RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

SC3S12010C

Silicon Carbide Schottky Diode

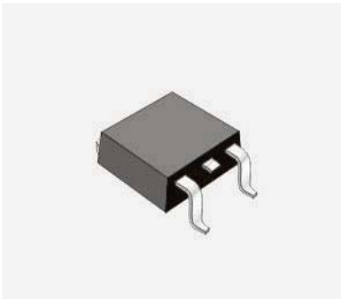
Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature

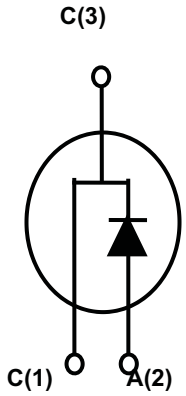
V_{RRM}	=	1200	V
I_F (T_C≤135℃)	=	9.5	A
Q_C	=	18.5	nC

Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses



Package: TO-252



Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station

Part No.	Package Type	Marking
SC3S12010C	TO-252	SC12010

2023-07/110
REV:A

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	T_C = 25˚C	
V_{RSM}	Surge Peak Reverse Voltage	1200	V	T_C = 25˚C	
V_R	DC Blocking Voltage	1200	V	T_C = 25˚C	
I_F	Forward Current	19 9.5 5	A	T_C ≤ 25˚C T_C ≤ 135˚C T_C ≤ 161˚C	
I_{FSM}	Non-Repetitive Forward Surge Current	50	A	T_C = 25˚C, t_p = 8.3ms, Half Sine Wave	
P_{tot}	Power Dissipation	130	W	T_C = 25˚C	Fig.3
T_C	Maximum Case Temperature	161	˚C		
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	˚C		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.55 2.2	1.8 2.5	V	I_F = 5A, T_J = 25˚C I_F = 5A, T_J = 175˚C	Fig.1
I_R	Reverse Current	2 10	20 200	μA	V_R = 1200V, T_J = 25˚C V_R = 1200V, T_J = 175˚C	Fig.2
C	Total Capacitance	340 32.5 25	/	pF	V_R = 0V, T_J = 25˚C, f = 1MHz V_R = 400V, T_J = 25˚C, f = 1MHz V_R = 800V, T_J = 25˚C, f = 1MHz	Fig.5
Q_C	Total Capacitive Charge	18.5	/	nC	V_R = 800V, I_F = 5A di/dt = 200A/μs, T_J = 25˚C	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.15	˚C/W	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	˚C/W	
T_{sold}	Soldering Temperature	260	˚C	

RATING AND CHARACTERISTICS CURVES(SC3S12010C)

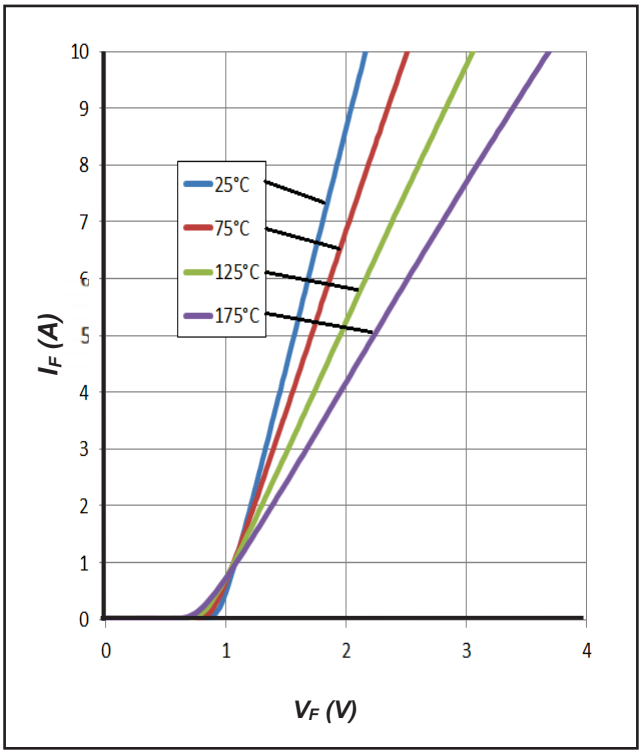


Figure 1. Forward Characteristics

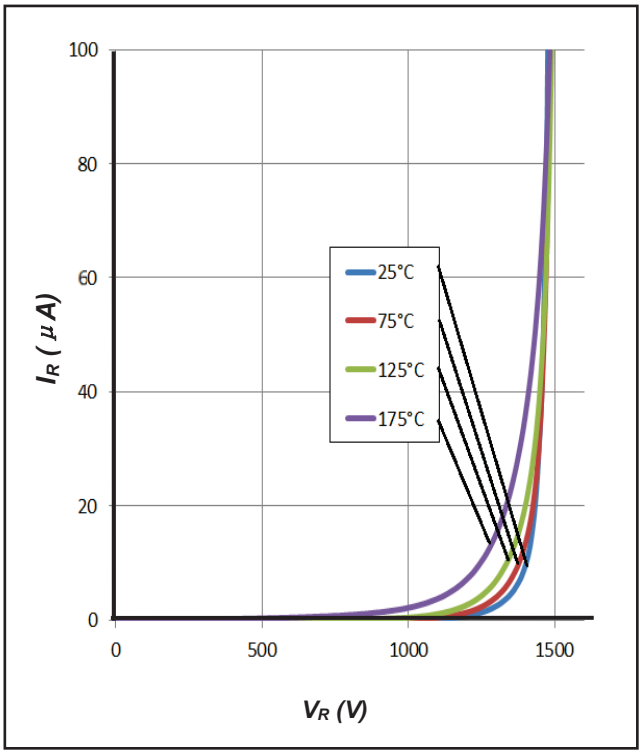


Figure 2. Reverse Characteristics

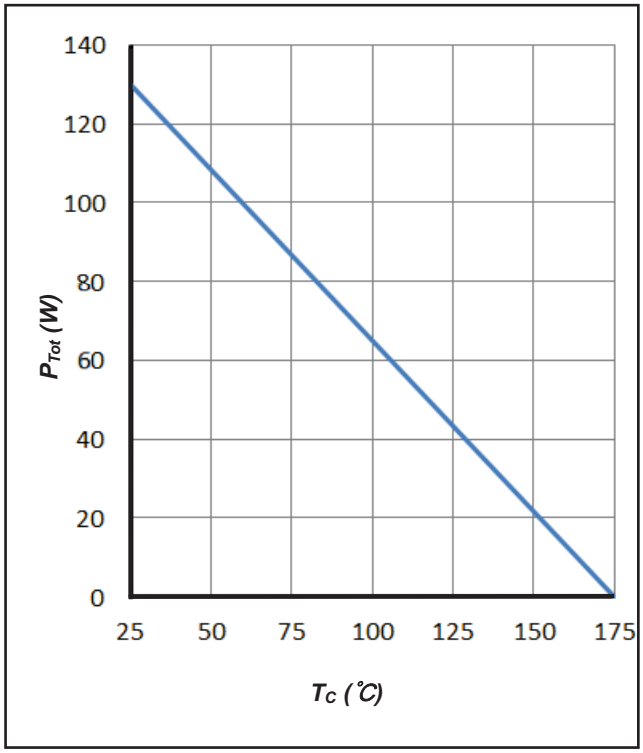


Figure 3. Power Derating

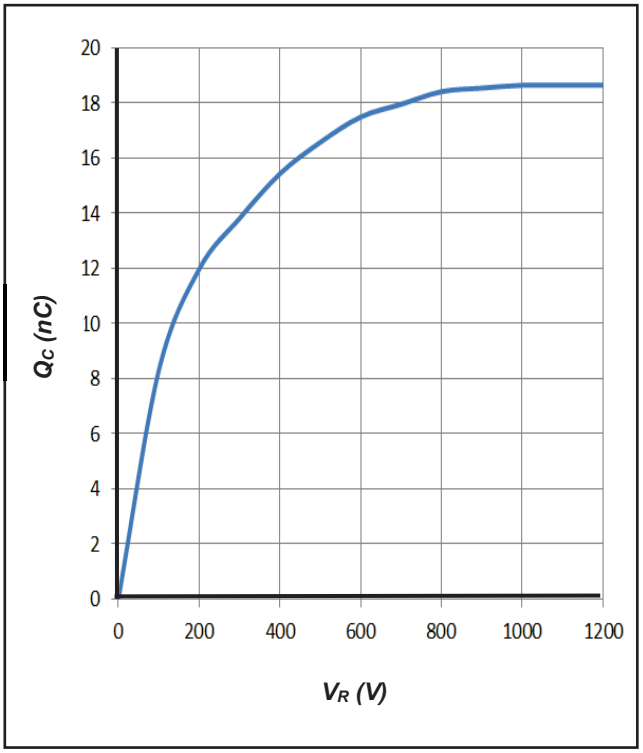


Figure 4. Total Capacitive Charge vs. Reverse Voltage

RATING AND CHARACTERISTICS CURVES(SC3S12010C)

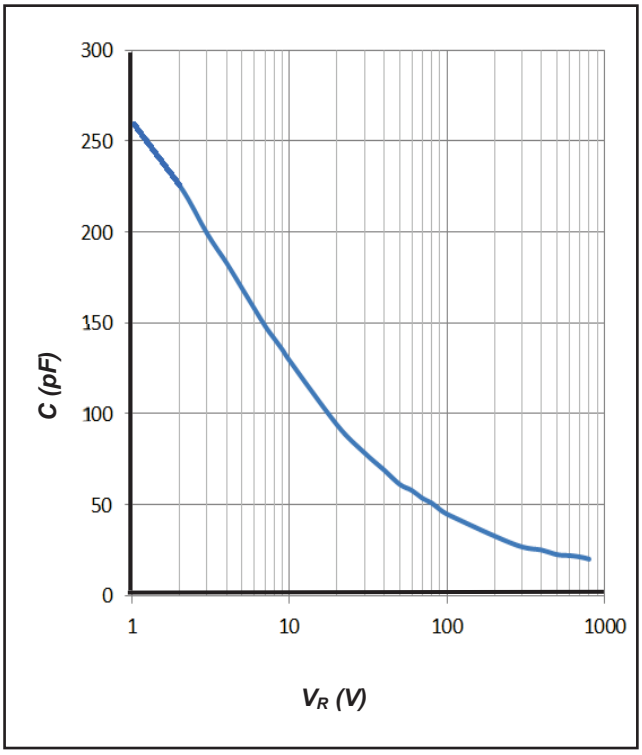


Figure 5. Total Capacitance vs. Reverse Voltage

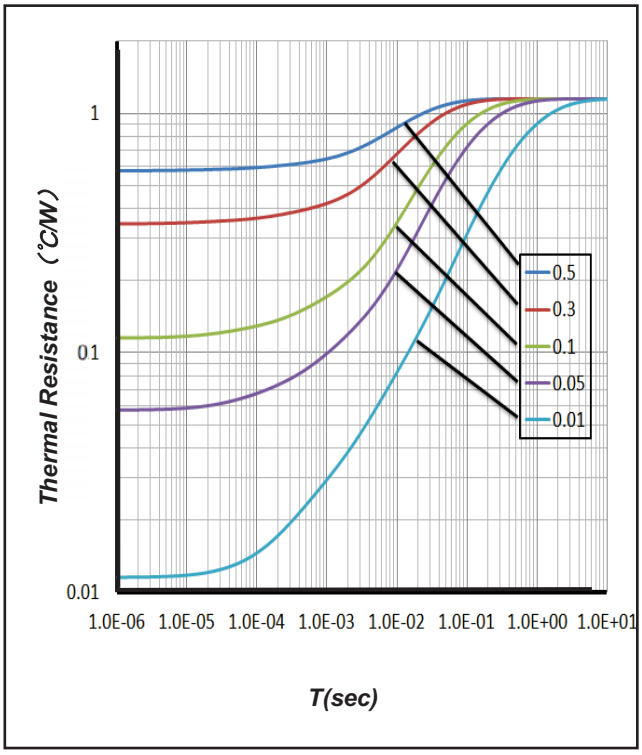
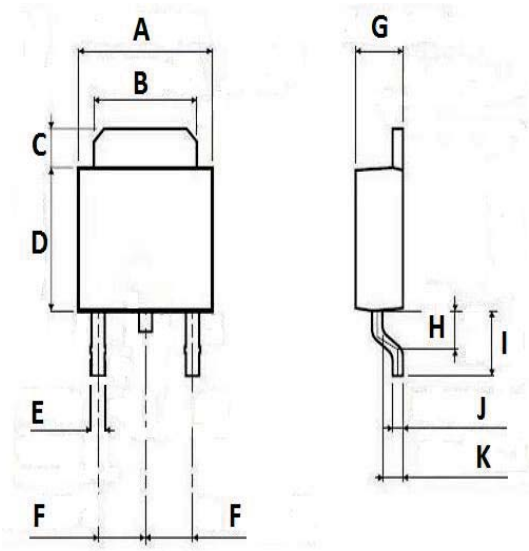
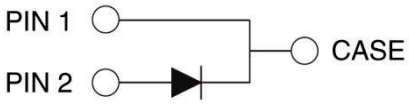


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-252





Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	6.3	6.5	6.7
B	5.2	5.3	5.4
C	1.15	1.25	1.35
D	5.7	5.9	6.1
E	0.65	0.7	0.75
F	2.1	2.3	2.5
G	2.2	2.3	2.4
H	1.45	1.5	1.55
I	2.9	3.0	3.1
J	0.45	0.5	0.55
K	0.9	1	1.1

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