SD5012CTDL

SiC Schottky Diode

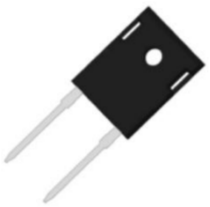
Features

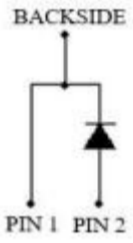
★Zero forward recovery voltage
★Zero reverse recovery current
★Excellent surge current capability
★Temperature independent switching
★Positive temmperature coefficient on V_F
★High frequency operation

Product Summary

V_{RRM}	Q_C	$I_F(T_C= 140°C)$
1200V	267nC	50A

Package: TO-247-2





Benefits

★ Increased Power Density
★Essentially no Switching Losses
★Reduction of Heat Sink Requirements
★Higher Efficiency
★Reduced EMI

Applications

★ Uninterruptible power supplies
★Switch mode power supplies (SMPS)
★Power Factor Correction
★Motor Drivers

Halogen

RoHS

Maximum ratings (T_j=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		1200	V
I_F	Continuous forward current	T_C=25°C T_C=140°C	125 50	A
I_{FSM}	Non-Repetitive forward surge current	T_C=25°C , t_p=10ms, Half Sine Wave	450	A
$\int i^2dt$	i^2t value	T_c=25°C, t_p=10ms	18	A^2S
P_{tot}	Power dissipation	Tc=25°C Tc=110°C	454 196	W
T_j	Operating junction temperature		-55~175	°C
T_{stg}	Storage temperature		-55~175	°C

Electrical Characteristics

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	T_j=25°C	1200			V
V_F	Diode forward voltage	I_F=50A,T_j=25°C I_F=50A,T_j=175°C		1.43 1.92	1.71 2.5	V
I_R	Reverse current	V_R=1200V ,T_j=25°C V_R=1200V ,T_j=175°C		1.5 10	200 400	μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capactive charge	V_R=800V ,T_j=25°C $Q_C = \int_0^V R\ C(V)dV$		267		nC
C	Total capacitance	V_R=1V f=1MHz V_R=400V f=1MHz V_R=800V f=1MHz		2696 252 192		pF
E_C	Capacitance stored energy	V_R=800V		77		μJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal Resistance from Junction to Case		0.33		° C/W

Typical Performance

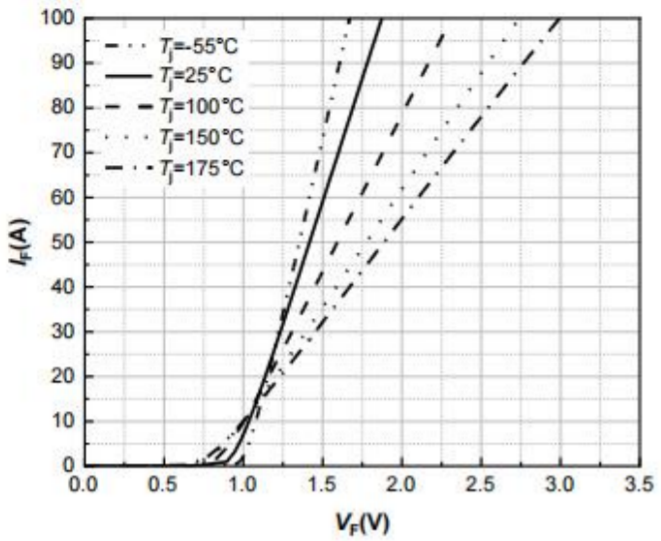


Figure 1. Typical forward characteristics

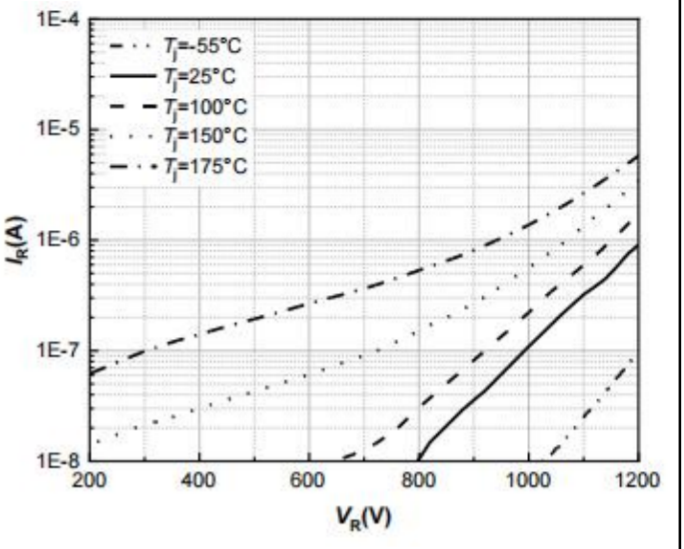


Figure 2. Typical reverse current as function of reverse voltage

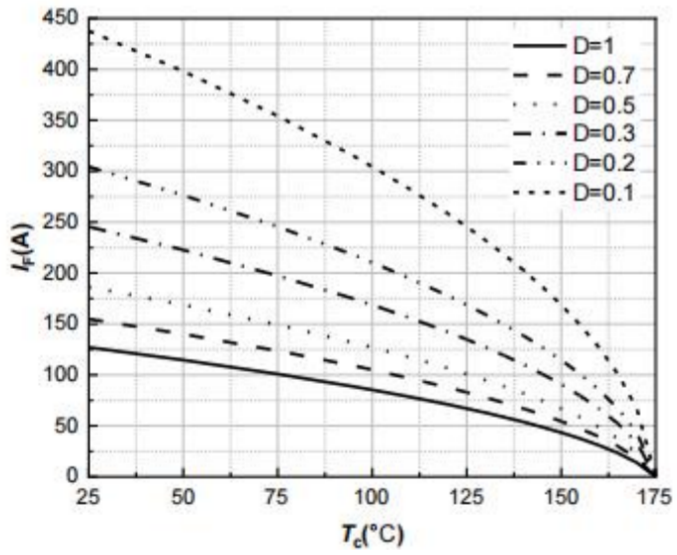


Figure 3. Diode forward current as function of temperature, D=duty cycle

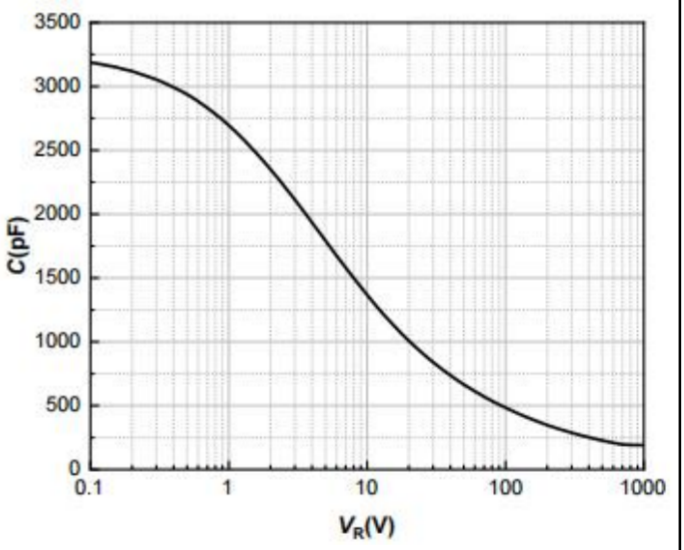


Figure 4.Typical capacitance as function of reverse voltage, C=f(V_R); T_j=25℃; f=1 MHz

Typical Performance

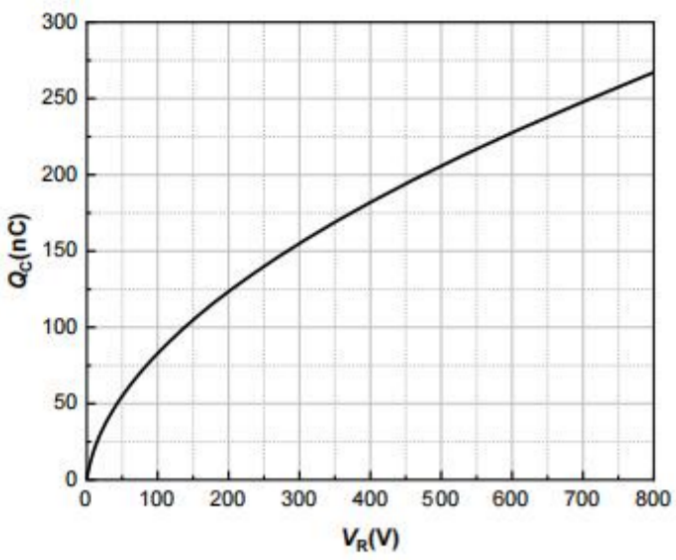


Figure 5. Typical reverse charge as function of reverse voltage

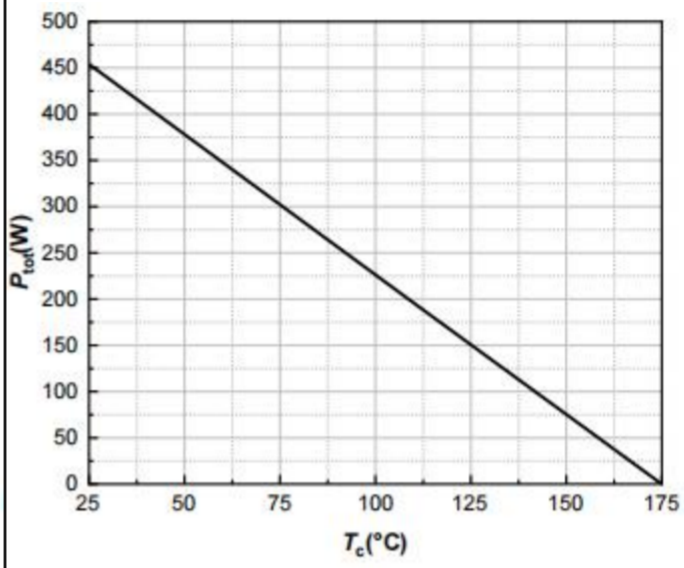


Figure 6. Power dissipation as function of case temperature

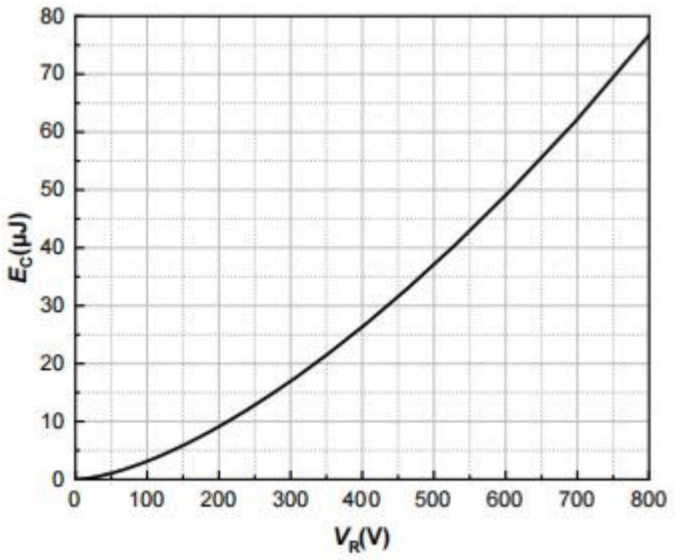


Figure7. Capacitance stored energy

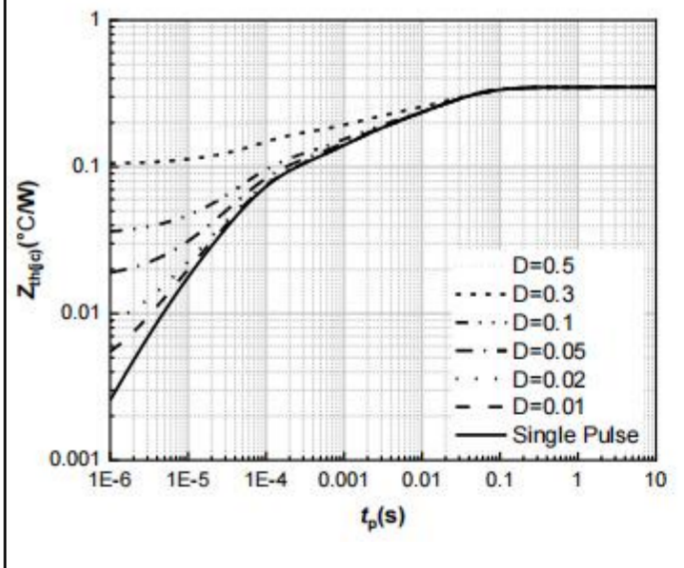
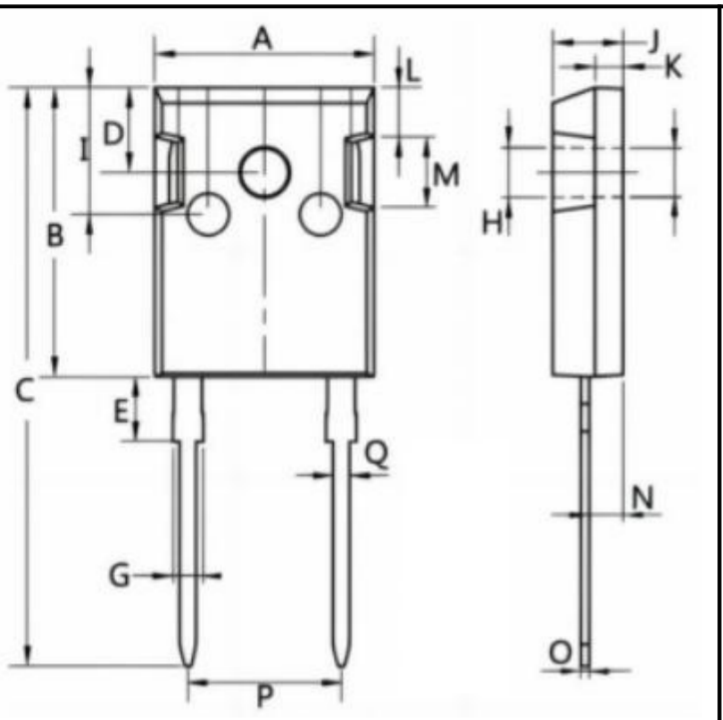


Figure 8. Max.transient thermal impedance, $Z_{th(jc)}=f_{(tp)}$, parameter: $D=t_p/T$

Package Outlines



Dim.	Min.	Max.
A	15.51	15.71
B	20.40	20.50
C	40.5	42
D	5.80	6.15
E	4.25	4.40
G	2.05	2.15
H	3.62	4.59
I	8.15	8.60
J	4.95	5.05
K	1.96	1.99
L	3.65	3.8
M	4.50	5.05
N	2.30	2.85
O	0.59	0.61
P	Typ 10.8	
All Dimensions in millimeter		