

## 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

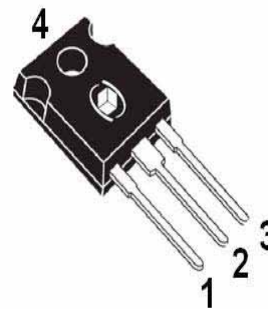
Description		
$V_{RRM}$	1200	V
$I_F, T_c \leq 135^\circ\text{C}$	12.5 (per leg)	A
$Q_c$	138	nC

### Benefits

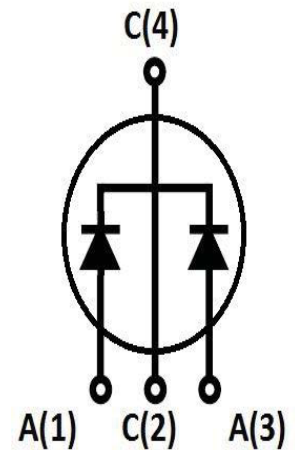
- Unipolar rectifiers
- Essentially no switching losses
- Parallel devices without thermal runaway
- Reduction of heat sink requirements

### Applications

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



Package:  
TO-247



Part Number	Package	Marking
SC3S12020B	TO-247-3pin	SC12020B

**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	$I_F$	$T_C=25^\circ C$ $T_C=135^\circ C$ $T_C=155^\circ C$	25.9* 12.5* 10*	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	$T_C=25^\circ C$ , $t_p=10ms$ , Half Sine Wave, $D=0.3$	50*	A
Non-repetitive Peak Forward Surge current	$I_{FSM}$	$T_C=25^\circ C$ , $t_p=10ms$ , Half Sine Wave	100*	A
Power Dissipation	$P_{TOT}$	$T_C=25^\circ C$	141.5*	W
		$T_C=110^\circ C$	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**

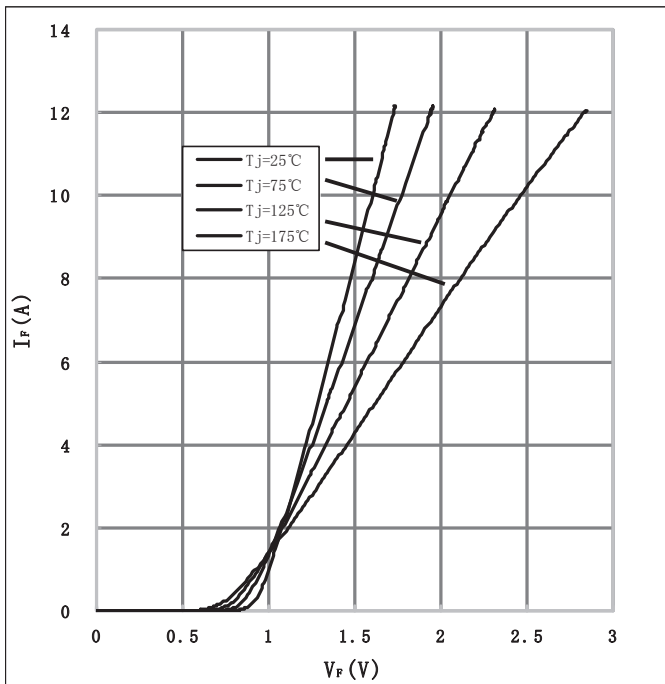
Parameter	Symbol	Test condition	Value	Unit
			Typical	
Thermal resistance from Junction to Case	$R_{thJC}$		1.06* 0.53**	°C/W

**Electrical Characteristics**

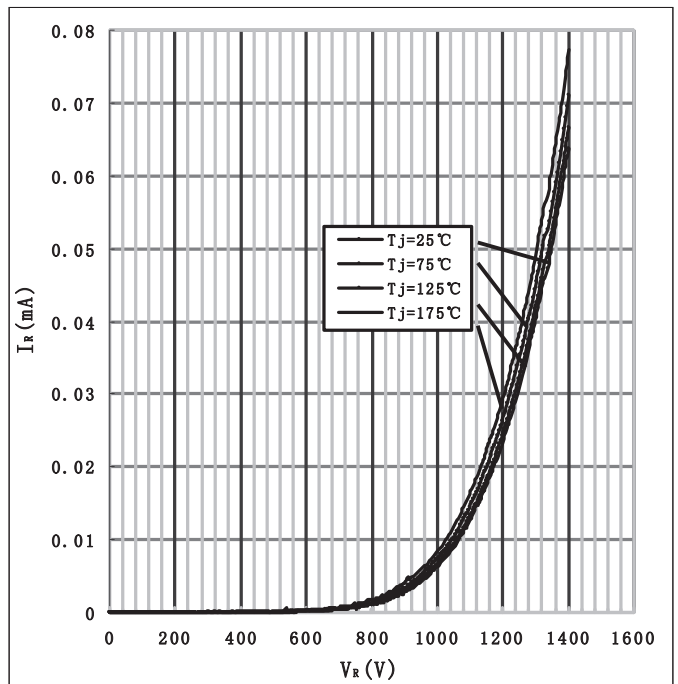
Parameter	Symbol	Test Condition	Value		Unit
			Typ.	Max.	
Forward voltage	$V_F$	$I_F=10A$ , $T_j=25^\circ C$	1.63	1.7	V
		$I_F=10A$ , $T_j=175^\circ C$	2.55	3	
Reverse current	$I_R$	$V_R=1200V$ , $T_j=25^\circ C$	50	100	µA
		$V_R=1200V$ , $T_j=175^\circ C$	100	200	
Total capacitive charge	$Q_C$	$V_R=800V$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

# RATING AND CHARACTERISTICS CURVES (SC3S12020B)

## 1) Forward characteristics

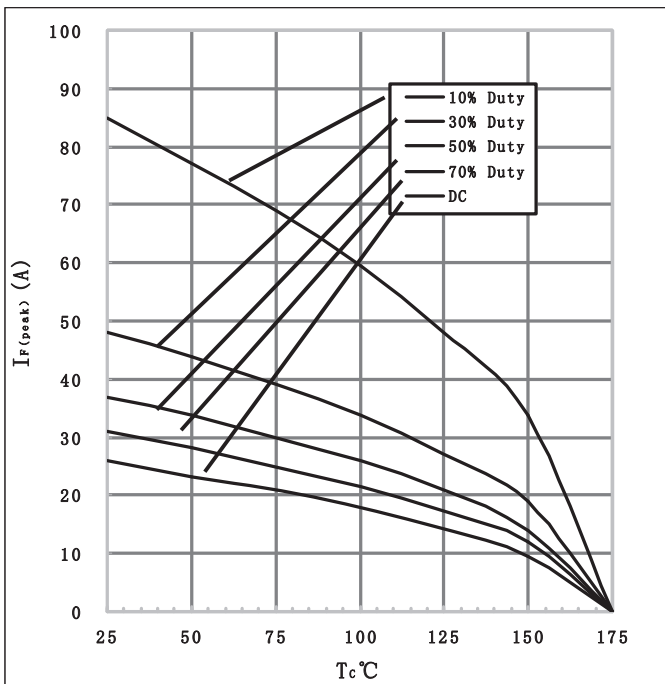


## 2) Reverse characteristics

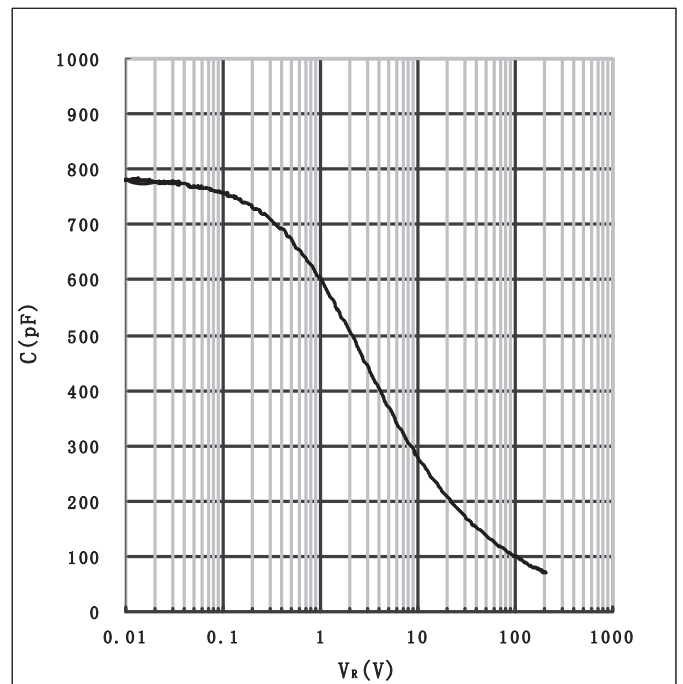


## 3) Current Derating

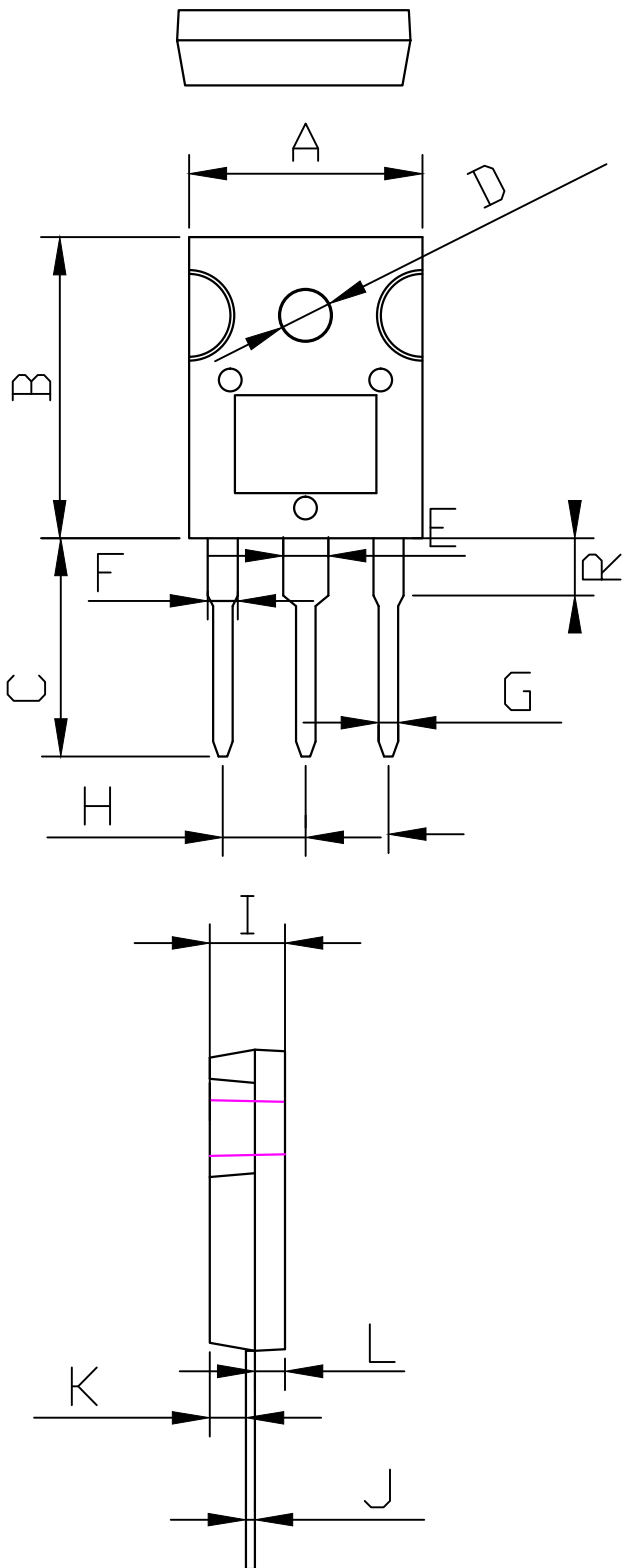
(10%, 30%, 50%, 70% Duty ,DC)



## 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