Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior
- High surge current capability
- 100% avalanche tested

TO-247-2

Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- High Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

Applications

- Servo Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous Forward Current	I_F	T_C=25°C T_C=135°C T_C=150°C	58 26 20	A
Non repetitive Forward Surge Current	I_{FSM}	T_C = 25°C, t_p=10 ms, Half Sine Pulse T_C = 110°C, t_p=10 ms, Half Sine Pulse	140 130	A
Repetitive peak Forward Surge Current	I_{FRM}	T_C = 25°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse T_C = 110°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	110 100	A
Total power dissipation	P_D	T_C=25°C T_C=110°C	250 108	W
Single Pulse Avalanche Energy	E_{AS}	L=2mH, I_{AS}=10A	100	mJ
Diode dv/dt ruggedness	dv/dt	V_R = 0-1200V	80	V/ns
Operating Junction Temperature	T_J		-55 to 175	°C
Storage Temperature	T_{STG}		-55 to 175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	V_{DC}	T_J = 25°C	1200			V
Forward Voltage	V_F	I_F = 20A, T_J = 25°C		1.45	1.8	V
		I_F = 20A, T_J = 125°C		1.8		V
		I_F = 20A, T_J = 175°C		2.0		V
Reverse Current	I_R	V_R = 1200V, T_J = 25°C		10	200	uA
		V_R = 1200V, T_J = 125°C		20	250	uA
		V_R = 1200V, T_J = 175°C		50	300	uA
Total Capacitive Charge	Q_C	V_R = 800V, T_J = 25°C		93		nC
Total Capacitance	C	V_R = 1V, T_J = 25°C, Freq = 1MHz		1120		pF
		V_R = 400V, T_J = 25°C, Freq = 1MHz		92		
		V_R = 800V, T_J = 25°C, Freq = 1MHz		62		

Note: This is a majority carrier diode, so there is no reverse recovery charge

Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance	$R_{th(j-c)}$	junction-case		0.6	0.75	°C/W

Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
SPCDH20120G1	TO-247-2	SC4D20120H	-55 to 175°C	1	TUBE,450	Rohs

Typical Electrical Curves

Figure 1. Forward Characteristics

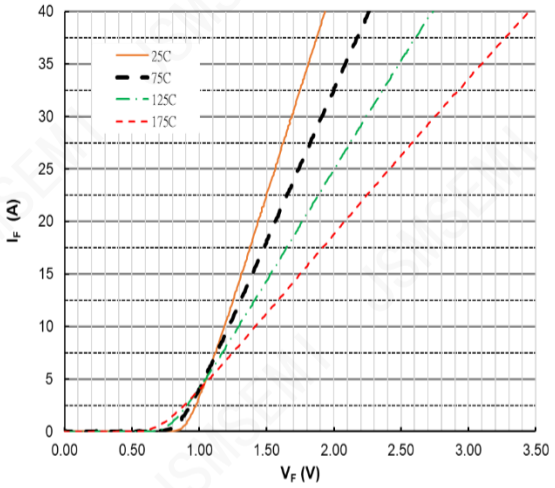


Figure 2. Forward Characteristics

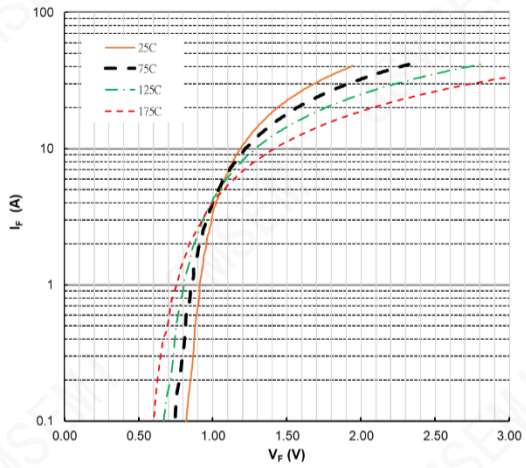


Figure 3. Reverse Characteristics

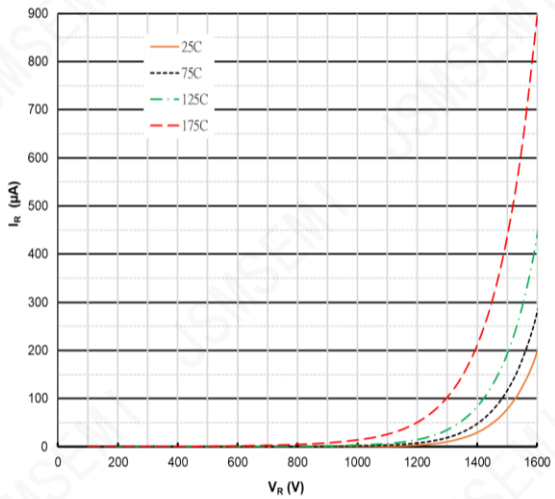


Figure 4. Power Derating

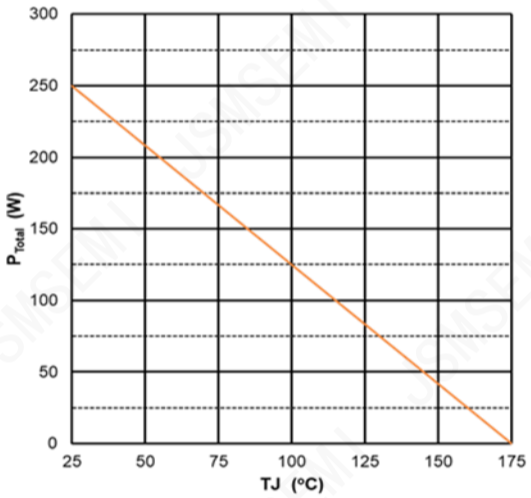


Figure 5. Reverse charge vs. Reverse Voltage

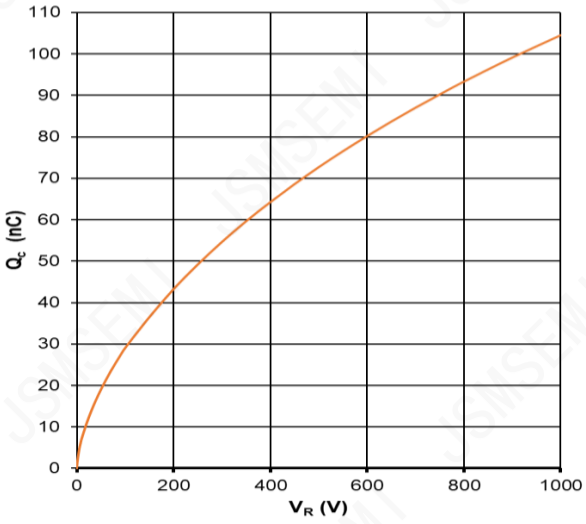
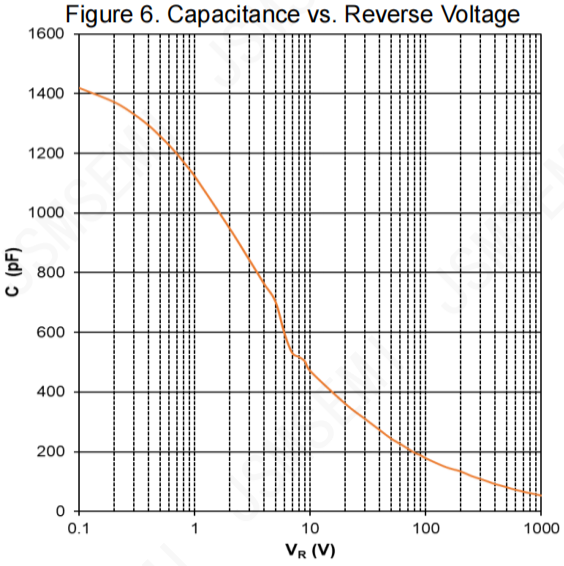
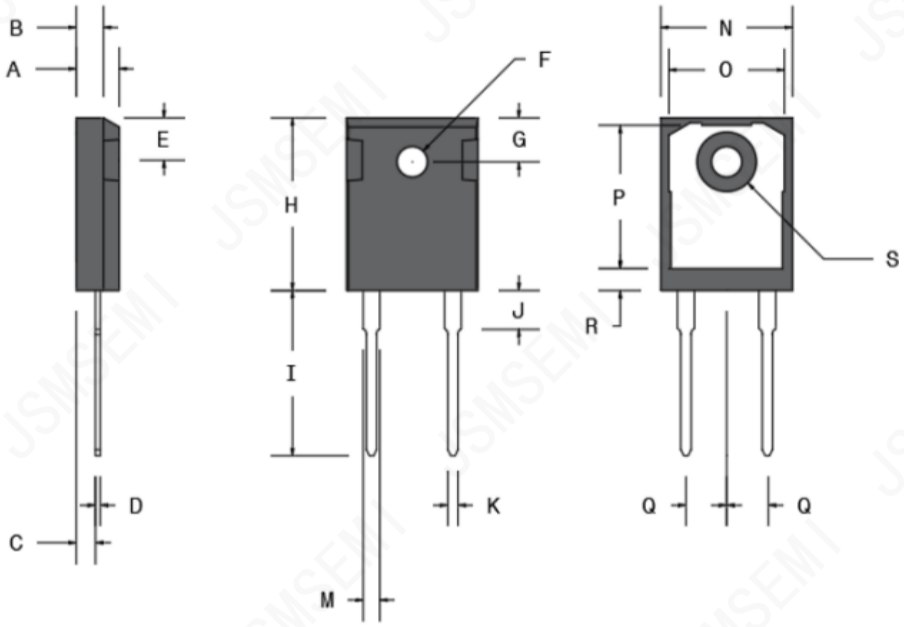


Figure 6. Capacitance vs. Reverse Voltage



Package Dimensions

(TO-247-2 Package)



SYMBOL	MIN	MAX	MIN	MAX
	[mm]	[mm]	[INCH]	[INCH]
A	4.69	5.31	0.185	0.209
B	1.49	2.49	0.059	0.098
C	2.21	2.59	0.087	0.102
D	0.40	0.79	0.016	0.031
E	5.38	6.20	0.212	0.244
F	3.50	3.81	0.138	0.150
G	6.15BSC		0.242BSC	
H	20.80	21.46	0.819	0.845
I	19.81	20.32	0.780	0.800
J	4.00	4.50	0.157	0.177
K	1.01	1.40	0.040	0.055
L	2.87	3.12	0.113	0.123
M	1.65	2.13	0.065	0.084
N	15.49	16.26	0.610	0.640
O	13.50	14.50	0.531	0.571
P	16.50	17.50	0.650	0.689
Q	5.45BSC		0.215BSC	
R	2.00	2.75	0.079	0.108
S	7.10	7.50	0.280	0.295

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2022

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