

SiC Schottky Diode

Features:

- ✦ Positive temperature coefficient, great for parallel connection.
- ✦ Switching is not affected by temperature.
- ✦ Max operational temperature: 175°C.
- ✦ 0 Reverse recovery current.
- ✦ 0 Forward recovery voltage.

Benefits:

- ✦ Unipolar device.
- ✦ Greatly reduce switching loss.
- ✦ No thermal breakdown in parallel devices.
- ✦ Reduce system dependence on heat sink.

Applications:

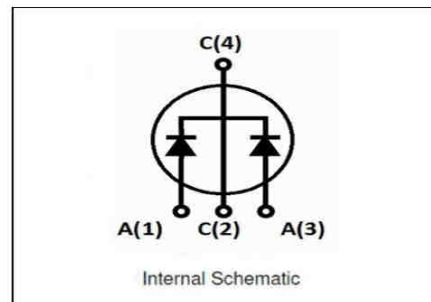
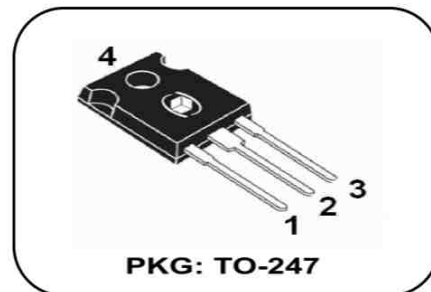
- ✦ Switching Mode Power Supply (SMPS)
- ✦ Power Factor Correction (PFC)
- ✦ Motor drive, PV inverter, Uninterruptible power supply.
- ✦ Wind driven electricity generator, Train hauling system, Electric automobiles.

Maximum Ratings:

Parameter	Symbol	Value	Unit	Test Condition
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	$T_j = 25^\circ\text{C}$
Surge Peak Reverse Voltage	V_{RSM}	1200	V	$T_j = 25^\circ\text{C}$
DC Blocking Voltage	V_{DC}	1200	V	$T_j = 25^\circ\text{C}$
Continuous Forward Current	I_F	44*	A	$T_c = 25^\circ\text{C}$
		20*		$T_c = 135^\circ\text{C}$
Repetitive Peak Forward Surge Current	I_{FRM}	90*	A	$T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave, $D = 0.3$
Non-repetitive Peak Forward Surge Current	I_{FSM}	100*	A	$T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave
Power Dissipation	P_{TOT}	192.3*	W	$T_c = 25^\circ\text{C}$
		85		$T_c = 110^\circ\text{C}$
Operating Junction Temperature	T_j	-55°C to 175°C	°C	
Storage Temperature	T_{stg}	-55°C to 175°C	°C	

*Single Leg

V_{RRM}	1200	V
I_F , $T_c \leq 135^\circ\text{C}$	40	A
Q_c	218	nC



Thermal Characteristics

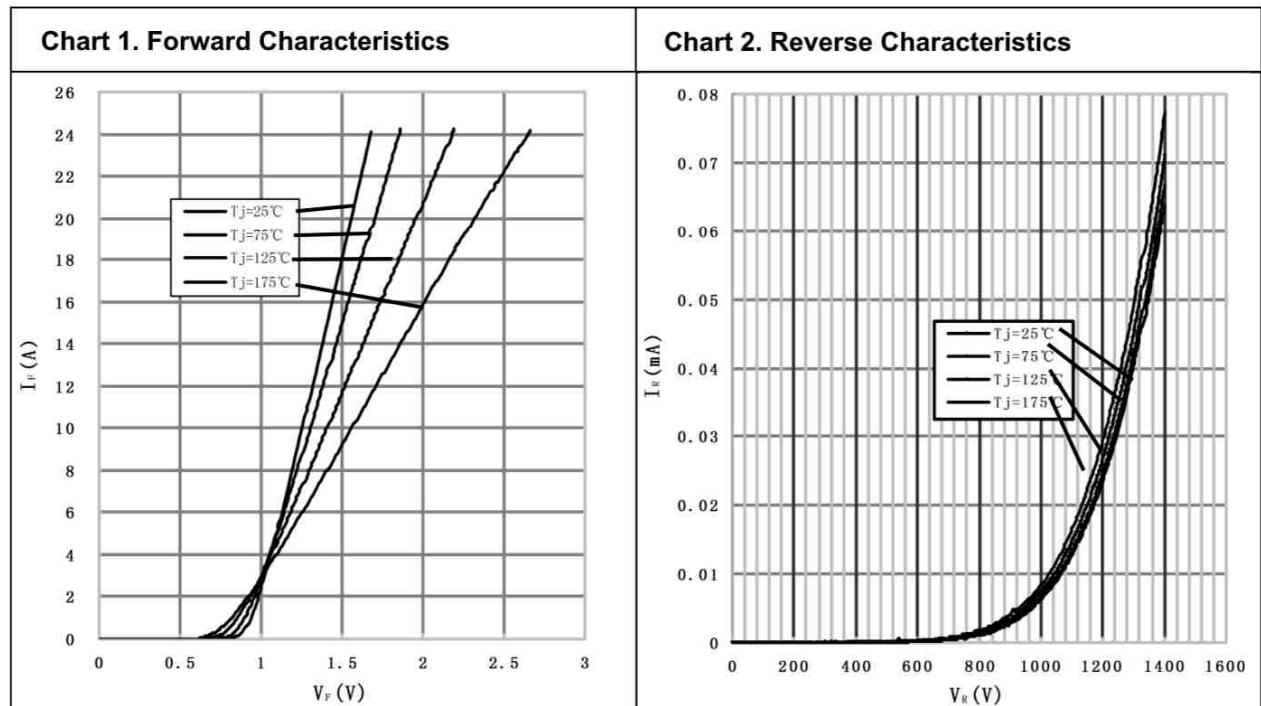
Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$		0.78* 0.39**		$^{\circ}\text{C}/\text{W}$

*Single Leg
**Single Tube

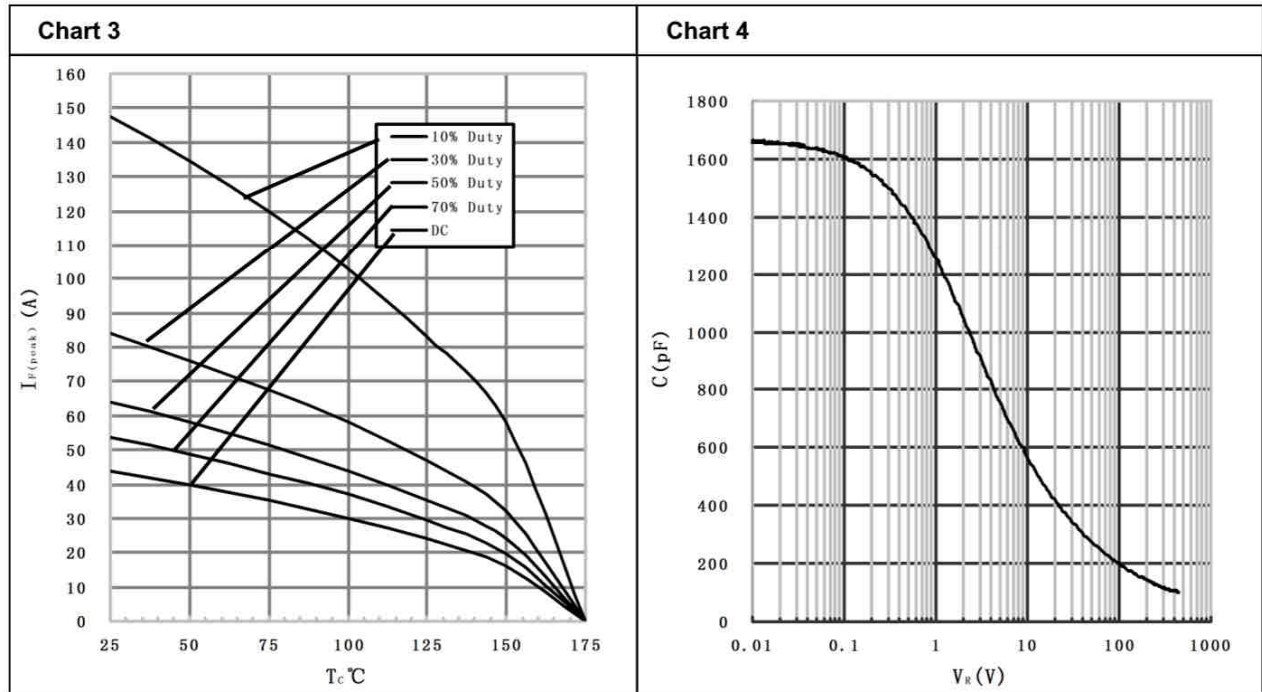
Electrical Characteristics

Parameter	Symbol	Typ.	Max.	Unit	Test Condition
Forward Voltage	V_F	1.6 2.4	1.8 3	V	$I_F=20\text{A}, T_j=25^{\circ}\text{C}$ $I_F=20\text{A}, T_j=175^{\circ}\text{C}$
Reverse Current	I_R	50 100	100 200	μA	$V_R=1200\text{V}, T_j=25^{\circ}\text{C}$ $V_R=1200\text{V}, T_j=175^{\circ}\text{C}$
Total Capacitance Charge	Q_C	218	-	nC	$V_R=800\text{V}, I_F=40\text{A},$ $di/dt=200\text{A}/\mu\text{s}, T_j=25^{\circ}\text{C}$
Total Capacitance	C	1640 105 103	1800 108 104	pF	$V_R=0\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=400\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=800\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$

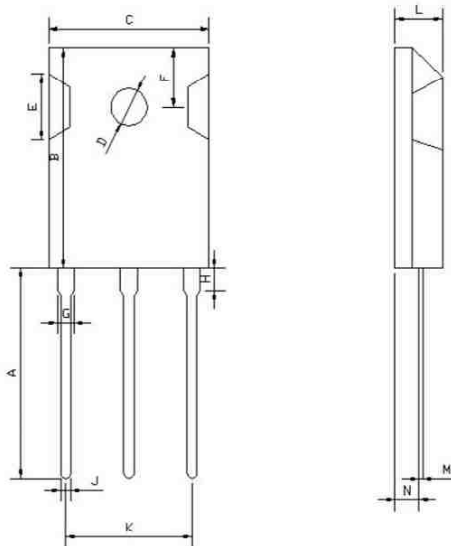
RATING AND CHARACTERISTICS CURVES (SC2S12040B)



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Package Outline: TO-247



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.8	21.46	0.819	0.845
C	15.75	16.26	0.620	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.213	0.244
G	1.65	2.13	0.065	0.084
H		4.5		0.177
J	1	1.4	0.039	0.055
K	10.8	11	0.425	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.059	0.098

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