

200V/20A Silicon Carbide Schottky Diode

Features

- Positive temperature co-efficient
- Temperature-independent switching behavior
- Operation temperature up to 175°C
- Zero reverse recovery current
- Zero forward recovery voltage

SC3S12020B

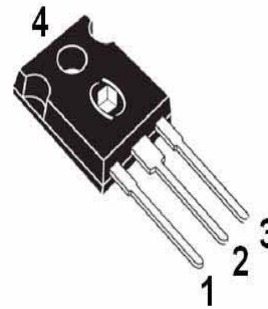
Description		
V_{RRM}	1200	V
$I_F, T_c \leq 135^\circ\text{C}$	12.5 (per leg)	A
Q_c	138	nC

Benefits

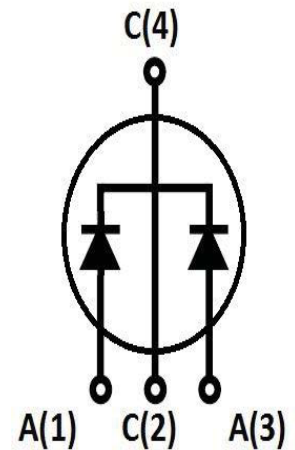
- Unipolar rectifiers
- Essentially no switching losses
- Parallel devices without thermal runaway
- Reduction of heat sink requirements

Applications

- SMPS, PFC
- Motor driving, PV inverter, UPS, Wind engine, Rail traction, EV/HEV.



Package:
TO-247



Part Number	Package	Marking
SC3S12020B	TO-247-3 pin	12020B

Maximum Ratings (Tc=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		1200	V
Surge Peak Reverse Voltage	V_{RSM}		1200	
DC Blocking Voltage	V_{DC}		1200	
Continuous Forward Current	I_F	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=155^\circ\text{C}$	25.9* 12.5* 10*	A
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$	50*	A
Non-repetitive Peak Forward Surge current	I_{FSM}	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	100*	A
Power Dissipation	P_{TOT}	$T_C=25^\circ\text{C}$	141.5*	W
		$T_C=110^\circ\text{C}$	62*	W
Operation temperature	T_j		-55°C to 175°C	°C
Storage temperature	T_{stg}		-55°C to 175°C	°C
Mounting Torque		M3 Screw	1	Nm
		6-32 Screw	8.8	lbf-in

Thermal Characteristics

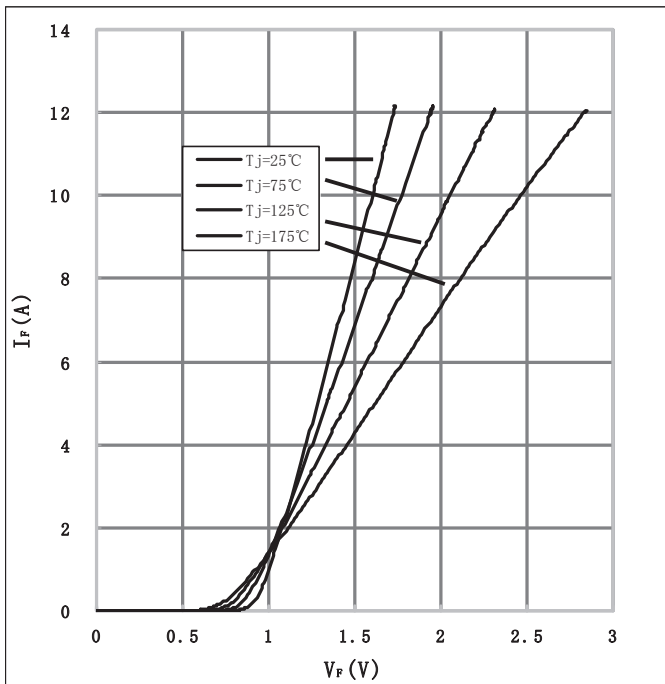
Parameter	Symbol	Test condition	Value	Unit
			Typical	
Thermal resistance from Junction to Case	$R_{th\text{JC}}$		1.06* 0.53**	°C/W

Electrical Characteristics

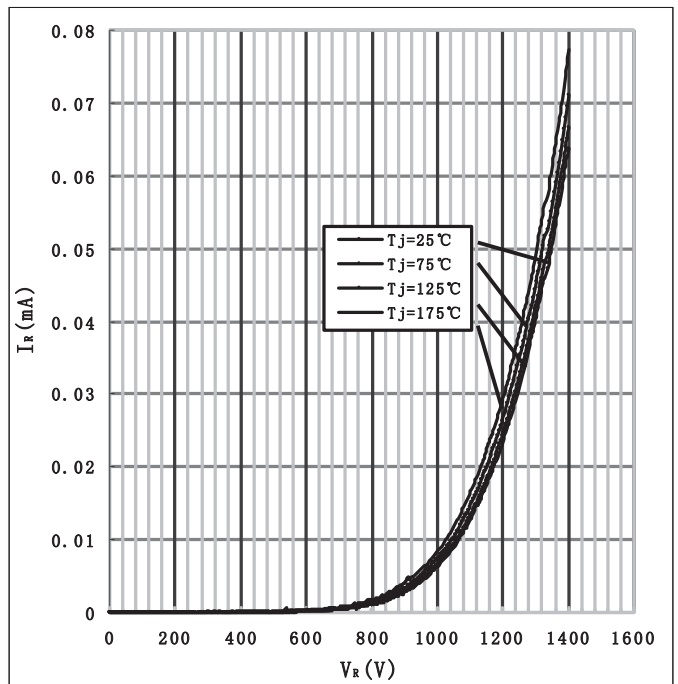
Parameter	Symbol	Test Condition	Value		Unit
			Typ.	Max.	
Forward voltage	V_F	$I_F=10\text{A}$, $T_j=25^\circ\text{C}$	1.63	1.7	V
		$I_F=10\text{A}$, $T_j=175^\circ\text{C}$	2.55	3	
Reverse current	I_R	$V_R=1200\text{V}$, $T_j=25^\circ\text{C}$	50	100	µA
		$V_R=1200\text{V}$, $T_j=175^\circ\text{C}$	100	200	
Total capacitive charge	Q_C	$V_R=800\text{V}$, $T_j=150^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$	69	-	nC
Total capacitance	C	$V_R=0\text{V}$, $T_j=25^\circ\text{C}$, $f=1\text{MHZ}$	770	790	pF
		$V_R=400\text{V}$, $T_j=25^\circ\text{C}$, $f=1\text{MHZ}$	52	54	
		$V_R=800\text{V}$, $T_j=25^\circ\text{C}$, $f=1\text{MHZ}$	50	51	

RATING AND CHARACTERISTICS CURVES (SC3S12020B)

1) Forward characteristics

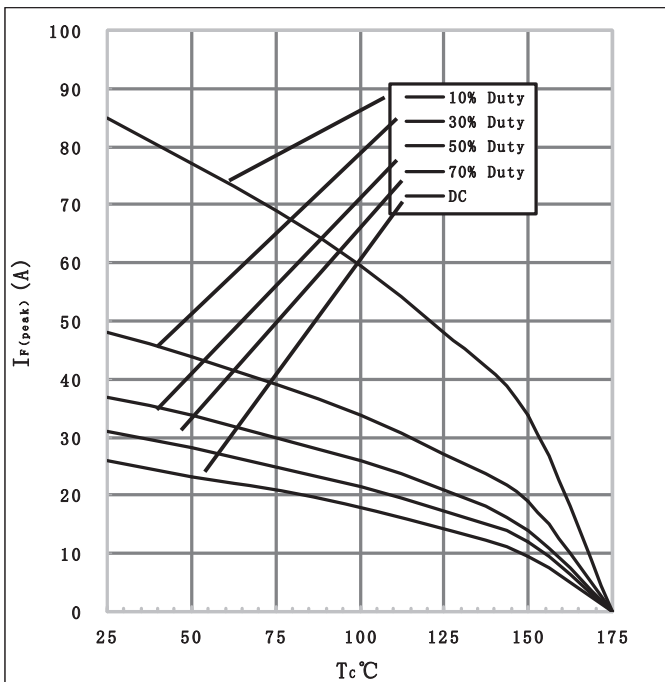


2) Reverse characteristics

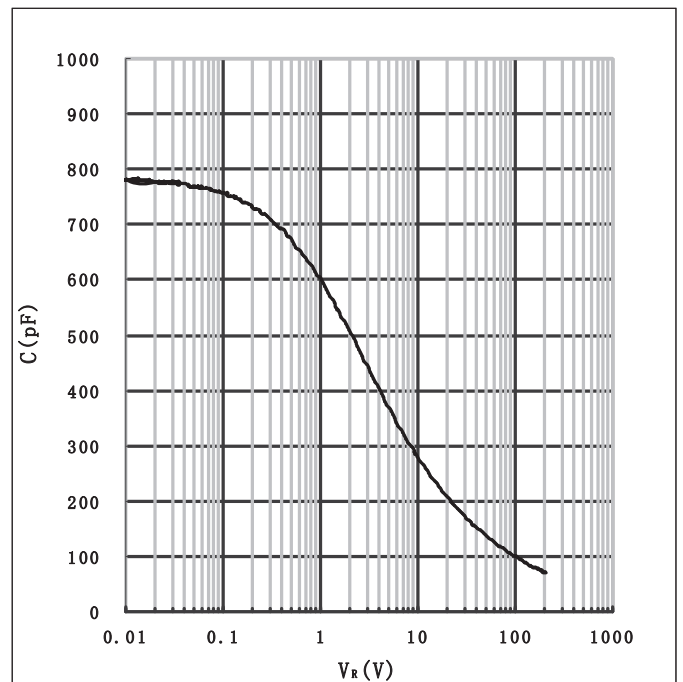


3) Current Derating

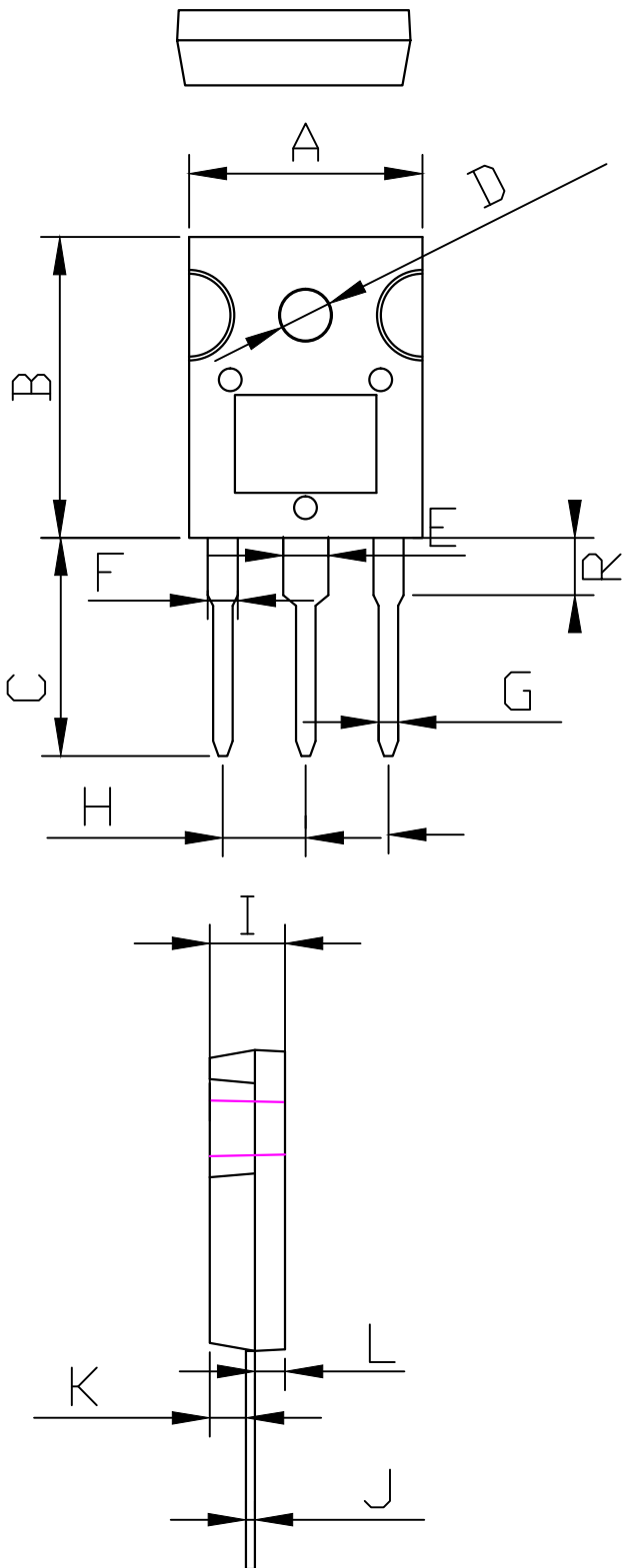
(10%, 30%, 50%, 70% Duty ,DC)



4) Capacitance vs. Reverse voltage



TO-247



项目	mm		
	标准值	Min	Max
A	15.5	15.45	15.55
B	20	19.9	20.1
C	14.5	14.4	14.6
D	3.5	3.3	3.6
E	3	2.95	3.05
F	2	1.95	2.05
G	1.3	1.2	1.4
H	5.5	5.4	5.6
I	5	4.95	5.05
J	0.6	0.58	0.62
K	2.4	2.3	2.5
L	2	1.9	2.1
R	3.8	3.6	4

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