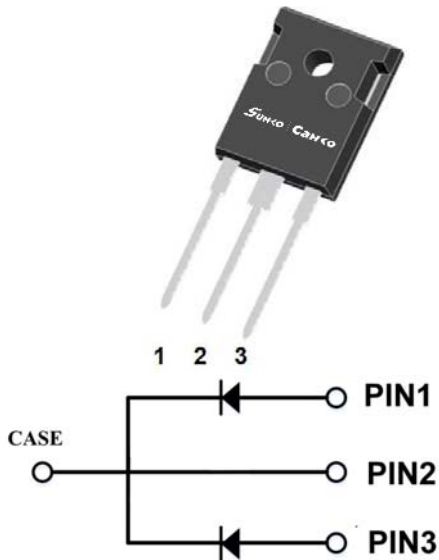


## Silicon Carbide Schottky Diode

$V_{RRM}$	650V
$I_F$ (135°C)	52A <sup>(2)</sup>
$Q_C$	124nC <sup>(2)</sup>



### 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-247AB  
Molding compound meets UL 94 V-0 flammability rating, -, halogen-free
- **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			D106540NCTQG2
Reverse voltage (repetitive peak) @ $T_j=25^\circ\text{C}$	$V_{RRM}$	V	650
Reverse voltage (Surge Peak) @ $T_j=25^\circ\text{C}$	$V_{RSM}$	V	650
Reverse voltage (DC) @ $T_j=25^\circ\text{C}$	$V_{DC}$	V	650
Continuous forward current @ $T_c=25^\circ\text{C}$	$I_F$	A	56/112
Continuous forward current @ $T_c=135^\circ\text{C}$			26/52
Continuous forward current @ $T_c=148^\circ\text{C}$			20/40
Non-repetitive peak forward surge current @ $T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	$I_{FSM}$	A	160 <sup>(1)</sup>
Power Dissipation@ $T_c=25^\circ\text{C}$	$P_{TOT}$	W	187/365
Power Dissipation@ $T_c=110^\circ\text{C}$			81/158
$i^2t$ Value@ $T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$	$\int i^2 dt$	A <sup>2</sup> S	128 <sup>(1)</sup>
Operating junction and Storage temperature range	$T_j, T_{stg}$	°C	-55 to +175

(1) Per Leg, (2) Per Device

## ■Electrical Characteristics (Per Leg)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	$V_F$	V	$I_F=20A, T_J=25^{\circ}C$	1.35	1.55
			$I_F=20A, T_J=175^{\circ}C$	1.75	-
Reverse leakage current	$I_R$	$\mu A$	$V_R=650V, T_J=25^{\circ}C$	1	25
			$V_R=650V, T_J=175^{\circ}C$	5	-
Total capacitive charge	$Q_C$	nC	$V_R=400V, T_J=25^{\circ}C, Q_C=\int_0^{V_R} C(V)dV$	62	-
Total capacitance	C	pF	$V_R=0V, f=1MHz$	1157	-
			$V_R=200V, f=1MHz$	115.6	-
			$V_R=400V, f=1MHz$	107	-
Capacitance Stored Energy	$E_C$	$\mu J$	$V_R=400V$	7.8	-

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

PARAMETER	SYMBOL	UNIT	Value
Thermal resistance	$R_{\theta J-C}$	$^{\circ}C/W$	0.8 <sup>(1)</sup> 0.41 <sup>(2)</sup>

(1) Per Leg, (2) Per Device

## ■Typical Characteristics (Per Leg)

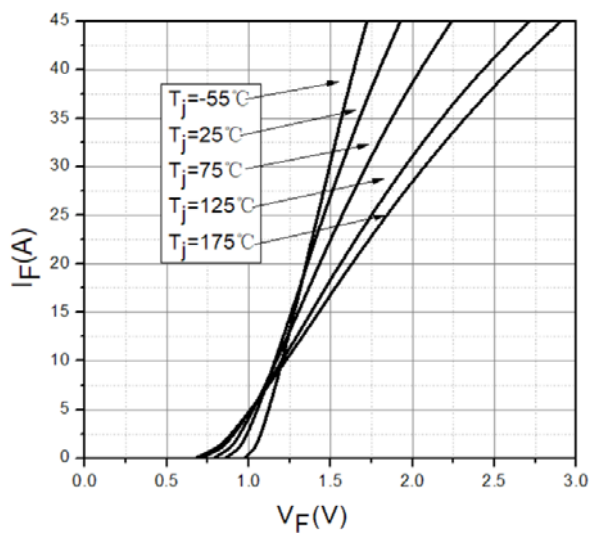


Figure 1. Forward Characteristics

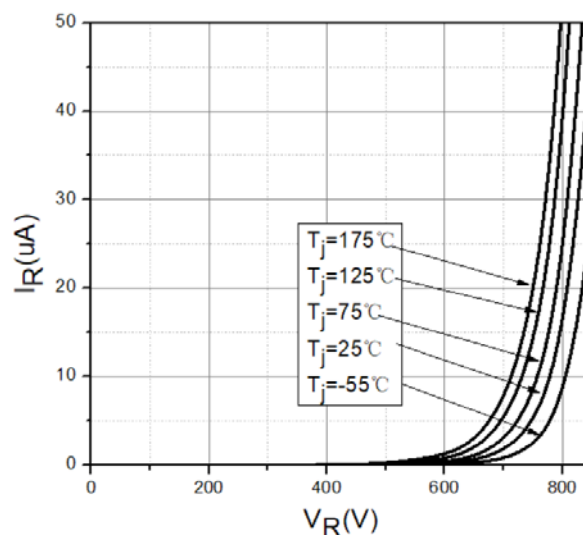


Figure2. Reverse Characteristic

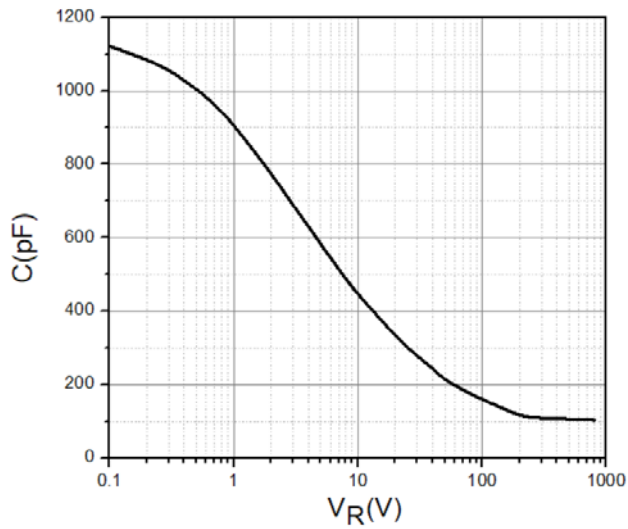


Figure 3. Capacitance vs. Reverse Voltage

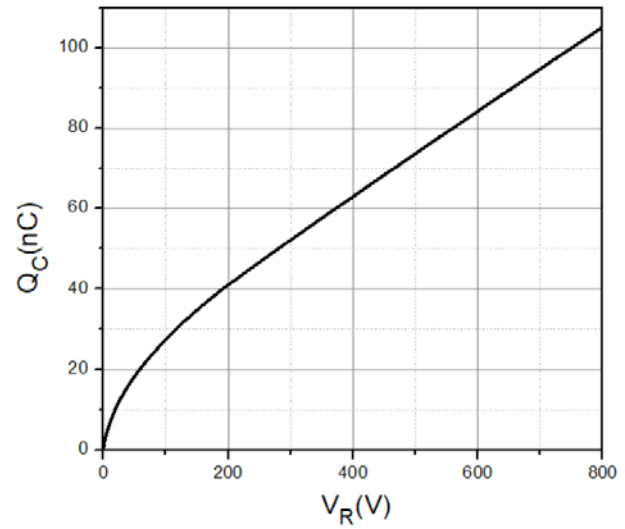


Figure 4. Total Capacitance Charge vs. Reverse Voltage

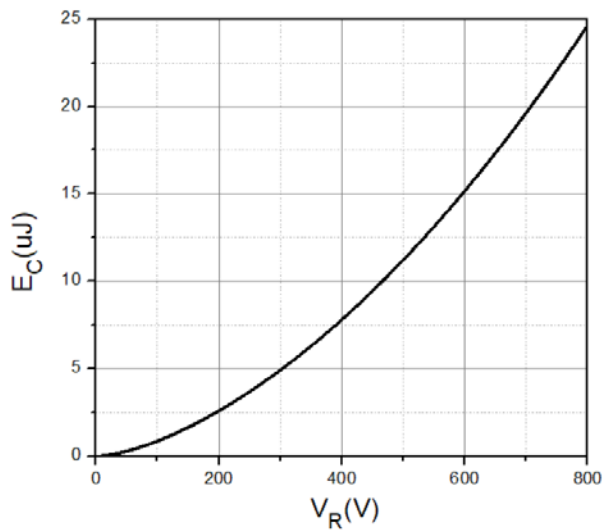


Figure 5. Capacitance Stored Energy

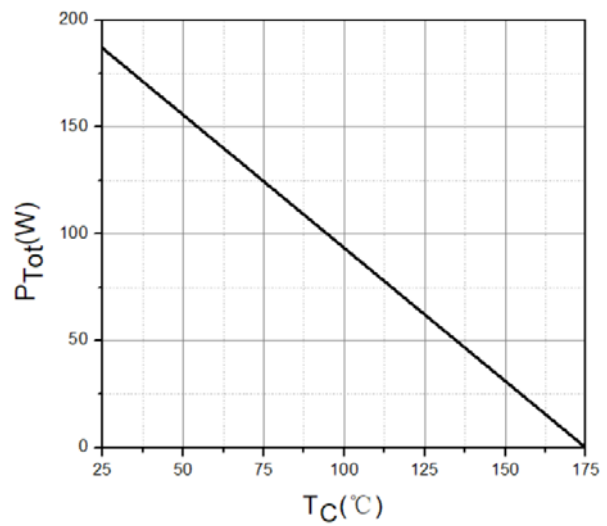


Figure 6. Power Derating

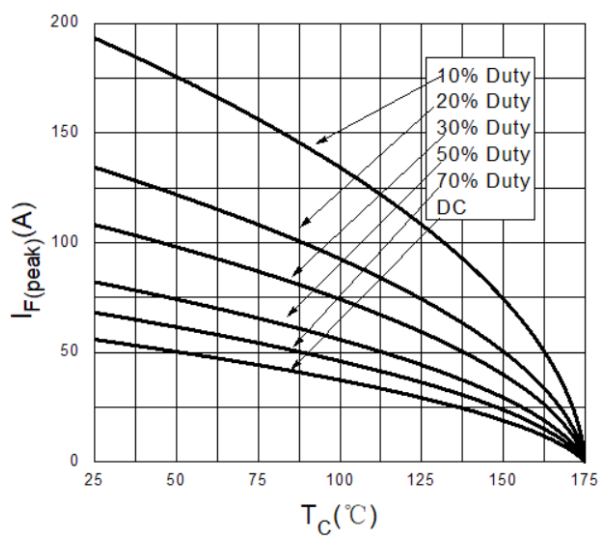


Figure 7. Current Derating

■ Typical Characteristics (Device)

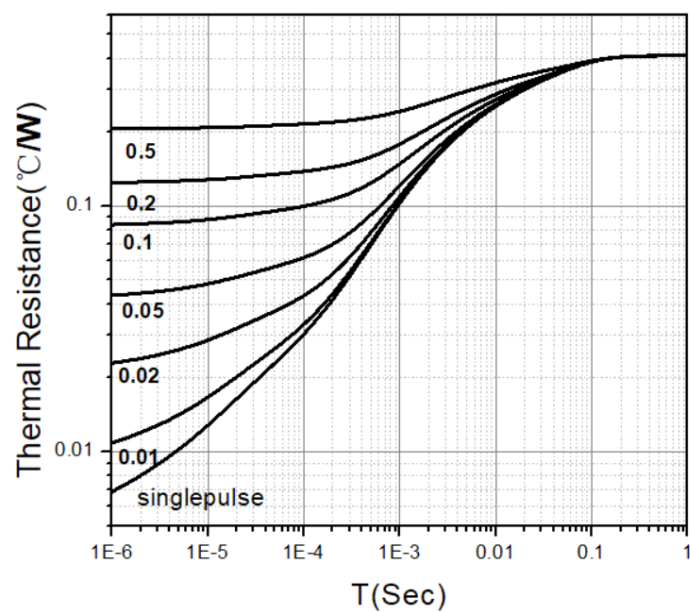
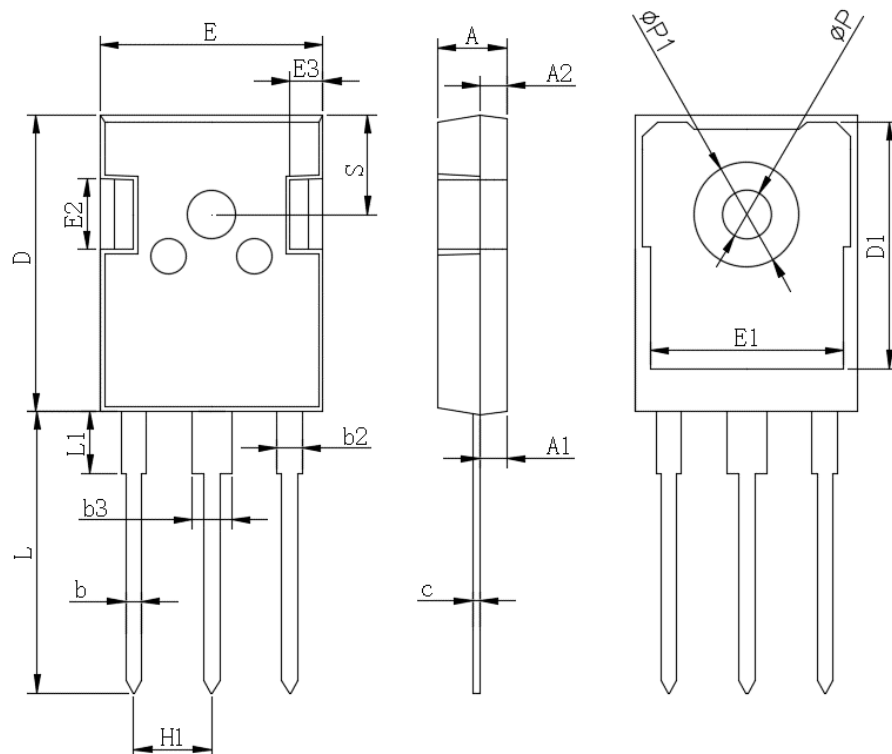


Figure 8. Transient Thermal Impedance

■ Outline Dimensions



TO-247AB		
Dim	Min	Max
A	4.8	5.2
A1	2.21	2.61
A2	1.85	2.15
b	1	1.4
b2	1.91	2.21
C	0.5	0.7
D	20.7	21.3
D1	16.25	16.85
E	15.5	16.1
E1	13	13.6
E2	4.8	5.2
E3	2.3	2.7
L	19.62	20.22
L1	-	4.3
ΦP	3.4	3.8
ΦP1		7.3
S	6.15TYP	
H1	5.44TYP	

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