

650V/4A Silicon Carbide Power Schottky Barrier Diode

Features

- Rated to 650V at 4 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

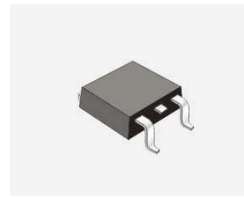
Key Characteristics		
V_{RRM}	650	V
$I_F, T_c \leq 135^\circ\text{C}$	5	A
Q_C	11	nC

Benefits

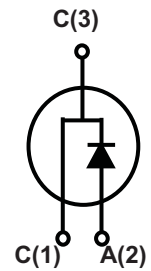
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

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



封装: TO-252



Part No.	Package Type	Marking
SC3S06504C	TO-252	06504

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	$T_C=25^\circ\text{C}$	11	A
		$T_C=135^\circ\text{C}$	5	
		$T_C=150^\circ\text{C}$	4	
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$	15	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	30	A
Power Dissipation	P_{TOT}	$T_C=25^\circ\text{C}$	53.2	W
		$T_C=110^\circ\text{C}$	23	W
Operating Junction	T_j		-55°C to 175°C	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55°C to 175°C	$^\circ\text{C}$
Mounting Torque		M3 Screw	1	Nm
		6-32 Screw	8.8	lbf-in

Thermal Characteristics

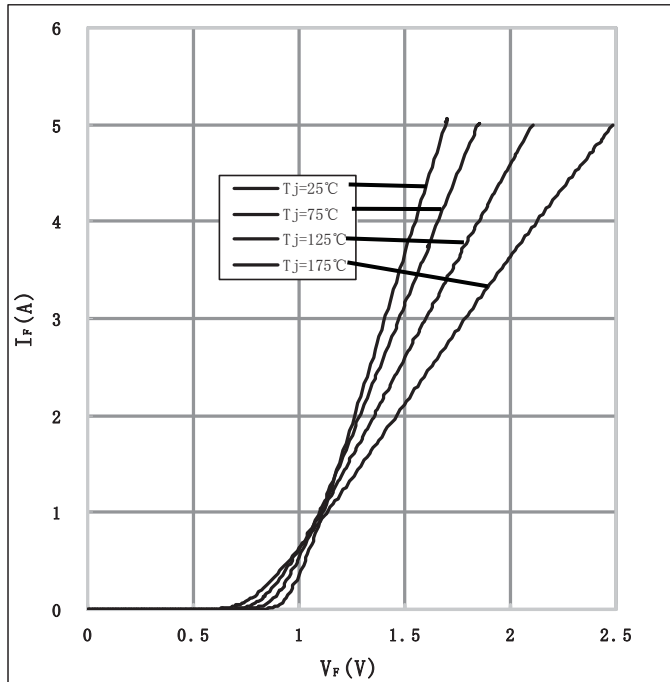
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{th\ JC}$		2.82	$^\circ\text{C} / \text{W}$

Electrical Characteristics

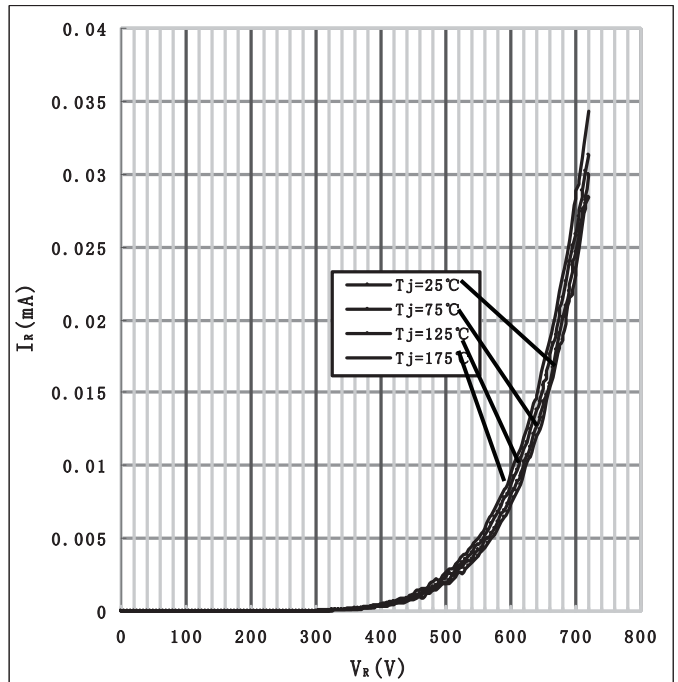
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	$I_F=4\text{A}$, $T_j=25^\circ\text{C}$	1.55	1.7	V
		$I_F=4\text{A}$, $T_j=175^\circ\text{C}$	2.2	2.5	
Reverse Current	I_R	$V_R=650\text{V}$, $T_j=25^\circ\text{C}$	10	100	μA
		$V_R=650\text{V}$, $T_j=175^\circ\text{C}$	20	200	
Total Capacitive Charge	Q_C	$V_R=400\text{V}$, $T_j=150^\circ\text{C}$ $Q_C = \int_b^{VR} C(V)dV$	11	-	nC
Total Capacitance	C	$V_R=0\text{V}$, $T_j=25^\circ\text{C}$, $f=1\text{MHZ}$	181	220	pF
		$V_R=200\text{V}$, $T_j=25^\circ\text{C}$, $f=1\text{MHZ}$	22.5	25	
		$V_R=400\text{V}$, $T_j=25^\circ\text{C}$, $f=1\text{MHZ}$	20.5	21	

RATING AND CHARACTERISTICS CURVES (SC3S06504C)

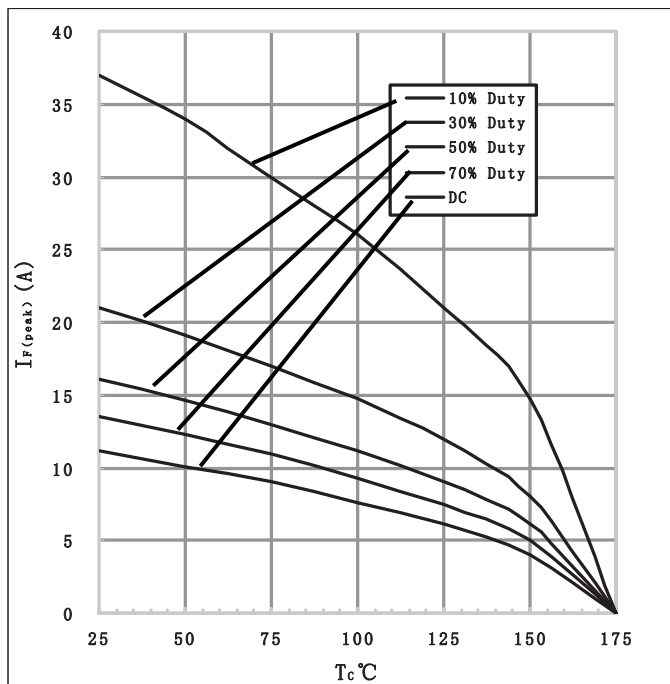
1) Forward IV characteristics as a function of T_j :



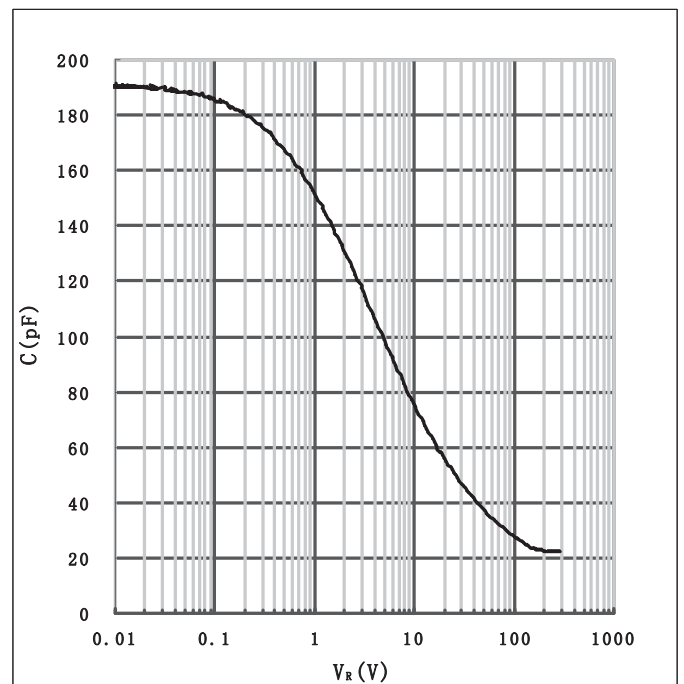
2) Reverse IV characteristics as a function of T_j :



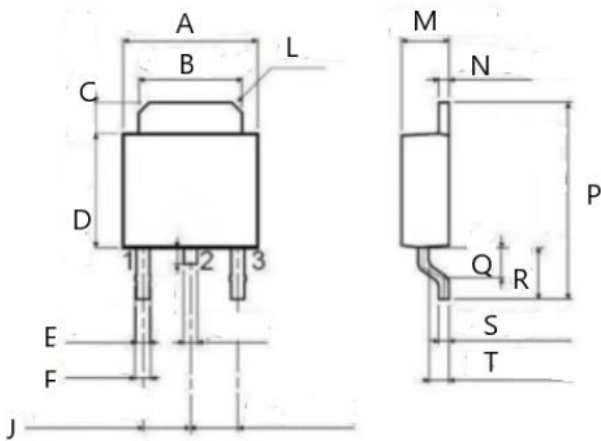
3) Current Derating



4) Capacitance vs. reverse voltage :



Package TO-252



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.4	6.6	0.251	0.259
B	5.2	5.4	0.204	0.212
C	1.15	1.35	0.045	0.053
D	5.7	6.1	0.224	0.240
E	1.3		0.051	
F	0.75		0.029	
J	2.1	2.5	0.082	0.098
L	0.5		0.019	
M	2.2	2.4	0.086	0.094
N	0.4	0.6	0.015	0.023
P	9.9	10.1	0.389	0.397
Q	1.5		0.059	
R	3.0		0.118	
S	0.4	0.6	0.015	0.023
T	0.9	1.1	0.035	0.043

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