

## 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

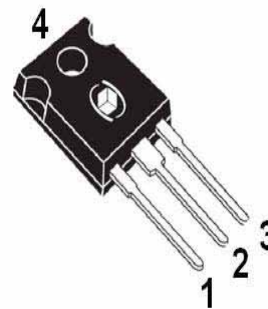
Description		
$V_{RRM}$	1200	V
$I_F$ , $T_c \leq 135^\circ\text{C}$	12.5 (per leg)	A
$Q_c$	138	nC

### Benefits

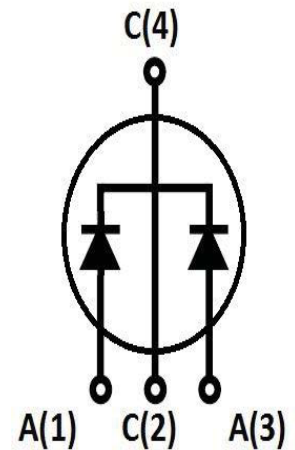
- Unipolar rectifiers
- Essentially no switching losses
- Parallel devices without thermal runaway
- Reduction of heat sink requirements

### 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**

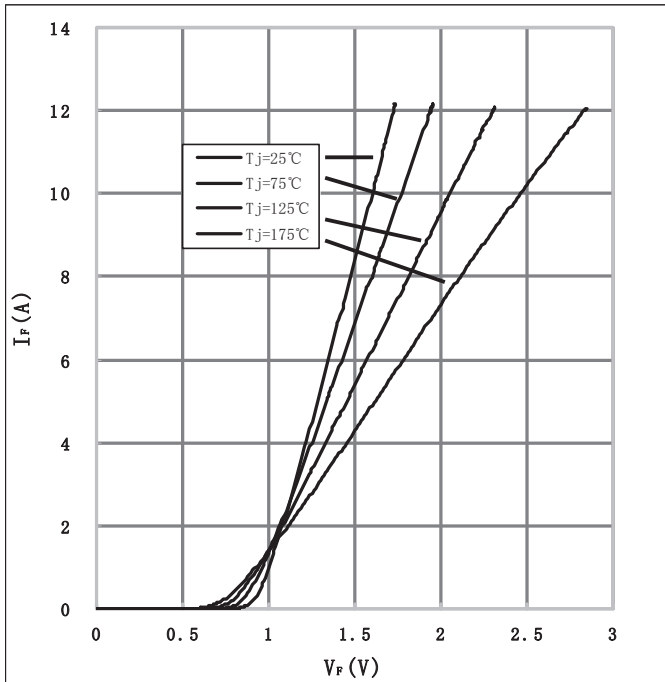
Parameter	Symbol	Test condition	Value	Unit
			Typical	
Thermal resistance from Junction to Case	$R_{th\text{JC}}$		1.06* 0.53**	°C/W

**Electrical Characteristics**

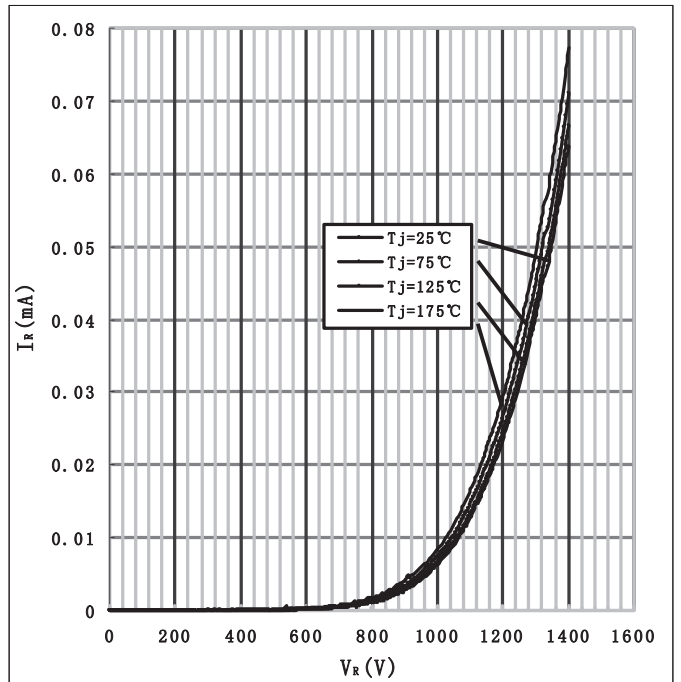
Parameter	Symbol	Test Condition	Value		Unit
			Typ.	Max.	
Forward voltage	$V_F$	$I_F=10\text{A}$ , $T_j=25^\circ\text{C}$	1.63	1.7	V
		$I_F=10\text{A}$ , $T_j=175^\circ\text{C}$	2.55	3	
Reverse current	$I_R$	$V_R=1200\text{V}$ , $T_j=25^\circ\text{C}$	50	100	μA
		$V_R=1200\text{V}$ , $T_j=175^\circ\text{C}$	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

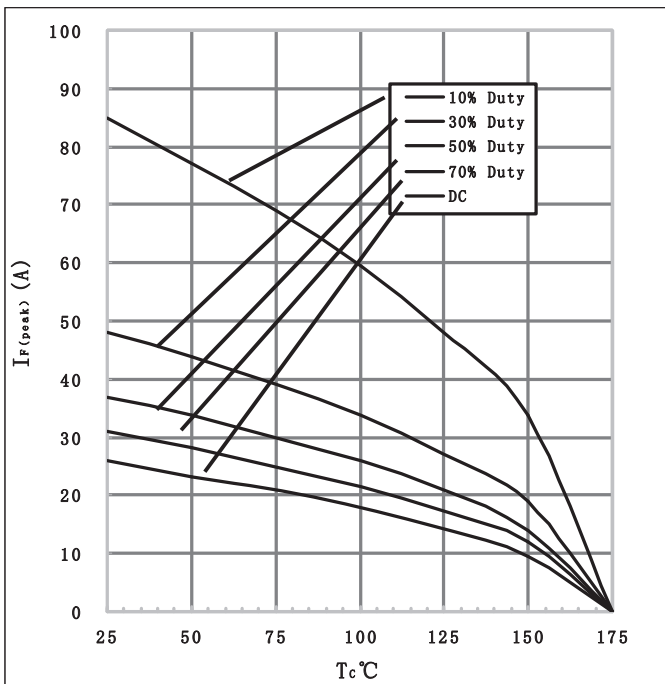


## 2) Reverse characteristics

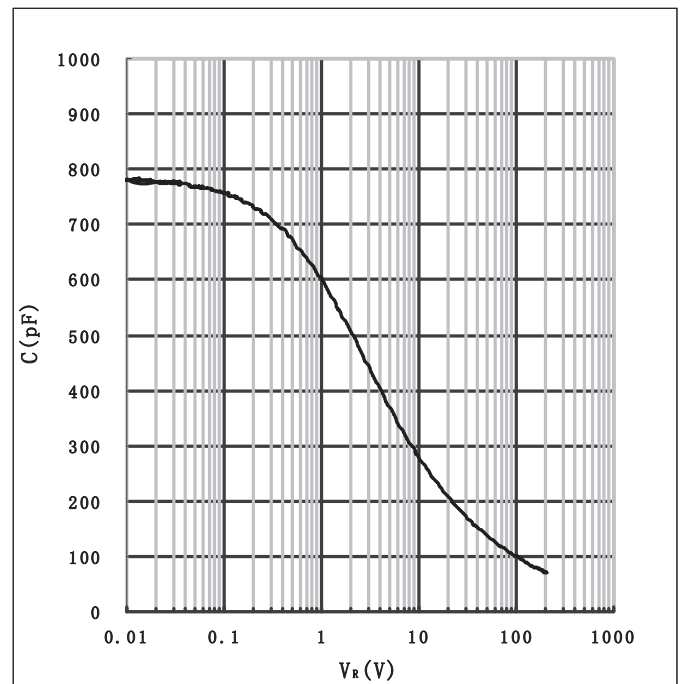


## 3) Current Derating

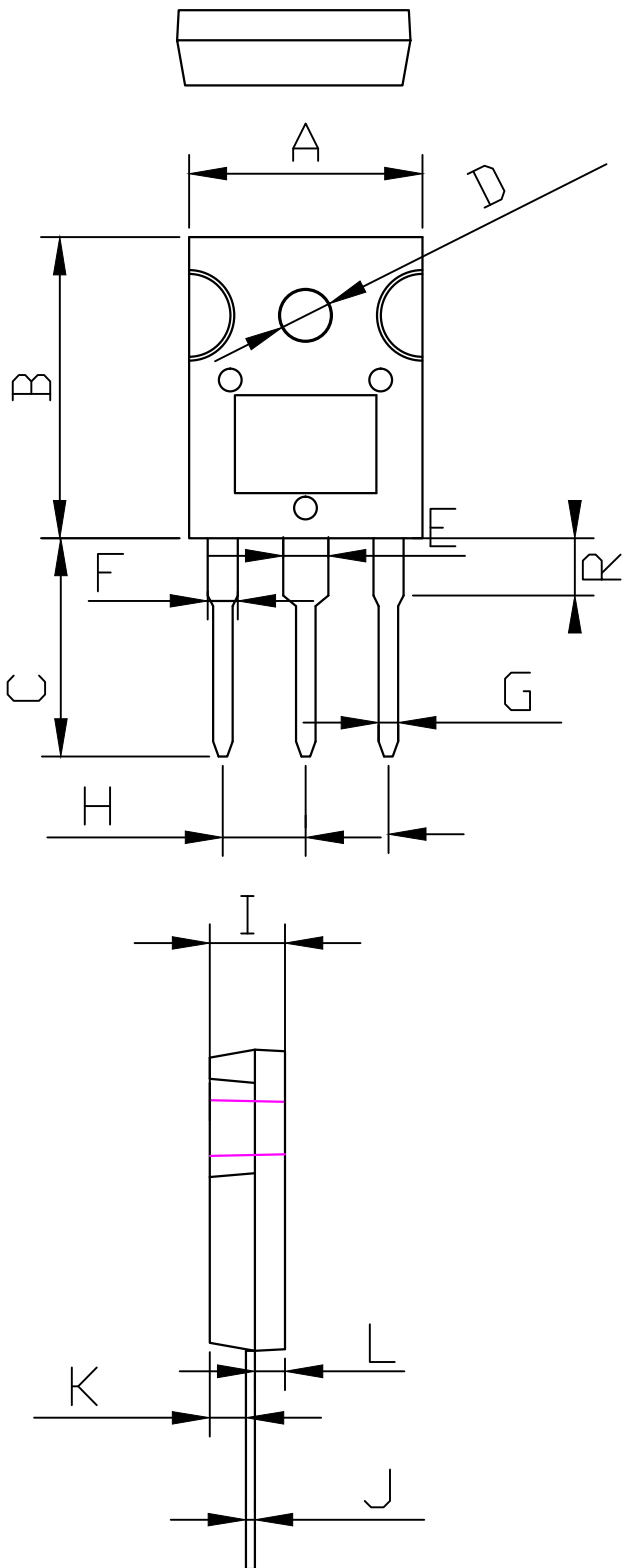
(10%, 30%, 50%, 70% Duty ,DC)



## 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

## DISCLAIMER NOTICE

Rectron Inc reserves the right to make changes without notice to any product specification herein, to make corrections, modifications, enhancements or other changes. Rectron Inc or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies. Data sheet specifications and its information contained are intended to provide a product description only. "Typical" parameters which may be included on RECTRON data sheets and/ or specifications can and do vary in different applications and actual performance may vary over time. Rectron Inc does not assume any liability arising out of the application or use of any product or circuit.

Rectron products are not designed, intended or authorized for use in medical, life-saving implant or other applications intended for life-sustaining or other related applications where a failure or malfunction of component or circuitry may directly or indirectly cause injury or threaten a life without expressed written approval of Rectron Inc. Customers using or selling Rectron components for use in such applications do so at their own risk and shall agree to fully indemnify Rectron Inc and its subsidiaries harmless against all claims, damages and expenditures.