

650V/ 1A 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

Benefits

- Improve system efficiency
- High system reliability
- Optimum cost performance
- Increase system power density
- Reduced heat sink requirements
- Very fast implementation switch

Applications

- SMPS, e.g., CCM PFC;
- High voltage sensor, Solar inverter, EV/HEV
- High frequency converter
- Battery charger, Auxiliary power, LED /HID

Key Characteristics		
V_{RRM}	650	V
$I_F, T_c \leq 104^\circ\text{C}$	1	A
Q_c	3.6	nC



Part No.	Package Type	Marking
G51XT	SOD123	G51XT

Maximum Ratings

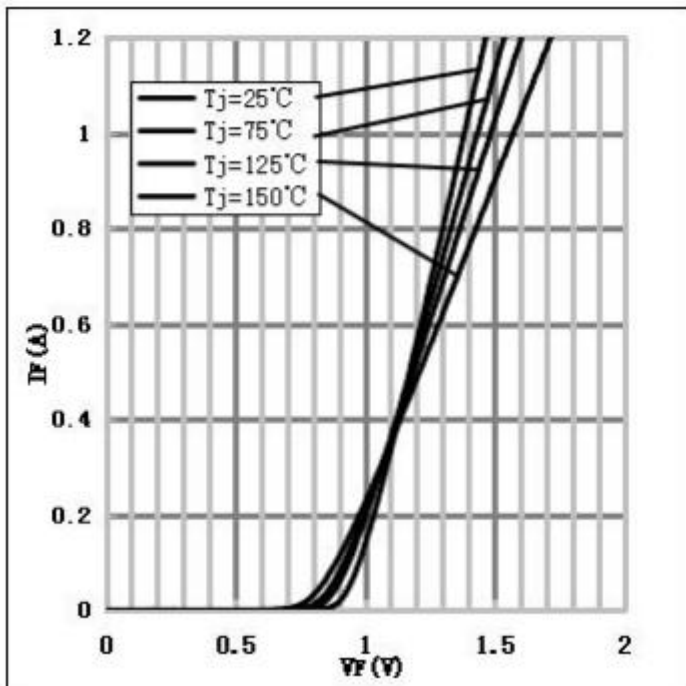
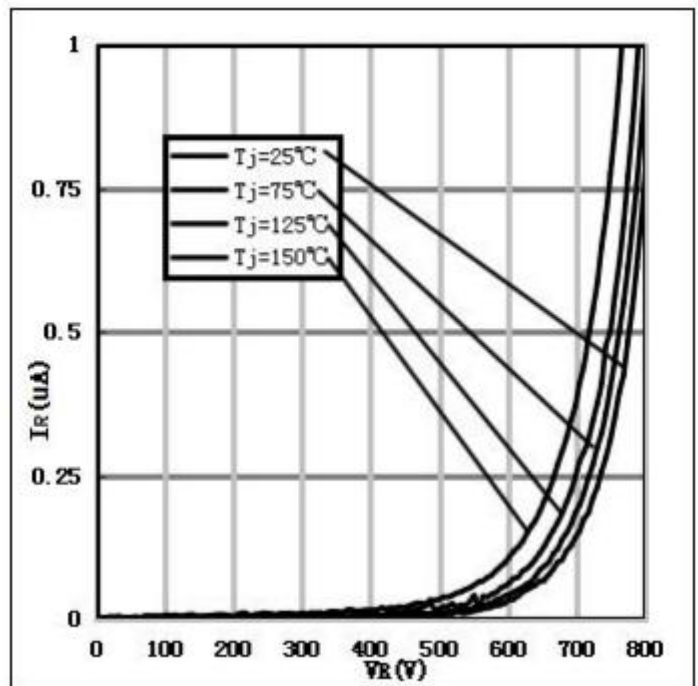
Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		650	V
Surge Peak Reverse Voltage	V_{RSM}		650	V
DC Blocking Voltage	V_{DC}		650	V
Continuous Forward Current	I_F	$T_C=25^{\circ}C$ $T_C=104^{\circ}C$ $T_C=125^{\circ}C$	1.84 1 0.65	A
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}C$, $t_p=10ms$, Half Sine Wave, $D=0.3$	5	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^{\circ}C$, $t_p=10ms$, Half Sine Wave	18	A
Power Dissipation	P_{TOT}	$T_C=25^{\circ}C$	3.8	W
		$T_C=110^{\circ}C$	1.2	W
Operating Junction	T_j		-55°C to 175°C	°C
Storage Temperature	T_{stg}		-55°C to 175°C	°C

Thermal Characteristics

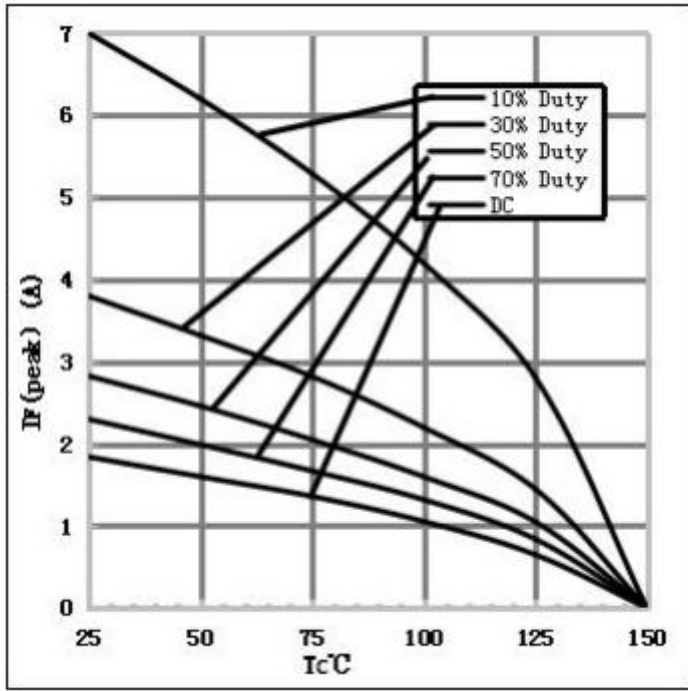
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	R_{thJC}		32.74	°C/W

Electrical Characteristics

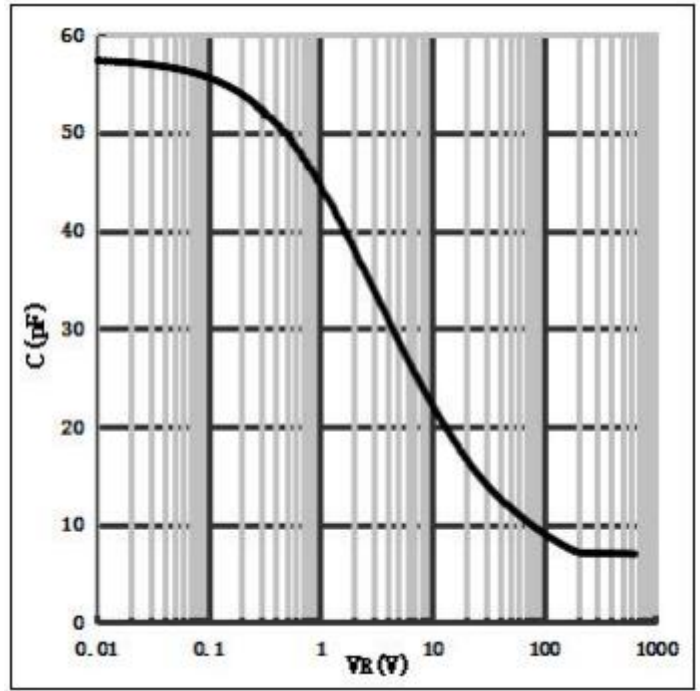
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	$I_F=1A, T_j=25^\circ C$	1.38	1.6	V
		$I_F=1A, T_j=150^\circ C$	1.57	2	
Reverse Current	I_R	$V_R=650V, T_j=25^\circ C$	0.07	50	μA
		$V_R=650V, T_j=150^\circ C$	0.2	100	
Total Capacitive Charge	Q_C	$V_R=400V, T_j=150^\circ C$ $Q_C = \int_0^{V_R} C(V)dV$	3.6	-	nC
Total Capacitance	C	$V_R=0V, T_j=25^\circ C, f=1MHz$	57.5	60	pF
		$V_R=200V, T_j=25^\circ C, f=1MHz$	7.18	10	
		$V_R=400V, T_j=25^\circ C, f=1MHz$	7	8	

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

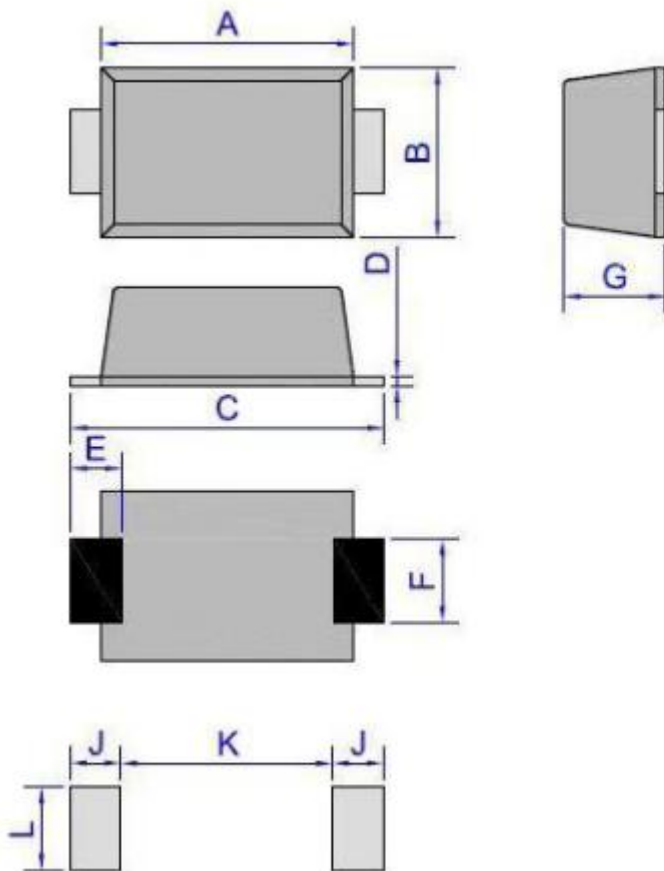
3) Current Derating:



4) Capacitance vs. reverse voltage:



Package SOD123



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	1.60	2.00	0.063	0.079
C	3.45	3.95	0.136	0.156
D	0.10	0.25	0.004	0.01
E	0.3	0.9	0.012	0.035
F	0.80	1.20	0.031	0.047
G	0.95	1.35	0.037	0.053
J	1.30		0.051	
K		1.70		0.067
L	1.30		0.051	

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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