



650V/ 10A Silicon Carbide Power Schottky Barrier Diode

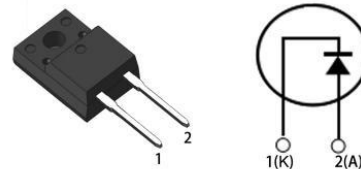
Features

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

Key Characteristics		
V_{RRM}	650	V
$I_F, T_c \leq 133^\circ\text{C}$	10	A
Q_c	29	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
G4S06510HT	TO-220F	G4S06510HT

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	$T_C=25^{\circ}C$	20	A
		$T_C=125^{\circ}C$	11	
		$T_C=133^{\circ}C$	10	
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}C$, $t_p=10ms$, Half Sine Wave, $D=0.3$	40	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^{\circ}C$, $t_p=10ms$, Half Sine Wave	105	A
Power Dissipation	P_{TOT}	$T_C=25^{\circ}C$	62	W
		$T_C=110^{\circ}C$	27	W
Operating Junction	T_j		-55°C to 175°C	°C
Storage Temperature	T_{stg}		-55°C to 175°C	°C
Mounting Torque		M3 Screw	1	Nm lbf-in
		6-32 Screw	8.8	

Thermal Characteristics

Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	R_{thJC}		2.42	°C/W

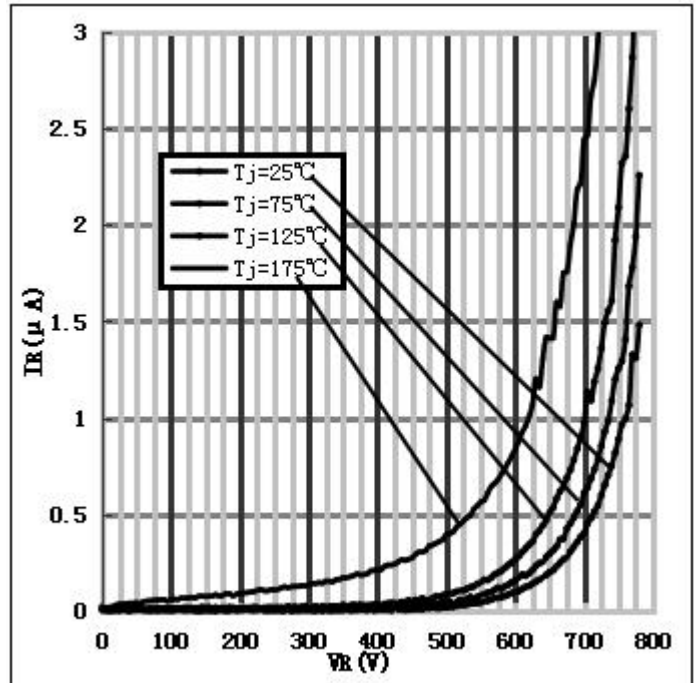
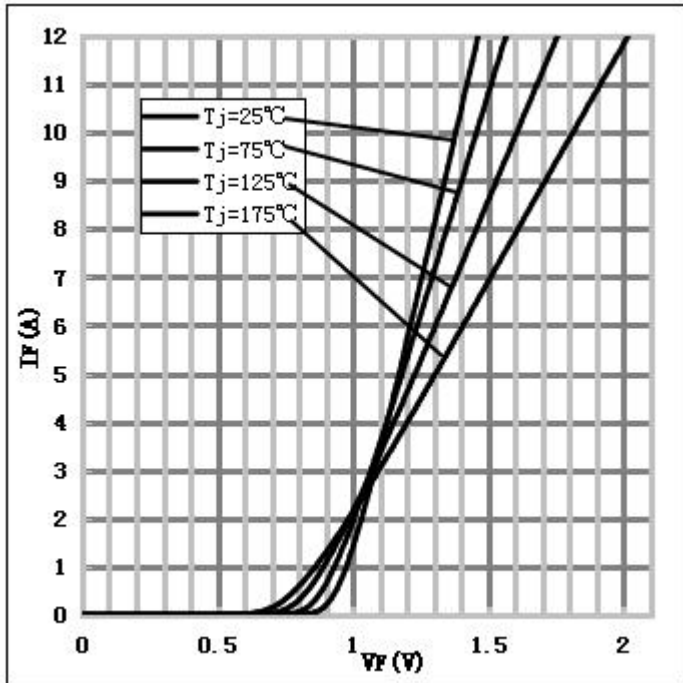
Electrical Characteristics

Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V _F	I _F =10A, T _j =25°C	1.38	1.7	V
		I _F =10A, T _j =175°C	1.82	2.5	
Reverse Current	I _R	V _R =650V, T _j =25°C	0.25	50	μA
		V _R =650V, T _j =175°C	1.5	100	
Total Capacitive Charge	Q _C	V _R =400V, T _j =150°C $Q_C = \int_0^{V_R} C(V)dV$	29	-	nC
Total Capacitance	C	V _R =0V, T _j =25°C, f=1MHZ	550	588	pF
		V _R =200V, T _j =25°C, f=1MHZ	60	65	
		V _R =400V, T _j =25°C, f=1MHZ	59	61	

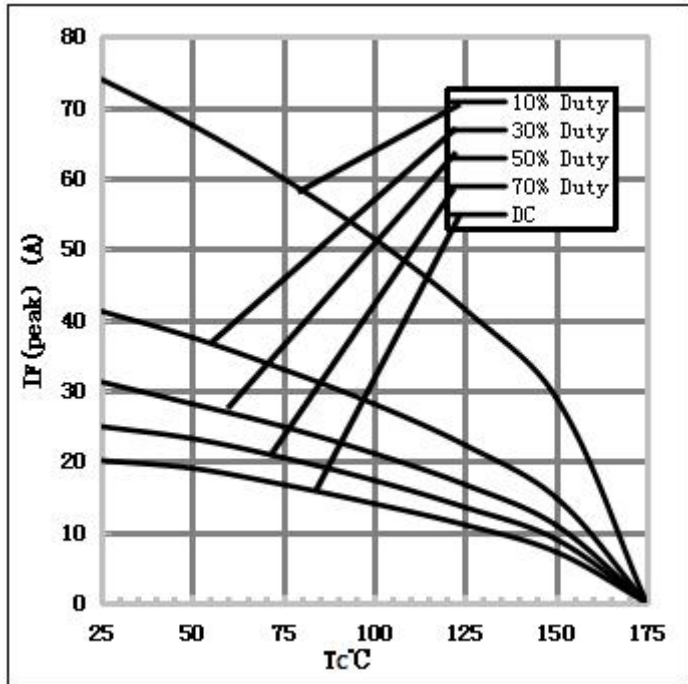
Performance Graphs

1) Forward IV characteristics as a function of T_j :

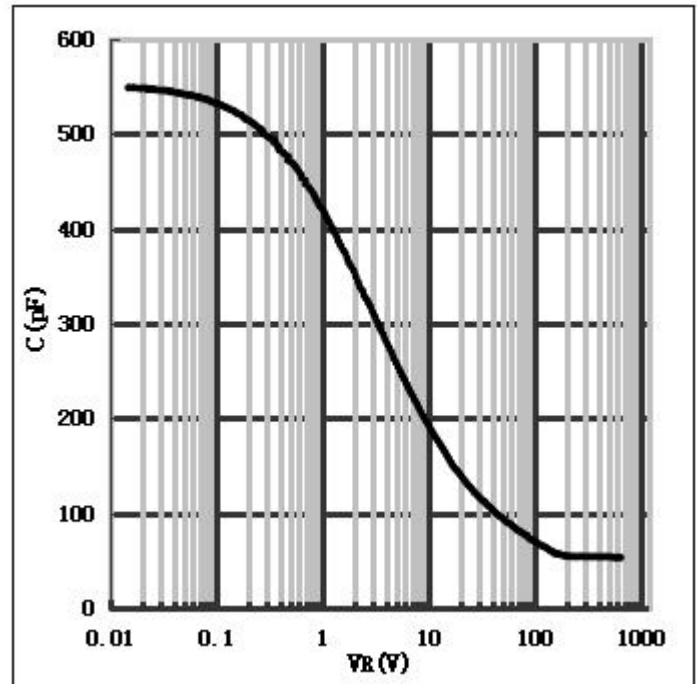
2) Reverse IV characteristics as a function of T_j :



3) Current Derating:



4) Capacitance vs. reverse voltage:



Package TO-220F

单位 : mm

The package drawings include a top view with dimensions ϕR , E , D , $\phi 1$, $2Xb2$, $2Xb1$, $L1$, $2Xe$, and $2Xb$; a side view with dimensions A , F , G , $A3$, Q , and C ; and a bottom view. A note specifies that mold flash and burrs 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:
 1. All Dimension Are In mm.
 2. Package Body Sizes Exclude Mold Flash And Burrs
 Mold Flash Should Be Less Than 6 Mil.

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>

More product datasheets and company information can be found in:

<http://globalpowertech.cn/English/index.asp>

