



650V/8A Silicon Carbide Power Schottky Barrier Diode

Features

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

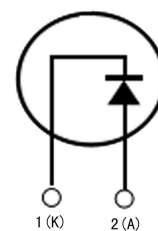
Key Characteristics		
V_{RRM}	650	V
$I_F, T_c \leq 148^\circ\text{C}$	8	A
Q_c	30	nC

Benefits

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

Applications

- SMPS, e.g., CCM PFC;
- Motor drives, Solar application, UPS, Wind turbine, Rail traction, EV/HEV



Part No.	Package Type	Marking
G3S06508J	TO-220ISO	G3S06508J

Maximum Ratings

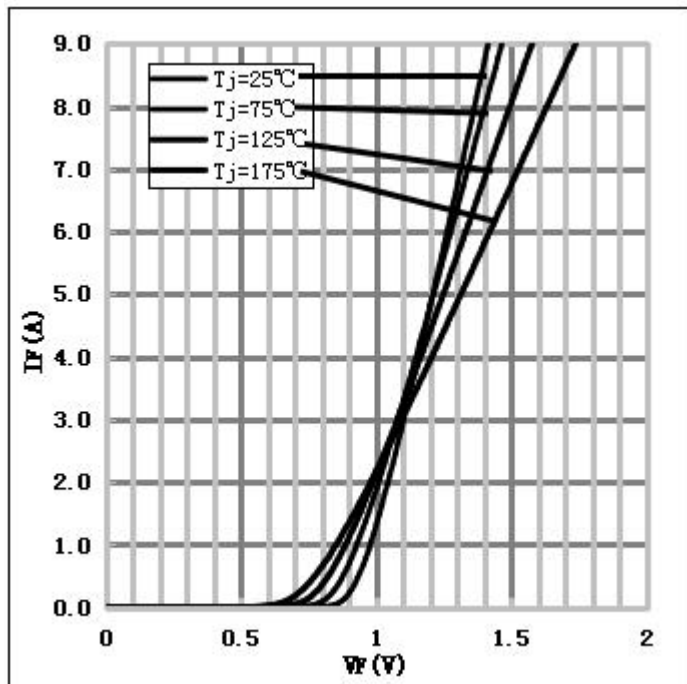
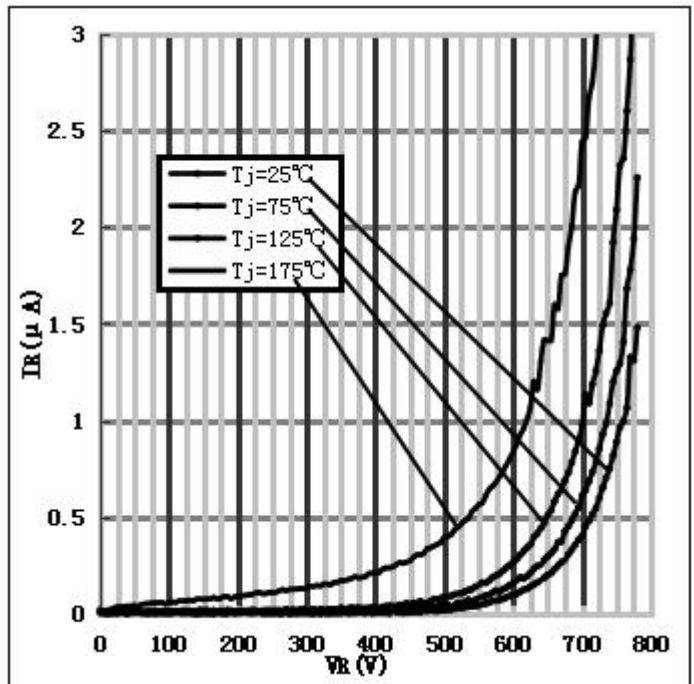
Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		650	V
Surge Peak Reverse Voltage	V_{RSM}		650	
DC Blocking Voltage	V_{DC}		650	
Continuous Forward Current	I_F	$T_C=25^{\circ}\text{C}$ $T_C=125^{\circ}\text{C}$ $T_C=148^{\circ}\text{C}$	21.7 11.2 8	A
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$	40	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	105	A
Power Dissipation	P_{TOT}	$T_C=25^{\circ}\text{C}$	66	W
		$T_C=110^{\circ}\text{C}$	29	W
Operating Junction	T_j		-55°C to 175°C	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-55°C to 175°C	$^{\circ}\text{C}$
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal Characteristics

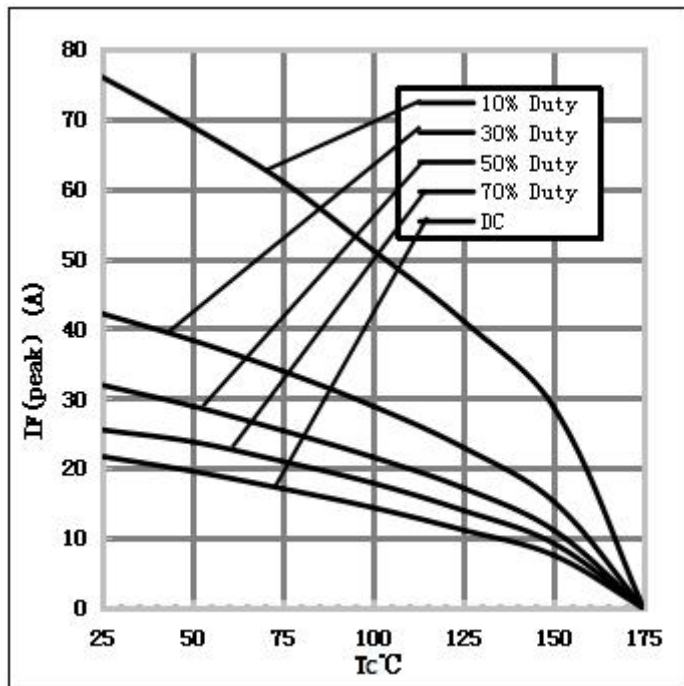
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	R_{thJC}		2.26	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

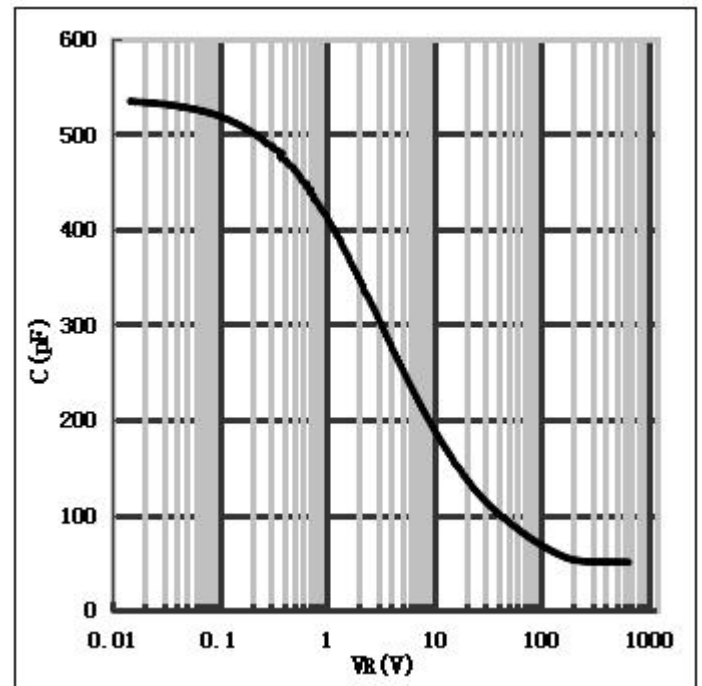
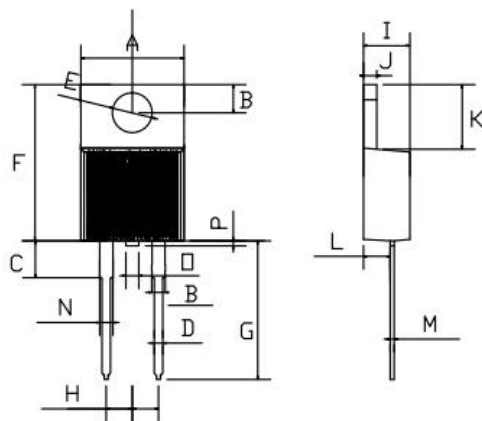
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	$I_F=8A, T_j=25^{\circ}C$	1.41	1.7	V
		$I_F=8A, T_j=175^{\circ}C$	1.63	2	
Reverse Current	I_R	$V_R=650V, T_j=25^{\circ}C$	0.25	50	μA
		$V_R=650V, T_j=175^{\circ}C$	1.5	100	
Total Capacitive Charge	Q_C	$V_R=400V, T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V) dV$	30	-	nC
Total Capacitance	C	$V_R=0V, T_j=25^{\circ}C, f=1MHz$	550	588	pF
		$V_R=200V, T_j=25^{\circ}C, f=1MHz$	56.5	57	
		$V_R=400V, T_j=25^{\circ}C, f=1MHz$	54	54.5	

Performance Graphs1) Forward IV characteristics as a function of T_j :2) Reverse IV characteristics as a function of T_j :

3) Current Derating:



4) Capacitance vs. reverse voltage:

Package TO-220ISO

DIM.	Unit(mm)		Unit(inch)	
	Min	Max	Min	Max
A	9.7	10.4	0.381	0.409
B	2.5	3	0.098	0.118
C	3.5	3.9	0.137	0.153
D	0.7	0.92	0.027	0.036
E	3.72	3.95	0.146	0.155
F	14.51	15.55	0.571	0.612
G	12.95	13.9	0.509	0.547
H	2.4	2.7	0.094	0.106
I	4.38	4.65	0.172	0.183
J	1.15	1.36	0.045	0.053
K	5.86	6.38	0.230	0.251
L	2.35	2.85	0.092	0.112
M	0.32	0.58	0.012	0.022
N	1.18	1.42	0.046	0.055
O	1.18	1.42	0.046	0.055
P	0.35	0.65	0.013	0.025

Note: The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC(RoHS2). RoHS Certification and other certifications can be obtained from GPT sales representatives or GPT website: <http://globalpowertech.cn/English/index.asp>

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