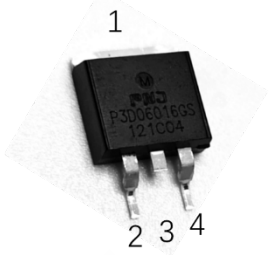
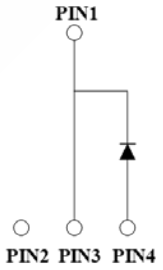
SiC SBD P3D12020GS

1200V SiC Schottky Diode



TO-263S

Cathode	1,3
N/C	2
Anode	4



Features

- Qualified to AEC-Q101
- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation
- Positive Temperature Coefficient on V_F
- High Surge Current
- 100% UIS tested

Benefits

- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway

RoHS

Application

- Consumer SMPS
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters

Halogen

Order Information

Part Number	Package	Marking
P3D12020GS	TO-263S	P3D12020GS

Contents

1. Maximum Ratings

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	T_C= 25℃
Surge Peak Reverse Voltage	V_{RSM}	1200	V	T_C= 25℃
DC Blocking Voltage	V_R	1200	V	T_C= 25℃
Forward Current	I_F	50 31 20	A	T_C= 25℃ T_C= 125℃ T_C= 145℃
Repetitive Peak Forward Surge Current	I_{FRM}	98 51	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	I_{FSM}	150 140	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Power Dissipation	P_{tot}	250	W	T_C= 25℃
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	℃	
TO-247 Mounting Torque M3 Screw	T_{orq}	1 8.8	Nm lbf-in	

2. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.6	℃/W

3. Electrical Characteristics

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.5	1.8	V	I_F= 20A, T_J= 25℃
			2.1	/		I_F= 20A, T_J= 175℃
Reverse Current	I_R	/	8.42	60	μA	V_R= 1200V, T_J= 25℃
			1820	/		V_R= 1200V, T_J= 175℃
Total Capacitance	C	/	1070	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			112			V_R= 400V, T_J= 25℃ f= 1MHz
			106			V_R= 800V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	110	/	nC	V_R= 800V, I_F= 20A T_J= 25℃
Capacitance Stored Energy	E_C	/	33.6	/	μJ	V_R= 800V

4. Typical Performance

At T_J= 25℃, unless specified otherwise

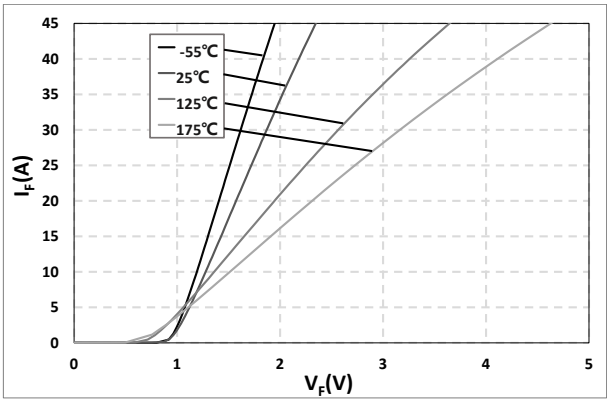


Fig. 1 Typical Forward Characteristics
$I_F = f(V_F)$; T_J = -55℃, 25℃, 125℃, 175℃

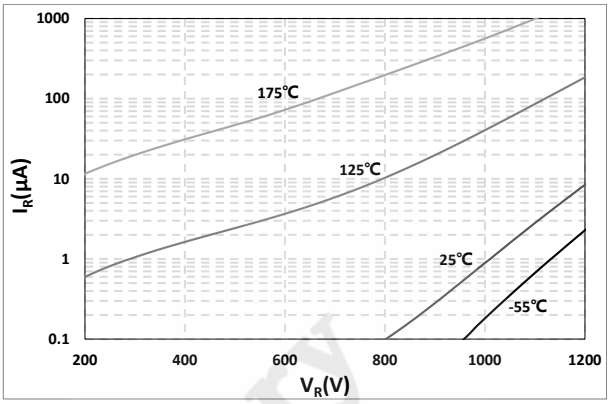


Fig. 2 Reverse Characteristics
$I_R=f(V_R)$; T_J = -55℃, 25℃, 125℃, 175℃

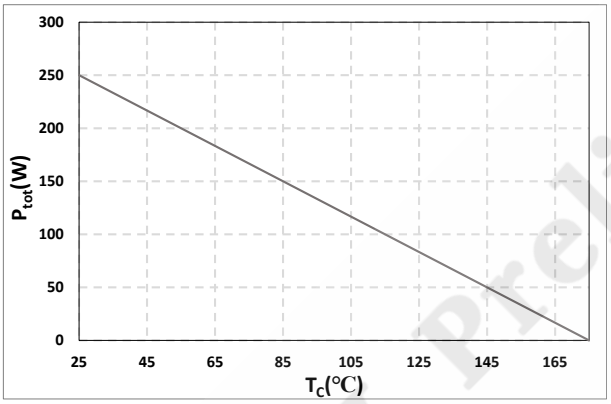


Fig. 3 Typical Power Derating
$P_{tot} = f(T_C)$

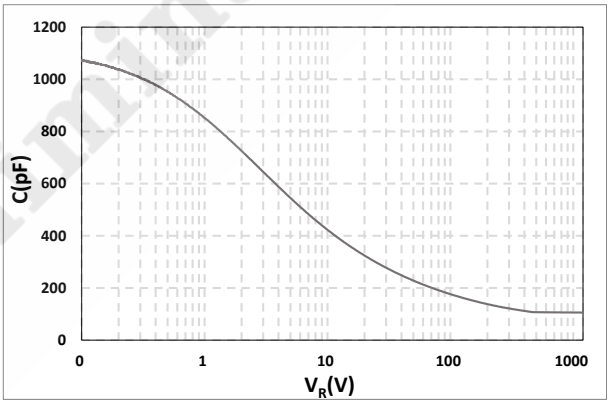


Fig. 4 Typical Total Capacitance
$C=f(V_R)$

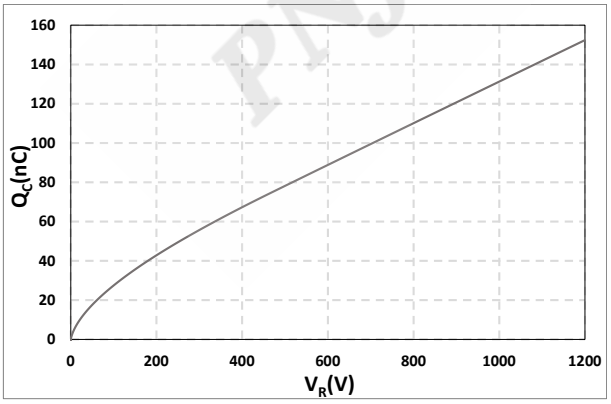


Fig. 5 Typical Total Capacitive Charge
$Q_C = f(V_R)$

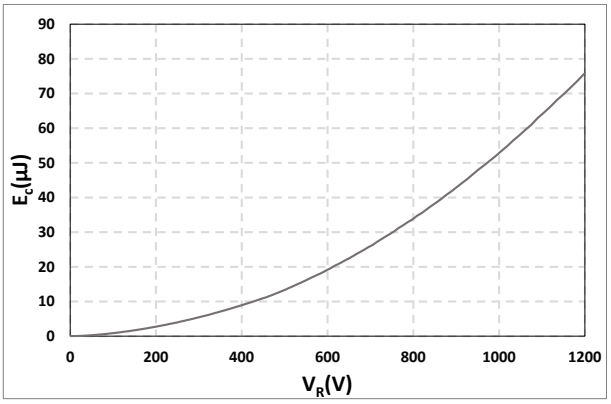
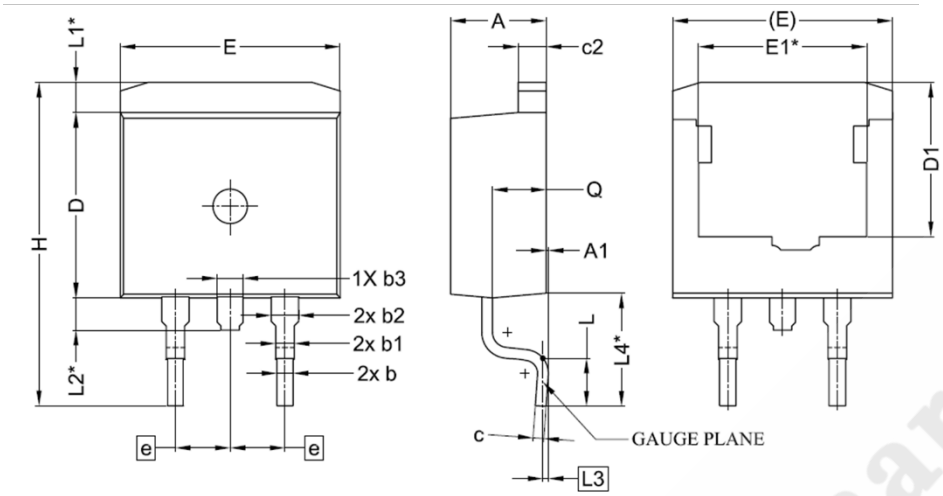


Fig. 6 Capacitance Stored Energy
$E_C = f(V_R)$

5. Package Outlines



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.66	0.76	0.96
b1	0.76	0.86	1.06
b2	1.14	1.27	1.47
b3	1.00	1.20	1.40
c	0.40	0.50	0.60
c2	1.15	1.30	1.45
D	8.38	8.60	8.90
D1	6.86	7.16	—
E	9.90	10.20	10.50
E1	7.80 REF.		
e	2.54 BSC		
H	14.61	15.00	15.88
L	1.78	2.20	2.79
L1	1.40 REF.		
L2	1.50 REF.		
L3	0.25 BSC		
L4	5.25 REF.		
Q	—	2.49	2.70

Drawing and Dimensions

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