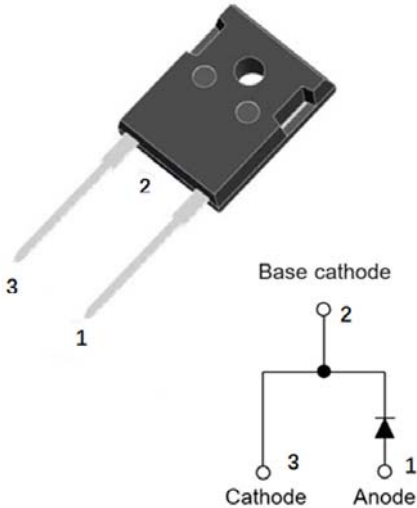


Silicon Carbide Schottky Diode

V_{RRM}	1200V
I_F (135°C)	51A
Q_C	216nC



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 ($T_c=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D112040NQG2
Reverse voltage (repetitive peak) @ $T_j=25^\circ\text{C}$	V_{RRM}	V	1200
Reverse voltage (Surge Peak) @ $T_j=25^\circ\text{C}$	V_{RSM}	V	1200
Reverse voltage (DC) @ $T_j=25^\circ\text{C}$	V_{DC}	V	1200
Continuous forward current @ $T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=144^\circ\text{C}$	I_F	A	105 51 40
Non-repetitive peak forward surge current @ $T_c=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	I_{FSM}	A	280
Power Dissipation@ $T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	P_{TOT}	W	440 191
i^2t Value@ $T_c=25^\circ\text{C}$, $t_p=10\text{ms}$	$\int i^2 dt$	A^2S	392
Operating junction and Storage temperature range	T_j, T_{stg}	$^\circ\text{C}$	-55 to +175



YJD112040NQG2

■Electrical Characteristics

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	V_F	V	$I_F=40A, T_j=25^{\circ}C$	1.41	1.58
			$I_F=40A, T_j=175^{\circ}C$	2.02	
Reverse leakage current	I_R	μA	$V_R=1200V, T_j=25^{\circ}C$	3.1	38
			$V_R=1200V, T_j=175^{\circ}C$	19	
Total capacitive charge	Q_C	nC	$V_R=800V, T_j=25^{\circ}C, Q_C=\int_0^{V_R} I_R C(V) dV$	216	
Total capacitance	C	pF	$V_R=0V, f=1MHZ$	2900	
			$V_R=400V, f=1MHZ$	204	
			$V_R=800V, f=1MHZ$	156	
Capacitance Stored Energy	E_C	μJ	$V_R=800V$	55	

■Thermal Characteristics ($T_a=25^{\circ}C$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	$R_{\theta J-C}$	$^{\circ}C/W$	0.34

■Characteristics (Typical)

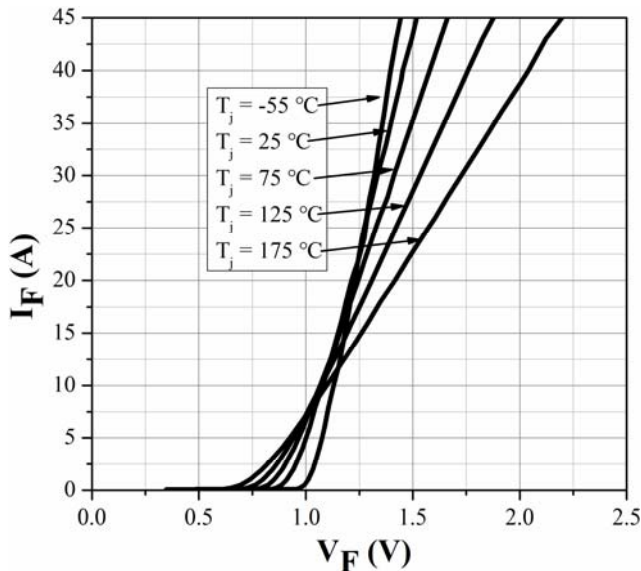


Figure 1. Forward Characteristics

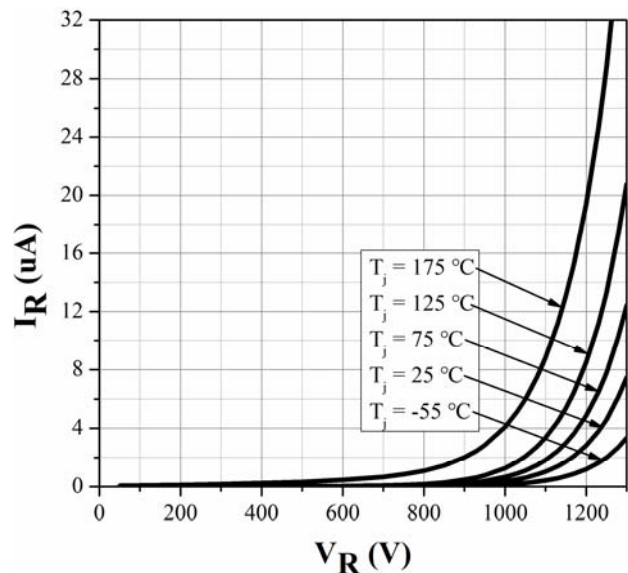


Figure2. Reverse Characteristic



YJD112040NQG2

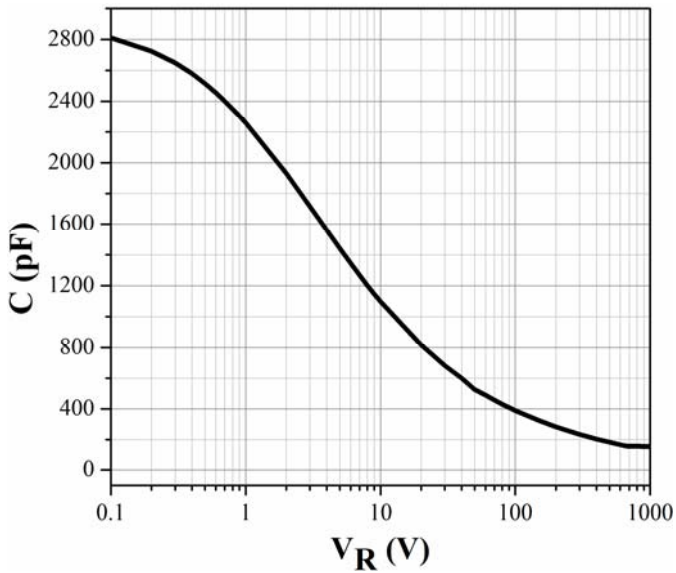


Figure 3. Capacitance vs. Reverse Voltage

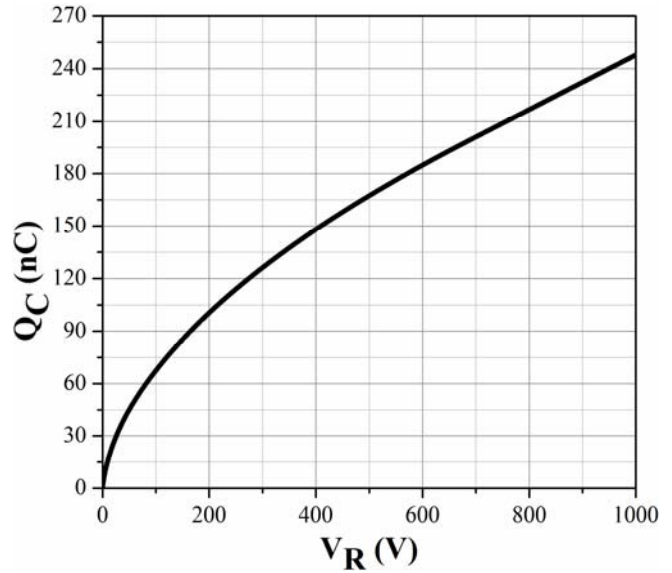


Figure 4. Total Capacitance Charge vs. Reverse Voltage

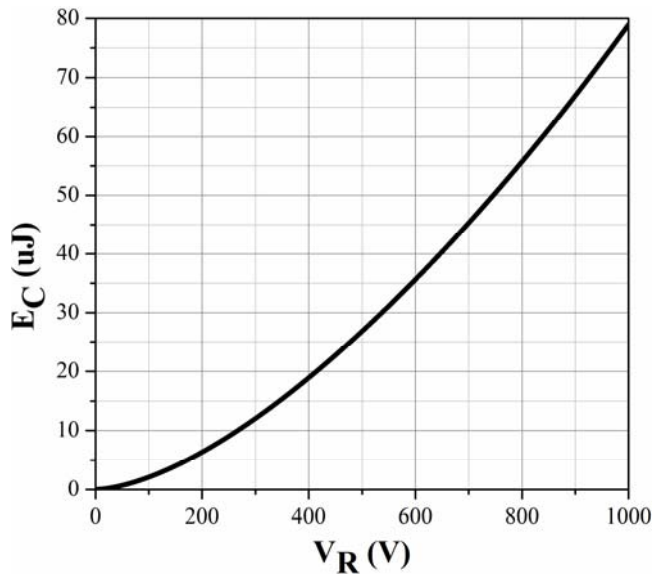


Figure 5. Capacitance Stored Energy

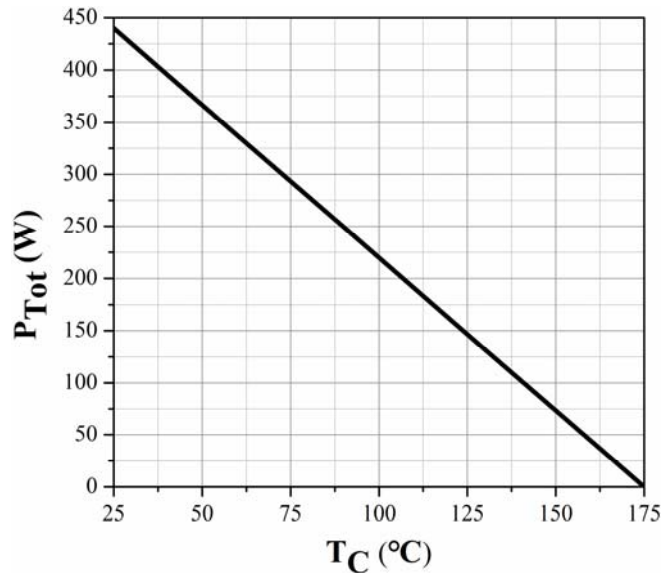


Figure 6. Power Derating

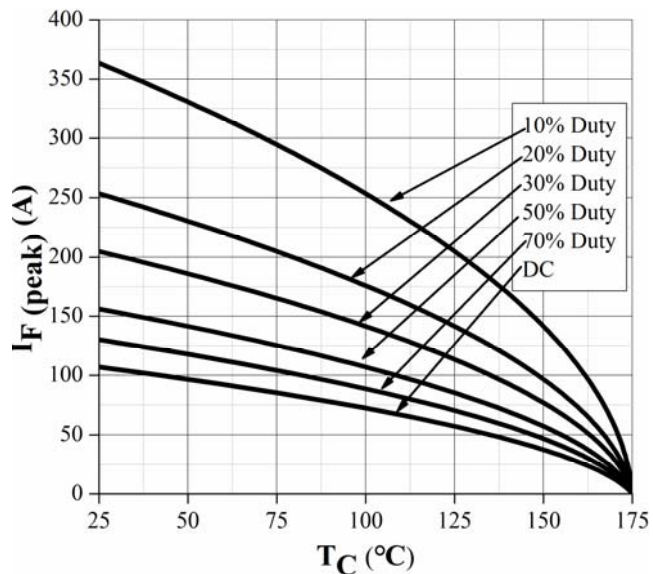


Figure 7. Current Derating

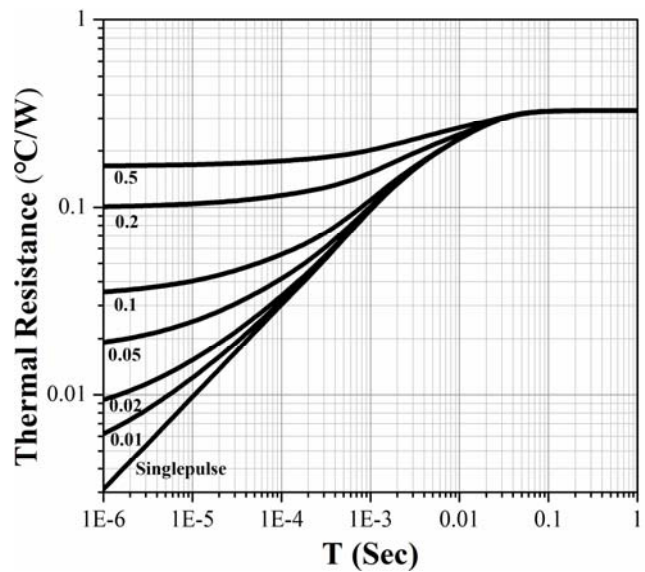


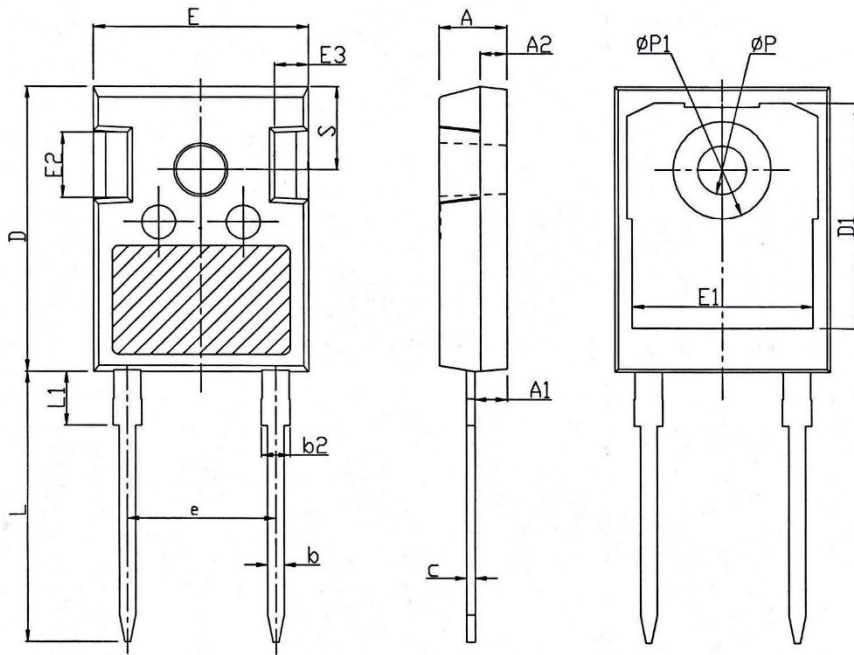
Figure 8. Transient Thermal Impedance



YJD112040NQG2

■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
$\phi P1$	-	7.30
S	6.15BSC	



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