Maplesemi

LEAD FREE RoHS COMPLIANT

MS2H40120V1
1200V Silicon Carbide Diode

Features

-1200-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

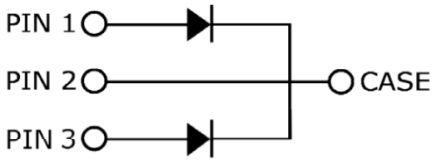
-Higher safety margin against overvoltage
-Improved efficiency all load conditions
-Increased efficiency compared to Silicon Diode alternatives
-Reduction of Heat Sink Requirements
-Parallel Devices Without Thermal Runaway
-Essentialy No Switching Losses

Applications

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

Package

Type : TO-247-3Lead



Absolute Maximum Ratings

T_C = 25 ℃ unless otherwise noted

Symbol	*Parameter*	*MS2H40120V1*	*Units*
VRRM	Repetitive Peak Reverse Voltage	1200	V
VRSM	Surge Peak Reverse Voltage	1200	V
VDC	DC Blocking Voltage	1200	V
IF	Continuous Forward Current @Tc=25℃ (Per Leg/Device) @Tc=135℃ @Tc=149℃	56.3/113 27/54 20/40	A
IFRM	Repetitive Peak Forward Surge Current (Per Leg) @TC=25℃, tP = 10 ms, Half Sine Wave	100	A
IFSM	Non-Repetitive Peak Forward Surge Current (Per Leg) @TC=25℃, tP = 10 ms, Half Sine Wave	140	A
Ptot	Power Dissipation @Tc=25℃ (Per Leg/Device) @Tc=110℃	236/532 114/238	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(Per Leg)	IF=20A, TC=25° C IF=20A, TC=175° C	-	1.5 2.2	1.8 3.0	V
IR	Reverse Current	VR=1200V, TC=25° C VR=1200V, TC=175° C	-	10 50	100 400	μA
QC	Total Capacitive Charge	VR =600V, IF =20A TJ = 25° C $Qc=\int_0^{Vr} C(V)\,dv$	-	95	-	nC
C	Total Capacitance	VR =0V, TJ = 25° C, f=1MHz VR =400V, TJ = 25° C, f=1MHz VR =600V, TJ = 25° C, f=1MHz	-	2010 120 97	-	pF
EC	Capacitance Stored Energy	VR=600V	-	28.6	-	μJ

Thermal Characteristics

Symbol	Parameter	Typ	Unit
RθJC	Thermal Resistance from Junction to Case	1.9	℃/W

Typical Characteristics

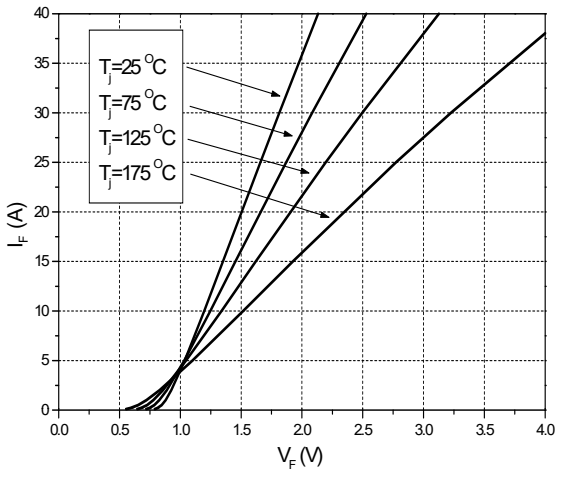


Figure 1.Forward Characteristics

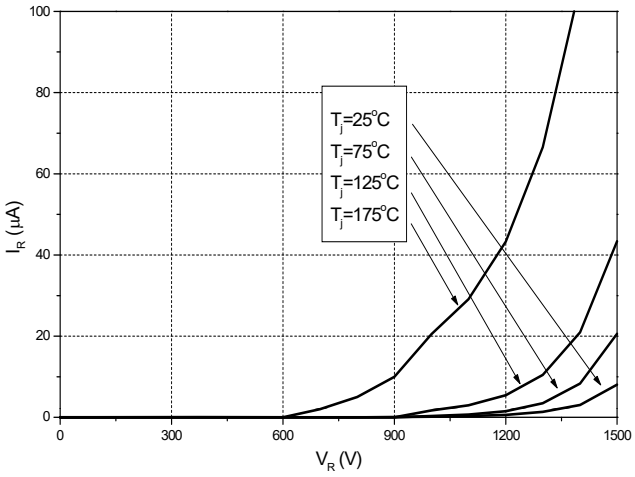


Figure 2. Reverse Characteristics

Typical Characteristics

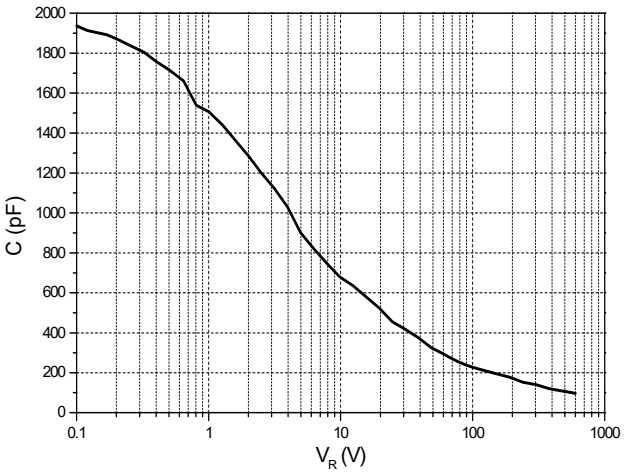


Figure 3.Capacitance vs. Reverse Voltage

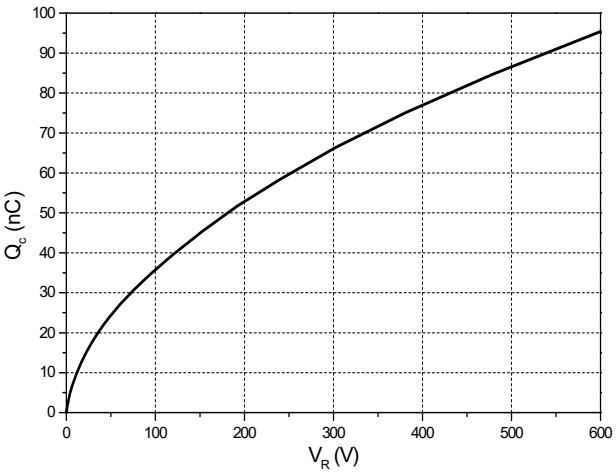


Figure 4. Total Capacitance Charge vs. Reverse Voltage

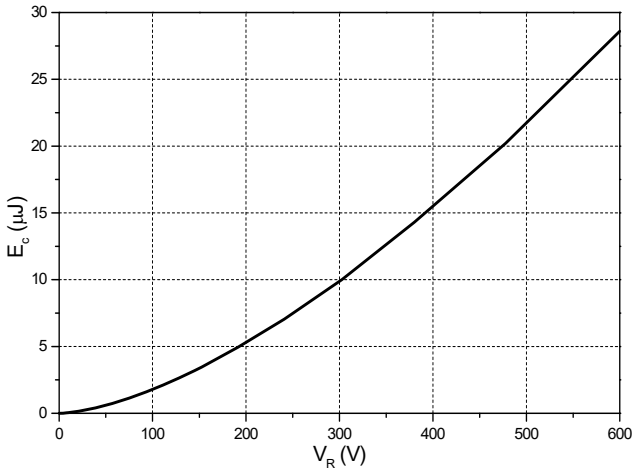
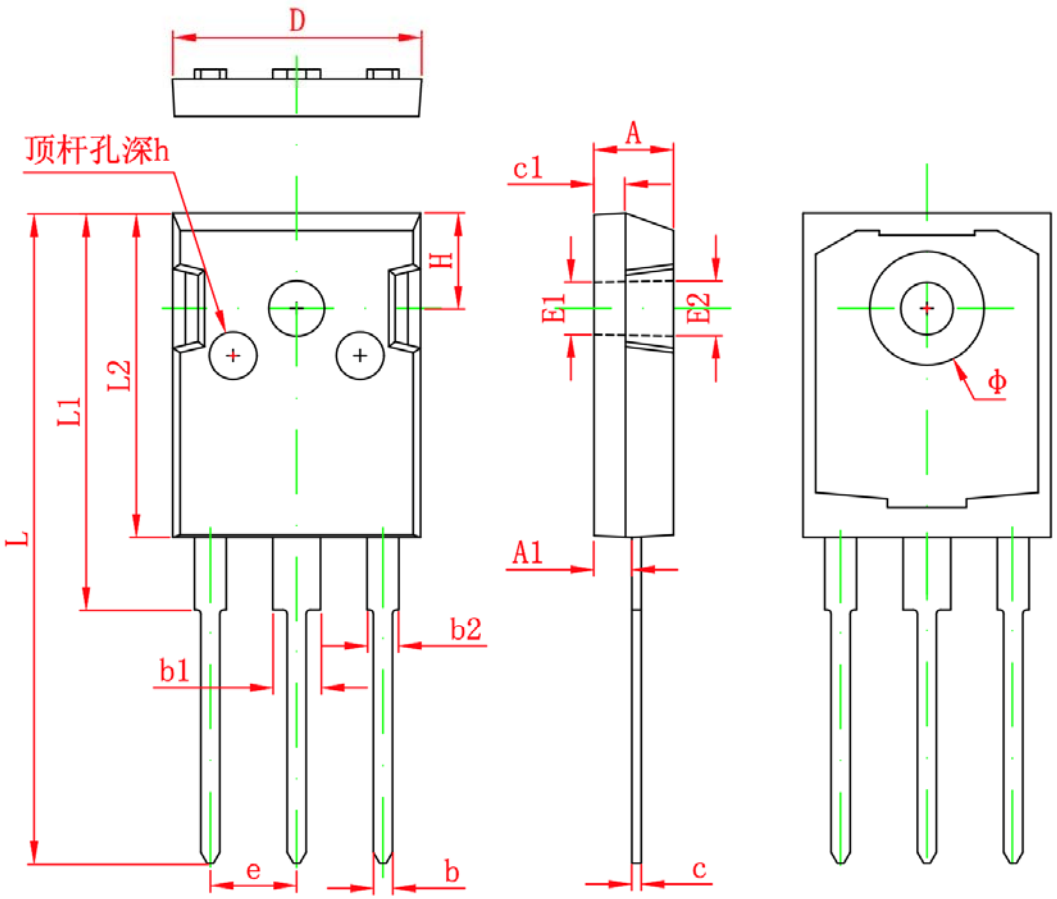


Figure 5. Capacitance Stored Energy

Package Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	
h	0.000	0.300	0.000	0.012