美浦森半导体
M s e m i t e k

Halogen Free

RoHS LEAD FREE

MS2H40120G1
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

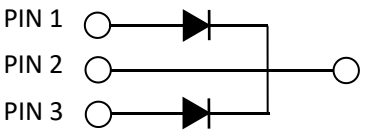
-Higher safety margin against overvoltage
-Improved efficiency all load conditions
-Increased efficiency compared to Silicon Diode alternatives
-Reduction of Heat Sink Requirements
-Parallel Devices Without Thermal Runaway
-Essentialy No Switching Losses

Applications

-Switch Mode Power Supplies
-Power Factor Correction
-Motor Drives
-Charging Pile Power

Package

Type : TO-247-3Lead



Absolute Maximum Ratings

T_C = 25 ℃ unless otherwise noted

Symbol	Parameter	MS2H40120G1	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℃ @Tc=125℃ @Tc=137℃	53 27 20	A
IFRM	Repetitive Peak Forward Surge Current (Per Leg) @TC=25℃, tP = 10 ms, Half Sine Wave,D=0.3	100	A
IFSM	Non-Repetitive Peak Forward Surge Current (Per Leg) @TC=25℃, tP = 10 ms, Half Sine Wave,D=0.3	140	A
IF,Max	Non-Repetitive Peak Forward Surge Current ;@TC=25˚C, tP= 10 μs, Pulse	120	A
Ptot	Power Dissipation @Tc=25℃ (Per Leg/Device) @Tc=110℃	283 123	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 Lag)	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, 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	-	2100 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	0.53	℃/W

Typical Characteristics

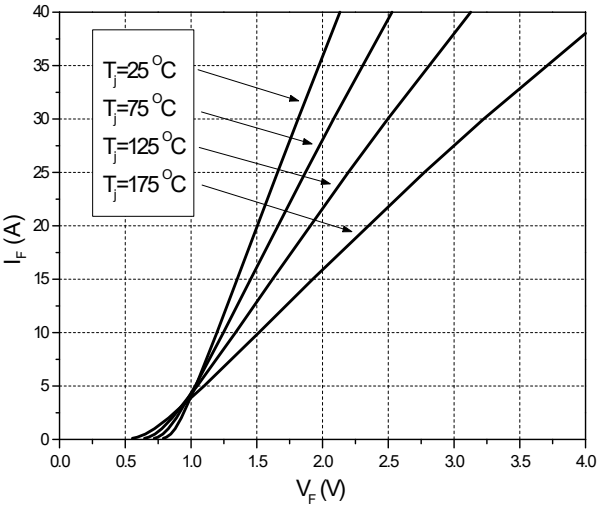


Figure 1.Forward Characteristics

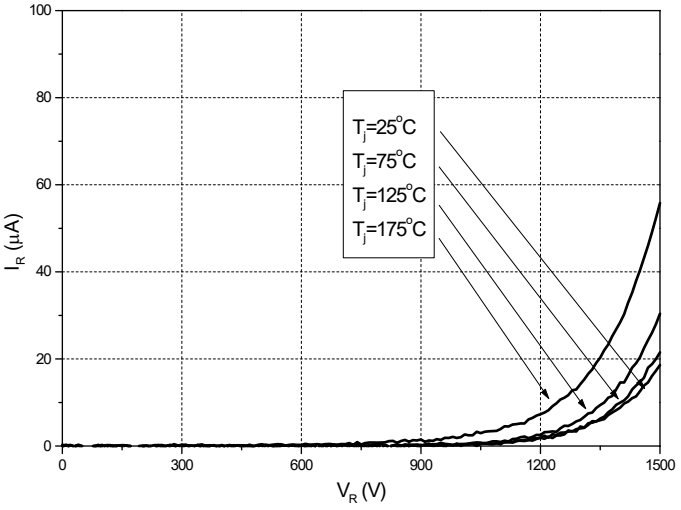


Figure 2. Reverse Characteristics

Typical Characteristics

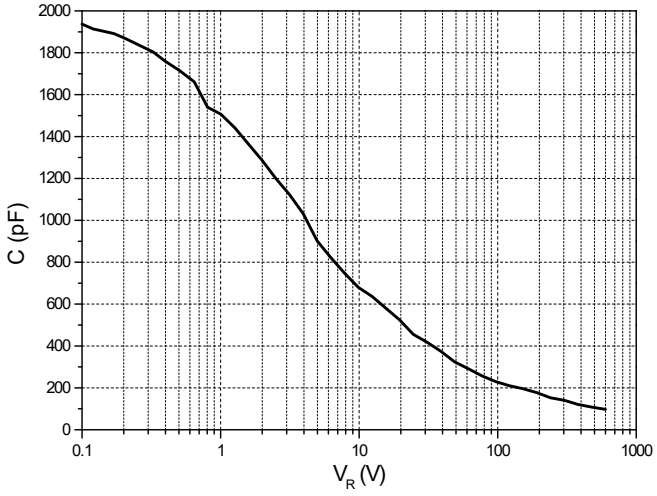


Figure 3.Capacitance vs. Reverse Voltage

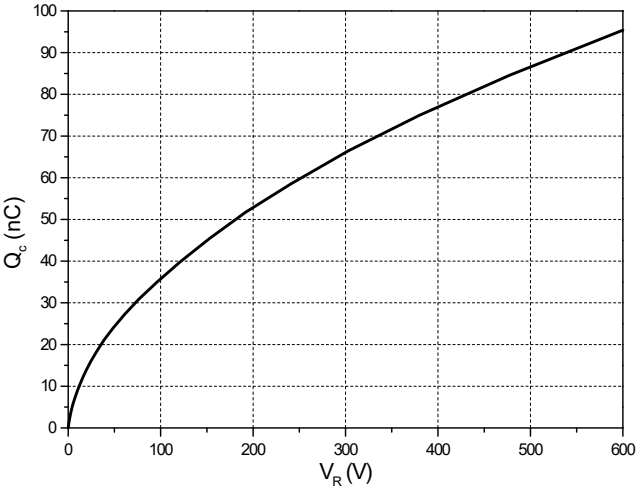


Figure 4. Total Capacitance Charge vs. Reverse Voltage

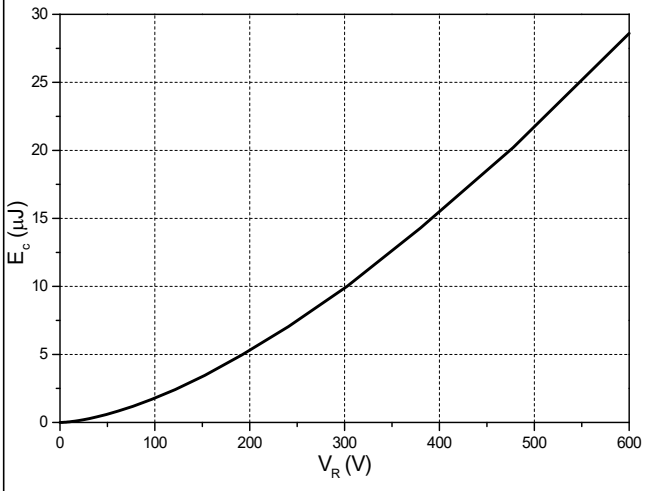


Figure 5. Capacitance Stored Energy

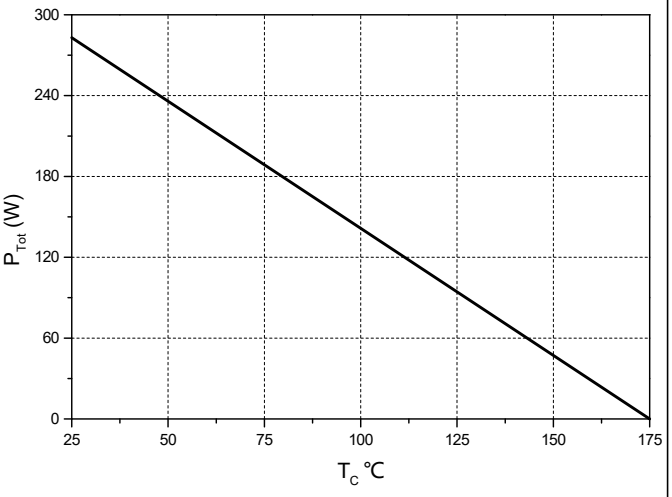


Figure 6. Power Derating

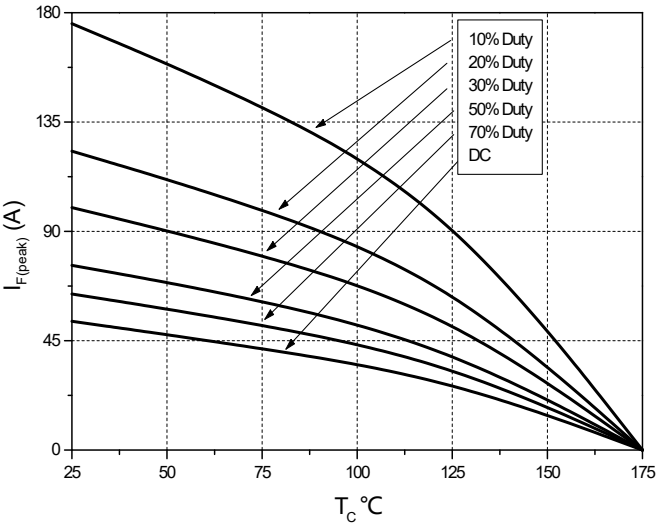


Figure 7. Current Derating

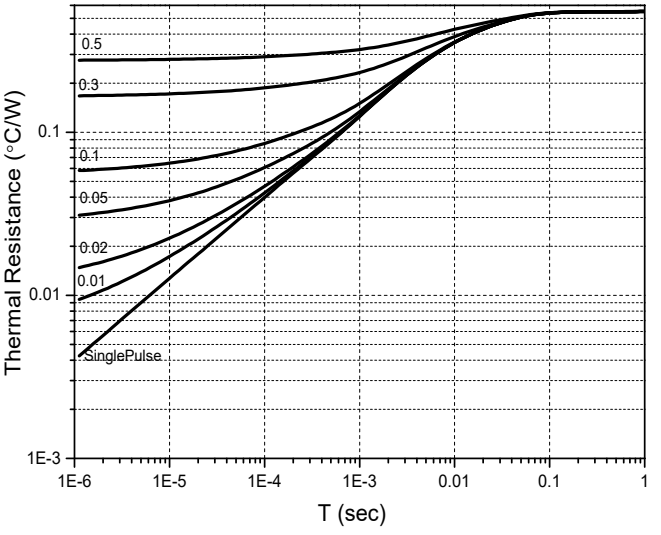
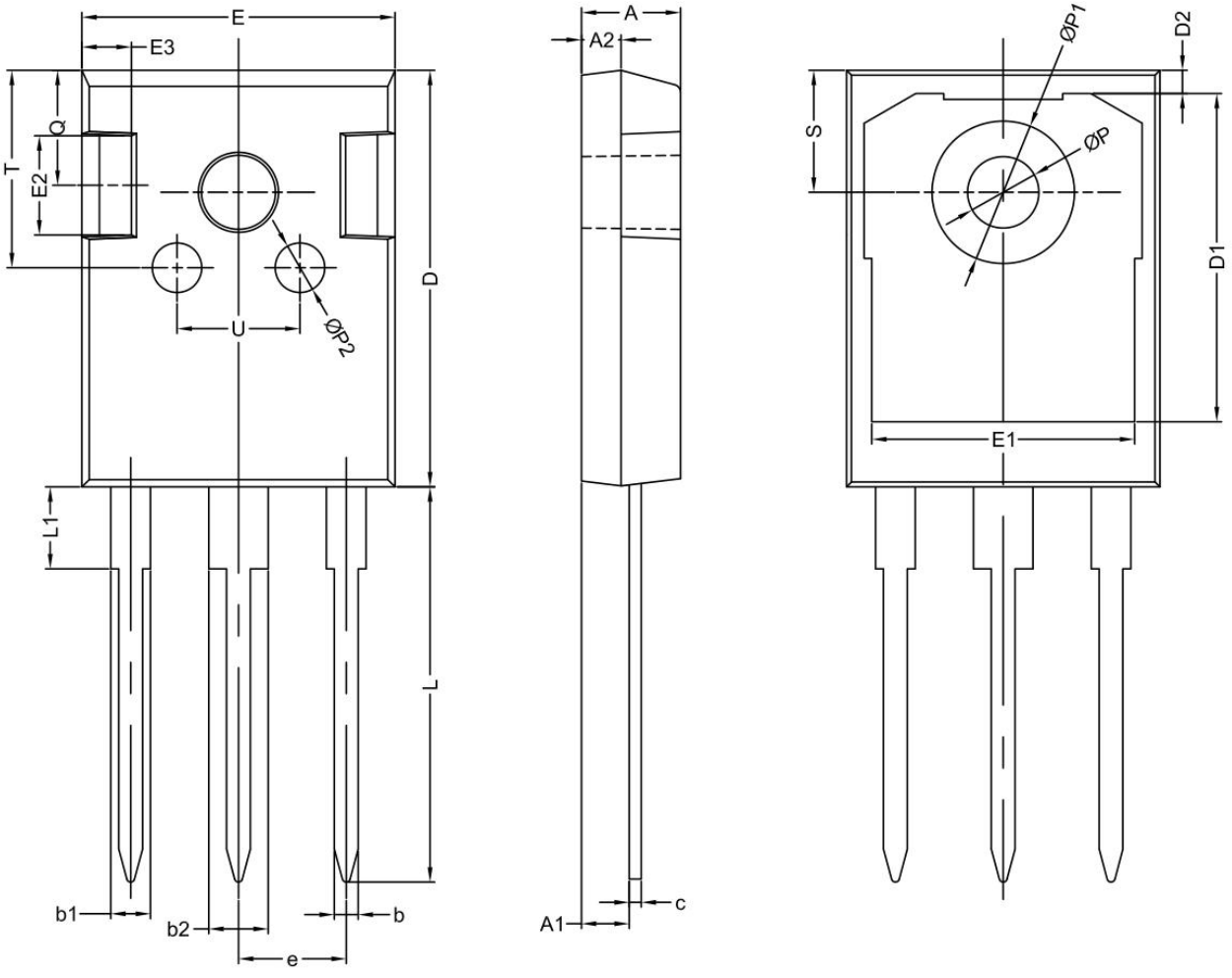


Figure 8. Transient Thermal Impedance

TO-247 OUTLINE



SYMBOL	Mechanical Dimensions/mm			SYMBOL	Mechanical Dimensions/mm			SYMBOL	Mechanical Dimensions/mm		
	MIN	NOM	MAX						MIN	NOM	MAX
A	4.80	5.00	5.20	D	20.80	21.00	21.20	L1	-	4.13	-
A1	2.21	2.41	2.61	D1	-	16.55	-	⌀ P	3.5	3.6	3.7
A2	1.90	2.00	2.10	E	15.60	15.80	16.0	⌀ P1	-	-	7.40
b	1.10	1.20	1.35	E1		13.3		⌀ P2	-	2.50	-
b1	-	2.00	-	E2		5.0		Q	-	5.8	-
b2	-	3.00	-	e	5.44			S	6.05	6.15	6.25
c	0.55	0.60	0.75	L	19.42	19.92	20.42	T	-	10.0	-

NOTE：

1The plastic package is not marked as smooth surfaceRa=0.1;Subglossy surfaceRa=0.8

2.Undeclared tolerance±0.25,Unmarked filletRmax=0.25

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