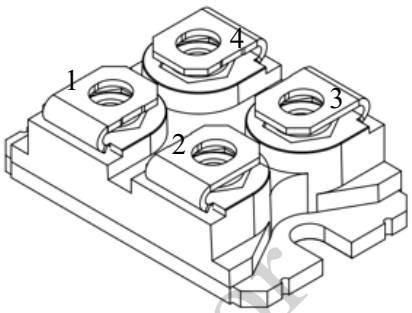
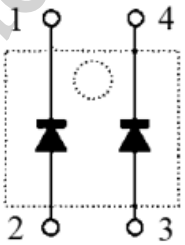
SiC SBD I3D12100SM

1200V SiC Schottky Diode





Features

- 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
I3D12100SM	SOT-227	I3D12100SM

Contents

1. Maximum Ratings

At T_J= 25℃, unless specified otherwise (per Diode)

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	150 120 100	A	T_C= 25℃ T_C= 65℃ T_C= 85℃
Repetitive Peak Forward Surge Current	I_{FRM}	300	A	T_C= 25℃, t_p= 10ms
Non-Repetitive Forward Surge Current	I_{FSM}	390	A	T_C= 25℃, t_p= 10ms
Power Dissipation	P_{tot}	450	W	T_C= 25℃
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	℃	

2. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.32	℃/W

3. Electrical Characteristics

At T_J= 25℃, unless specified otherwise (per Diode)

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.6	1.7	V	I_F= 100A, T_J= 25℃
			2.5	/		I_F= 100A, T_J= 175℃
Reverse Current	I_R	/	10	100	μA	V_R= 1200V, T_J= 25℃
			100	/		V_R= 1200V, T_J= 175℃
Total Capacitance	C	/	4670	/	pF	V_R= 1V, T_J= 25℃ f= 1MHz
			400			V_R= 400V, T_J= 25℃ f= 1MHz
			339			V_R= 800V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	454	/	nC	V_R= 800V
Capacitance Stored Energy	E_C	/	110	/	μJ	V_R= 800V

4. Typical Performance

At T_J= 25℃, unless specified otherwise

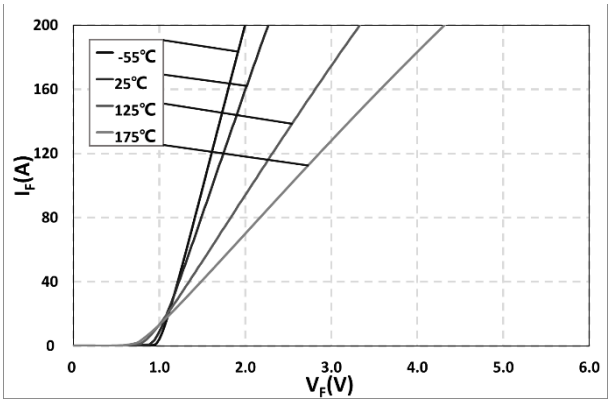


Fig. 1 Typical Forward Characteristics
$I_F = f(V_F)$; T_J = -55℃, 25℃, 125℃, 175℃

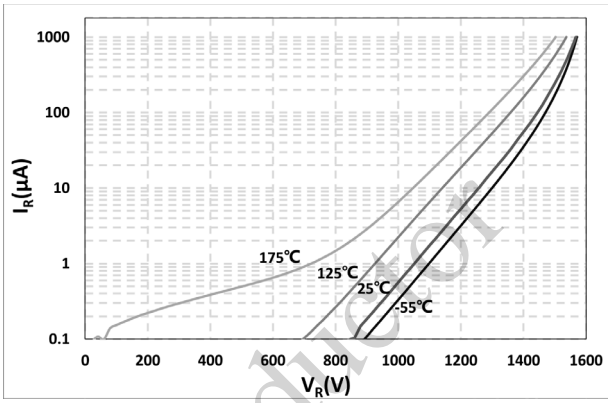


Fig. 2 Reverse Characteristics
I_R=f(V_R); T_J = -55℃, 25℃, 125℃, 175℃

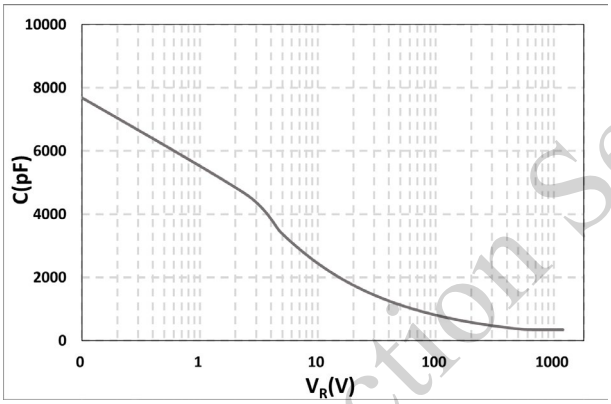


Fig. 3 Typical Total Capacitance
C=f(V_R)

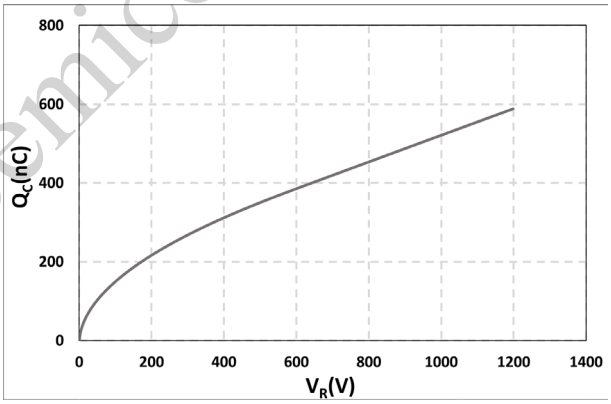


Fig. 4 Typical Total Capacitive Charge
$Q_C = f(V_R)$

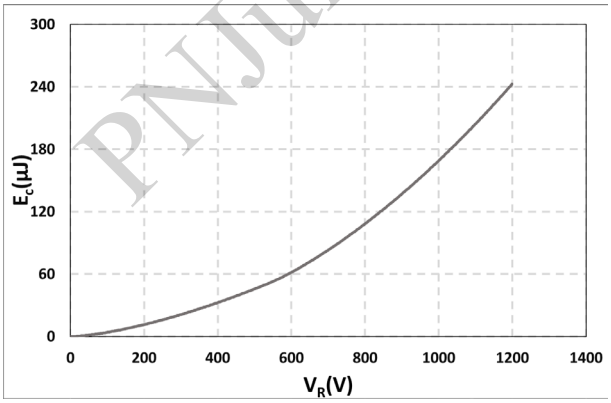


Fig. 5 Capacitance Stored Energy
$E_C = f(V_R)$

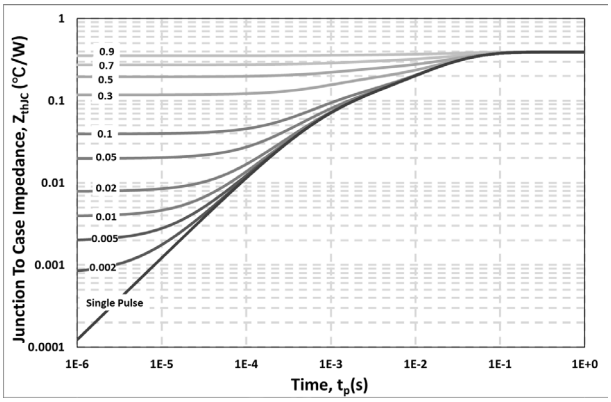


Fig. 6 Transient Thermal Impedance

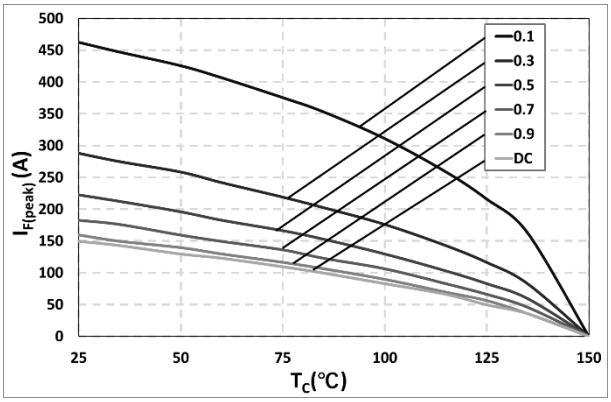


Fig. 7 Current Derating

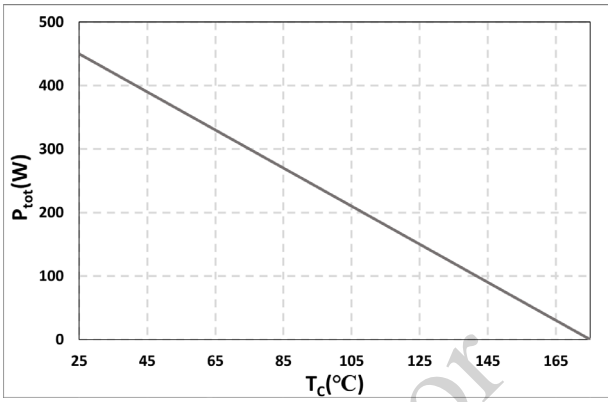
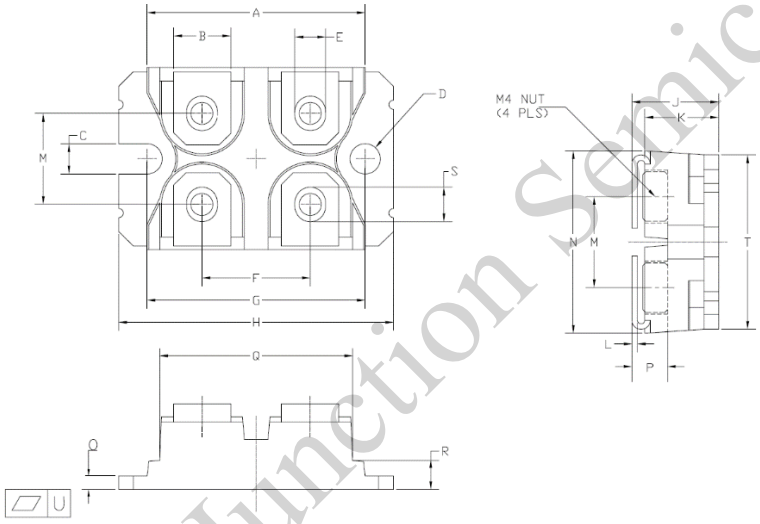


Fig. 8 Typical Power Derating
$P_{tot} = f(T_C)$

5. Package Outlines



SYMBOL	MIN.	NOM.	MAX.
A	31.50	31.69	31.88
B	7.80	8.00	8.20
C	4.09	4.19	4.29
D	4.09	4.19	4.29
E	4.09	4.19	4.29
F	14.91	15.01	15.11
G	30.12	30.21	30.30
H	38.00	38.11	38.23
J	11.68	11.95	12.22
K	8.92	9.26	9.60
L	0.76	0.80	0.84
M	12.60	12.73	12.85
N	25.15	25.29	25.42
O	2.00	2.06	2.13
P	4.95	5.46	5.97
Q	26.54	26.72	26.90
R	3.94	4.18	4.42
S	4.72	4.79	4.85
T	24.59	24.83	25.07
U	-0.05	0.03	0.10

Drawing and Dimensions

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