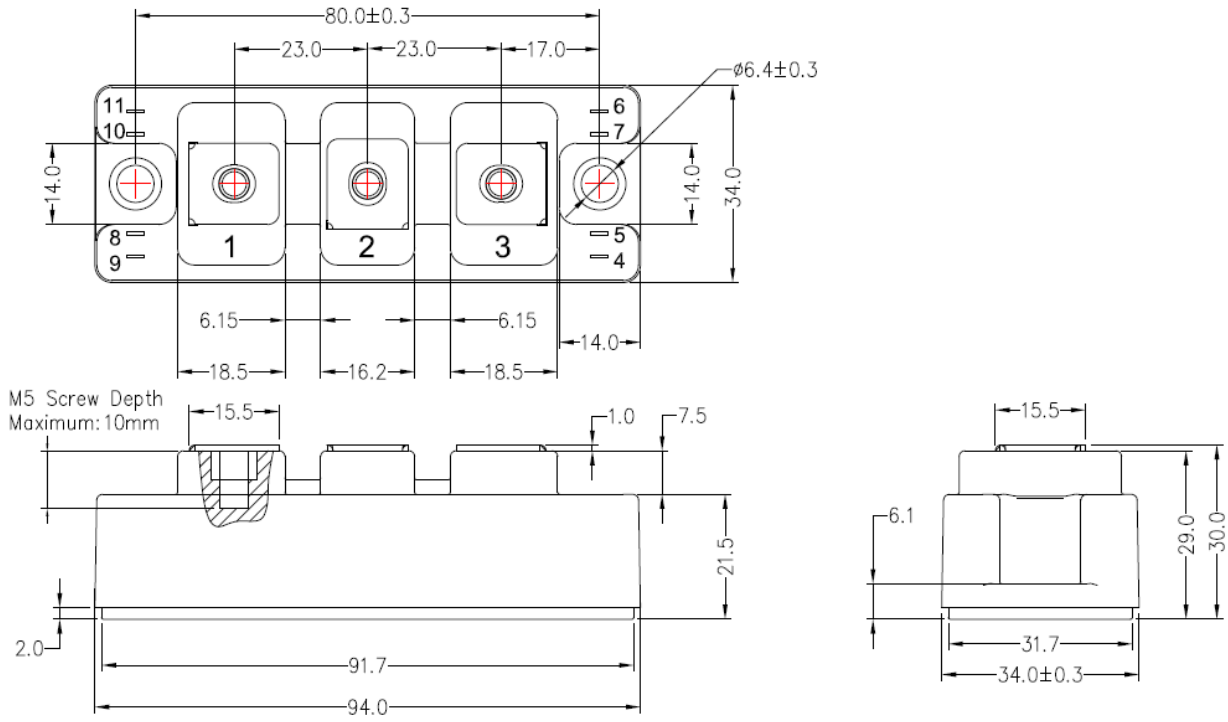


Fig.7 Maximum Power Dissipation Derating vs. Case Temperature

Package Dimensions



Notes

- The information provided herein is subject to change without notice.
- For other information that does not show on this datasheet, please contact us for inquiry.