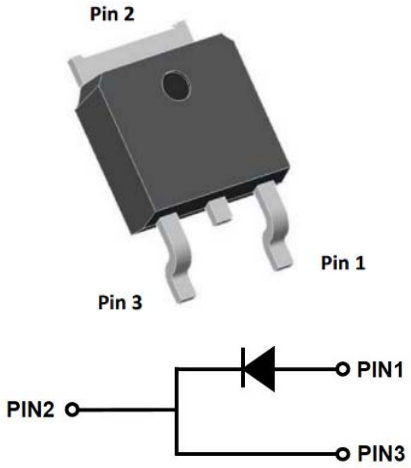
Silicon Carbide Schottky Diode

V_{RRM}	650V
$I_{F(135°C)}$	8A
Q_C	21.5nC



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-252
  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			D106506DYG5
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	18
Continuous forward current @ T_C=135°C			8
Continuous forward current @ T_C=152°C			6
Non-repetitive peak forward surge current @ T_C=25°C, tp=10ms, Half Sine Wave	I_{FSM}	A	60
Power Dissipation@ T_C=25°C	P_{TOT}	W	67
Power Dissipation@ T_C=110°C			29
i^2t Value@ T_C=25°C ,tp=10ms	$\int i^2dt$	A^2S	18
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	650	-	-
Forward voltage	V_F	V	I_F=6A, T_j=25°C	-	1.30	1.55
			I_F=6A, T_j=175°C	-	1.65	-
Reverse leakage	I_R	μA	V_R=650V, T_j=25°C	-	0.5	25
			V_R=650V, T_j=175°C	-	30	-
Total capacitive charge	Q_C	nC	V_R=400V, T_j=25°C , $QC=\int_0^{VR} C(V)dV$	-	21.5	-
Total capacitance	C	pF	V_R=0V, f=1MHZ	-	382	-
			V_R=200V, f=1MHZ	-	41	-
			V_R=400V, f=1MHZ	-	40	-
Capacitance stored energy	E_C	μJ	V_R=400V	-	3.4	-

■Thermal Characteristics

PARAMETER	SYMBOL	UNIT	Value
Thermal resistance	$R_{\theta J-C}$	°C /W	2.22

■Typical Characteristics (Typical)

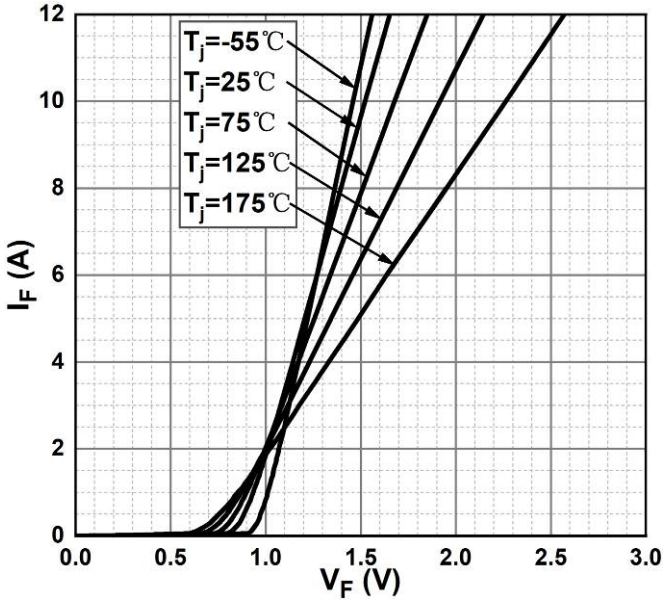


Figure 1. Forward Characteristics

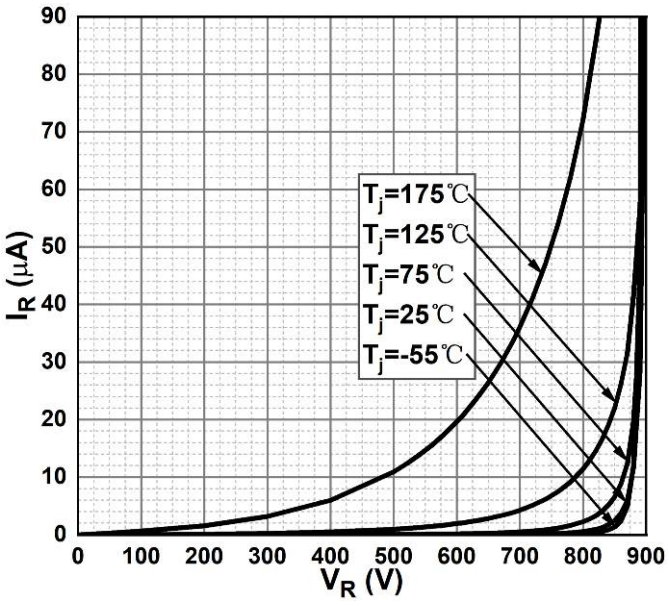


Figure 2. Reverse Characteristic

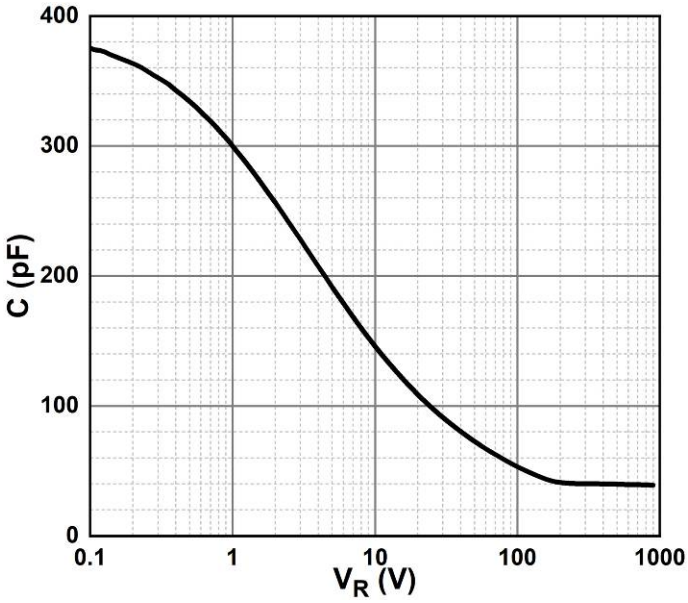


Figure 3. Capacitance vs. Reverse Voltage

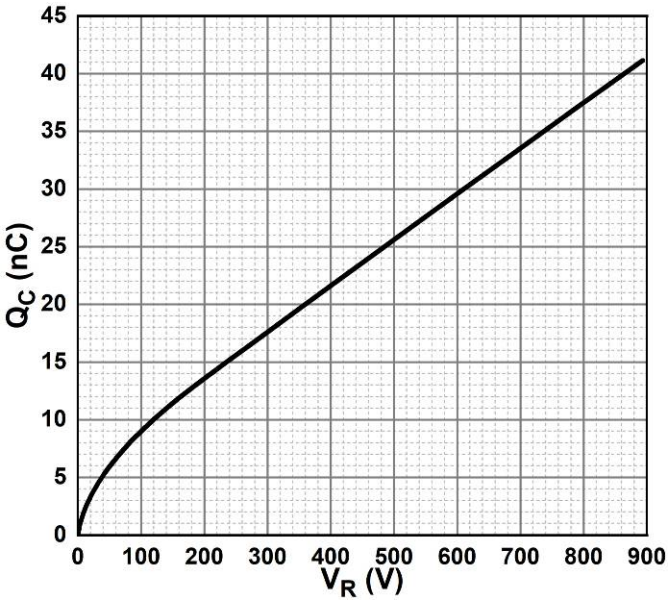


Figure 4. Total Capacitance Charge vs. Reverse Voltage

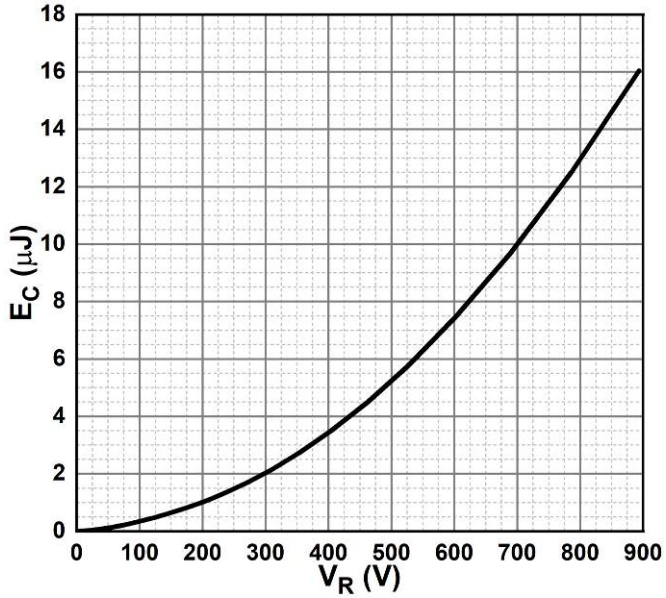


Figure 5. Capacitance Stored Energy

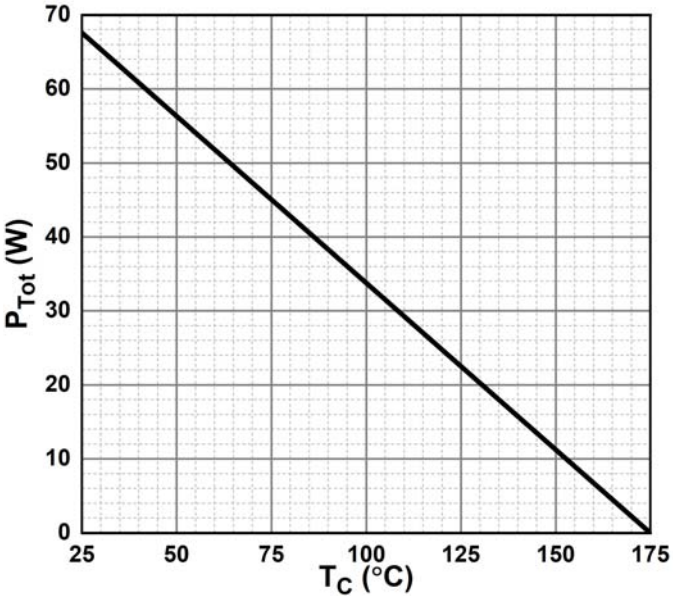


Figure 6. Power Derating

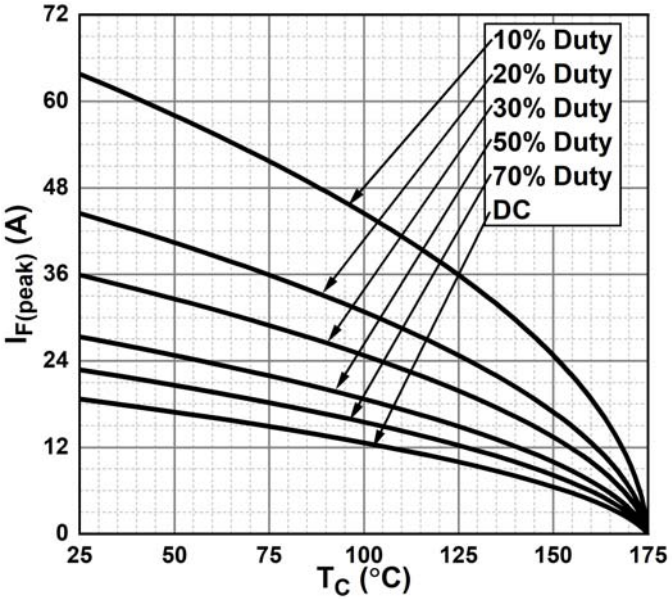


Figure 7. Current Derating

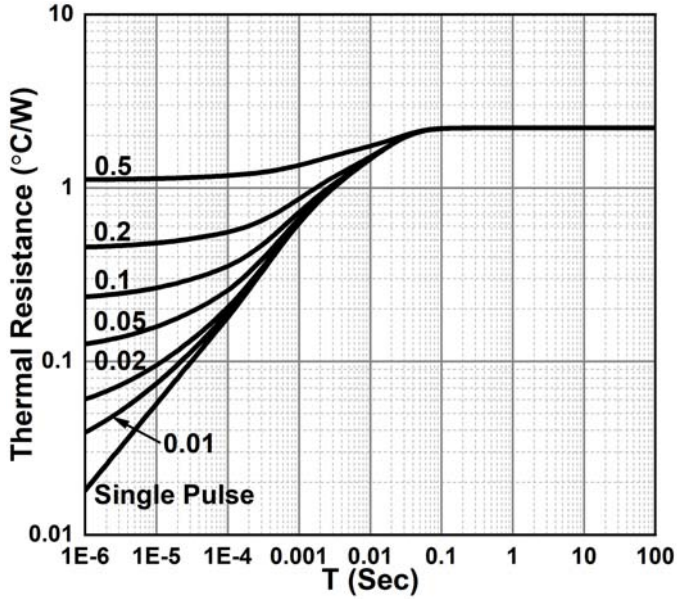
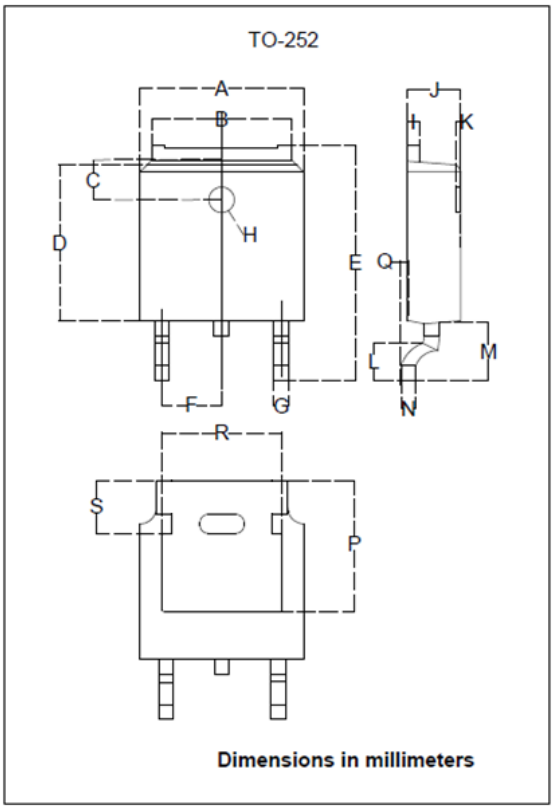


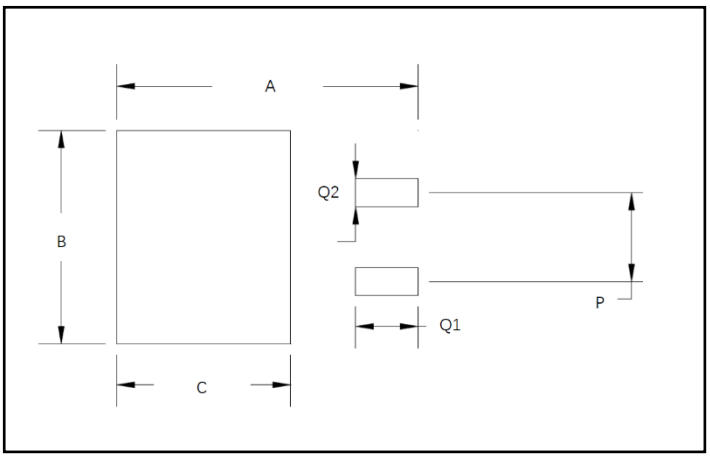
Figure 8. Transient Thermal Impedance

■Outline Dimensions



TO-252		
Dim	Min	Max
A	6.500	6.700
B	5.100	5.460
C	1.400	1.800
D	6.000	6.200
E	10.000	10.400
F	2.166	2.366
G	0.660	0.860
H	Φ1.050	Φ1.350
I	0.460	0.580
J	2.200	2.400
K	0	0.300
L	0.890	2.290
M	2.730	3.080
N	0.430	0.580
P	5.15	5.45
Q	0	0.2
R	4.50	5.10
S	1.60	2.40

■Suggested Pad Layout



Dim	Millimeters
A	11.4
B	6.74
C	6.23
P	4.56

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