G5S12020PMT

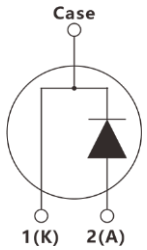
Silicon Carbide Schottky Diode

Features

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

V_{RRM}	1200V
I_F (T_C = 149°C)	20A
Q_c	80nC

TO-247AC



Inner Circuit

Benefits

- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction

G = GPT
5 = Gen5
S = SiC Schottky Diode
120 = Voltage Rating 1200V
20 = Current Rating 20A
PMT = TO-247AC
DDDDDD = Traceable Code

Maximum Ratings (at T_J = 25 °C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
Continuous Forward Current T_C = 25°C T_C = 135°C T_C = 149°C	I_F	 54 25.9 20	A
Repetitive Peak Forward Surge Current T_C = 25°C, t_p = 10ms, Half Sine Pulse	I_{FRM}	90	A
Non-Repetitive Forward Surge Current T_C = 25°C, t_p = 10ms, Half Sine Pulse	I_{FSM}	180	A
i^2t Value T_C = 25°C, t_p = 10ms, Half Sine Pulse	$\int i^2dt$	162	A^2s
Power Dissipation T_C = 25°C T_C = 110°C	P_{tot}	 259 112	W
Operating Junction Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{stg}	-55 to +175	°C
Mounting Torque, M3 Screw	M	1	Nm

Electrical Characteristics (at T_J = 25 °C, unless otherwise specified)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC Blocking Voltage	V_{DC}		1200	-	-	V
Forward Voltage	V_F	I_F = 20A T_J = 25°C T_J = 175°C	 - -	 1.47 2.2	 1.7 2.5	V
Reverse Current	I_R	V_R = 1200V T_J = 25°C T_J = 175°C	 - -	 5.5 32	 50 100	μA
Total Capacitance	C	f = 1MHz V_R = 0V V_R = 400V V_R = 800V	 - - -	 1235 75 62	 - - -	pF
Total Capacitive Charge	Q_C	V_R = 800V T_J = 25°C	-	80	-	nC
Capacitance Stored Energy	E_C	V_R = 800V	-	41	-	uJ

Thermal Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Thermal Resistance, junction-case	$R_{th(j-c)}$		-	0.58	-	°C/W

Typical Characteristics Curves

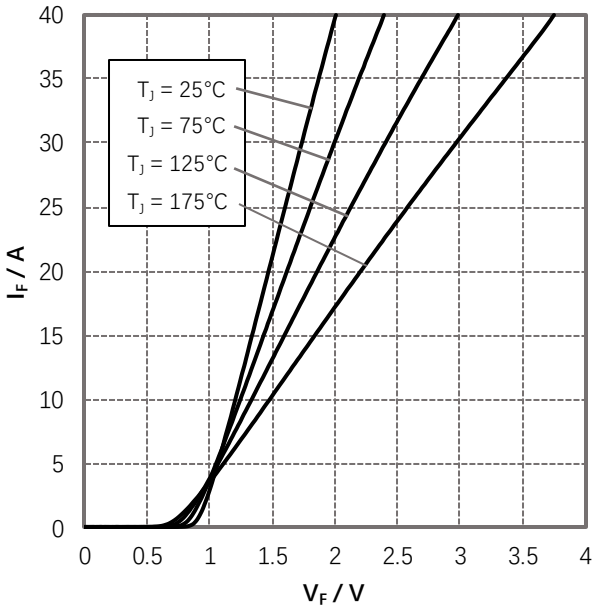


Figure 1. Forward Characteristics

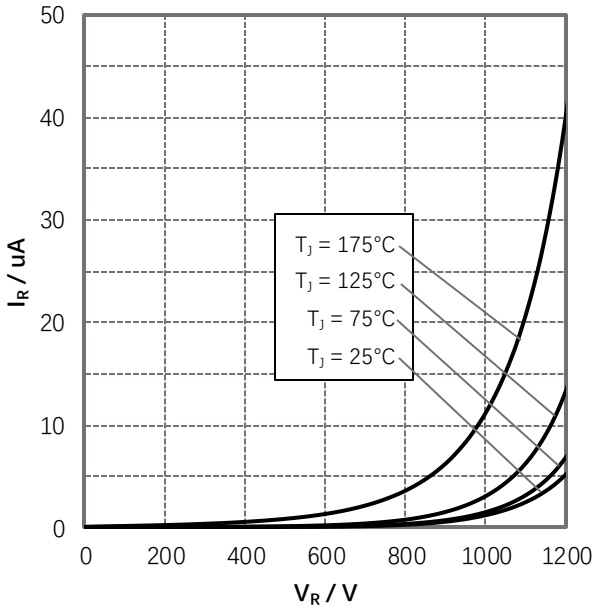


Figure 2. Reverse Characteristics

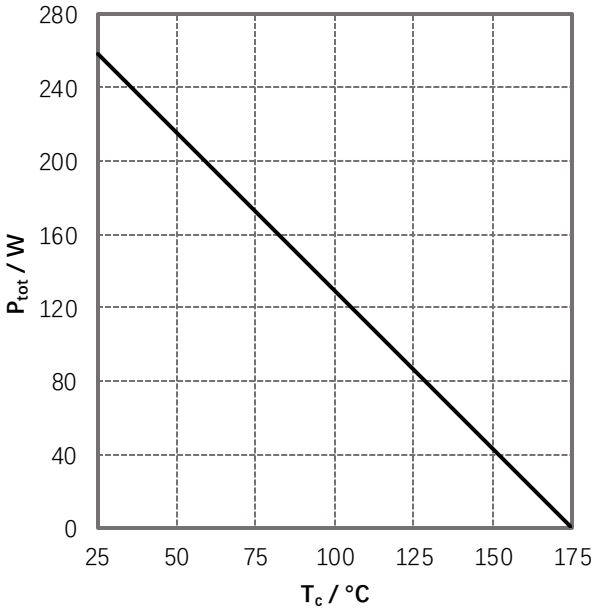


Figure 3. Power Derating

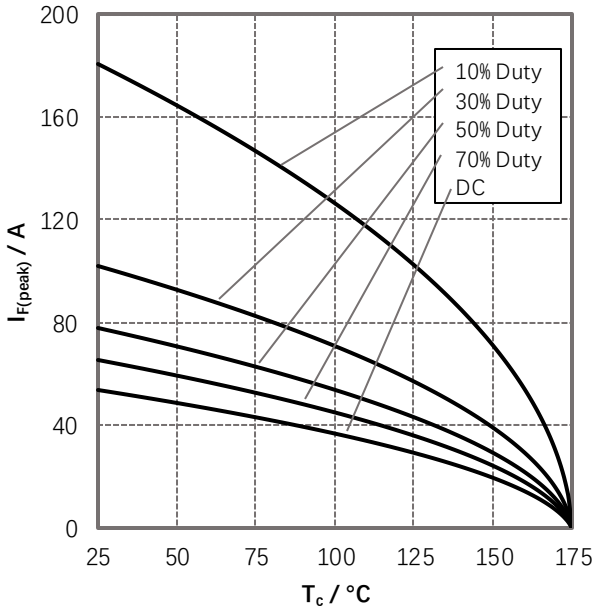


Figure 4. Current Derating

Typical Characteristics Curves

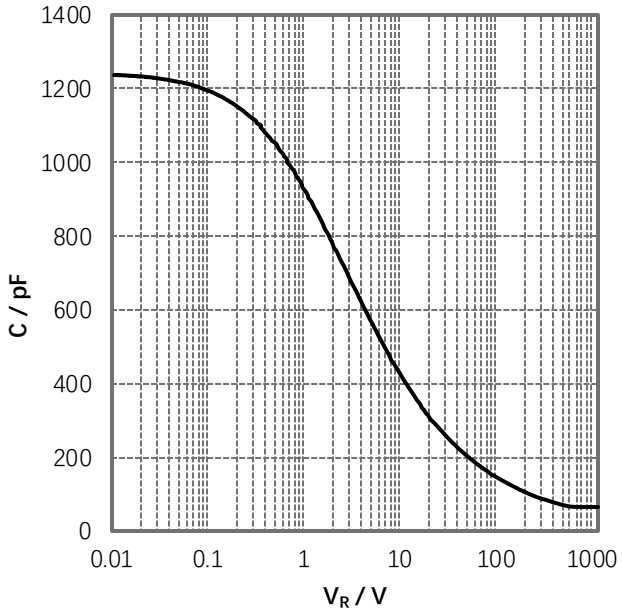


Figure 5. Capacitance vs. Reverse Voltage

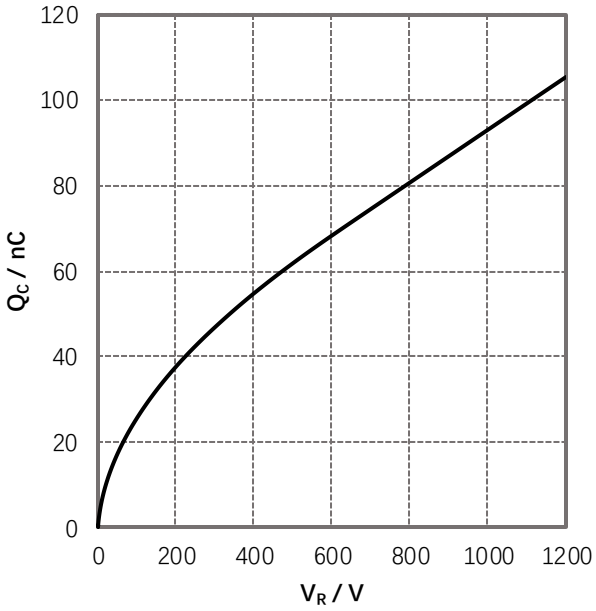


Figure 6. Reverse Charge vs. Reverse Voltage

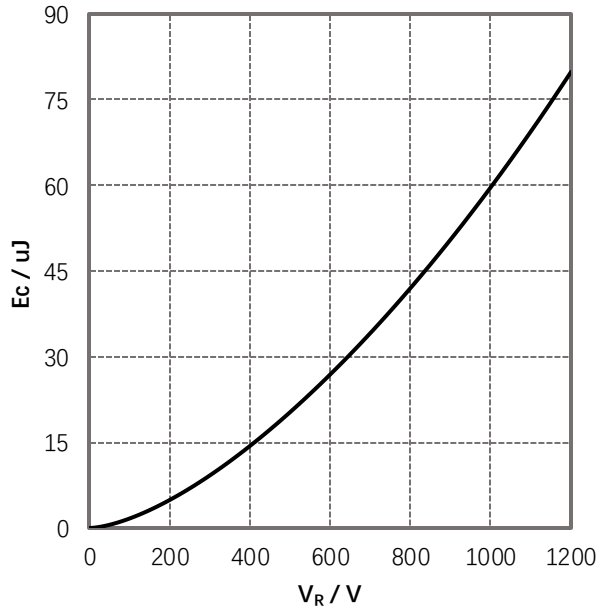


Figure 7. Capacitance Stored Energy

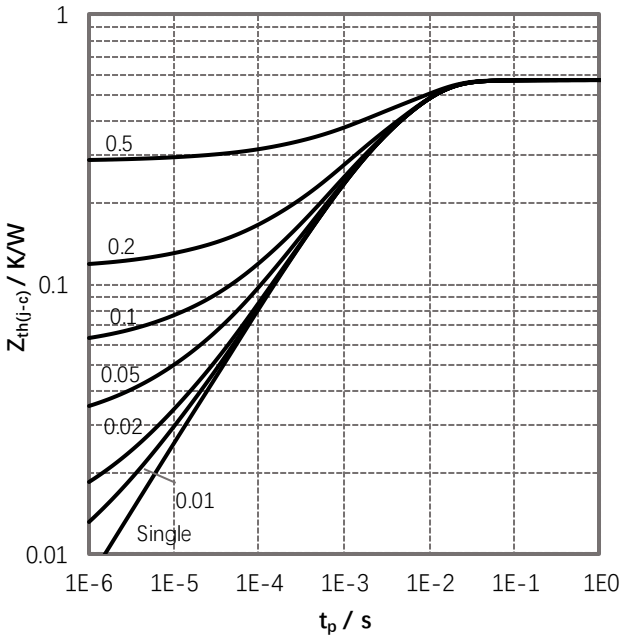
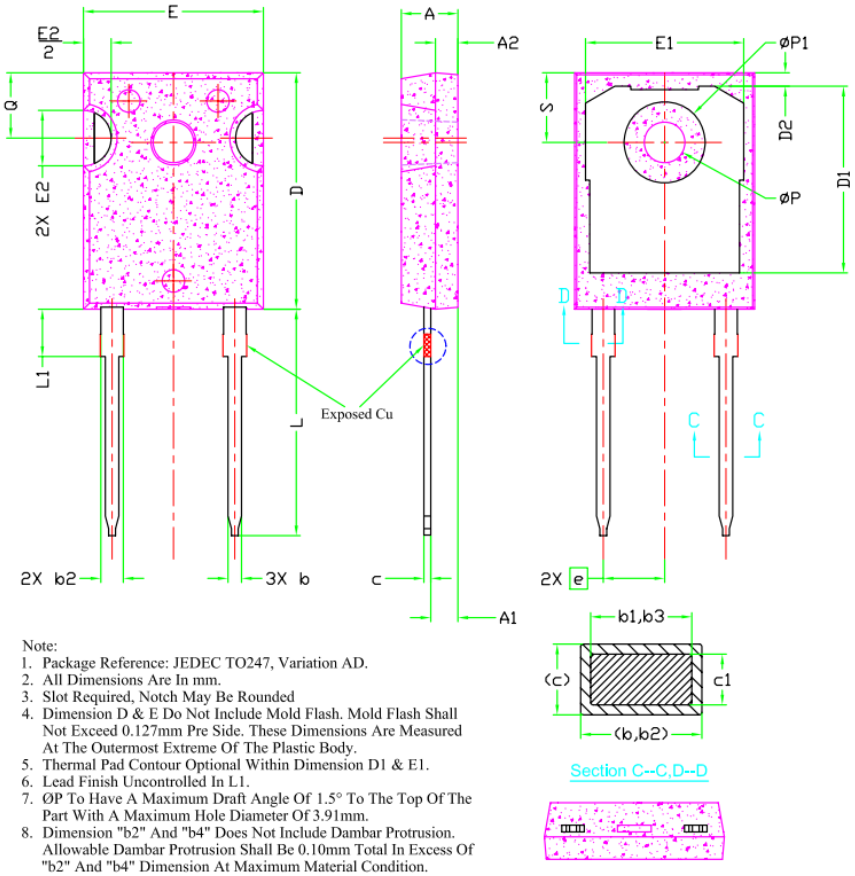


Figure 8. Transient Thermal Impedance

Package Dimensions



Note:
1. Package Reference: JEDEC TO247, Variation AD.
2. All Dimensions Are In mm.
3. Slot Required, Notch May Be Rounded
4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
5. Thermal Pad Contour Optional Within Dimension D1 & E1.
6. Lead Finish Uncontrolled In L1.
7. ØP To Have A Maximum Draft Angle Of 1.5° To The Top Of The Part With A Maximum Hole Diameter Of 3.91mm.
8. Dimension "b2" And "b4" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10mm Total In Excess Of "b2" And "b4" Dimension At Maximum Material Condition.

SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ØP	3.56	3.61	3.65	7
ØP1	7.19REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	

Ordering Information

Part Number	Marking	Package	Packaging Mode
G5S12020PMT	G5S12020PMT	TO-247AC	30pcs/Tube