650V/ 15A Silicon Carbide Power Schottky Barrier Diode

Features

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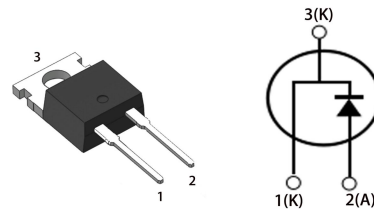- High temperature operation
- High frequency operation

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, $T_c \leqslant 143°C$	15	A
Q_C	31	nC

Part No.	Package Type	Marking
G4S06515AT	TO-220AC	G4S06515AT

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℃ T_C=125℃ T_C=143℃	36 19 15	A
Repetitive Peak Forward Surge Current	I_{FRM}	T_C=25℃, tp=10ms， Half Sine Wave，D=0.3	50	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	T_C=25℃, tp=10ms， Half Sine Wave	130	A
Power Dissipation	P_{TOT}	T_C=25℃	129	W
		T_C=110℃	56	W
Operating Junction	T_j		-55℃ to 175℃	℃
Storage Temperature	T_{stg}		-55℃ to 175℃	℃
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal Characteristics

Parameter	Symbol	Test Condition	Value Typ.	Unit
Thermal resistance from junction to case	$R_{th\ JC}$		1.16	℃/W

Electrical Characteristics

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

Performance Graphs

1) Forward IV characteristics as a function of Tj :
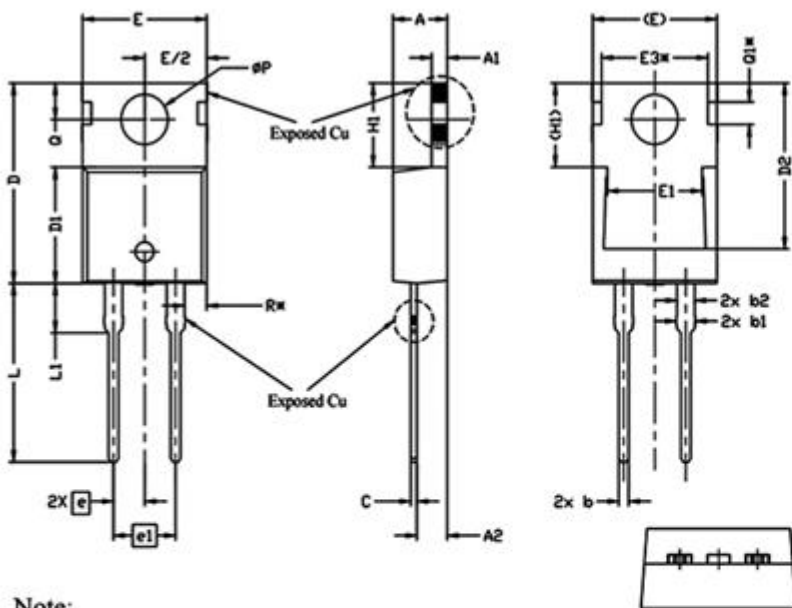
2) Reverse IV characteristics as a function of Tj :
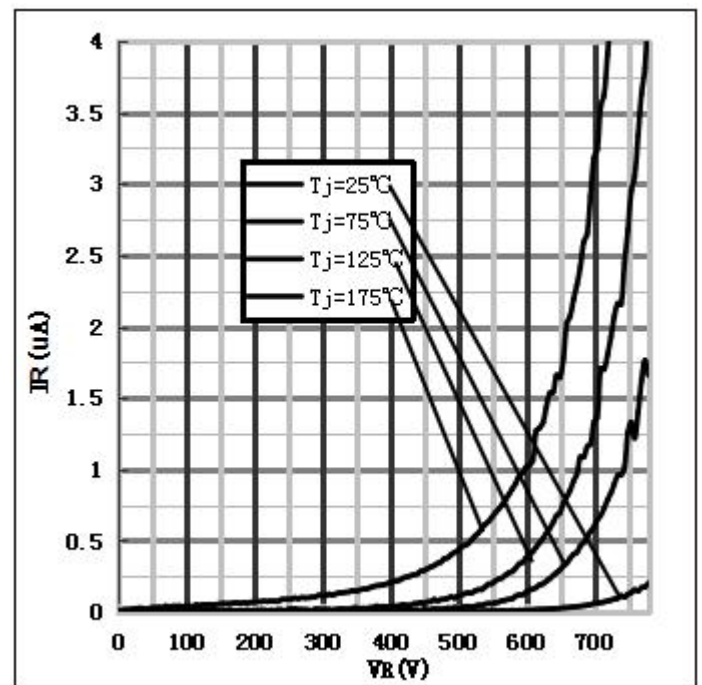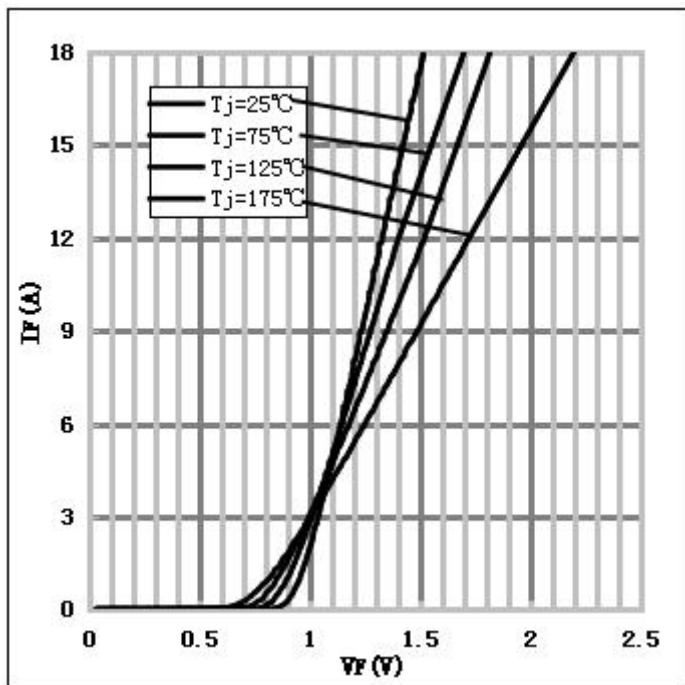
3) Current Derating:
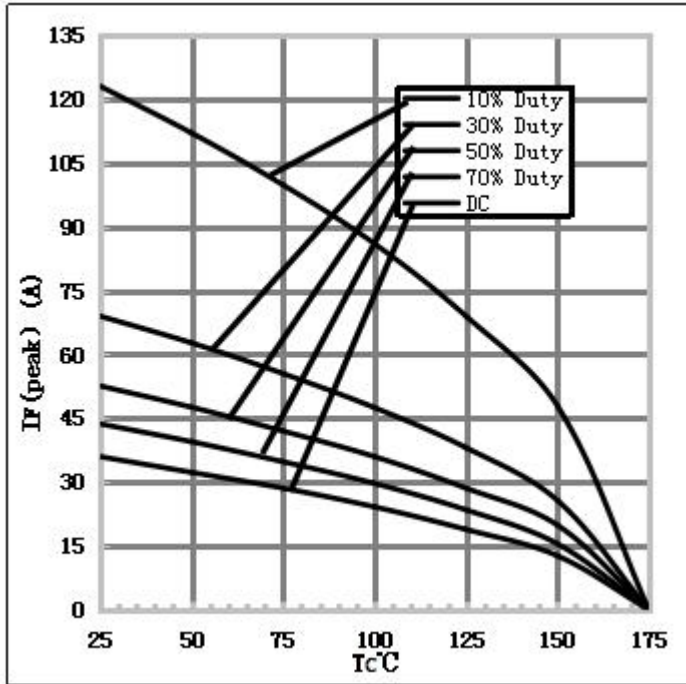
4) Capacitance vs. reverse voltage:

Package TO-220AC

SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.63	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.86	7.77	8.89	5
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6.30	6.45	6.60	5,6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
ØP	3.75	3.84	3.93	
Q	2.60	2.80	3.00	
Q1*	1.73REF.			
R*	1.82REF.			

单位：mm
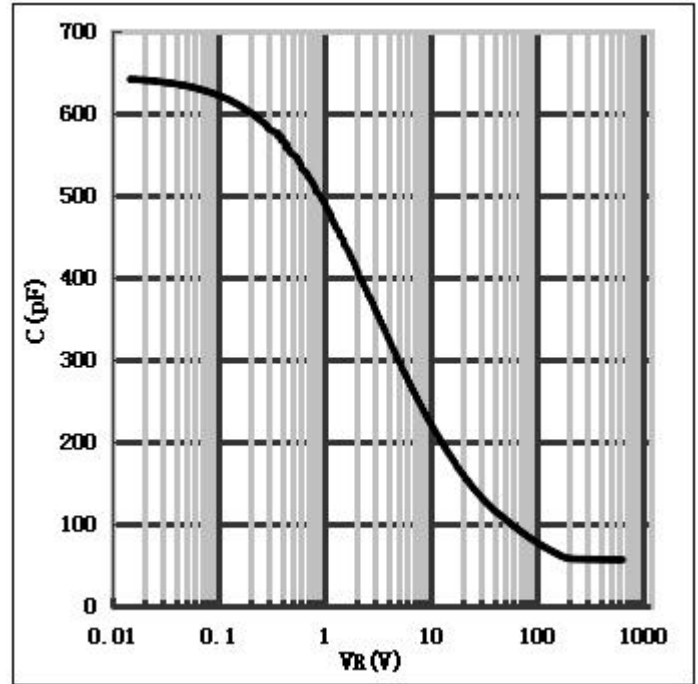
Note:
1. Package Reference: JEDEC TO220, Variation AB.
2. All Dimensions Are In mm.
3. Slot Required, Notch May Be Rounded
4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
5. Thermal Pad Contour Optional Within Dimensions E, H1, D2 & E1.
6. Dimension E2 & H1 Define A Zone Where Stamping And Singulation Irregularities Are Allowed.
7. "*" is reference .

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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