



## 650V/ 15A 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

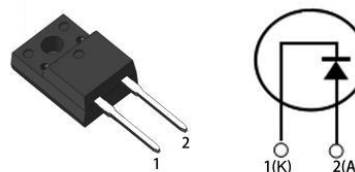
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

### Applications

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

### Key Characteristics

$V_{RRM}$	650	V
$I_F, T_c \leq 106^\circ\text{C}$	15	A
$Q_c$	31	nC



Part No.	Package Type	Marking
G4S06515HT	TO-220F	G4S06515HT

**Maximum Ratings**

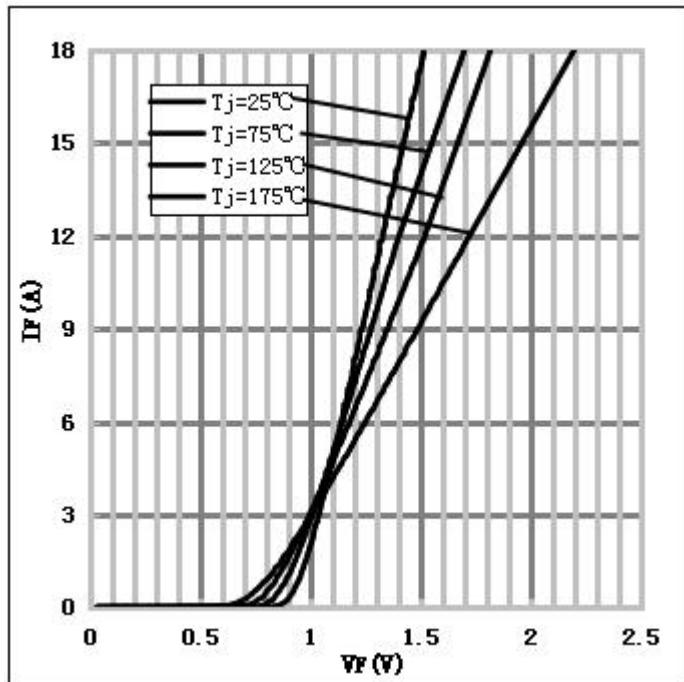
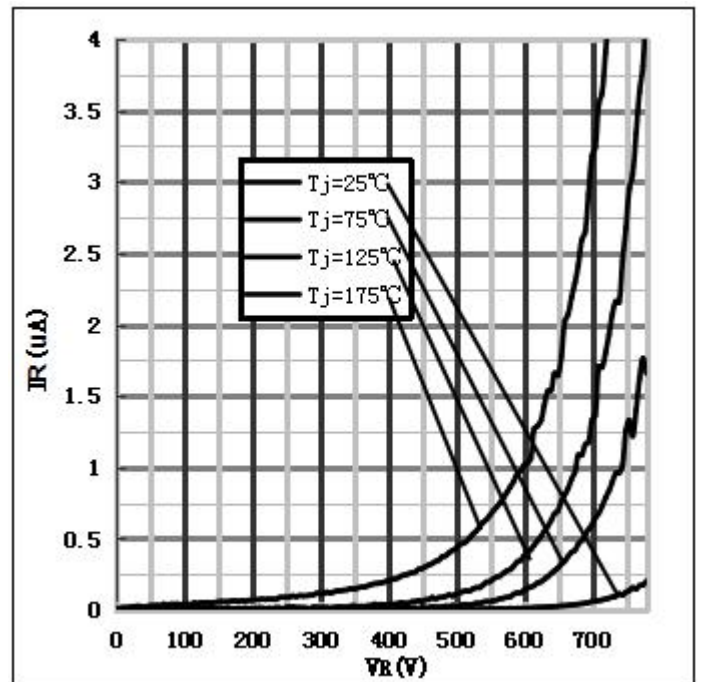
Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$		650	V
Surge Peak Reverse Voltage	$V_{RSM}$		650	V
DC Blocking Voltage	$V_{DC}$		650	V
Continuous Forward Current	$I_F$	$T_C=25^{\circ}C$ $T_C=106^{\circ}C$ $T_C=125^{\circ}C$	23.8 15 12.5	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	$T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave, $D=0.3$	50	A
Non-repetitive Peak Forward Surge Current	$I_{FSM}$	$T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave	130	A
Power Dissipation	$P_{TOT}$	$T_C=25^{\circ}C$	63	W
		$T_C=110^{\circ}C$	27	W
Operating Junction	$T_j$		$-55^{\circ}C$ to $175^{\circ}C$	$^{\circ}C$
Storage Temperature	$T_{stg}$		$-55^{\circ}C$ to $175^{\circ}C$	$^{\circ}C$
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

**Thermal Characteristics**

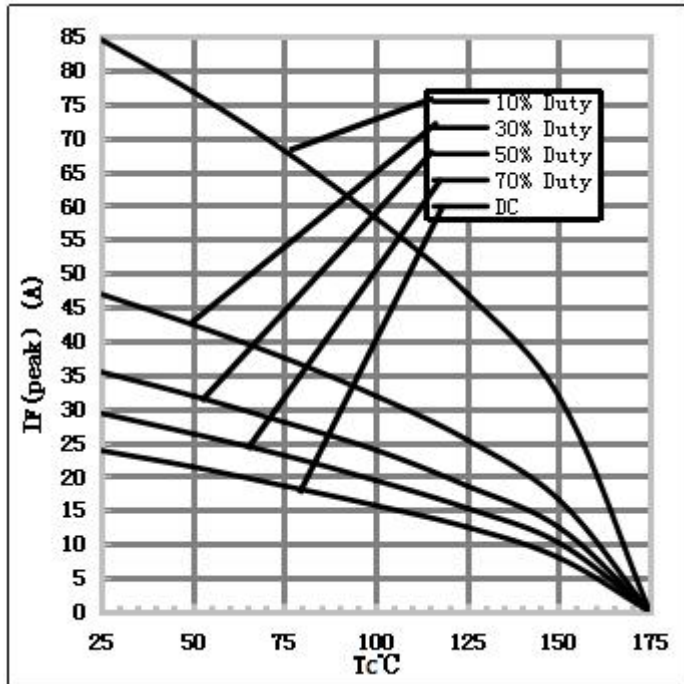
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{thJC}$		2.38	$^{\circ}C/W$

**Electrical Characteristics**

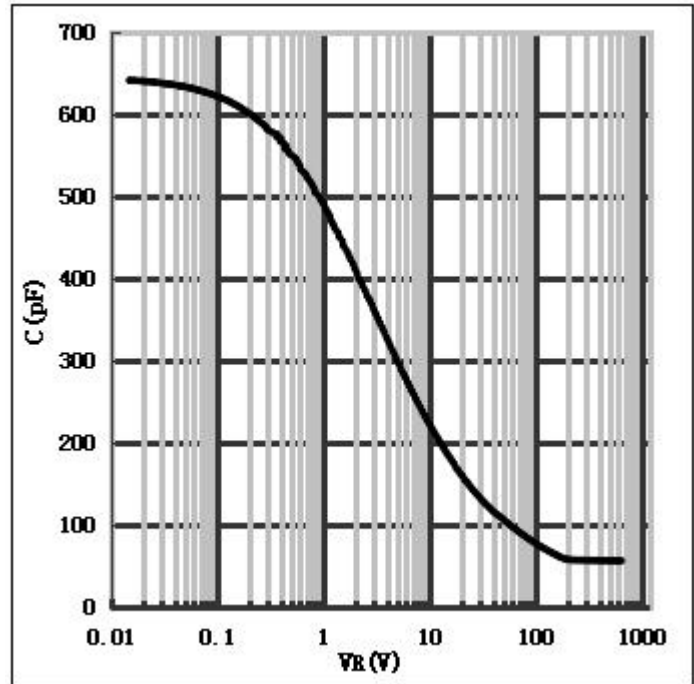
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	$V_F$	$I_F=15A, T_j=25^{\circ}C$	1.5	1.7	V
		$I_F=15A, T_j=175^{\circ}C$	2	2.5	
Reverse Current	$I_R$	$V_R=650V, T_j=25^{\circ}C$	0.5	50	$\mu A$
		$V_R=650V, T_j=175^{\circ}C$	1.4	100	
Total Capacitive Charge	$Q_C$	$V_R=400V, T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$	31	-	nC
Total Capacitance	C	$V_R=0V, T_j=25^{\circ}C, f=1MHz$	645	680	pF
		$V_R=200V, T_j=25^{\circ}C, f=1MHz$	58	61	
		$V_R=400V, T_j=25^{\circ}C, f=1MHz$	56	58	

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

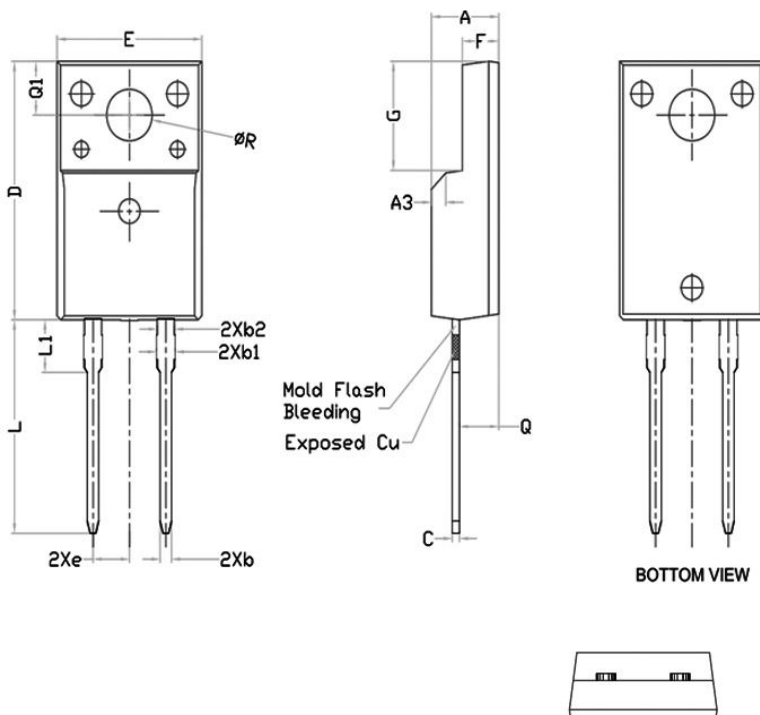
## 3) Current Derating:



## 4) Capacitance vs. reverse voltage:

Package TO-220F

单位 : mm



## Note:

1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash And Burrs  
Mold Flash Should Be Less Than 6 Mil.

SYMBOL	DIMENSIONS		
	Min.	Nom.	Max.
A	4.60	4.70	4.80
b	0.70	0.80	0.91
b1	1.20	1.30	1.47
b2	1.10	1.20	1.30
C	0.45	0.50	0.63
D	15.80	15.87	15.97
e	2.54		
E	10.00	10.10	10.30
F	2.44	2.54	2.64
G	6.50	6.70	6.90
L	12.90	13.10	13.30
L1	3.13	3.23	3.33
Q	2.65	2.75	2.85
Q1	3.20	3.30	3.40
ΦR	3.08	3.18	3.28

**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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