

## Features

- Zero Reverse Recovery Current
- Positive Temperature Coefficient
- High-Speed Switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)

## Benefits

- Temperature-Independent Performance
- Low Switching Loss
- Low Heat Dissipation Requirements

## Applications

- Switching Power Supply
- Power Factor Correction
- Motor Drive, Traction
- Charging Pile

## Maximum Ratings

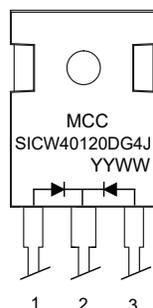
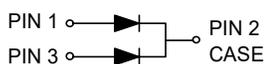
Parameter	Symbol	Rating	Unit
Peak Repetitive Reverse Voltage@ $T_j=25^\circ\text{C}$	$V_{RRM}$	1200	V
Surge Peak Reverse Voltage@ $T_j=25^\circ\text{C}$	$V_{RSM}$	1200	V
DC Reverse Voltage@ $T_j=25^\circ\text{C}$	$V_{DC}$	1200	V
Continuous forward Current	@ $T_C=25^\circ\text{C}$	59/118	A
	@ $T_C=135^\circ\text{C}$	27/54	
	@ $T_C=151^\circ\text{C}$	20/40	
Non-repetitive Peak Forward Surge Current @ $T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse	$I_{FSM}$	160 <sup>(3)</sup>	A
Power Dissipation	@ $T_C=25^\circ\text{C}$	230/454	W
	@ $T_C=110^\circ\text{C}$	100/196	

Note:1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. High Temperature Solder Exemptions Applied, see EU Directive Annex 7a.

3. Per Leg.

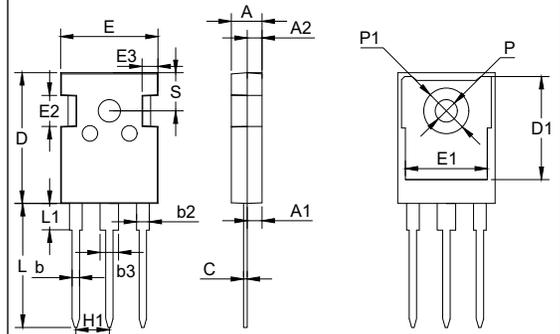
### Internal Structure:



Device Code: SICW40120DG4J  
YYWW: Date Code (Year&Week)

# 40Amp Silicon Carbide Schottky Barrier Rectifier 1200 Volts

## TO-247AB



### DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.189	0.205	4.80	5.20	
A1	0.087	0.103	2.21	2.61	
A2	0.073	0.085	1.85	2.15	
b	0.039	0.055	1.00	1.40	
b2	0.075	0.087	1.91	2.21	
C	0.020	0.028	0.50	0.70	
D	0.815	0.839	20.70	21.30	
D1	0.640	0.663	16.25	16.85	
E	0.610	0.634	15.50	16.10	
E1	0.512	0.535	13.00	13.60	
E2	0.189	0.205	4.80	5.20	
E3	0.091	0.106	2.30	2.70	
L	0.772	0.796	19.62	20.22	
L1	-	0.169	-	4.30	
P	0.134	0.150	3.40	3.80	Φ
P1		0.287	-	7.30	Φ
S	0.242		6.15		TYP
H1	0.214		5.44		TYP
b3	0.110	0.126	2.80	3.20	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Conditions	Typ.	Max.	Units
Forward Voltage	$V_F$	$I_F=20A, T_J=25^\circ C$	1.36	1.60	V
		$I_F=20A, T_J=175^\circ C$	1.85		V
Reverse Leakage Current	$I_R$	$V_R=1200V, T_J=25^\circ C$	0.5	25	$\mu A$
		$V_R=1200V, T_J=175^\circ C$	10		$\mu A$
Total Capacitive Charge	$Q_C$	$V_R=800V$	118		nC
Total capacitance	C	$V_R=0V, f=1MHz$	1626		pF
		$V_R=400V, f=1MHz$	110		pF
		$V_R=800V, f=1MHz$	85		pF
Capacitance Stored Energy	$E_C$	$V_R=800V$	30		$\mu J$

**Thermal characteristics**

Parameter	Symbol	Min	Typ	Max	Units
Operating Junction Temperature Range	$T_J$	-55		175	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55		175	$^\circ C$
Thermal Resistance from Junction to Case (Per Leg)	$R_{th_{J-C}}$		0.65		$^\circ C/W$
Thermal Resistance from Junction to Case (Device)	$R_{th_{J-C}}$		0.33		$^\circ C/W$

**Curve Characteristics**

Fig. 1 - Typical Forward Characteristics

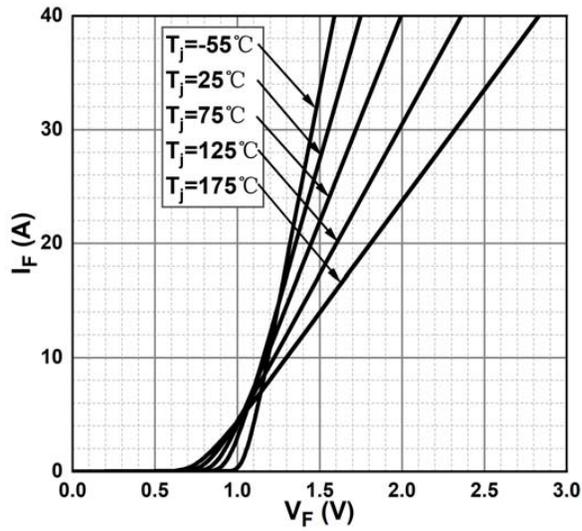


Fig. 2 - Typical Reverse Leakage Characteristics

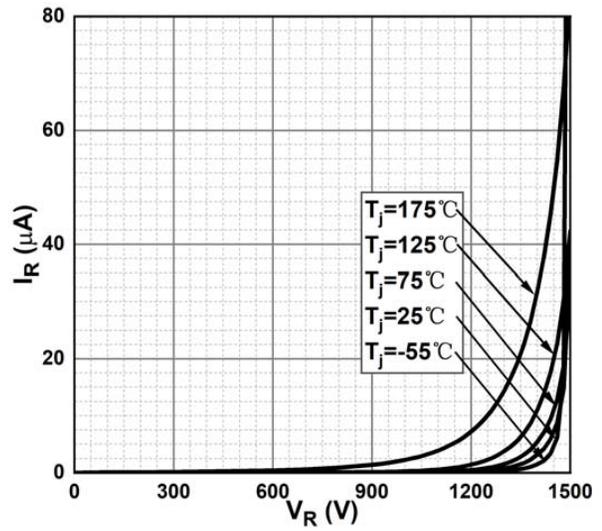


Figure 3. Capacitance vs. Reverse Voltage

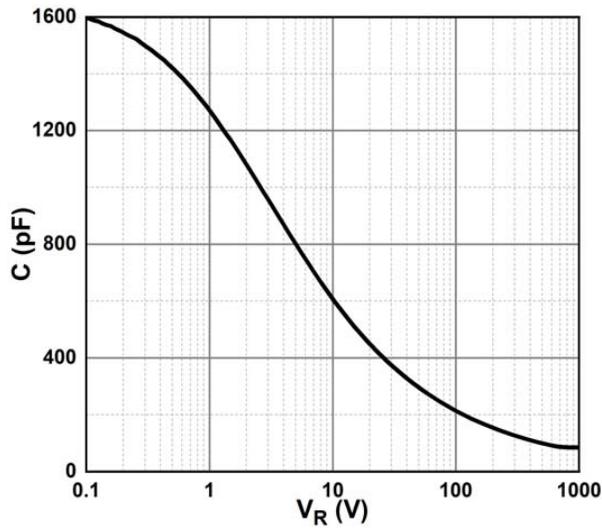


Figure 4. Total Capacitance Charge vs. Reverse Voltage

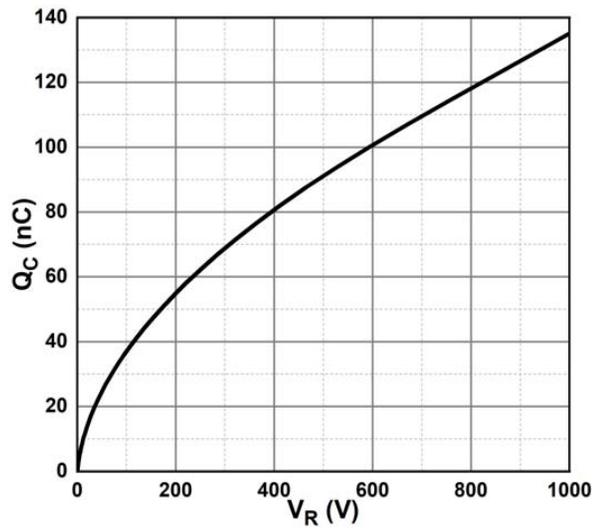


Figure 5. Capacitance Stored Energy

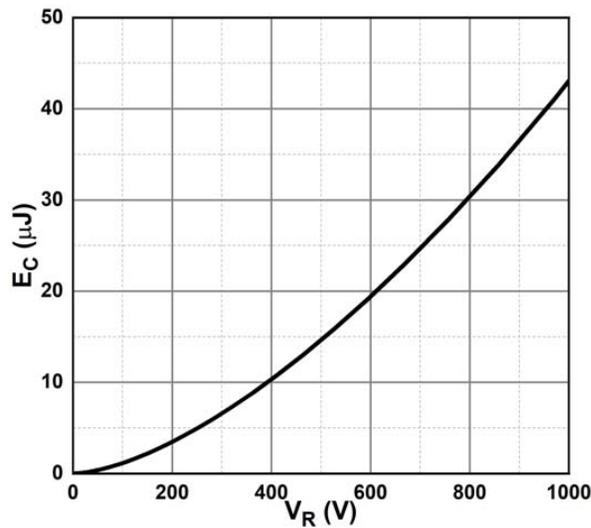
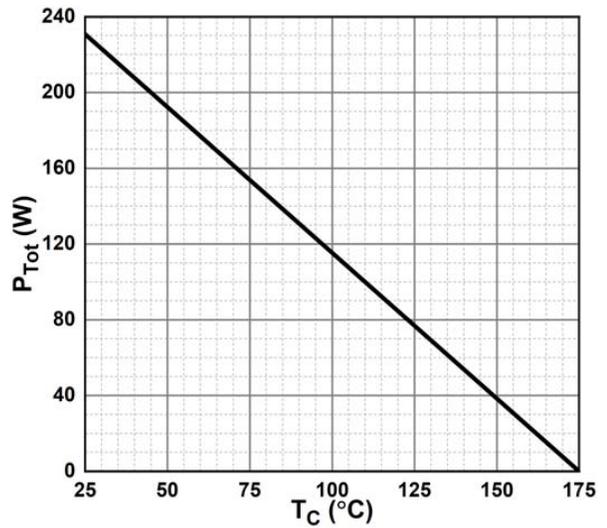


Figure 6. Power Derating



## Curve Characteristics

Fig. 7 - Current Derating

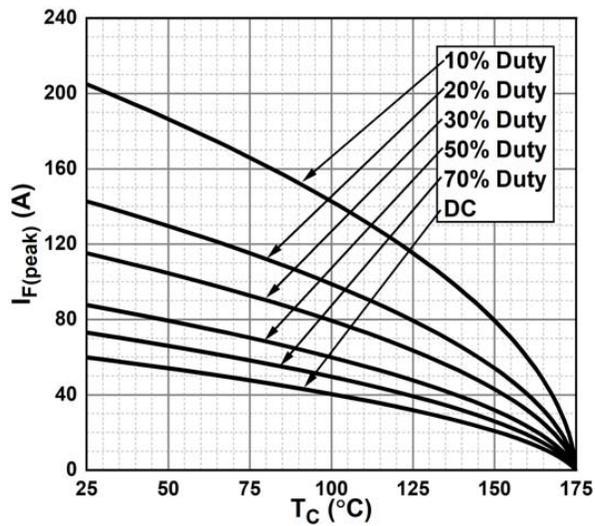
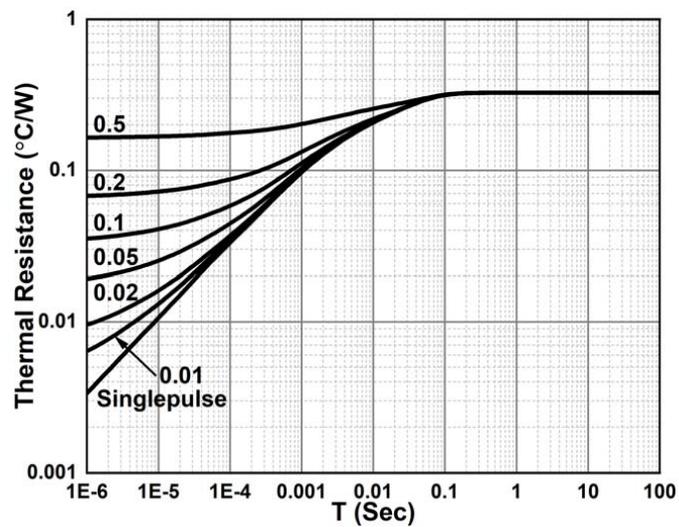


Fig. 8 - Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-BP	Bulk: 30pcs/Tube

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