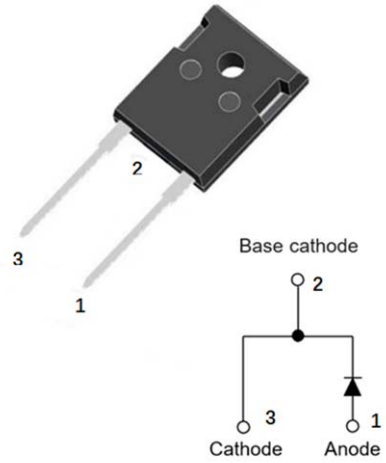
Silicon Carbide Schottky Diode

V_{RRM}	1200V
$I_{F(135°C)}$	40A
Q_C	225nC



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
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Tin plated leads
- **Polarity**: As marked

■Maximum Ratings (T_C=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D112040NYG5
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	87
Continuous forward current @ T_C=135°C			40
Non-repetitive peak forward surge current @ T_C=25°C, tp=10ms, Half Sine Wave	I_{FSM}	A	400
Power Dissipation@ T_C=25°C	P_{TOT}	W	300
Power Dissipation@ T_C=110°C			130
i^2t Value@ T_C=25°C ,tp=10ms	$\int i^2dt$	A^2S	800
Operating junction and Storage temperature range	T_j ,T_{stg}	°C	-55 to +175

■Electrical Characteristics (T_C=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Min.	Typ.	Max.
Reverse voltage (DC)	V_{DC}	V	I_R=0.25mA, T_j=25°C	> 1200	-	-
Forward voltage	V_F	V	I_F=40A, T_j=25°C	-	1.37	1.60
			I_F=40A, T_j=175°C	-	1.95	-
Reverse current	I_R	μA	V_R=1200V, T_j=25°C	-	0.5	25
			V_R=1200V, T_j=175°C	-	60	-
Total capacitive charge	Q_C	nC	V_R=800V, T_j=25°C , $Q_C=\int_0^{VR}C(V)dV$	-	225	-
Total capacitance	C	pF	V_R=0V, f=1MHZ	-	3170	-
			V_R=400V, f=1MHZ	-	211	-
			V_R=800V, f=1MHZ	-	160	-
Capacitance stored energy	E_C	μJ	V_R=800V	-	64	-

■Thermal Characteristics

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	$R_{\theta J-C}$	°C /W	0.50

■Typical Characteristics (Typical)

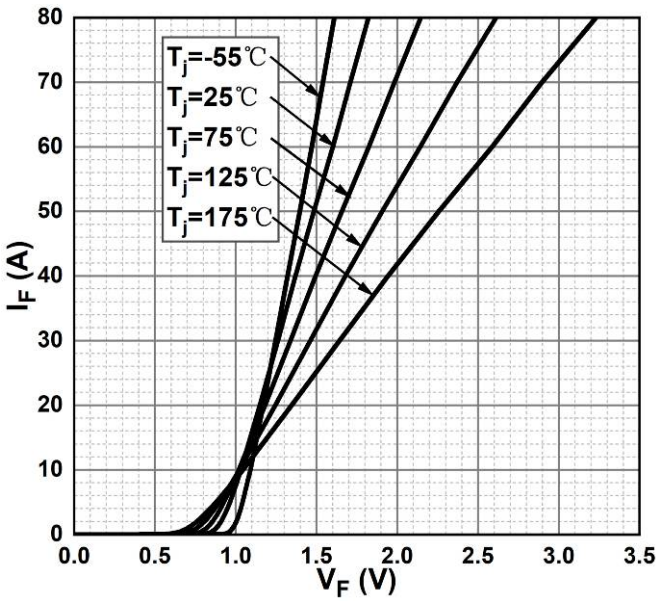


Figure 1. Forward Characteristics

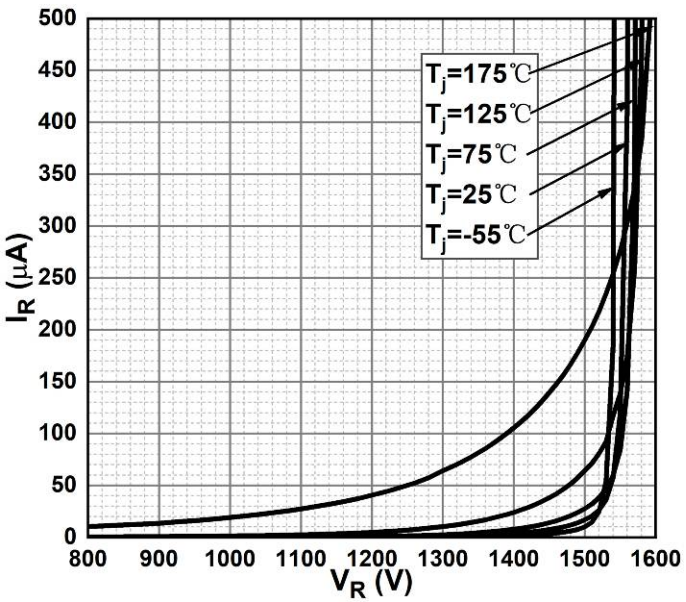


Figure 2. Reverse Characteristics

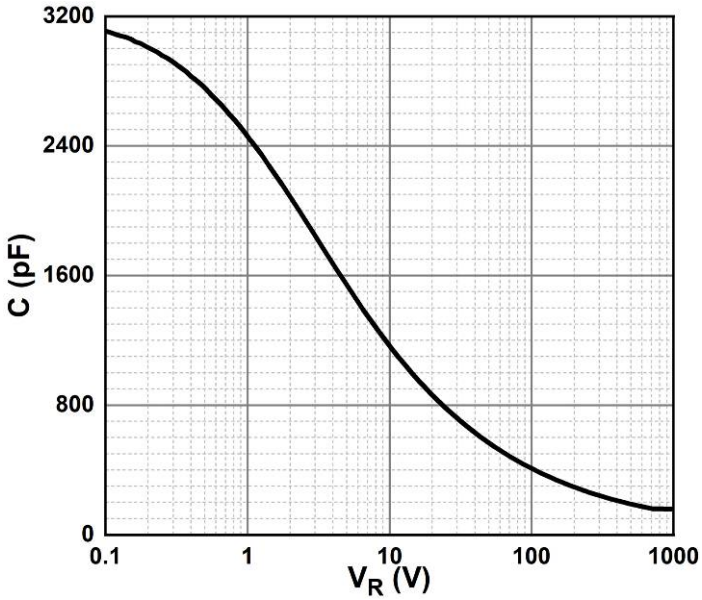


Figure 3. Capacitance vs. Reverse Voltage

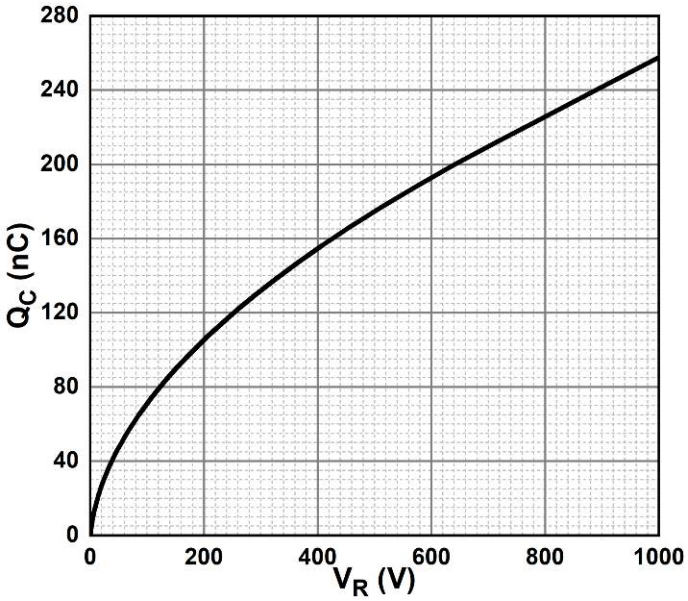


Figure 4. Total Capacitance Charge vs. Reverse Voltage

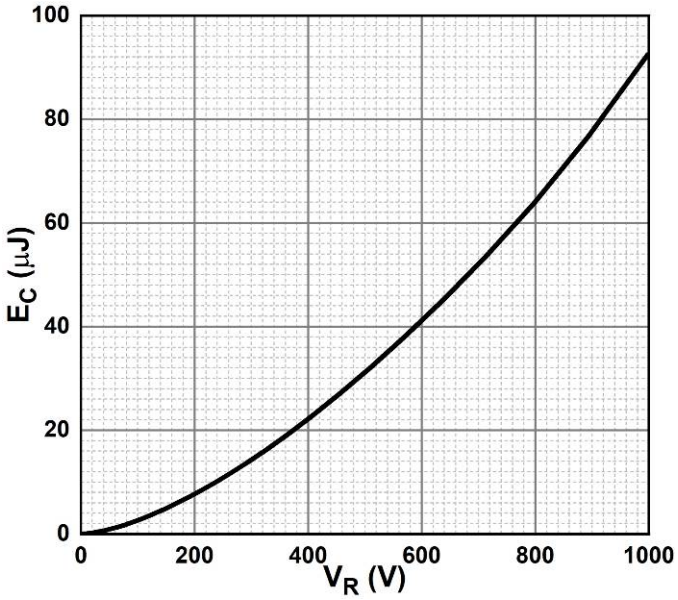


Figure 5. Capacitance Stored Energy

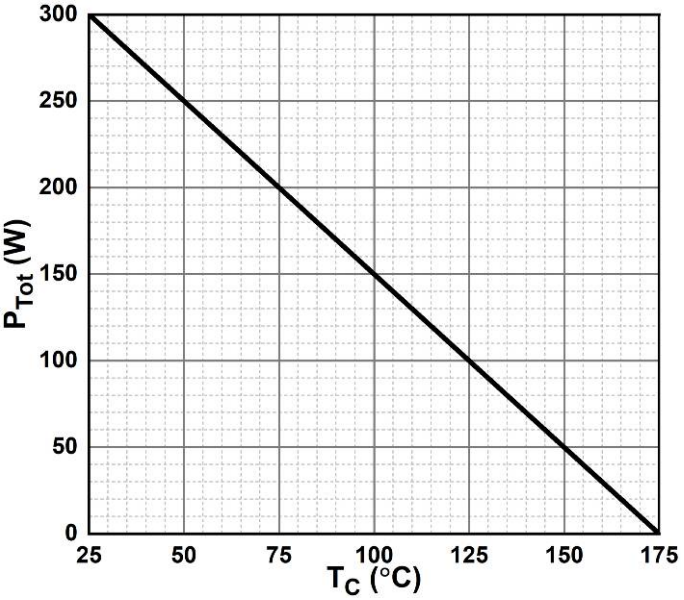


Figure 6. Power Derating

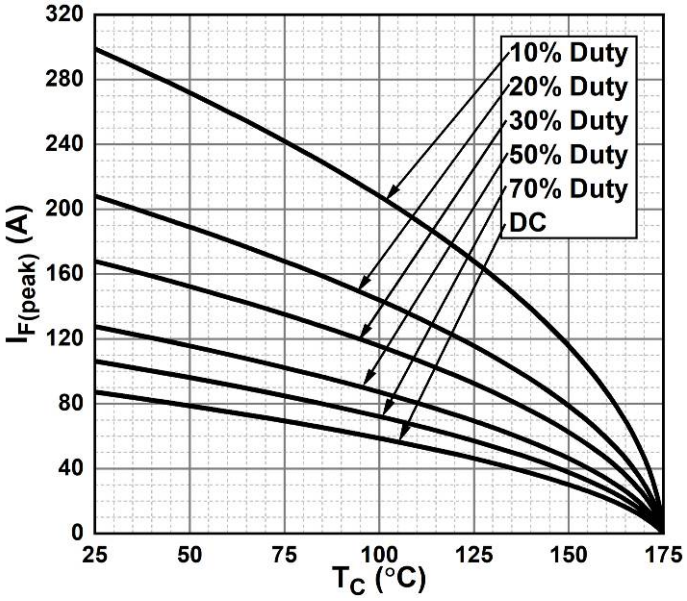


Figure 7. Current Derating

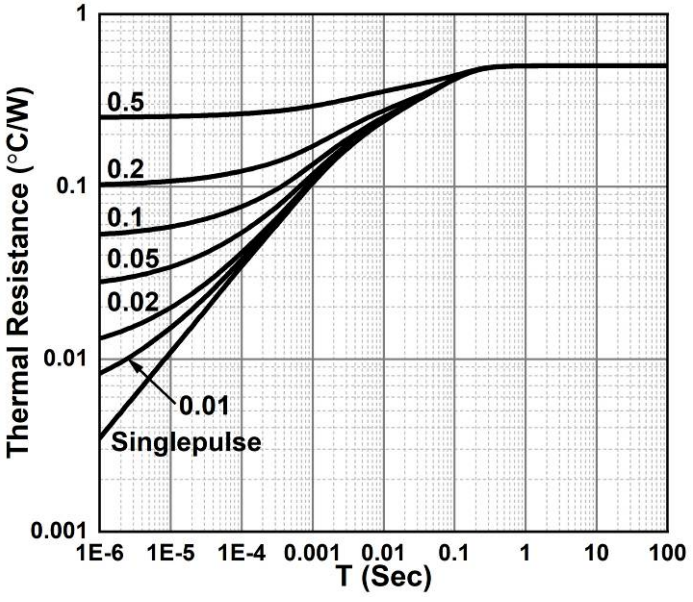
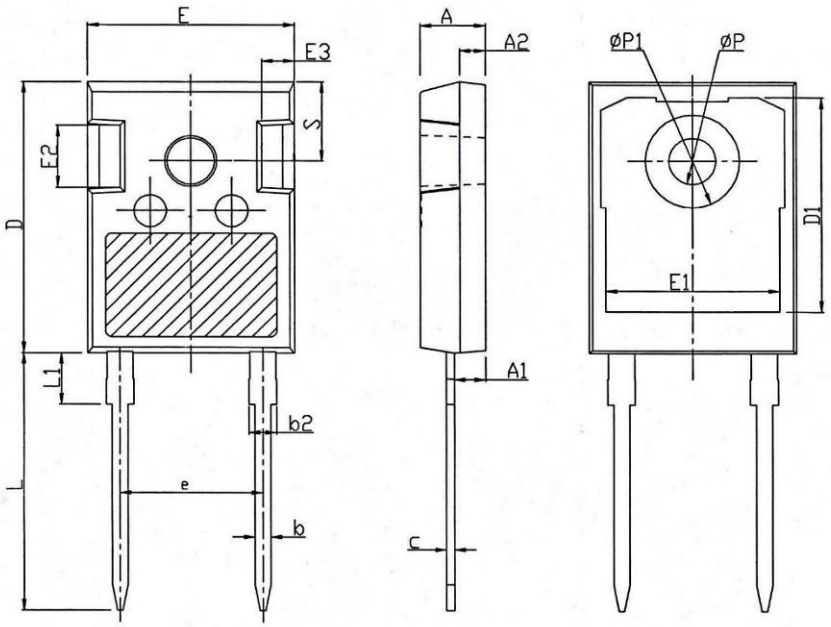


Figure 8. Transient Thermal Impedance

■Outline Dimensions

TO-247AC



TO-247AC		
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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