



## 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

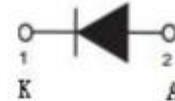
### Benefits

- 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**

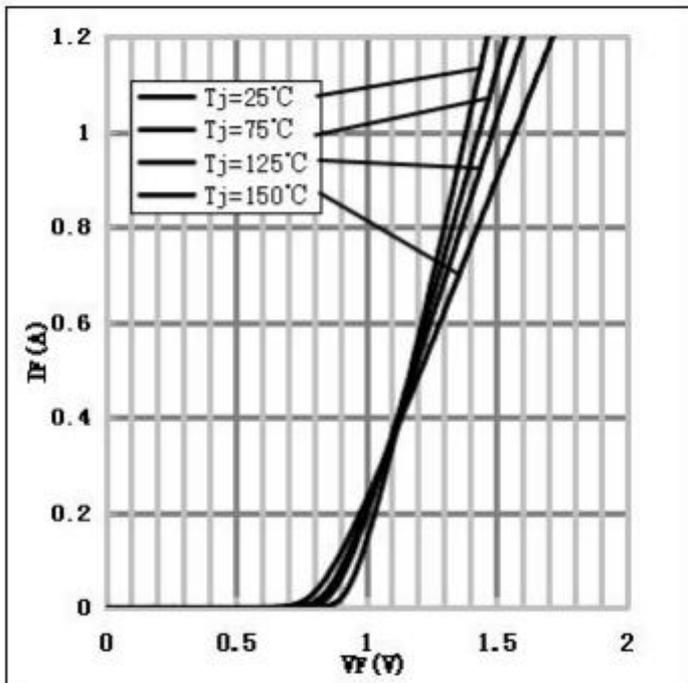
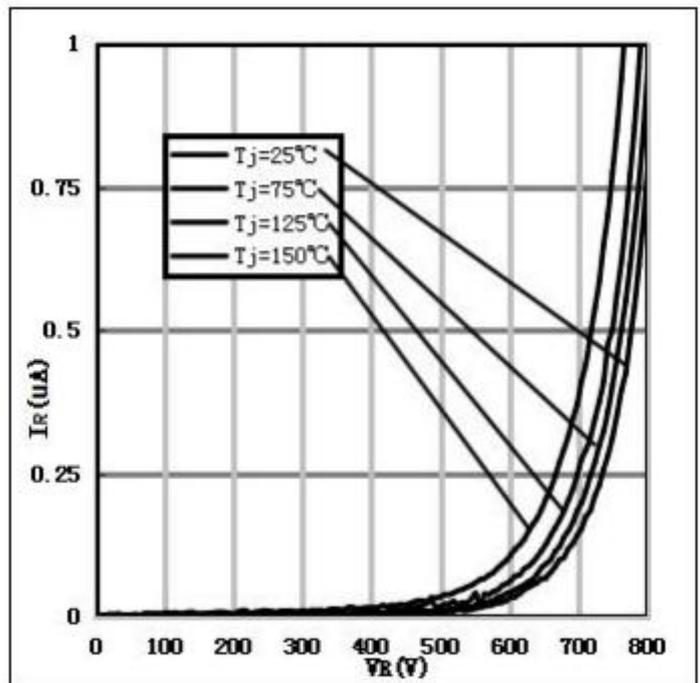
Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$		650	V
Surge Peak Reverse Voltage	$V_{RSM}$		650	V
DC Blocking Voltage	$V_{DC}$		650	V
Continuous Forward Current	$I_F$	$T_C=25^{\circ}C$ $T_C=104^{\circ}C$ $T_C=125^{\circ}C$	1.84 1 0.65	A
Repetitive Peak Forward Surge 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**

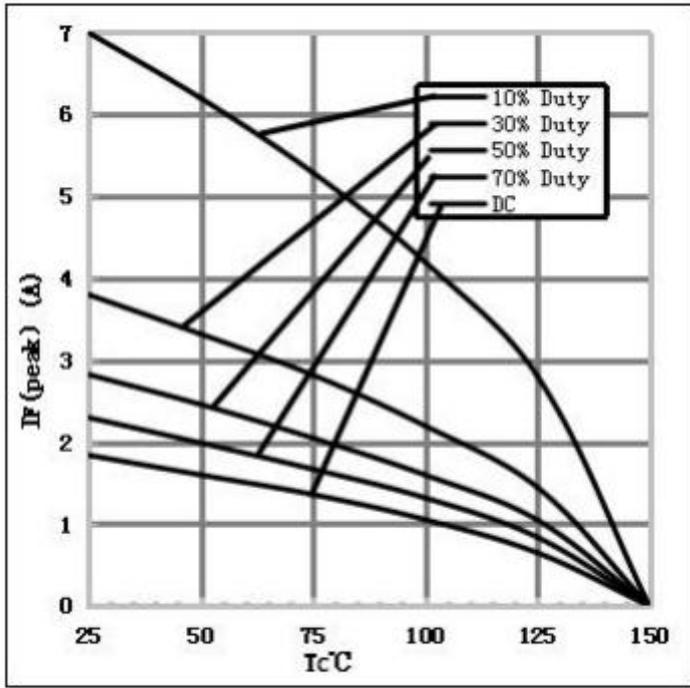
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{thJC}$		32.74	°C/W

**Electrical Characteristics**

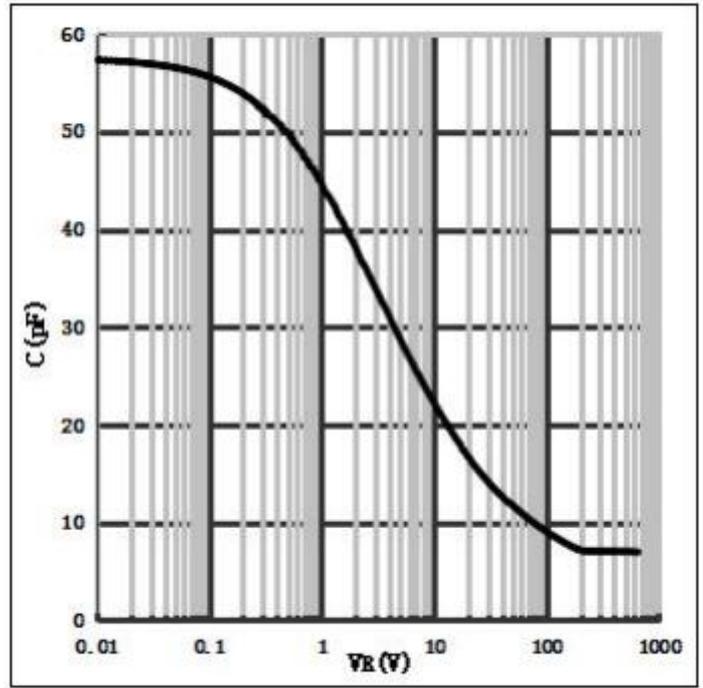
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	$V_F$	$I_F=1A, T_j=25^\circ C$	1.38	1.6	V
		$I_F=1A, T_j=150^\circ C$	1.57	2	
Reverse Current	$I_R$	$V_R=650V, T_j=25^\circ C$	0.07	50	$\mu A$
		$V_R=650V, T_j=150^\circ C$	0.2	100	
Total Capacitive Charge	$Q_C$	$V_R=400V, T_j=150^\circ C$ $Q_C = \int_0^{V_R} C(V)dV$	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 Graphs**1) Forward IV characteristics as a function of  $T_j$  :2) Reverse IV characteristics as a function of  $T_j$  :

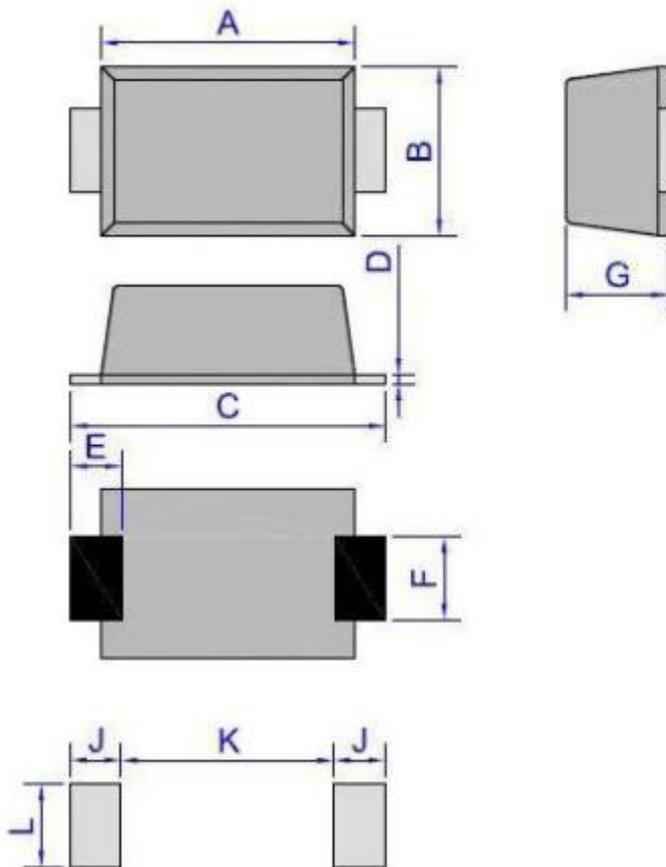
3) Current Derating:



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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