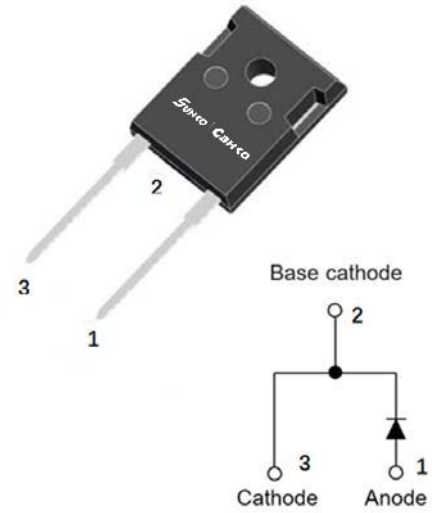
SCD112020NGG3

Silicon Carbide Schottky Diode

V_{RRM}	1200V
$I_{F\ (135°C)}$	33A
Q_C	120nC



Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI

Typical Applications

Typical applications are in power factor correction(PFC), solar inverter, uninterruptible power supply, motor drives, photovoltaic inverter, electric car and charger.

Mechanical Data

- **Package**: TO-247AC
- **Terminals**: Tin plated leads
- **Polarity**: As marked

■Maximum Ratings (T_C=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D112020NGG3
Reverse voltage (Repetitive peak) @ T_j=25°C	V_{RRM}	V	1200
Reverse voltage (Surge peak) @ T_j=25°C	V_{RSM}	V	1200
Reverse voltage (DC) @ T_j=25°C	V_{DC}	V	1200
Continuous forward current @ T_C=25°C	I_F	A	70
Continuous forward current @ T_C=135°C			33
Continuous forward current @ T_C=158°C			20
Non-repetitive peak forward surge current @ T_C=25°C, tp=10ms, Half Sine Wave	I_{FSM}	A	210
Repetitive peak forward surge current @ T_C=25°C, tp=10ms, Half Sine Wave	I_{FRM}	A	100
Power Dissipation@ T_C=25°C	P_{TOT}	W	326
Power Dissipation@ T_C=110°C			141
i^2t Value@ T_C=25°C ,tp=10ms	$\int i^2dt$	A^2S	220
Operating junction and Storage temperature range	T_j ,T_{stg}	°C	-55 to +175

■Electrical Characteristics

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	V_F	V	I_F=20A, T_j=25°C	1.38	1.55
			I_F=20A, T_j=175°C	1.88	-
Reverse current	I_R	μA	V_R=1200V, T_j=25°C	0.5	20
			V_R=1200V, T_j=175°C	8	-
Total capacitive charge	Q_C	nC	V_R=800V, T_j=25°C , $Q_C=\int_0^{VR}C(V)dV$	120	-
Total capacitance	C	pF	V_R=0V, f=1MHZ	1675	-
			V_R=400V, f=1MHZ	113	-
			V_R=800V, f=1MHZ	85	-
Capacitance stored energy	E_C	μJ	V_R=800V	31	-

■Thermal Characteristics (T_a=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	$R_{\theta J-C}$	°C /W	0.46

■Characteristics (Typical)

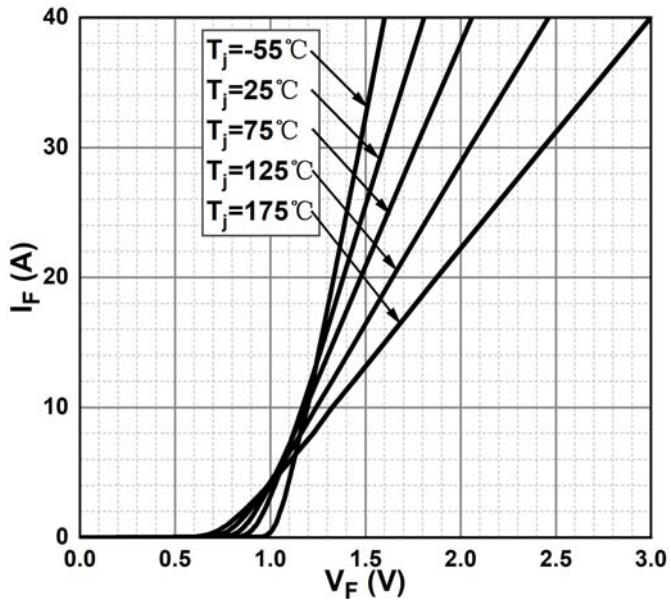


Figure 1. Forward Characteristics

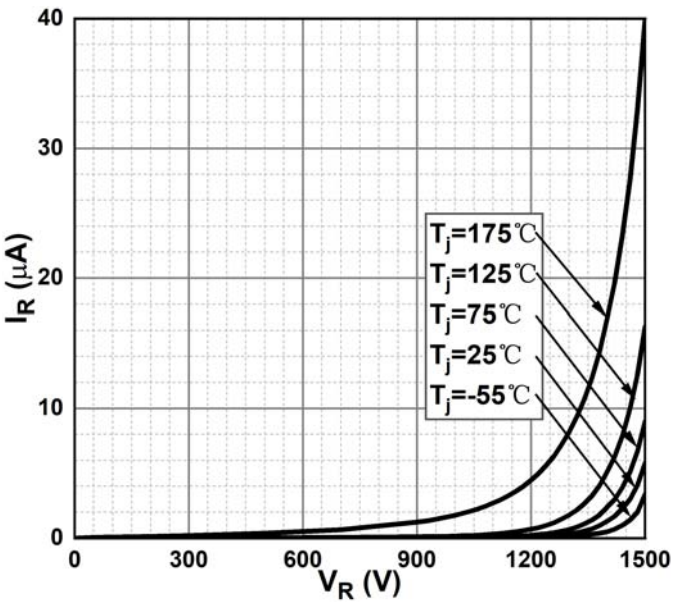


Figure 2. Reverse Characteristic

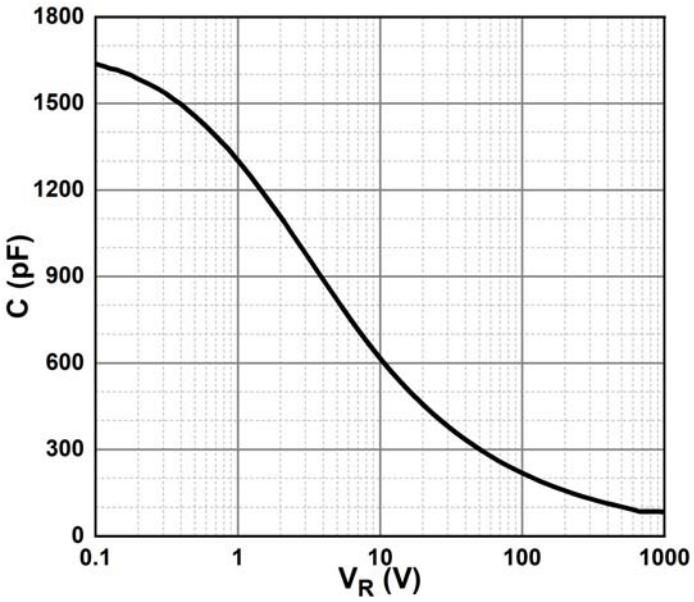


Figure 3. Capacitance vs. Reverse Voltage

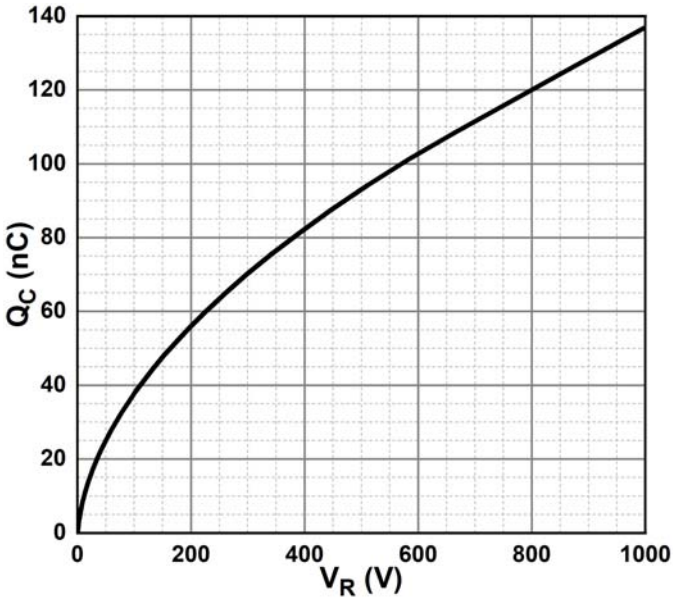


Figure 4. Total Capacitance Charge vs. Reverse Voltage

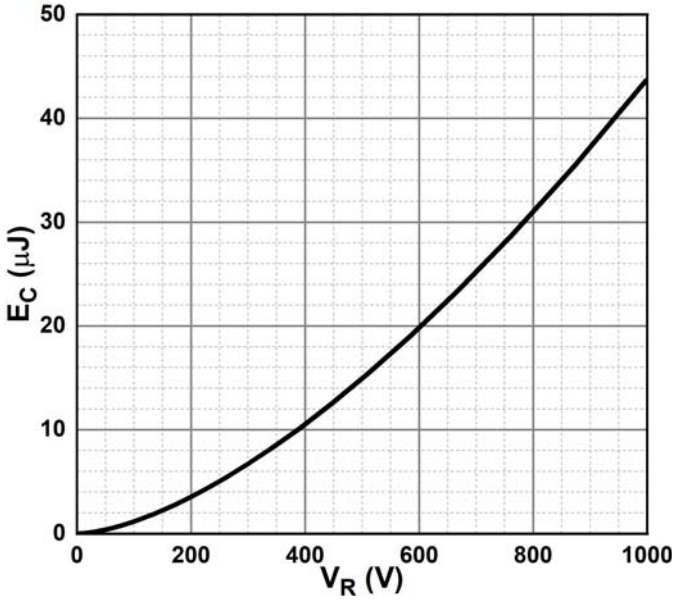


Figure 5. Capacitance Stored Energy

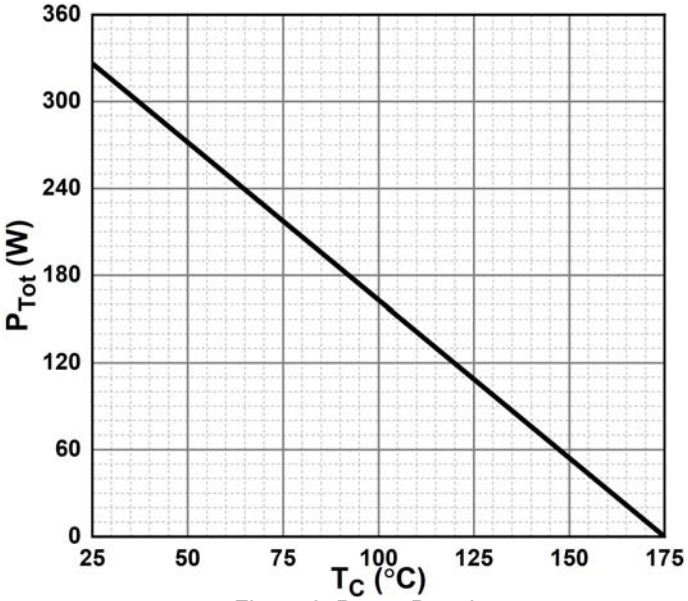


Figure 6. Power Derating

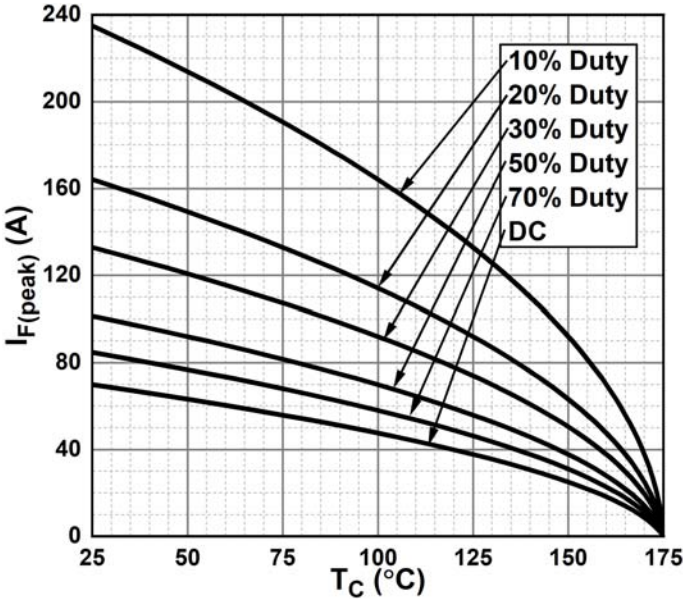


Figure 7. Current Derating

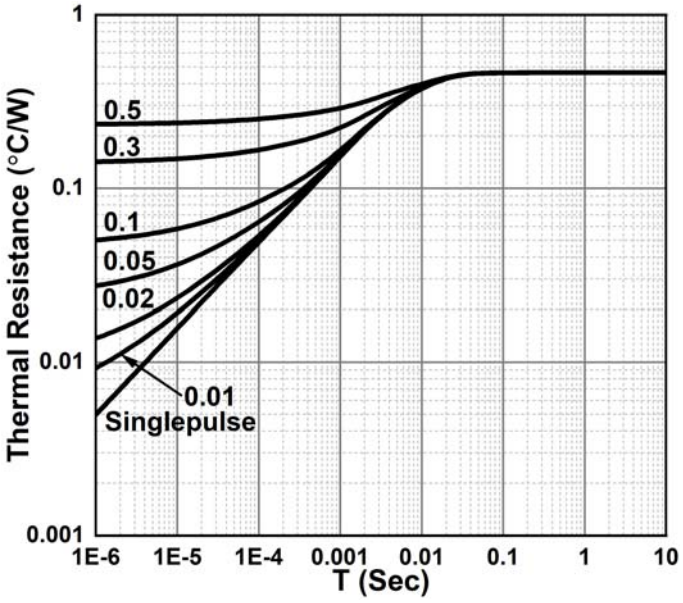
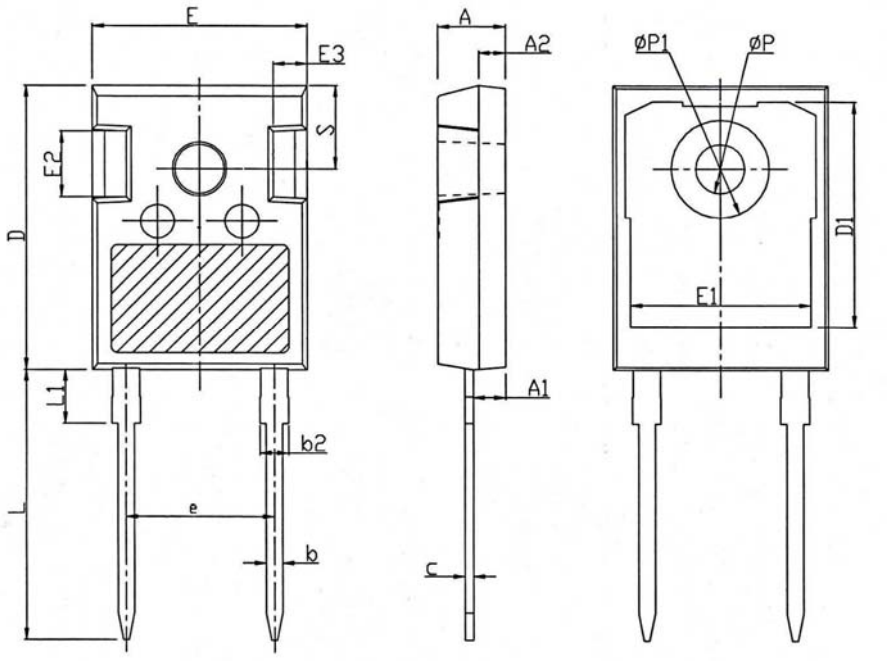


Figure 8. Transient Thermal Impedance

■Outline Dimensions



TO247-AC		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.11	1.36
b2	1.91	2.21
c	0.51	0.75
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.00	13.60
E2	4.80	5.20
E3	2.30	2.70
e	10.88BSC	
L	19.62	20.22
L1	-	4.30
φP	3.40	3.80
φP1	-	7.30
S	6.15BSC	

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