Maplesemi

LEAD FREE RoHS COMPLIANT

MSP10065V1
650V Silicon Carbide Diode

Features

-650-Volt Schottky Rectifier
-Shorter recovery time
-High-speed switching possible
-High-Frequency Operation
-Temperature-Independent Switching Behavior
-Extremely Fast Switching
-Positive Temperature Coefficient on VF

Benefits

-Higher safety margin against overvoltage
-Improved efficiency all load conditions
-Increased efficiency compared to Silicon Diode alternatives
-Reduction of Heat Sink Requirements
-Parallel Devices Without Thermal Runaway
-Essentialy No Switching Losses

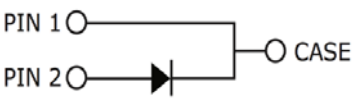
Applications

-Switch Mode Power Supplies
-Power Factor Correction
-Motor Drives
-HID Lighting

Package

Type : TO-220 -2lead

1、Cathode 2、Anode



Absolute Maximum Ratings

T_C = 25℃ unless otherwise noted

Symbol	Parameter	MSP10065V1	Units
VRRM	Repetitive Peak Reverse Voltage	650	V
VRSM	Surge Peak Reverse Voltage	650	V
VDC	DC Blocking Voltage	650	V
IF	Continuous Forward Current @Tc=25℃ @Tc=135℃ @Tc=150℃	30 14 10	A
IFRM	Repetitive Peak Forward Surge Current @TC=25℃ tp = 10 ms, Half Sine Wave @TC=110℃	65 42	A
IFSM	Non-Repetitive Peak Forward Surge Current @TC=25℃ tp= 10 ms, Half Sine Wave @TC=110℃	88 68	A
IFSM	Non-Repetitive Peak Forward Surge Current @TC=25℃, tp= 10 us，pulse	230	A
Ptot	Power Dissipation @Tc=25℃ @Tc=110℃	138 60	W
TJ , Tstg	Operating Junction and Storage Temperature	-55 to +175	˚C

Electrical Characteristics

T_C = 25° C unless otherwise noted

Symbol	Test Conditions	Test Conditions	Min	Typ	Max	Unit
VF	Forward Voltage	IF=10A, TC=25° C IF=10A, TC=175° C	-	1.5 2.1	1.8 2.5	V
IR	Reverse Current	VR=650V, TC=25° C VR=650V, TC=175° C	-	10 20	50 100	μA
QC	Total Capacitive Charge	VR =400V, IF =10A TJ = 25° C Qc= $\int_0^{Vr} C\ (V)\ \mathrm{dv}$	-	33	-	nC
C	Total Capacitance	VR =0V, TJ = 25° C, f=1MHz VR =200V, TJ = 25° C, f=1MHz VR =400V, TJ = 25° C, f=1MHz	-	514 54 45	-	pF
EC	Capacitance Stored Energy	VR=400V	-	6.5	-	μJ

Thermal Characteristics

Symbol	Parameter	Typ	Unit
RθJC	Thermal Resistance from Junction to Case	1.09	℃/W

Typical Characteristics

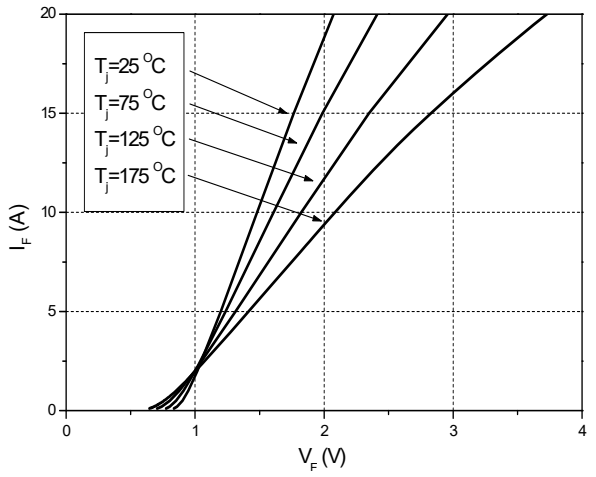


Figure 1.Forward Characteristics

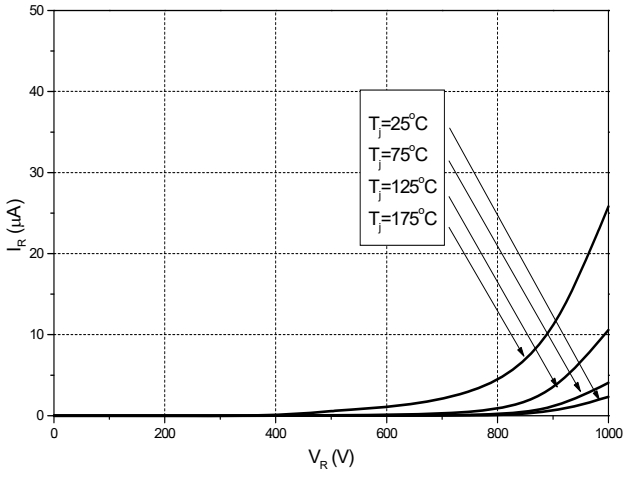


Figure 2. Reverse Characteristics

Typical Characteristics

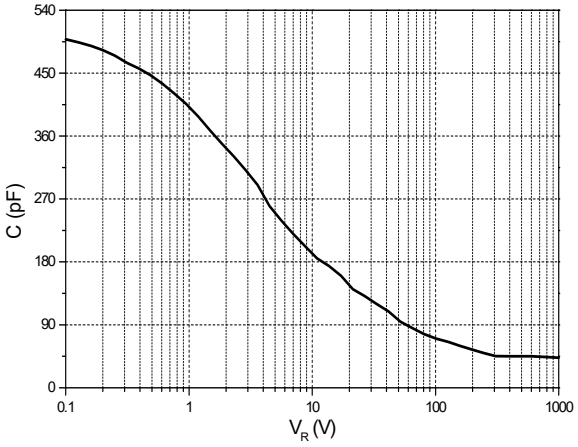


Figure 3. Capacitance vs. Reverse Voltage

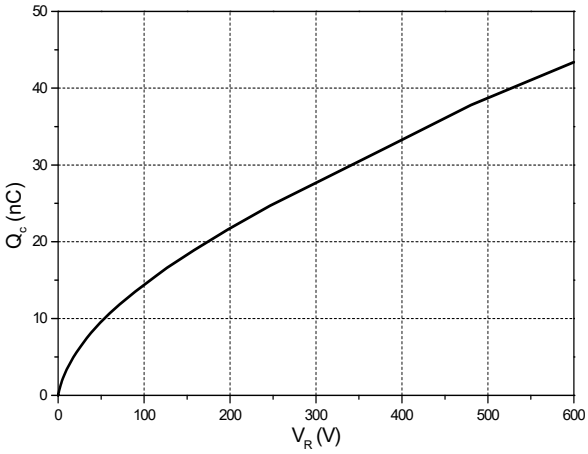


Figure 4. Total Capacitance Charge vs. Reverse Voltage

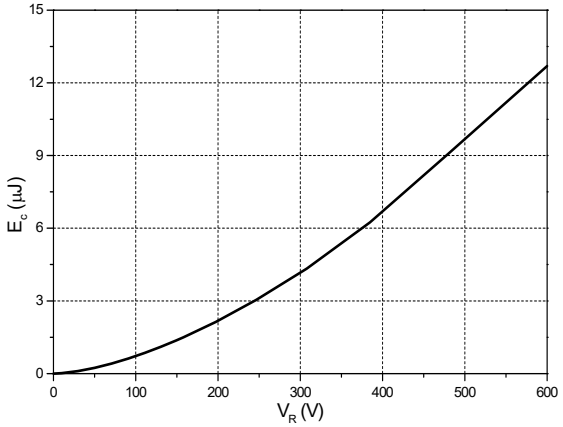


Figure 5. Capacitance Stored Energy

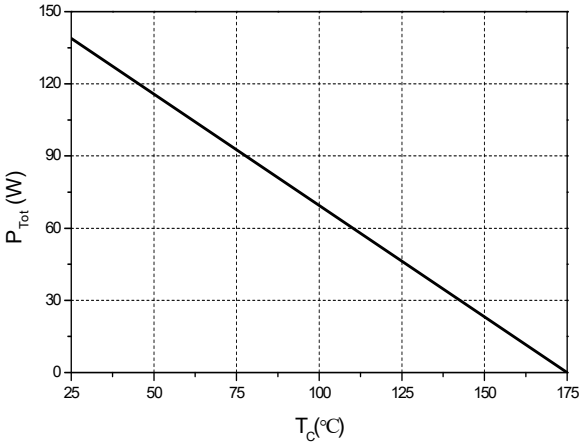


Figure 6. Power Derating

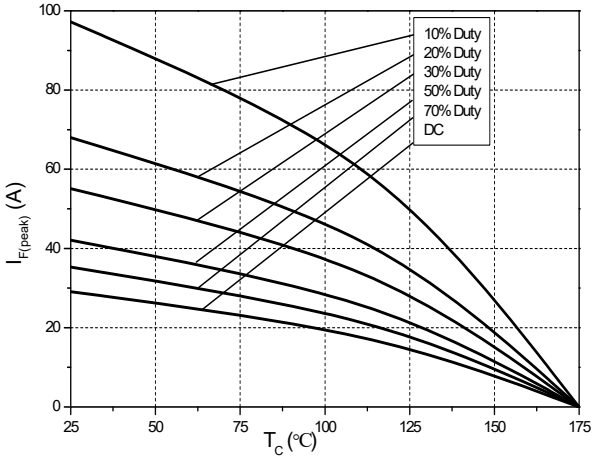


Figure 7.Current Derating

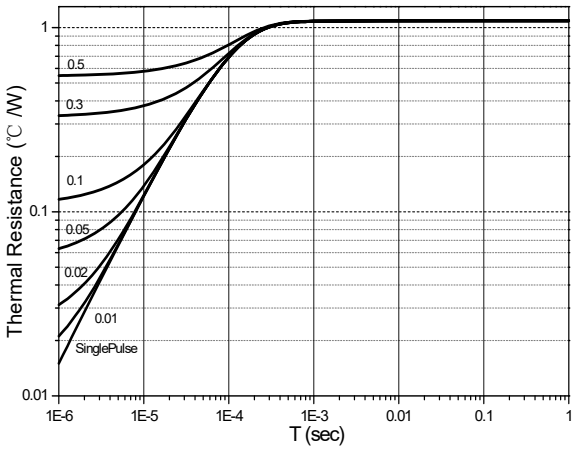
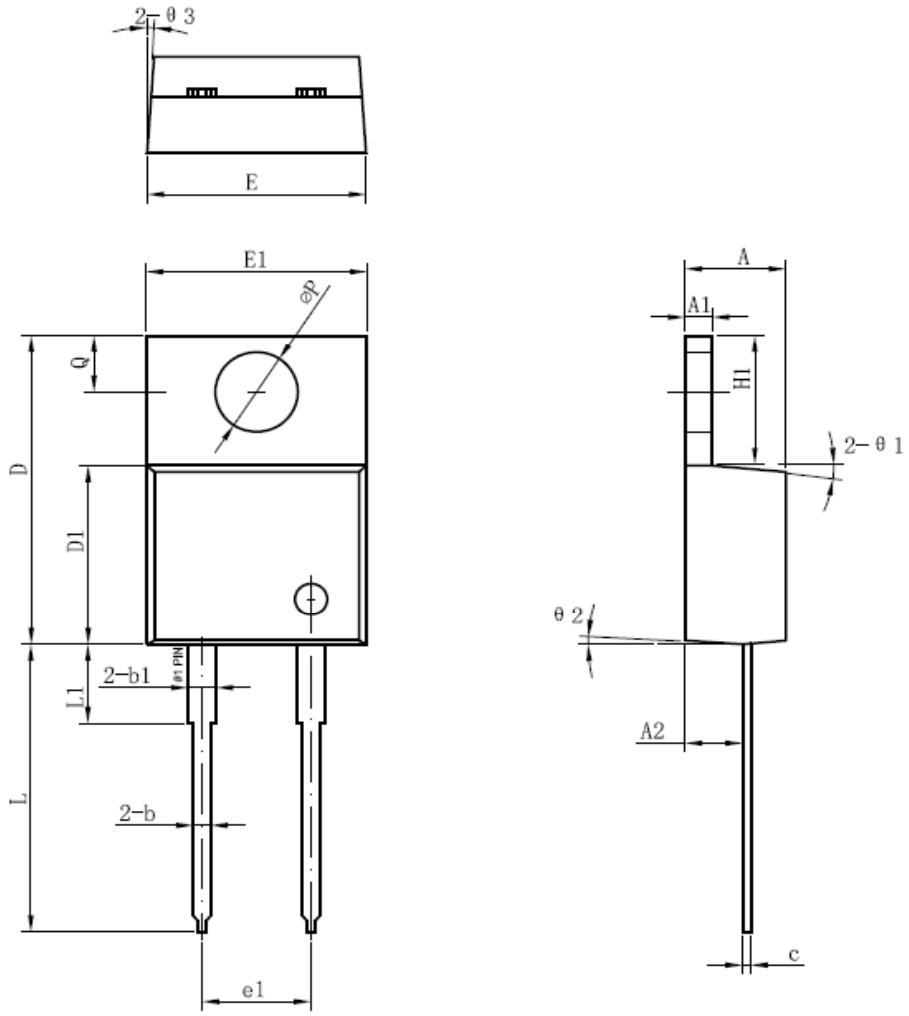


Figure 8. Transient Thermal Impedance

Package Dimensions TO-220-2Lead



Symbol	Millimeters		
	Min.	Typ.	Max.
A	4.55	4.70	4.85
A1	1.17	1.27	1.37
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
D	14.64	14.94	15.24
D1	8.55	8.70	8.85
E	10.01	10.16	10.31
E1	9.98	10.18	10.38
e1		5.08	
H1	6.04	6.24	6.44
L	13.00	13.86	14.08
L1		3.80	
ΦP	3.74	3.84	4.04
Q	2.54	2.74	2.94
θ1		5°	
θ2		4°	
θ3		4°	

Marking Layout

1ST Line : Company logo

2nd Line : Date code

3rd Line : Device name