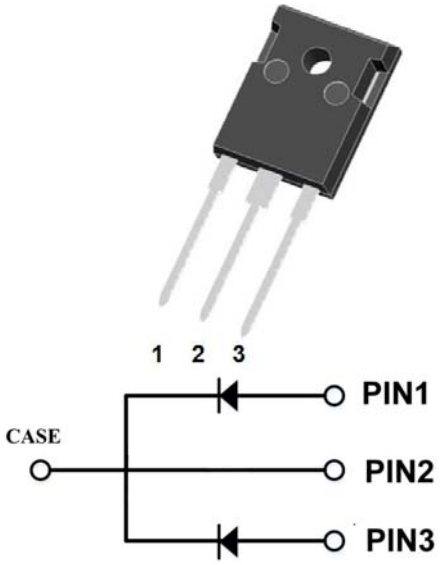
Silicon Carbide Schottky Diode

V_{RRM}	650V
$I_{F\ (135°C)}$	20A[2]
Q_C	50nC[2]



Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery voltage
- 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, RoHS-compliant, halogen-free
- **Terminals**: Tin plated leads
- **Polarity**: As marked

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

PARAMTETER	SYMBOL	UNIT	VALUE
Device marking code			D106520NCTQG3
Reverse voltage (repetitive peak) @ T_j=25°C	V_{RRM}	V	650
Reverse voltage (Surge Peak) @ T_j=25°C	V_{RSM}	V	650
Reverse voltage (DC) @ T_j=25°C	V_{DC}	V	650
Continuous forward current @ T_c=25°C	I_F	A	21/42
Continuous forward current @ T_c=135°C			10/20
Non-repetitive peak forward surge current @ T_c=25°C, tp=10ms, Half Sine Wave	I_{FSM}	A	70[1]
Power Dissipation@ T_c=25°C	P_{TOT}	W	84/166
Power Dissipation@ T_c=110°C			36/72
i^2t Value@ Tc=25°C ,tp=10ms	$\int i^2dt$	A^2S	24[1]
Operating junction and Storage temperature range	T_j , T_{stg}	°C	-55 to +175

[1] Per Leg, [2] Per Device

■Electrical Characteristics (Per Leg)

PARAMTETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	V_F	V	I_F=10A, T_j=25°C	1.55	1.7
			I_F=10A, T_j=175°C	2.1	-
Reverse leakage current	I_R	μA	V_R=650V, T_j=25°C	0.5	25
			V_R=650V, T_j=175°C	5	-
Total capacitive charge	Q_C	nC	V_R=400V, T_j=25°C , $QC=\int_0^{VR} C(V)dV$	25	-
Total capacitance	C	pF	V_R=0V, f=1MHZ	378	-
			V_R=200V, f=1MHZ	51	-
			V_R=400V, f=1MHZ	49	-
Capacitance Stored Energy	E_C	μJ	V_R=400V	3	-

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

PARAMETER	SYMBOL	UNIT	Value
Thermal resistance	$R_{\theta J-C}$	°C /W	1.78(1) 0.9(2)

(1) Per Leg, (2) Per Device

■Typical Characteristics (Per Leg)

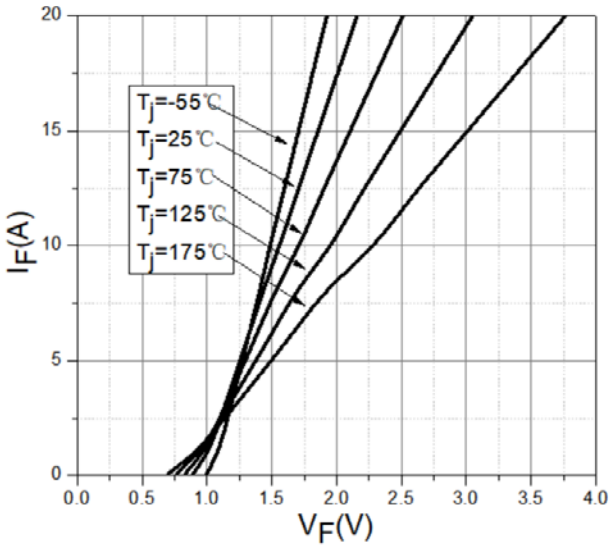


Figure 1. Forward Characteristics

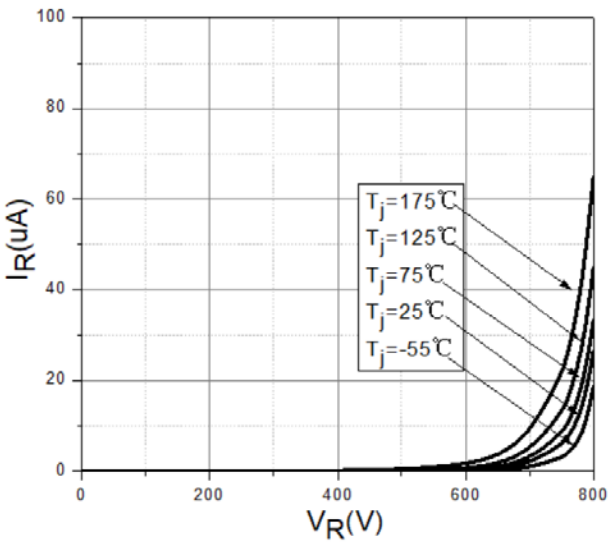


Figure2. Reverse Characteristic

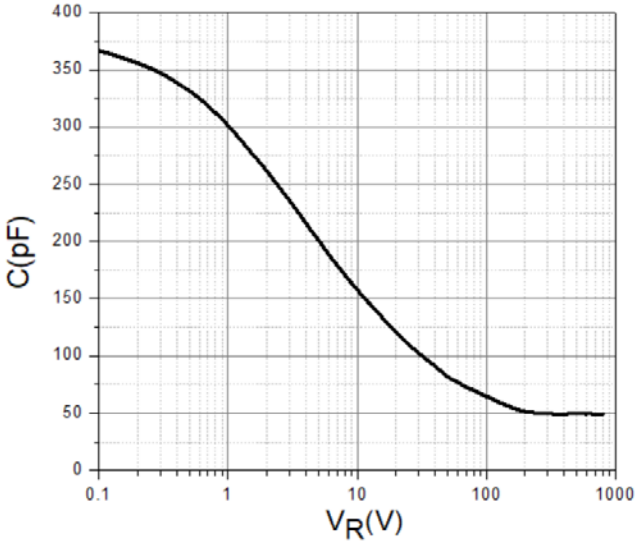


Figure 3. Capacitance vs. Reverse Voltage

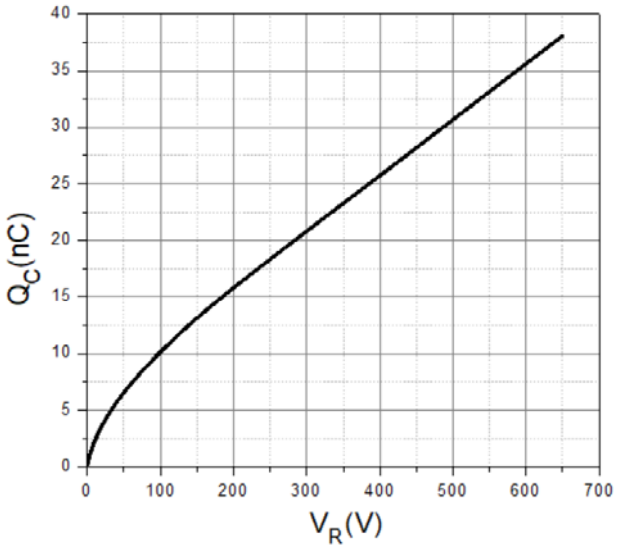


Figure 4. Total Capacitance Charge vs. Reverse Voltage

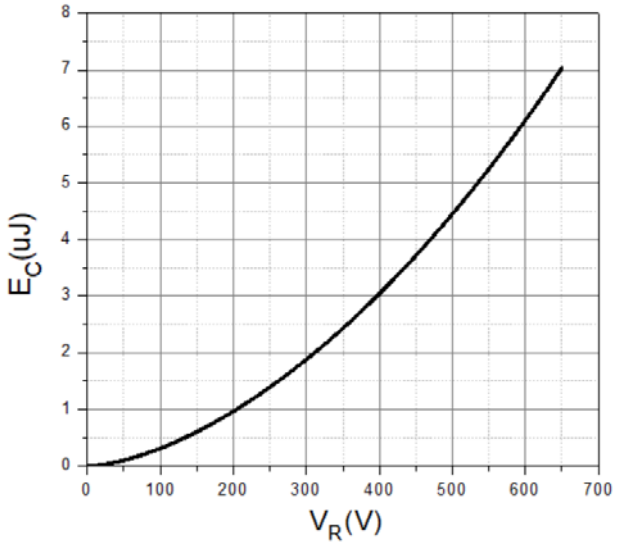


Figure 5. Capacitance Stored Energy

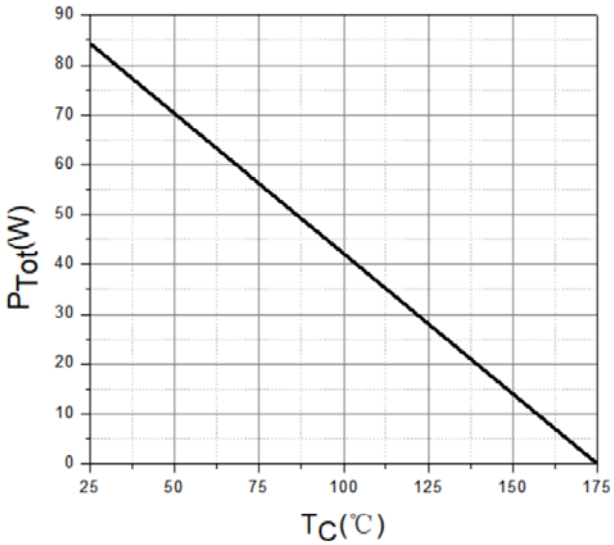


Figure 6. Power Derating

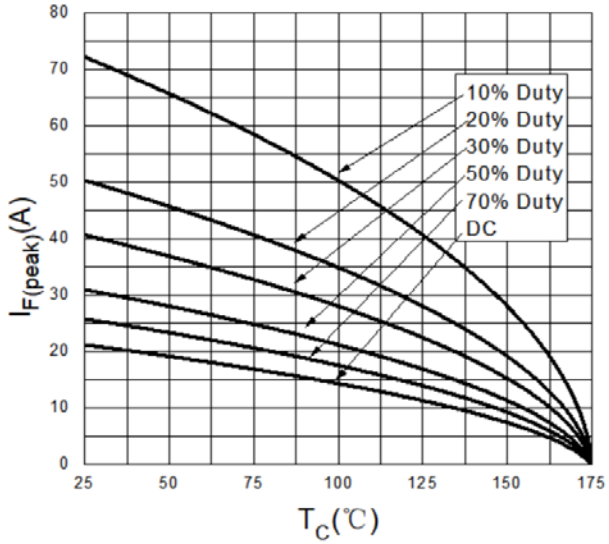


Figure 7. Current Derating

■**Typical Characteristics** (Device)

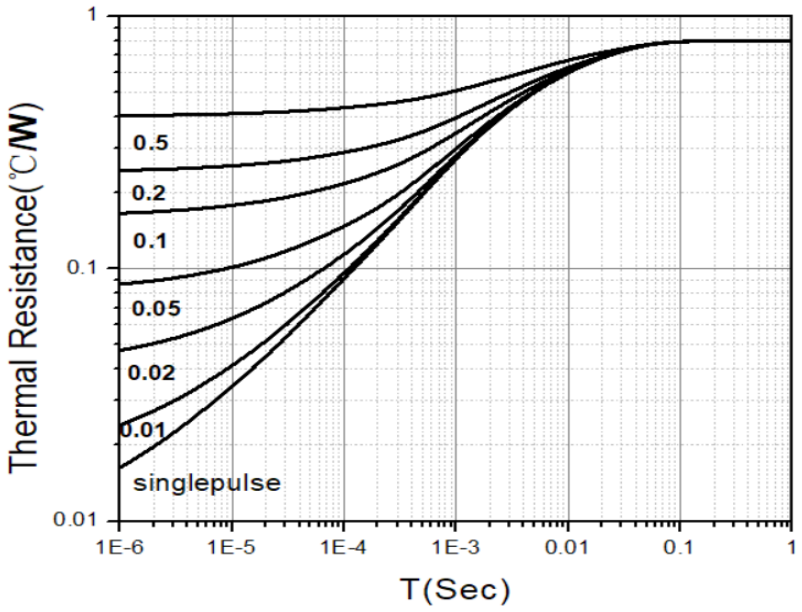
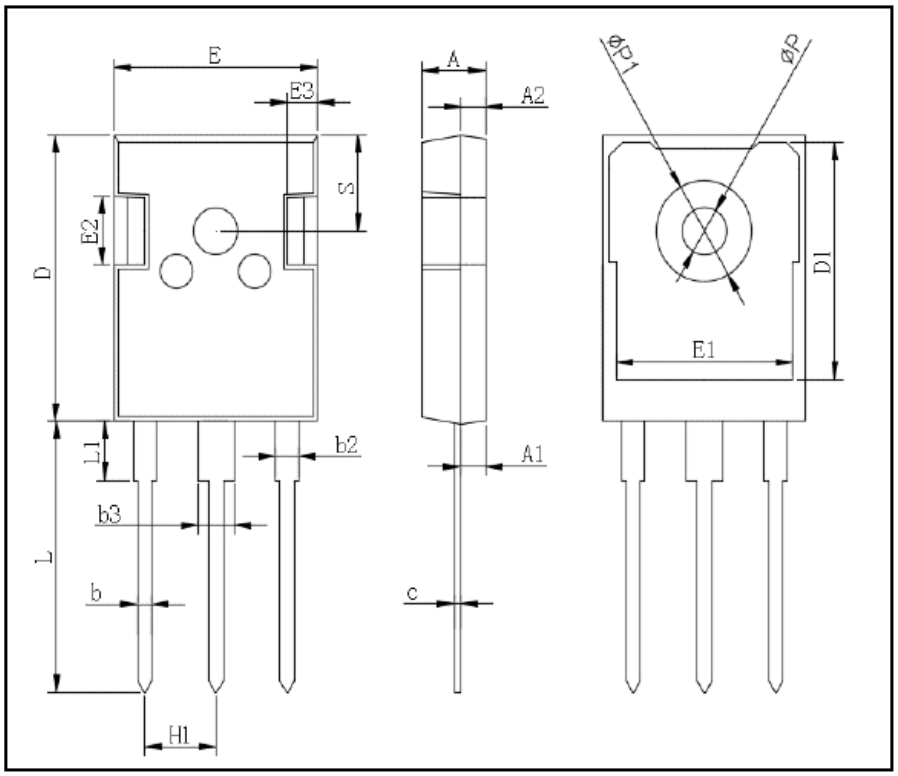


Figure 8. Transient Thermal Impedance

■Outline Dimensions



TO-247AB		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.0	1.4
b2	1.91	2.21
C	0.5	0.7
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.0	13.6
E2	4.80	5.20
E3	2.30	2.70
L	19.62	20.22
L1	-	4.30
ΦP	3.40	3.80
ΦP1	-	7.30
S	6.15TYP	
H1	5.44TYP	
b3	2.80	3.20

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