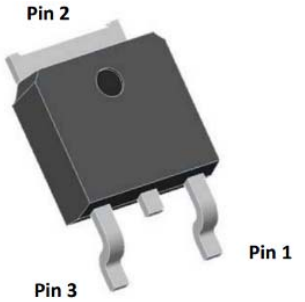
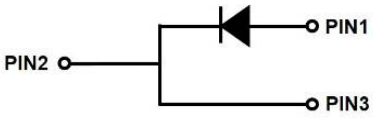
Silicon Carbide Schottky Diode

V_{RRM}	650V
$I_{F\ (135°C)}$	6A
Q_C	11nC





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
- **Terminals**: Tin plated leads
- **Polarity**: As marked

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

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D106504DYG4
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	12.6
Continuous forward current @ T_C=135°C			6
Continuous forward current @ T_C=154°C			4
Non-repetitive peak forward surge current @ T_C=25°C, tp=10ms, Half Sine Wave	I_{FSM}	A	28
Power Dissipation@ T_C=25°C	P_{TOT}	W	57
Power Dissipation@ T_C=110°C			25
i^2t Value@ Tc=25°C ,tp=10ms	$\int i^2dt$	A^2S	3.9
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	Typ.	Max.
Forward voltage	V_F	V	I_F=4A, T_j=25°C	1.45	1.65
			I_F=4A, T_j=175°C	2.0	-
Reverse current	I_R	μA	V_R=650V, T_j=25°C	0.1	20
			V_R=650V, T_j=175°C	1	-
Total capacitive charge	Q_C	nC	V_R=400V, T_j=25°C , $Q_C=\int_0^{VR}C(V)dV$	11	-
Total capacitance	C	pF	V_R=0V, f=1MHZ	194	-
			V_R=200V, f=1MHZ	20.5	-
			V_R=400V, f=1MHZ	19.5	-
Capacitance stored energy	E_C	μJ	V_R=400V	1.7	-

■Thermal Characteristics

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	$R_{\theta J-C}$	°C /W	2.60

■Typical Characteristics (Typical)

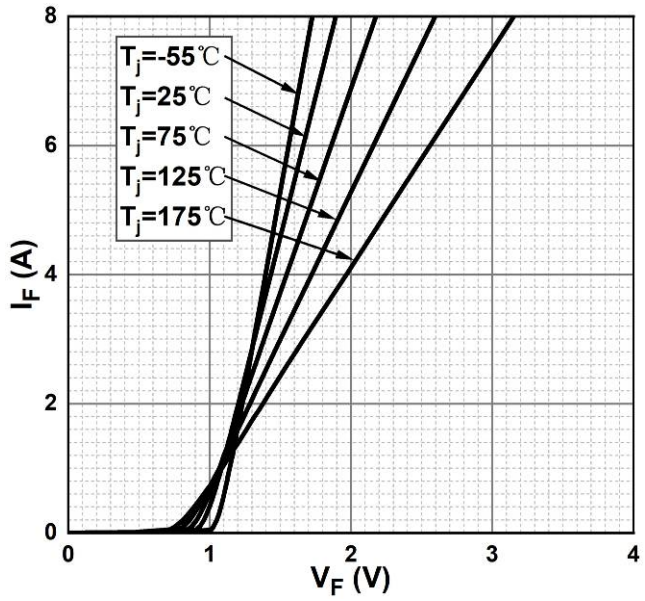


Figure 1. Forward Characteristics

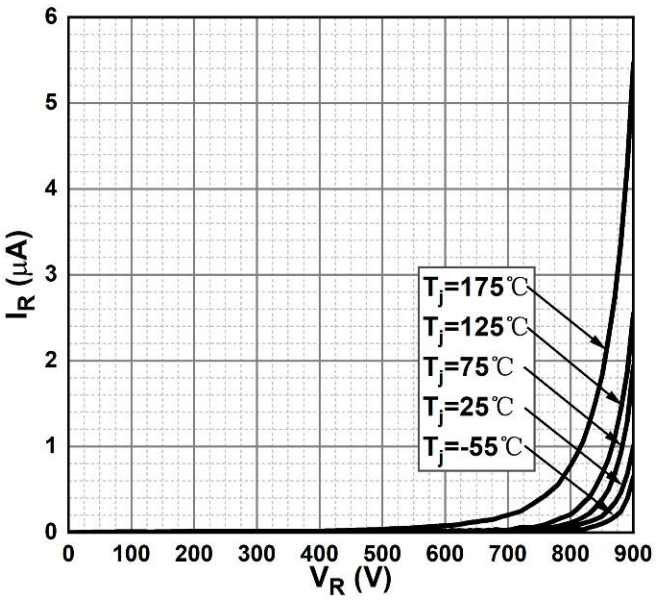


Figure 2. Reverse Characteristics

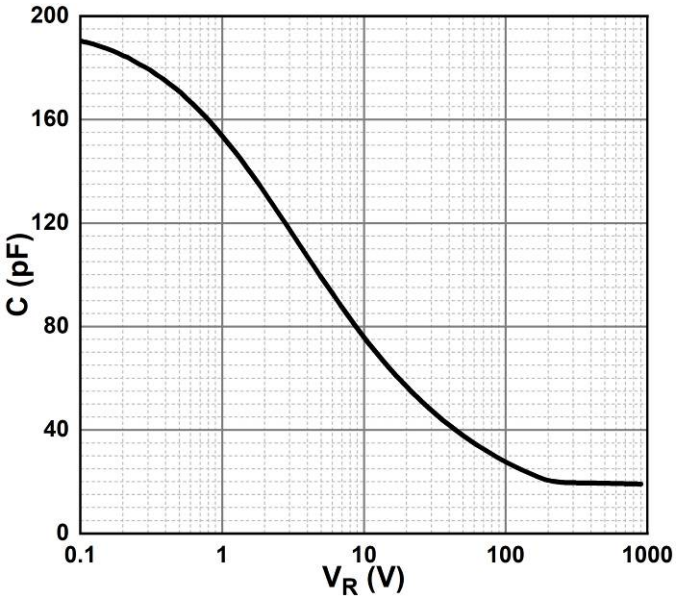


Figure 3. Capacitance vs. Reverse Voltage

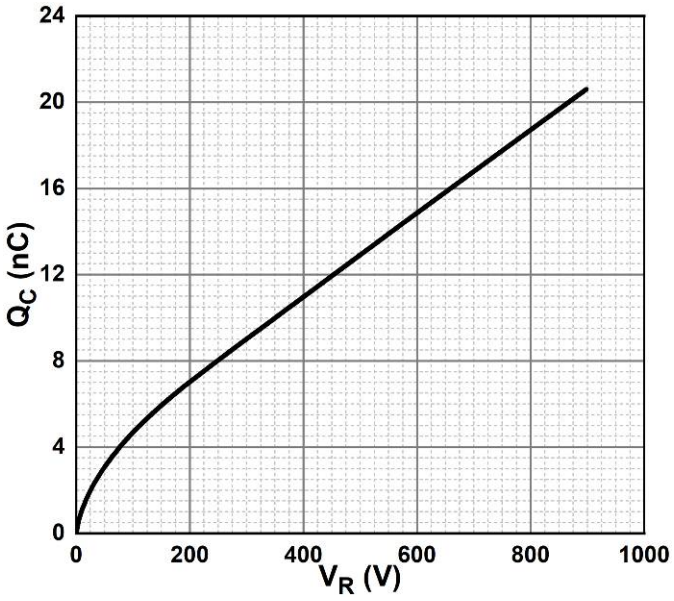


Figure 4. Total Capacitance Charge vs. Reverse Voltage

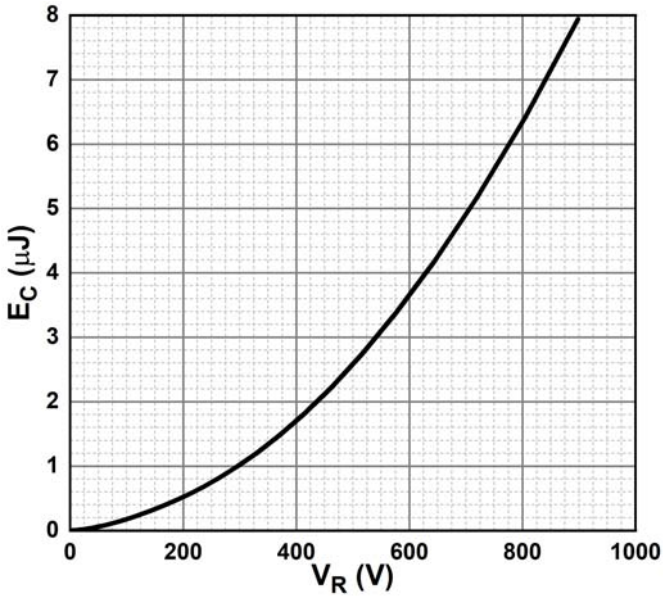


Figure 5. Capacitance Stored Energy

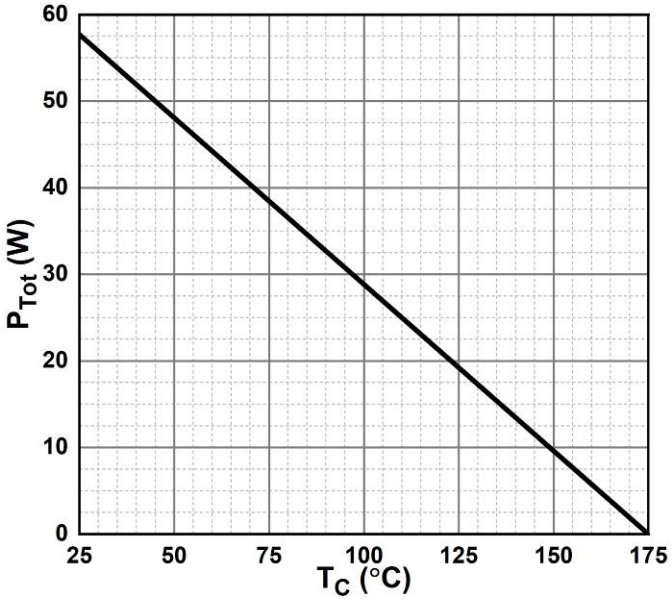


Figure 6. Power Derating

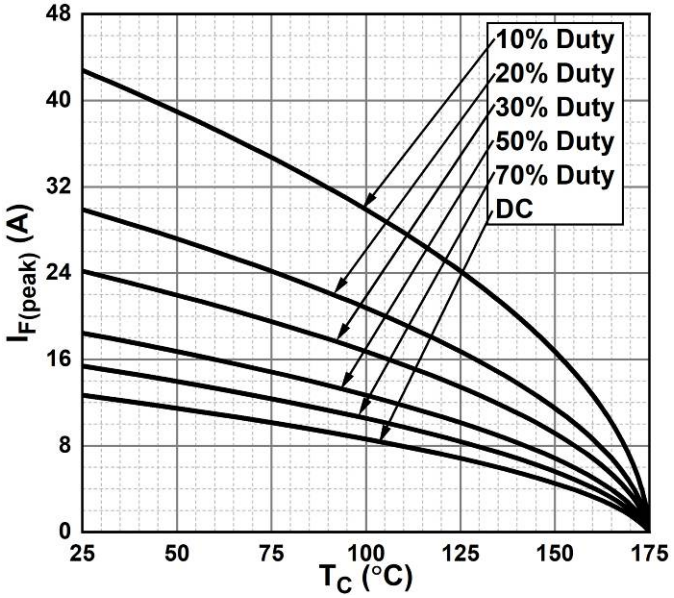


Figure 7. Current Derating

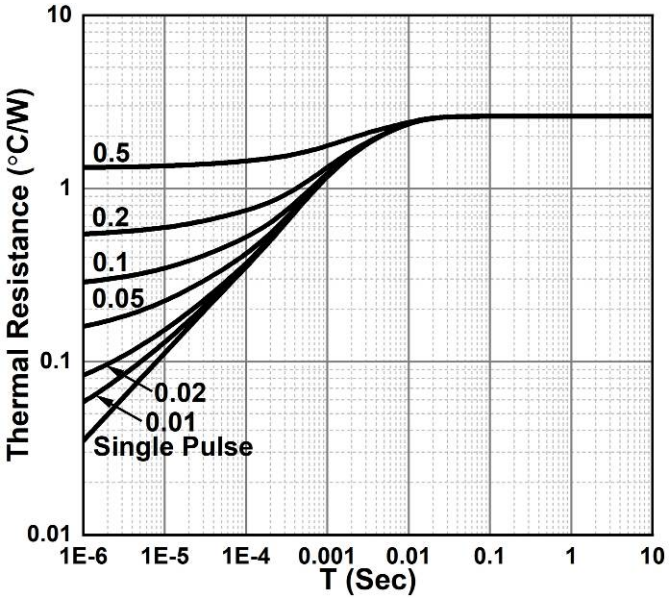
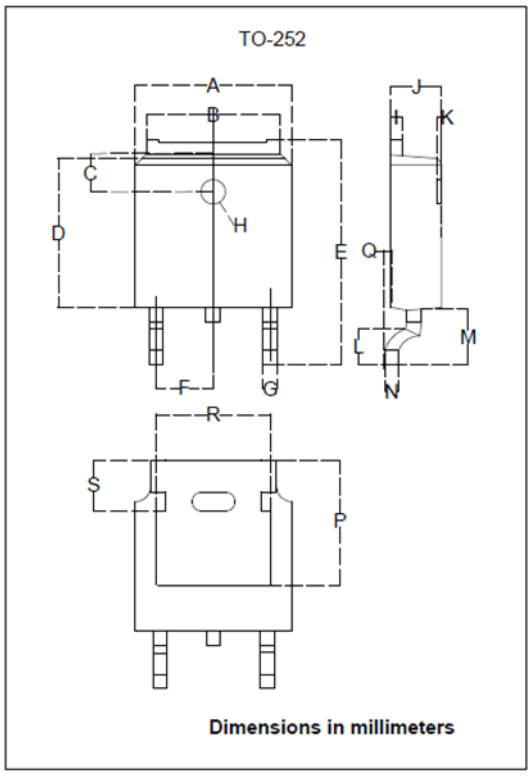


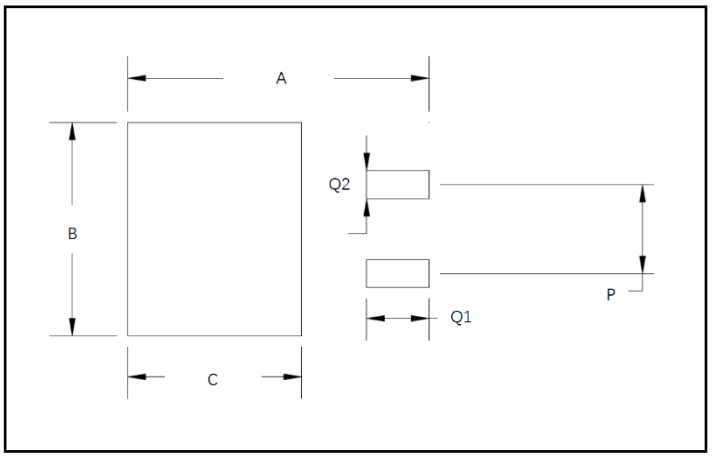
Figure 8. Transient Thermal Impedance

■Outline Dimensions



TO-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
Q1	2.28
Q2	1.52

Notice

All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.
Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in STARSEA's terms and conditions of sale for such products, STARSEA assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of STARSEA products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.