

650V/30A Silicon Carbide Power Schottky Barrier Diode

Features

- Rated to 650V at 30 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

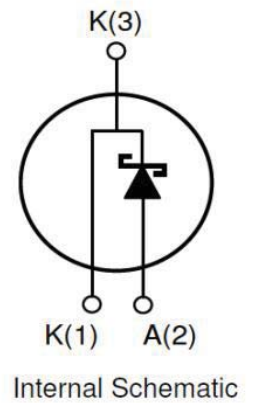
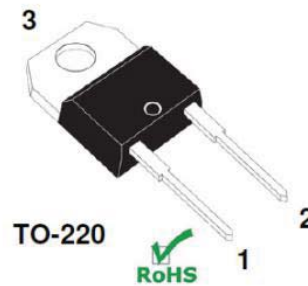
Key Characteristics		
V_{RRM}	650	V
$I_F, T_c \leq 135^\circ\text{C}$	30	A
Q_c	101	nC

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
SC3S06530A	TO-220-2 pin	SC06530

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	$T_C=25^{\circ}C$ $T_C=135^{\circ}C$	64 30	A
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}C$, $t_p=10ms$, Half Sine Wave, $D=0.3$	150	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^{\circ}C$, $t_p=10ms$, Half Sine Wave	300	A
Power Dissipation	P_{TOT}	$T_C=25^{\circ}C$	192.3	W
		$T_C=110^{\circ}C$	83	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	1	Nm
		6-32 Screw	8.8	lbf-in

Thermal Characteristics

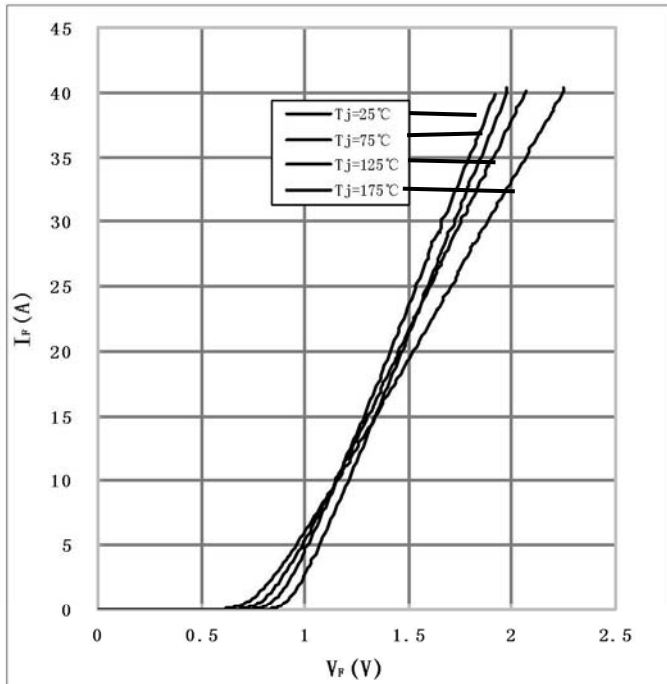
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	R_{thJC}		0.78	$^{\circ}C/W$

Electrical Characteristics

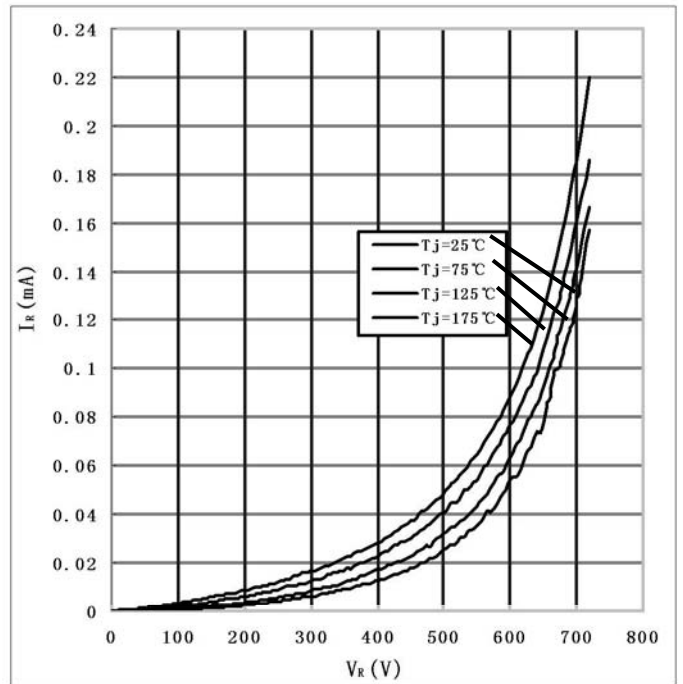
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	$I_F=30A$, $T_j=25^{\circ}C$	1.75	1.8	V
		$I_F=30A$, $T_j=175^{\circ}C$	2	2.5	
Reverse Current	I_R	$V_R=650V$, $T_j=25^{\circ}C$	50	100	μA
		$V_R=650V$, $T_j=175^{\circ}C$	100	200	
Total Capacitive Charge	Q_C	$V_R=400V$, $T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$	101	-	nC
Total Capacitance	C	$V_R=0V$, $T_j=25^{\circ}C$, $f=1MHz$	2150	2300	pF
		$V_R=200V$, $T_j=25^{\circ}C$, $f=1MHz$	188	191	
		$V_R=400V$, $T_j=25^{\circ}C$, $f=1MHz$	183	184	

RATING AND CHARACTERISTICS CURVES(SC3S06530A)

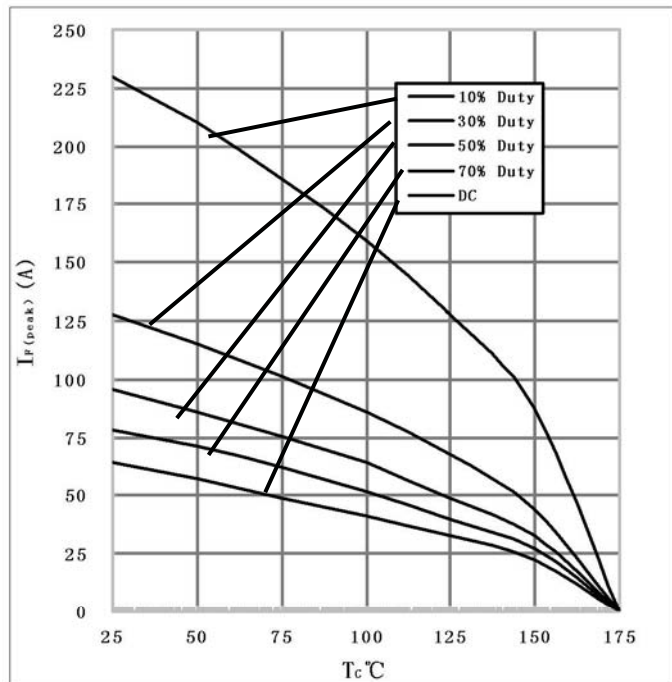
1) Forward IV characteristics as a function of T_j :



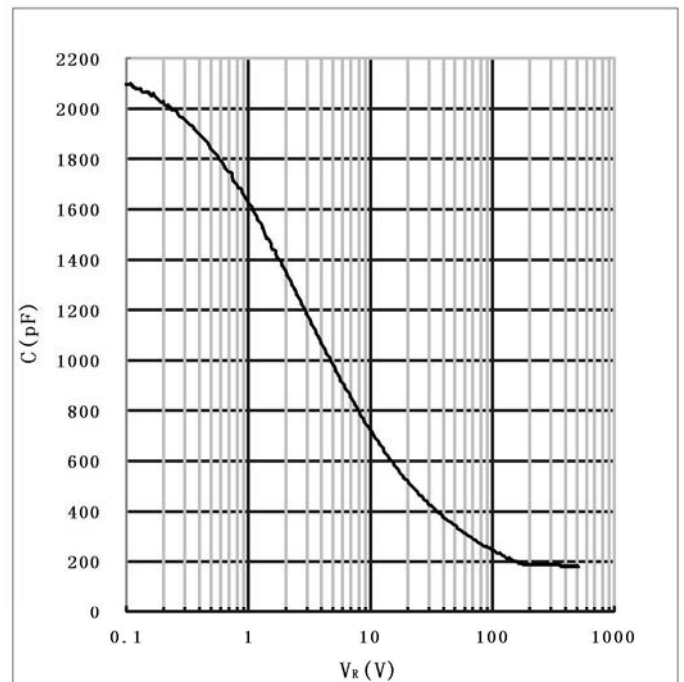
2) Reverse IV characteristics as a function of T_j :



3) Current Derating



4) Capacitance vs. reverse voltage :



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