



## 1200V/10A 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

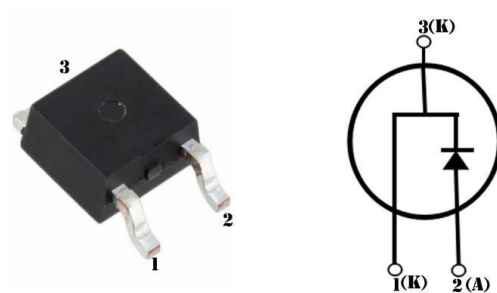
### Benefits

- 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

Key Characteristics		
$V_{RRM}$	1200	V
$I_F, T_c \leq 154^\circ\text{C}$	10	A
$Q_c$	54.4	nC



Part No.	Package Type	Marking
G3S12010C	TO-252	G3S12010C

**Maximum Ratings**

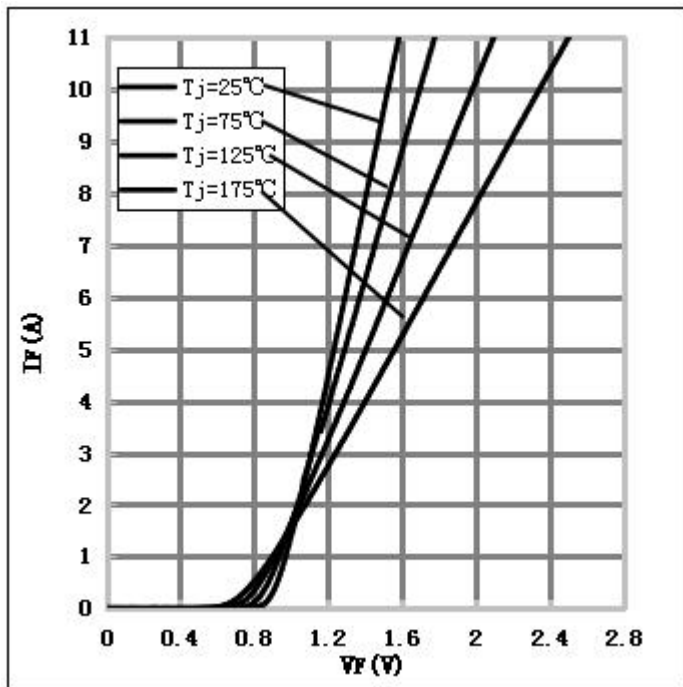
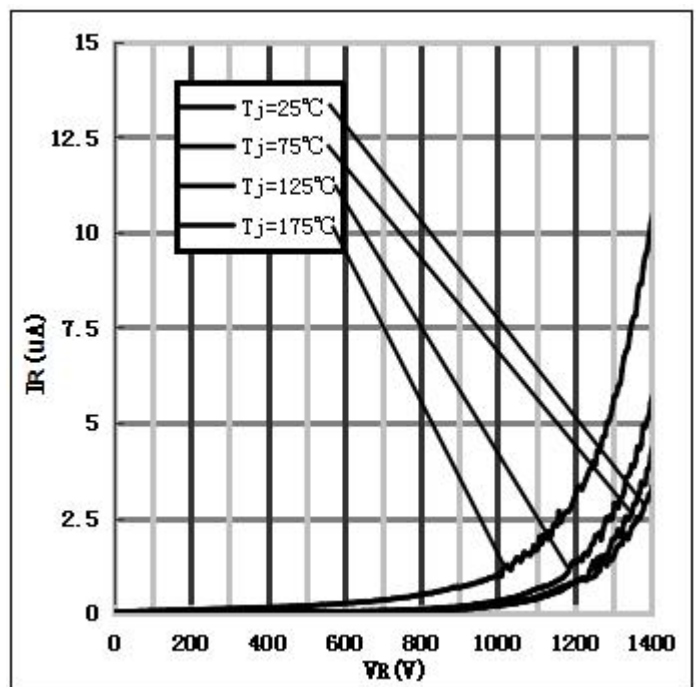
Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$		1200	V
Surge Peak Reverse Voltage	$V_{RSM}$		1200	
DC Blocking Voltage	$V_{DC}$		1200	
Continuous Forward Current	$I_F$	$T_C=25^{\circ}\text{C}$ $T_C=125^{\circ}\text{C}$ $T_C=154^{\circ}\text{C}$	32.4 17.4 10	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	$T_C=25^{\circ}\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave, $D=0.3$	50	A
Non-repetitive Peak Forward Surge Current	$I_{FSM}$	$T_C=25^{\circ}\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	140	A
Power Dissipation	$P_{TOT}$	$T_C=25^{\circ}\text{C}$	188	W
		$T_C=110^{\circ}\text{C}$	81	W
Operating Junction	$T_j$		$-55^{\circ}\text{C}$ to $175^{\circ}\text{C}$	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$		$-55^{\circ}\text{C}$ to $175^{\circ}\text{C}$	$^{\circ}\text{C}$

**Thermal Characteristic**

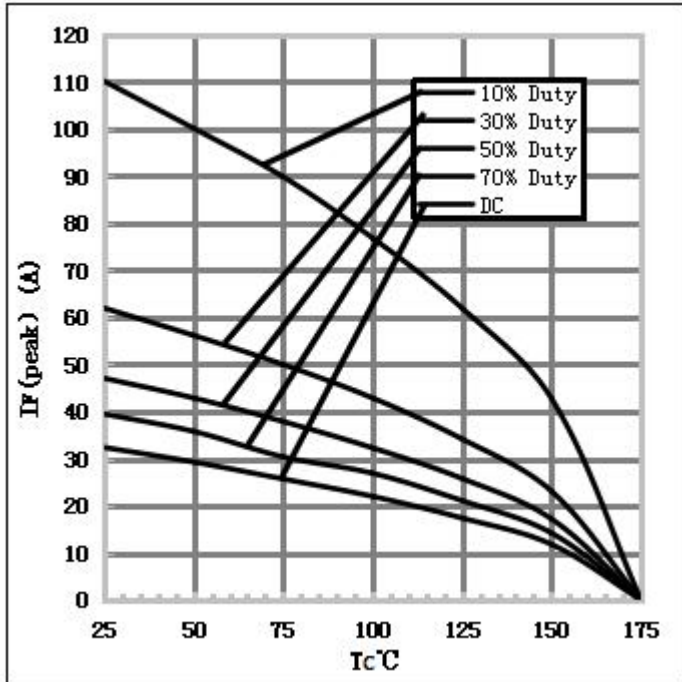
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{thJC}$		0.84	$^{\circ}\text{C}/\text{W}$

**Electrical Characteristics**

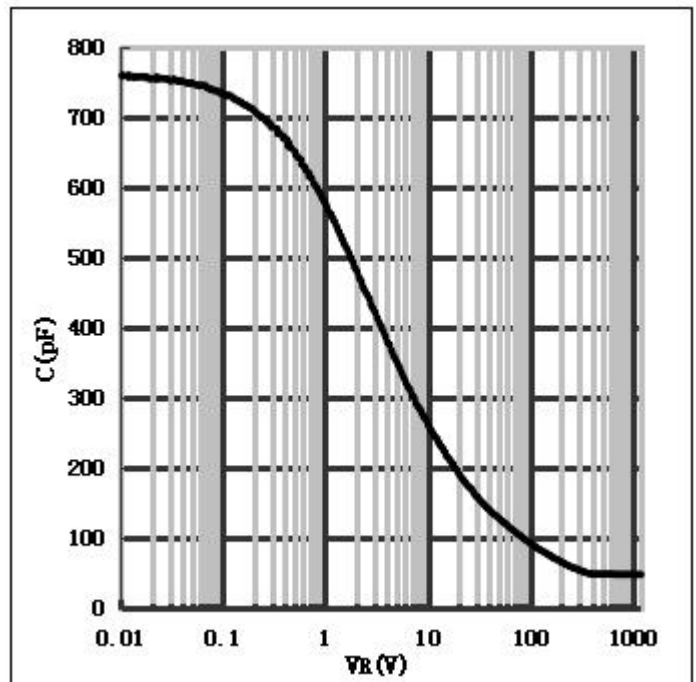
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	$V_F$	$I_F=10A, T_j=25^{\circ}C$	1.55	1.7	V
		$I_F=10A, T_j=175^{\circ}C$	2.35	2.6	
Reverse Current	$I_R$	$V_R=1200V, T_j=25^{\circ}C$	0.7	50	$\mu A$
		$V_R=1200V, T_j=175^{\circ}C$	3	100	
Total Capacitive Charge	$Q_C$	$V_R=800V, T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V) dV$	54.4	-	nC
Total Capacitance	C	$V_R=0V, T_j=25^{\circ}C, f=1MHz$	765	790	pF
		$V_R=400V, T_j=25^{\circ}C, f=1MHz$	50	54	
		$V_R=800V, T_j=25^{\circ}C, f=1MHz$	48.5	51	

**Performance Graphs**1) Forward IV characteristics as a function of  $T_j$  :2) Reverse IV characteristics as a function of  $T_j$  :

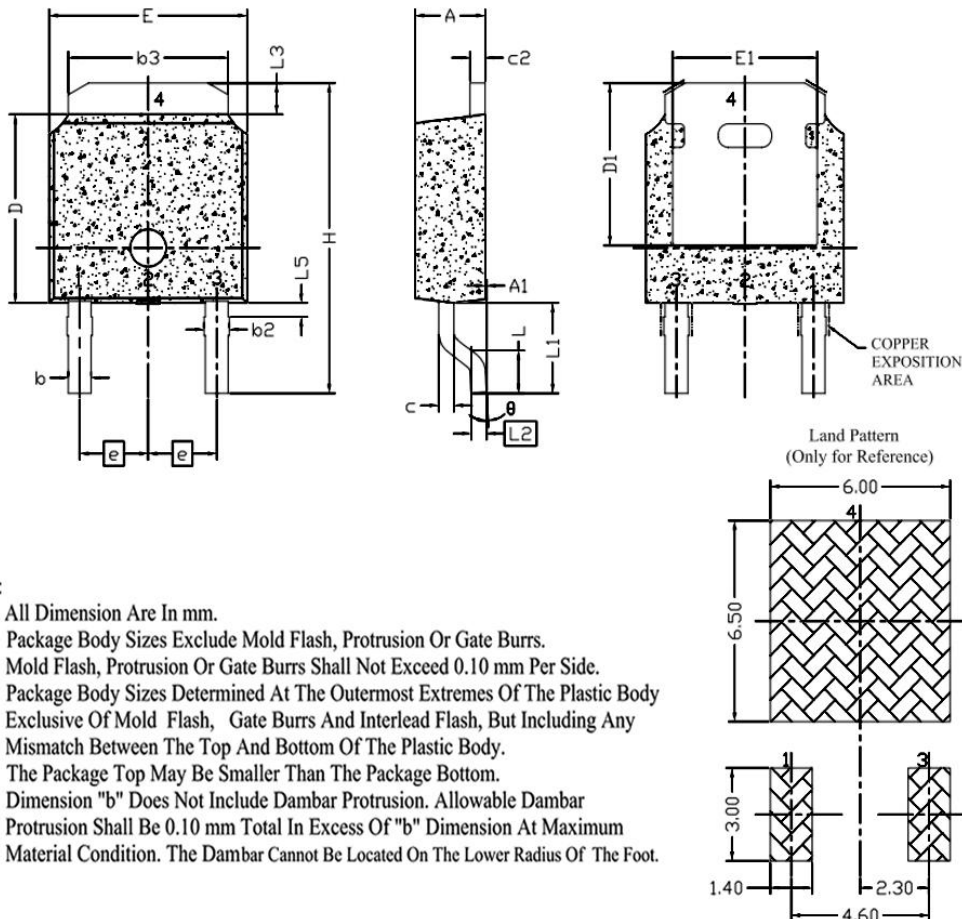
## 3) Current Derating:



## 4) Capacitance vs. reverse voltage:

**Package TO-252**

单位: mm



## Note:

1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash, Protrusion Or Gate Burrs. Mold Flash, Protrusion Or Gate Burrs Shall Not Exceed 0.10 mm Per Side.
3. Package Body Sizes Determined At The Outermost Extremes Of The Plastic Body Exclusive Of Mold Flash, Gate Burrs And Interlead Flash, But Including Any Mismatch Between The Top And Bottom Of The Plastic Body.
4. The Package Top May Be Smaller Than The Package Bottom.
5. Dimension "b" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10 mm Total In Excess Of "b" Dimension At Maximum Material Condition. The Dambar Cannot Be Located On The Lower Radius Of The Foot.

SYMBDL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1	2.743 REF		
L2	0.508 BSC		
L3	0.89	--	1.27
L5	--	--	--
D	6.00	6.10	6.22
H	9.40	10.00	10.40
b	0.64	0.76	0.88
b2	0.77	0.84	1.14
b3	5.21	5.34	5.46
e	2.286 BSC		
A	2.20	2.30	2.38
A1	0	--	0.127
C	0.46	0.50	0.60
C2	0.46	0.50	0.58
D1	5.21	--	--
E1	4.40	--	--
θ	0°	--	10°

**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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