SEMICONDUCTOR

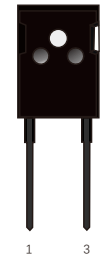
# SC30120P

Silicon Carbide Schottky Diode
Reverse Voltage - 1200 Volts
Forward Current - 30.0Amperes

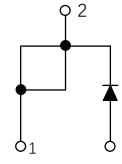
## DESCRIPTION

SiC Schottky Diode has no switching loss,provides improved system efficiency against Si diodes by utilizing new semiconductor material-Silicon Carbide,enables higher operating frequency, and helps increasing power density and reduction of system size /cost.Its high reliability ensures robust operation during surge or over_voltage conditions.

TO-247AC




Base common cathode




Cathode Anode

## FEATURES

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

## MECHANICAL DATA

- Case: JEDEC TO-247AC
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

## TYPICAL APPLICATIONS

- General Purpose
- SMPS, Solar inverter, UPS
- Power Switching Circuits

-

## KEY PERFORMANCE AND PACKAGE PARAMETERS

| Type | $V_{DC}$ | $I_F$ | Qc | T,max | Package |
|---|---|---|---|---|---|
| SC30120P | 1200V | 30A | 159nC | 175℃ | TO-247AC |

## MAXIMUM RATINGS

(Ratings at 25℃ ambient temperature unless otherwise specified )

| Parameters | Symbol | Value | Unit |
|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 1200 | V |
| Continuous forward current for $Rth_{(j-c)}$ | $I_F$ | 30($T_C$=155℃)<br>100($T_C$=25℃) | A |
| Non-repetitive forward surge current (Haif-Sine Pulse,tp=10ms) | $I_{FSM}$ | 270 (Tc=25℃) | A |
| $I^2t$ value | $\int i^2t$ | 364(Tc=25℃) | $A^2S$ |
| Power dissipation for $R_{th(j-c,max)}$ (Tc=25℃) | Ptot | 375 | W |
| Operating junction temperature range | Tj | -55...175 | ℃ |
| Storage temperature range | Tstg | -55...175 | ℃ |

## THERMAL CHARACTERISTCS

| Parameter | Symbol | Value | | Unit |
|---|---|---|---|---|
| | | Typ | Max | |
| Diode thermal resistance junction-case | $R_{th(j-c)}$ | - | 0.40 | ℃/W |

## ELECTRICAL CHARACTERISTCS (Tj=25°C Unless otherwise noted)

| Parameter | Symbol | Conditions | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| DC blocking voltage | $V_{DC}$ | Tj=25...175℃ | 1200 | - | - | V |
| Diode forward voltage | $V_F$ | $I_F$ = 30A Tj=25℃<br>$I_F$ = 30A Tj=175℃ | -<br>- | 1.45<br>1.88 | 1.60<br>- | V |
| Reverse current | $I_R$ | $V_R$=1200 Tj=25℃<br>$V_R$=1200 Tj=175℃ | -<br>- | -<br>- | 50<br>200 | uA |

## DYNAMIC CHARACTERISTICS(at Tj=25℃,unless otherwise specified)

| Parameter | Symbol | conditions | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Total capacitive charge | Qc | $V_R$=1000V | | 159 | | nC |
| Total capacitance | C | $V_R$=1V,f=1MHz<br>$V_R$=400V,f=1MHz<br>$V_R$=800V,f=1MHz<br>Tj=25℃ | | 2490<br>125<br>93 | | pF |

FIG.1-FORWARD CURRENT DERATING CURVE

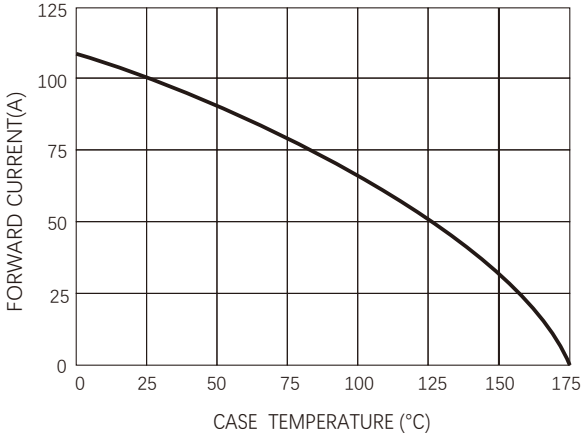



FIG.2-TYPICAL JUNCTION CAPACITANCE

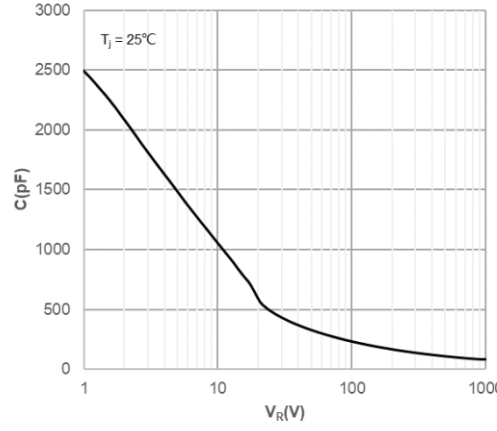



FIG.3-FORWARD CURRENT DERATING CURVE

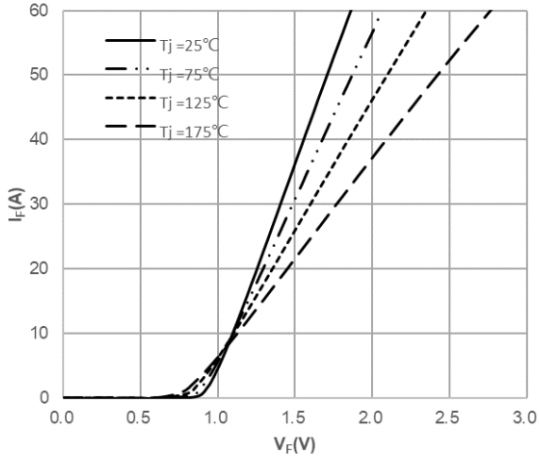
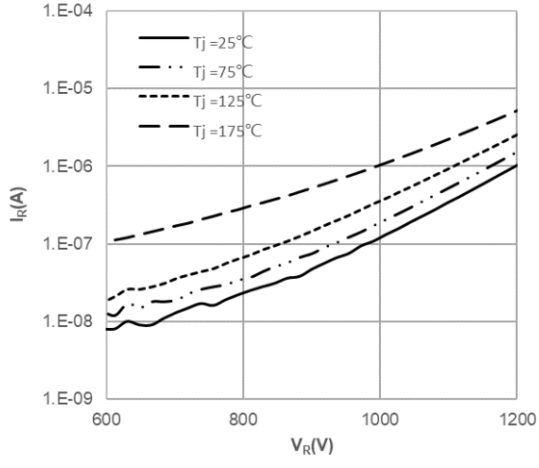
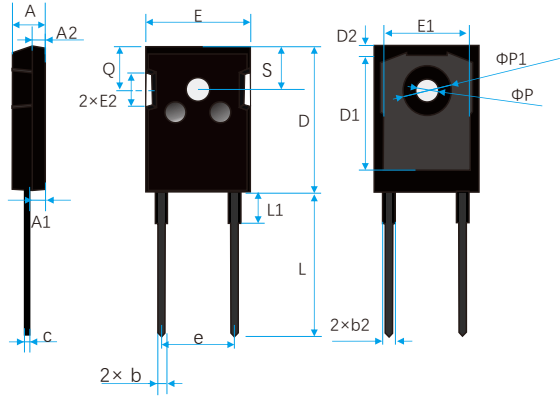



FIG.4-REVERSE CHARACTERISTICS



## PACKAGE OUTLINE DIMENSIONS TO-247AC




| Symbol | millimeter | | |
|---|---|---|---|
| | Min | Typ | MAX |
| A | 4.70 | | 5.30 |
| A1 | 2.21 | | 2.59 |
| A2 | 1.50 | | 2.49 |
| D | 20.50 | | 21.30 |
| E | 15.48 | | 16.24 |
| E2 | 4.30 | | 5.50 |
| e | | 10.92 | |
| L | 19.80 | | 20.30 |
| L1 | 4.10 | | 4.50 |
| ΦP | | 3.50 | |
| Q | 5.38 | | 6.19 |
| S | | 6.14 | |
| b | 0.99 | | 1.40 |
| b2 | 1.65 | | 2.39 |
| c | 0.38 | | 0.89 |
| D1 | 13.07 | | |
| D2 | 0.51 | | 1.35 |
| E1 | 13.30 | | |
| ΦP1 | | 7.20 | |

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