

**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

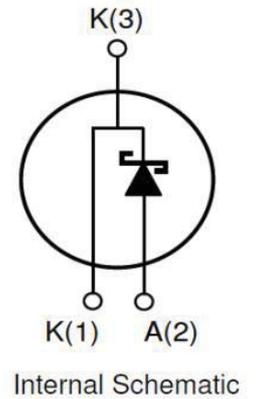
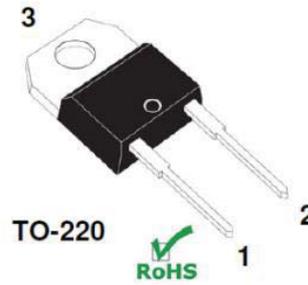
Key Characteristics		
$V_{RRM}$	<b>650</b>	<b>V</b>
$I_F, T_c \leq 135^\circ\text{C}$	<b>30</b>	<b>A</b>
$Q_C$	<b>101</b>	<b>nC</b>

**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

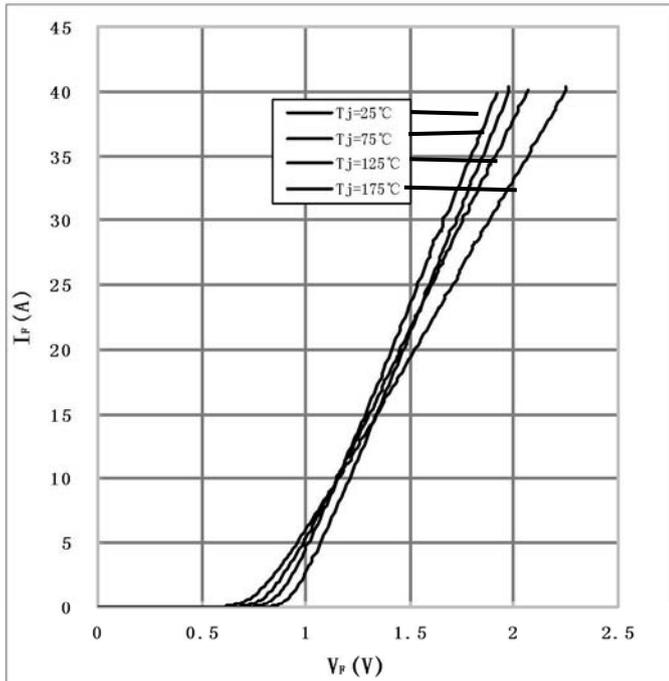
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{thJC}$		0.78	$^{\circ}C/W$

## Electrical Characteristics

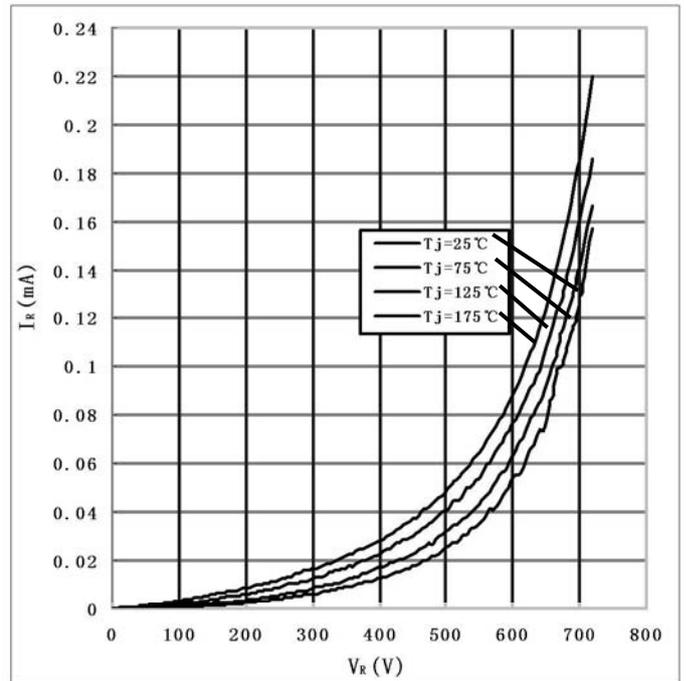
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	$V_F$	$I_F=30A$ , $T_j=25^{\circ}C$	1.75	1.8	V
		$I_F=30A$ , $T_j=175^{\circ}C$	2	2.5	
Reverse Current	$I_R$	$V_R=650V$ , $T_j=25^{\circ}C$	50	100	$\mu A$
		$V_R=650V$ , $T_j=175^{\circ}C$	100	200	
Total Capacitive Charge	$Q_C$	$V_R=400V$ , $T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$	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)

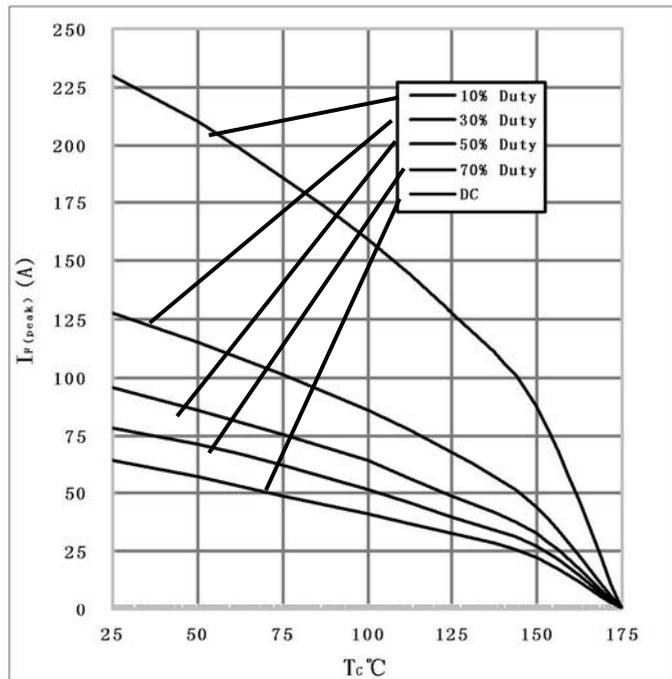
1) Forward IV characteristics as a function of  $T_j$  :



2) Reverse IV characteristics as a function of  $T_j$  :



3) Current Derating



4) Capacitance vs. reverse voltage :

