RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

SC3S12020A

1200V/20A Silicon Carbide Power Schottky Barrier Diode

Features

- Rated to 1200V at 20 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

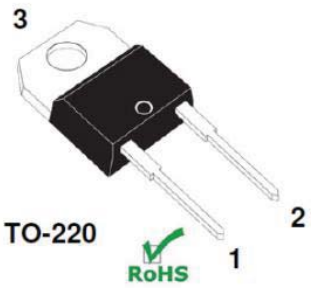
Key Characteristics		
V_{RRM}	1200	V
I_F, $T_c \leqslant 135℃$	20	A
Q_C	110	nC

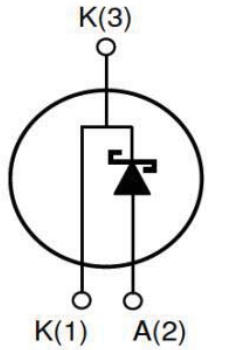
Benefits

- 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





Internal Schematic

Part No.	Package Type	Marking
SC3S12020A	TO-220-2 pin	12020

2016-11
REV:O26

Maximum Ratings

Parameter	Symbol	Test Condition	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℃ T_C=135℃	43.2 20	A
Repetitive Peak Forward Surge Current	I_{FRM}	T_C=25℃, tp=10ms，Half Sine Wave，D=0.3	100	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	T_C=25℃, tp=10ms，Half Sine Wave	200	A
Power Dissipation	P_{TOT}	T_C=25℃	192.3	W
		T_C=110℃	83.3	W
Operating Junction	T_j		-55℃ to 175℃	℃
Storage Temperature	T_{stg}		-55℃ to 175℃	℃
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal Characteristics

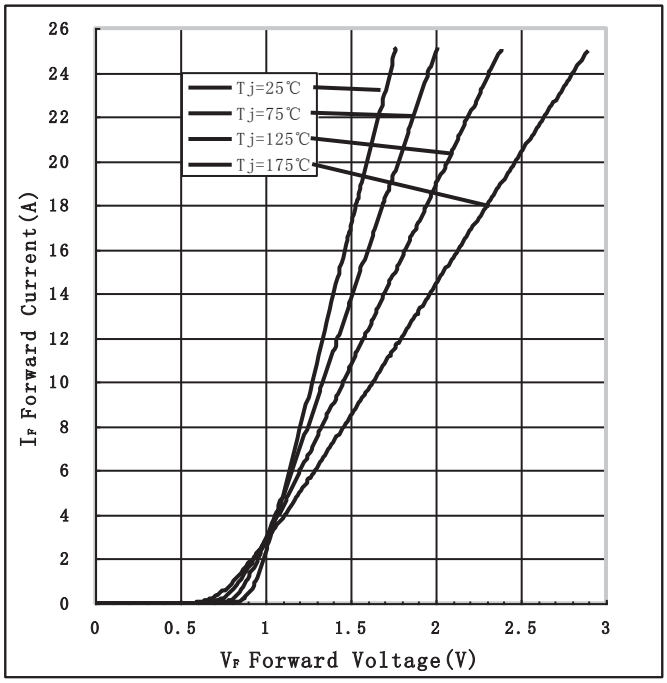
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{th\ JC}$		0.78	℃/W

Electrical Characteristics

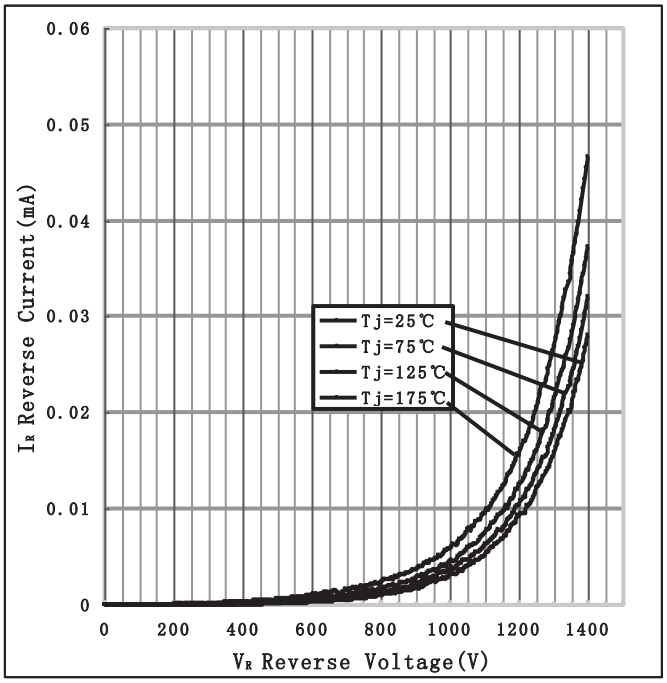
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	I_F=20A, T_j=25℃	1.62	1.8	V
		I_F=20A, T_j=175℃	2.55	2.7	
Reverse Current	I_R	V_R=1200V, T_j=25℃	20	100	μA
		V_R=1200V, T_j=175℃	30	200	
Total Capacitive Charge	Q_C	V_R=800V, T_j=150℃ $Qc = \int_0^{VR} C(V)dV$	110	-	nC
Total Capacitance	C	V_R=0V, T_j=25℃, f=1MHZ	1500	1580	pF
		V_R=400V, T_j=25℃, f=1MHZ	98	100	
		V_R=800V, T_j=25℃, f=1MHZ	97	99	

RATING AND CHARACTERISTICS CURVES (SC3S12020A)

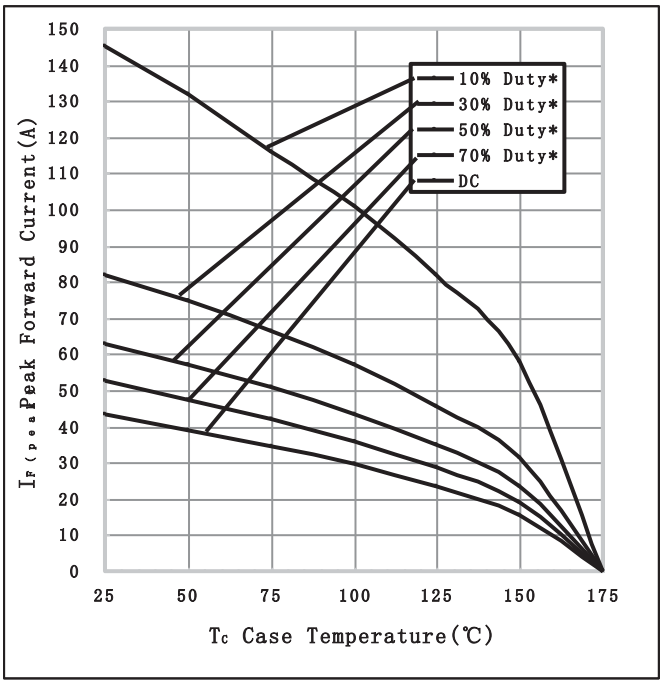
1) Forward IV characteristics as a function of Tj :



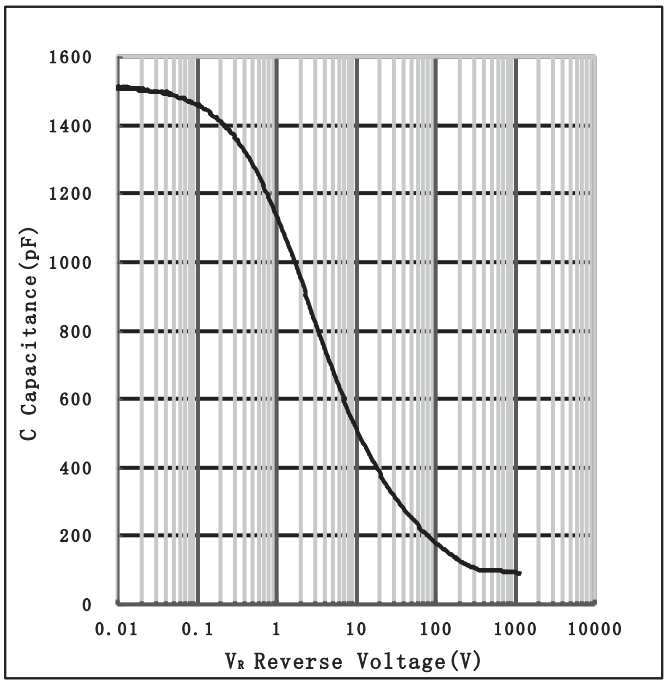
2) Reverse IV characteristics as a function of Tj :



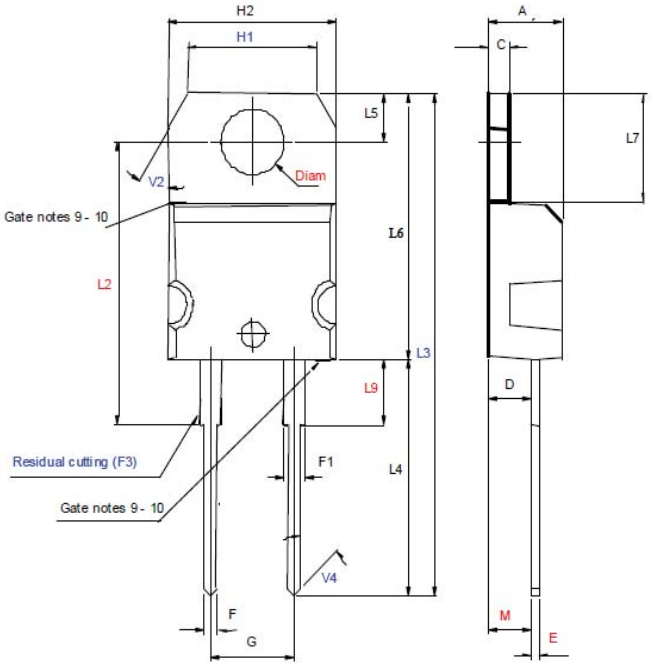
3) Current Derating



4)Capacitance vs. reverse voltage :



Package TO-220



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.4	4.6	0.173	0.181
C	1.23	1.32	0.048	0.052
D	2.4	2.72	0.094	0.107
E	0.49	0.7	0.019	0.028
F	0.61	0.88	0.024	0.035
F1	1.14	1.7	0.045	0.067
F3		1		0.039
G	4.95	5.15	0.195	0.203
H1	7.7	7.9	0.303	0.311
H2	10	10.4	0.394	0.409
L2	16.4		0.646	
L3	28.9		1.138	
L4	13	14	0.512	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.2	6.6	0.244	0.260
L9	3.5	3.93	0.138	0.155
M	2.6			
V	5°			
V2	30°			
V4	45°			
diam	3.75	3.85	0.148	0.152

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