Features

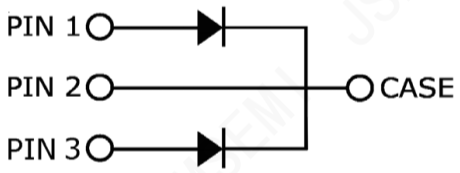
- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior
- High surge current capability
- 100% avalanche tested



TO-247-3

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(Tc=25℃ unless otherwise specified)

Parameter	Symbol	Test Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	T_j = 25℃	1200	V
Surge Peak Reverse Voltage	V_{RSM}	T_j = 25℃	1300	V
DC Blocking Voltage	V_R	T_C = 25℃	1200	V
Forward Current	I_F	T_C ≤ 135℃ T_C ≤ 150℃	14.5/29 10/20	A
Non-Repetitive Forward Surge Current	I_{FSM}	T_C = 25℃, t_p = 8.3ms, Half Sine Wave	80	A
Power Dissipation	P_{tot}	T_C = 25℃	62/145	W
Maximum Case Temperature	T_C		153	℃
Operating Junction and Storage Temperature	T_J, T_{STG}		-55 to 175	℃
TO-247 Mounting Torque		M3 Screw	1	Nm

Electrical Characteristics

Parameter	Symbol	Test Conditions	Typ.	Max.	Unit
Forward Voltage	V_F	I_F = 10A, T_J = 25℃ I_F = 10A, T_J = 175℃	1.45 2.0	1.75 2.6	V
Reverse Current	I_R	V_R = 1200V, T_J = 25℃ V_R = 1200V, T_J = 175℃	4 30	100 300	μA
Total Capacitance	C	V_R = 0V, T_J = 25℃, f = 1MHz V_R = 400V, T_J = 25℃, f = 1MHz V_R = 800V, T_J = 25℃, f = 1MHz	800 56 42	/	pF
Total Capacitive Charge	Q_C	V_R = 800V, I_F = 10A di/dt = 200A/μs, T_J = 25℃	61	/	nC

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

Thermal Characteristics

Parameter	Symbol	Typ.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.52/1.04	℃/W

Typical Performance(Per Leg)

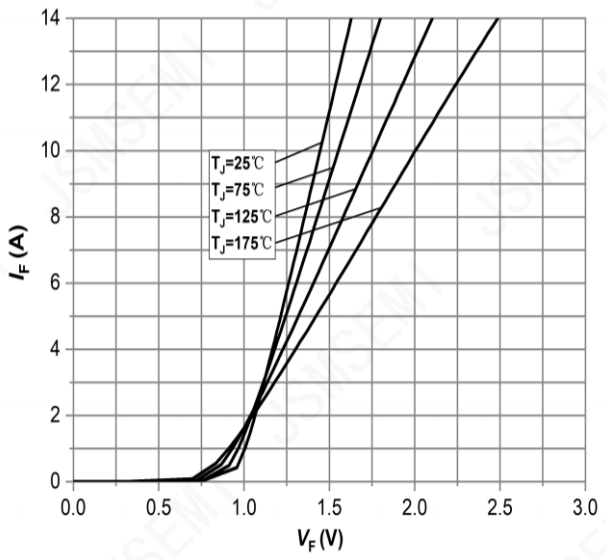


Figure 1: Forward Characteristics

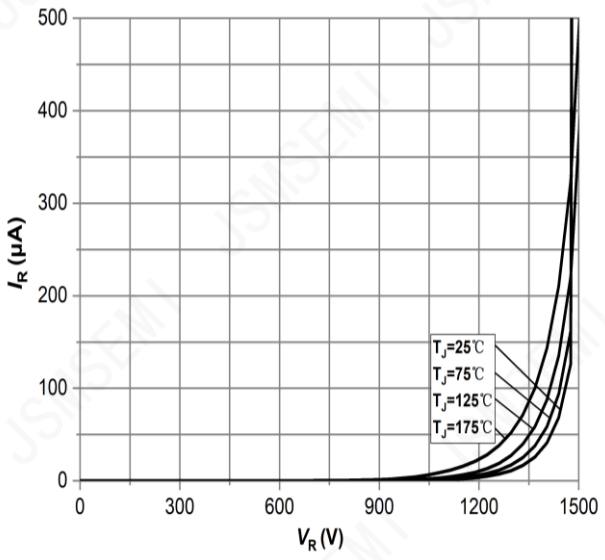


Figure 2: Reverse Characteristics

Typical Performance

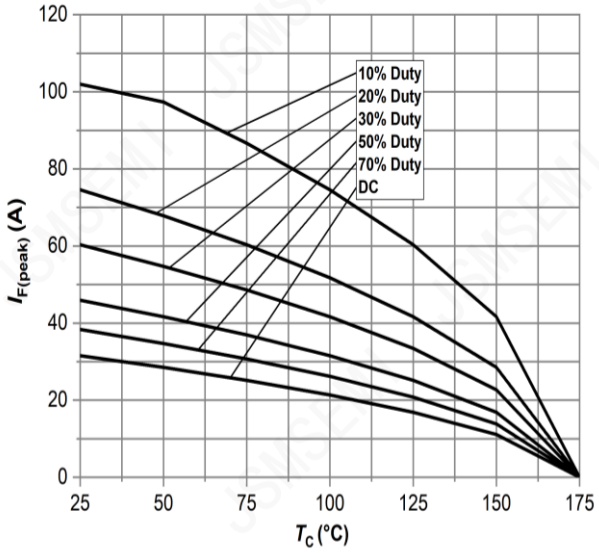


Figure 3: Current Derating

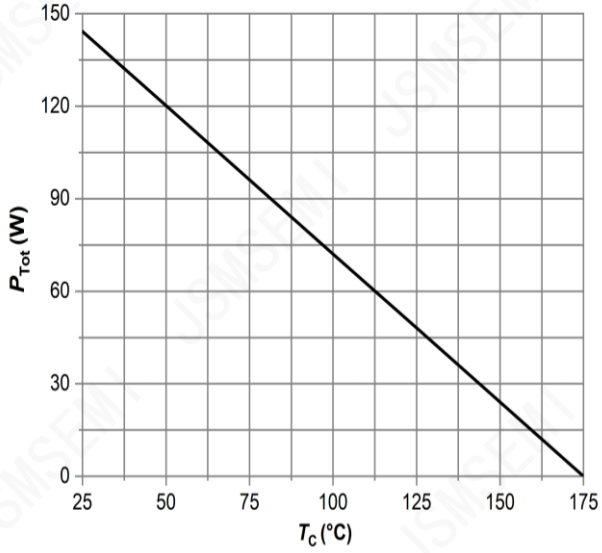


Figure 4: Power Derating

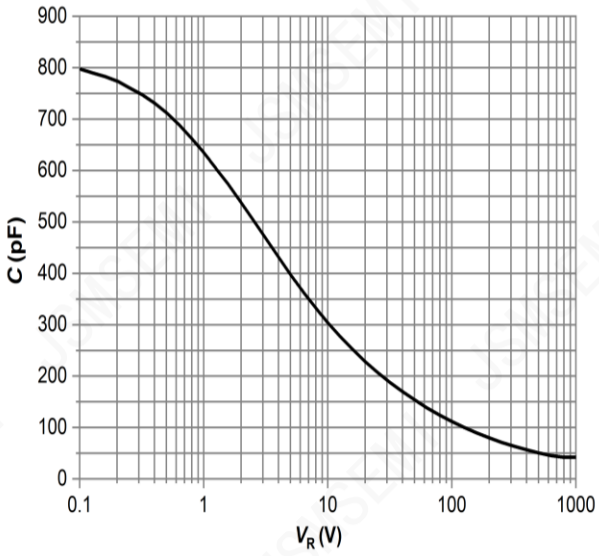


Figure 5: Capacitance vs. Reverse Voltage

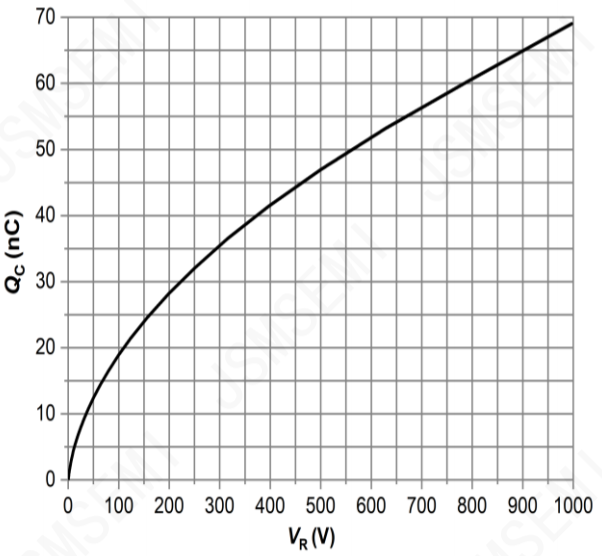


Figure 6: Total Capacitance Charge vs. Reverse

Typical Performance

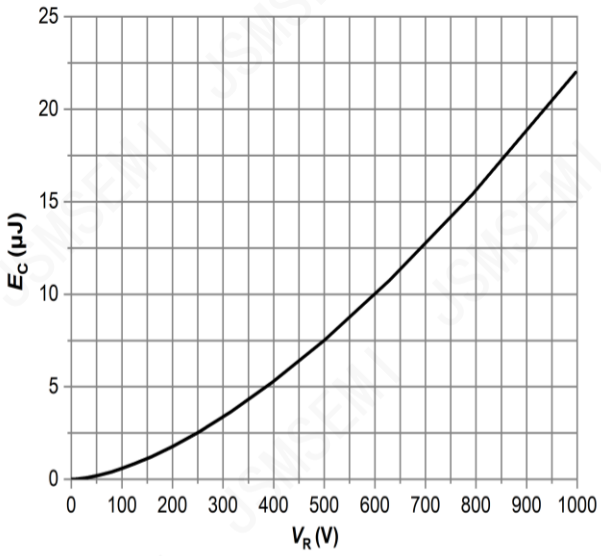


Figure 7:Typical Capacitance Stored Energy

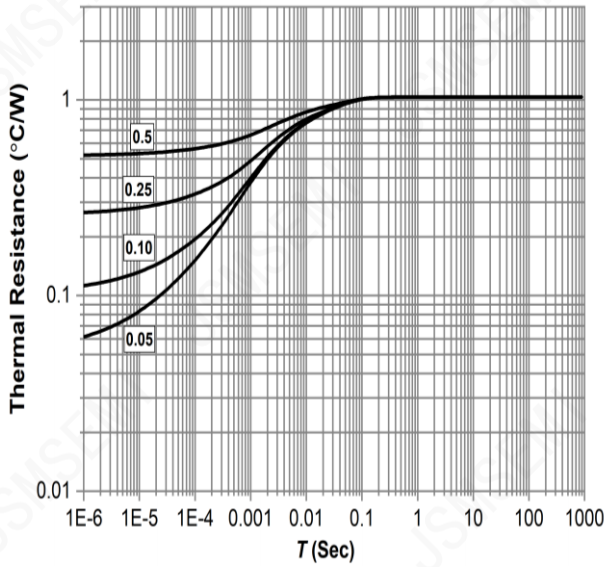


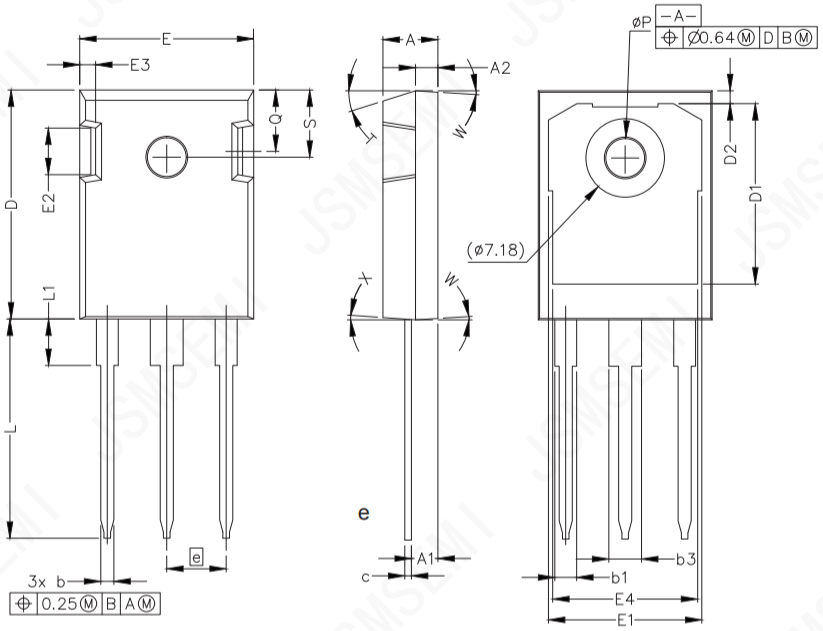
Figure 8: Transient Thermal Impedance

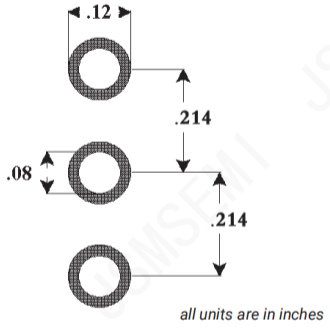
Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
SC4D20120D	TO-247-3	SC4D20120D	-55 to 175°C	1	TUBE,450	Rohs

Package Dimensions

(TO-247-3 Package)





Recommended Solder Pad Layout

POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.042	.052	1.07	1.33
b1	.075	.095	1.91	2.41
b3	.113	.133	2.87	3.38
c	.022	.027	0.55	0.68
D	.819	.831	20.80	21.10
D1	.640	.695	16.25	17.65
D2	.037	.049	0.95	1.25
E	.620	.635	15.75	16.13
E1	.516	.557	13.10	14.15
E2	.145	.201	3.68	5.10
E3	.039	.075	1.00	1.90
E4	.487	.529	12.38	13.43
e	.214 BSC		5.44 BSC	
L	.780	.800	19.81	20.32
L1	.161	.173	4.10	4.40
N	3			
ØP	.138	.144	3.51	3.65
Q	.216	.236	5.49	6.00
S	.238	.248	6.04	6.30
T	17.5° REF			
W	3.5° REF			
X	4° REF			

Revision History

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

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