650V/2A Silicon Carbide Power Schottky Barrier Diode

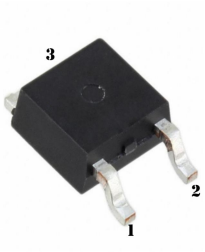
Features

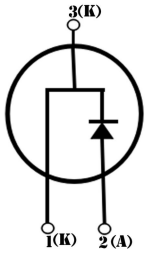
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

Key Characteristics		
V_{RRM}	650	V
I_F, $T_c \leqslant 159℃$	2	A
Q_C	8	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
G3S06502C	TO-252	G3S06502C

Maximum Ratings

Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		650	V
Surge Peak Reverse Voltage	V_{RSM}		650	
DC Blocking Voltage	V_{DC}		650	
Continuous Forward Current	I_F	T_C=25℃ T_C=125℃ T_C=159℃	8.3 4.5 2	A
Repetitive Peak Forward Surge Current	I_{FRM}	T_C=25℃, tp=10ms， Half Sine Wave，D=0.3	12	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	T_C=25℃, tp=10ms， Half Sine Wave	30	A
Power Dissipation	P_{TOT}	T_C=25℃	37	W
		T_C=110℃	16	W
Operating Junction	T_j		-55℃ to 175℃	℃
Storage Temperature	T_{stg}		-55℃ to 175℃	℃

Thermal Characteristics

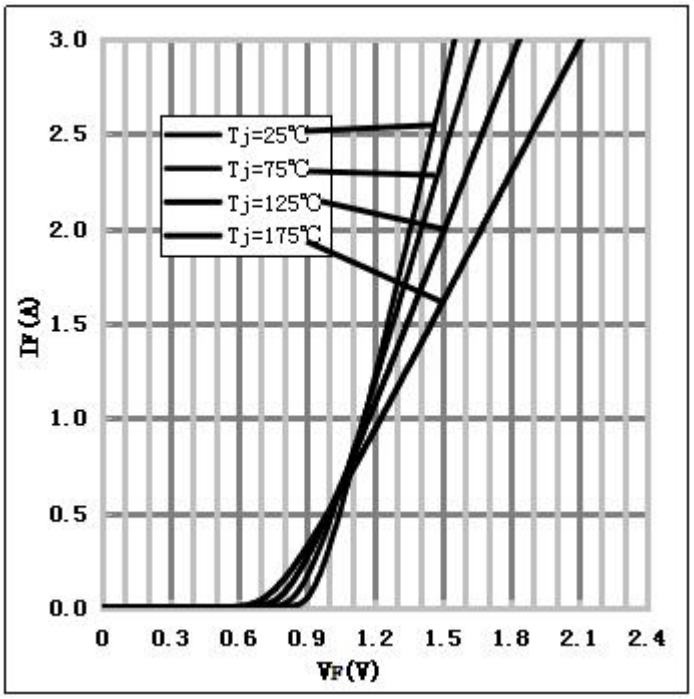
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{th\ JC}$		4.03	℃/W

Electrical Characteristics

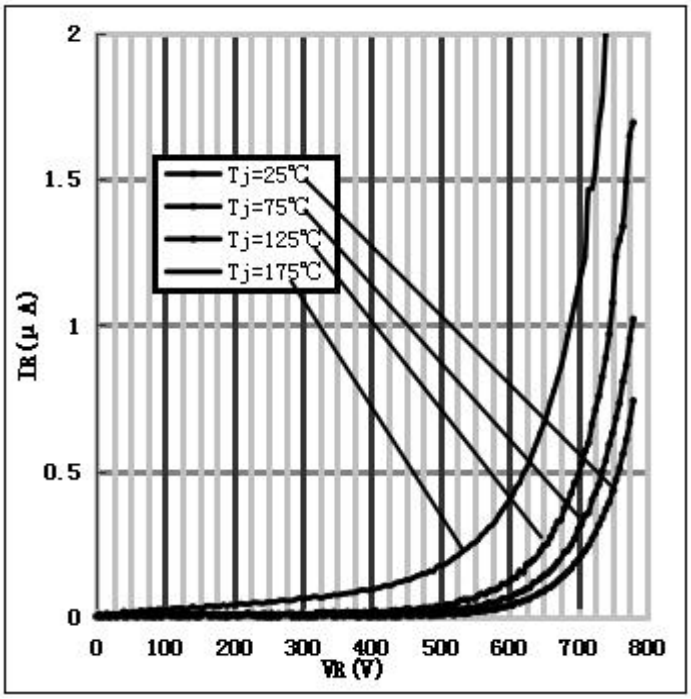
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	I_F=2A, T_j=25℃	1.37	1.7	V
		I_F=2A, T_j=175℃	1.67	2	
Reverse Current	I_R	V_R=650V, T_j=25℃	0.04	50	μA
		V_R=650V, T_j=175℃	0.4	100	
Total Capacitive Charge	Q_C	V_R=400V, T_j=150℃ $Qc = \int_0^{VR} C(V)dV$	8	-	nC
Total Capacitance	C	V_R=0V, T_j=25℃, f=1MHZ	123	150	pF
		V_R=200V, T_j=25℃, f=1MHZ	12	20	
		V_R=400V, T_j=25℃, f=1MHZ	13	30	

Performance Graphs

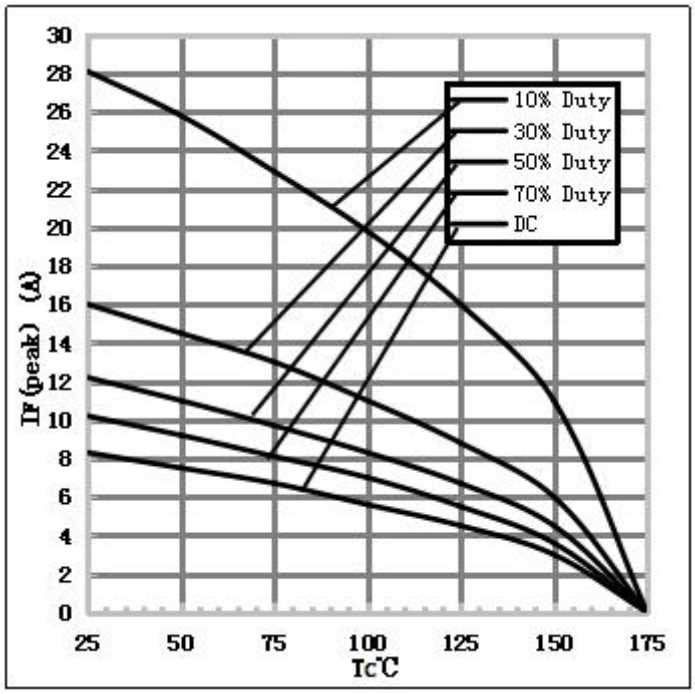
1) Forward IV characteristics as a function of Tj :



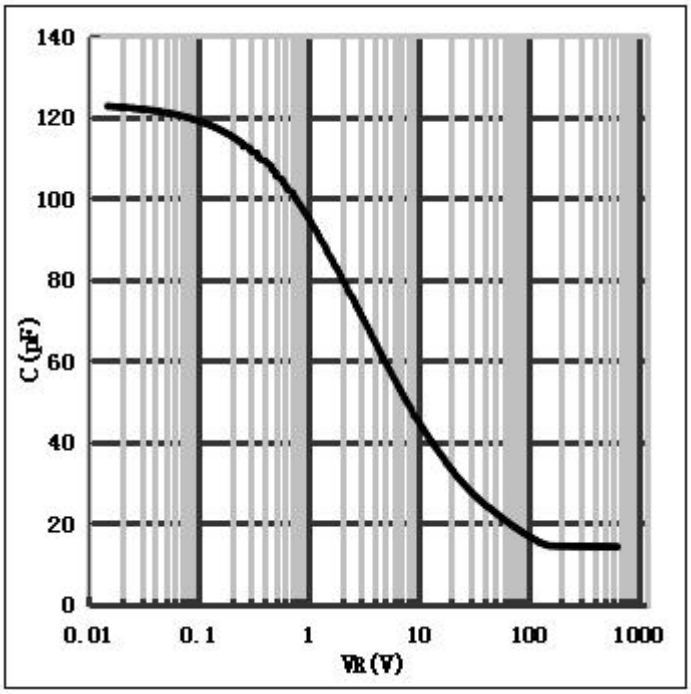
2) Reverse IV characteristics as a function of Tj :



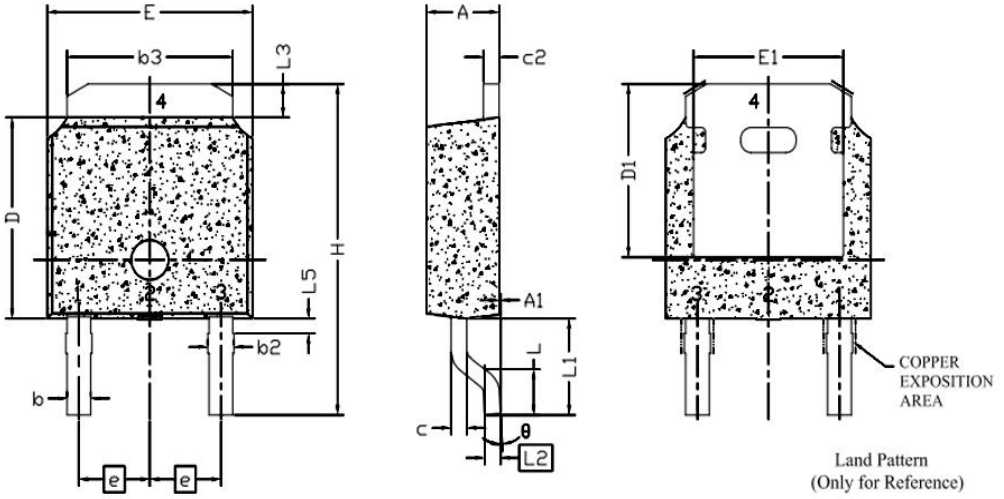
3) Current Derating:



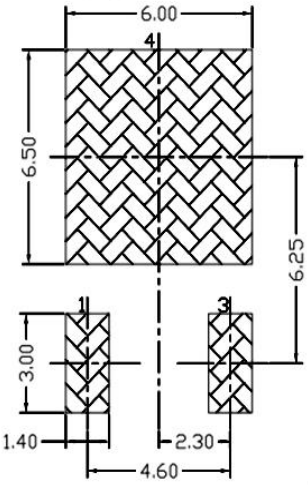
4) Capacitance vs. reverse voltage:



Package TO-252



Land Pattern
(Only for Reference)



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:

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.

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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