

## 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.

## 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

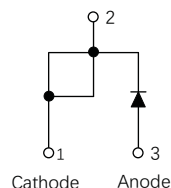
## KEY PERFORMANCE AND PACKAGE PARAMETERS

| Type    | $V_{DC}$ | $I_F$ | $Q_C$ | $T_{j,max}$ | Package  |
|---------|----------|-------|-------|-------------|----------|
| SC4065P | 650V     | 40A   | 142nC | 175°C       | TO-247AC |

TO-247AC



Base common cathode



## MAXIMUM RATINGS

(Ratings at 25°C ambient temperature unless otherwise specified )

| Parameter   | Symbol    | Value  | Unit             |
|---|-----------|--|------------------|
| Maximum Repetitive Peak Reverse Voltage   | $V_{RRM}$ | 650  | V                |
| Continuous Forward C urrent for $R_{th(j-c)}$                                   | $I_F$     | 40( $T_c \leq 150^\circ\text{C}$ )<br>64( $T_c \leq 125^\circ\text{C}$ )<br>126( $T_c \leq 25^\circ\text{C}$ ) | A                |
| Non-Repetitive Forward Surge Current<br>(Half-Sine Pulse , $t_p=8.3\text{ms}$ ) | $I_{FSM}$ | 200( $T_c=25^\circ\text{C}$ )<br>170( $T_c=110^\circ\text{C}$ )  | A                |
| Power dissipation for $R_{th(j-c,max)}$ ( $T_c=25^\circ\text{C}$ )              | $P_{tot}$ | 357  | W                |
| Operating junction temperature range  | $T_j$     | -55...175  | $^\circ\text{C}$ |
| Storage temperature range   | $T_{stg}$ | -55...175  | $^\circ\text{C}$ |

## THERMAL CHARACTERISTICS

| Parameter                                 | Symbol        | Typ | Max  | Unit                      |
|---|---------------|-----|------|---------------------------|
| Diode thermal resistance<br>junction-case | $R_{th(j-c)}$ | -   | 0.42 | $^\circ\text{C}/\text{W}$ |

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C Unless otherwise noted)

| Parameter             | Symbol                       | Conditions                                 | Value(Per Leg) |      |      | Unit |
|-----------------------|------------------------------|--|----------------|------|------|------|
|                       |                              |  | min            | typ  | max  |      |
| DC blocking voltage   | V <sub>DC</sub>              | I <sub>R</sub> =40uA,T <sub>j</sub> =25°C  | 650            | -    | -    | V    |
| Diode forward voltage | V <sub>F</sub> <sup>1)</sup> | I <sub>F</sub> =40A T <sub>j</sub> =25°C   | -              | 1.40 | 1.65 | V    |
|                       |                              | I <sub>F</sub> =40A T <sub>j</sub> =175°C  | -              | 1.70 | 2.30 |      |
| Reverse current       | I <sub>R</sub> <sup>2)</sup> | V <sub>R</sub> =650V T <sub>j</sub> =25°C  | -              | -    | 40   | uA   |
|                       |                              | V <sub>R</sub> =650V T <sub>j</sub> =175°C | -              | -    | 400  |      |

Notes: 1.Pulse test: 300 μs pulse width,1% duty cycle

2.Pulse test: pulse width ≤40ms

## DYNAMIC CHARACTERISTICS(at T<sub>j</sub>=25°C,unless otherwise specified)

| Parameter               | Symbol         | conditions  | Value |                    |     | Unit |
|-------------------------|----------------|---|-------|--------------------|-----|------|
|                         |                |   | min   | typ                | max |      |
| Total capacitive charge | Q <sub>c</sub> | V <sub>R</sub> =400V, I <sub>F</sub> =20A<br>di/dt=200A/uS                              | -     | 142                | -   | nC   |
| Total capacitance       | C <sub>j</sub> | V <sub>R</sub> =0V,f=1MHz<br>V <sub>R</sub> =200V,f=1MHz<br>V <sub>R</sub> =400V,f=1MHz |       | 2380<br>230<br>192 |     | pF   |

FIG.1-FORWARD CURRENT DERATING CURVE

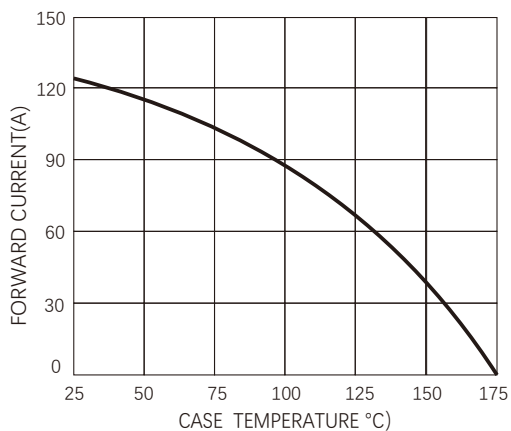


FIG.2-POWER DERATING CURVE

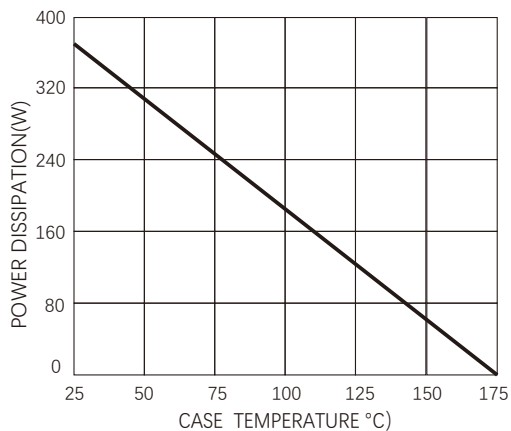


FIG.3-FORWARD CURRENT DERATING CURVE

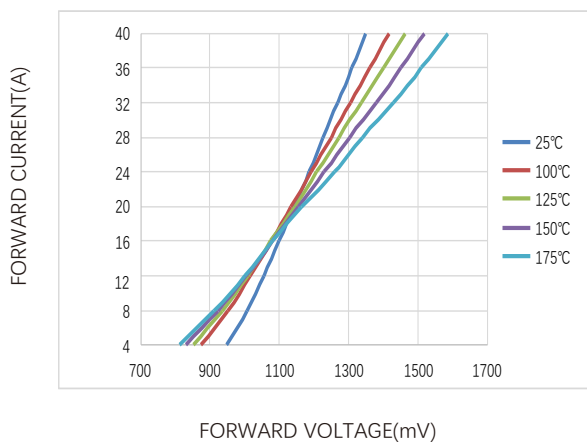
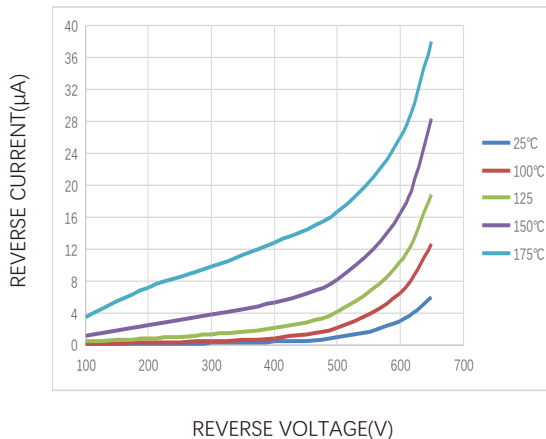
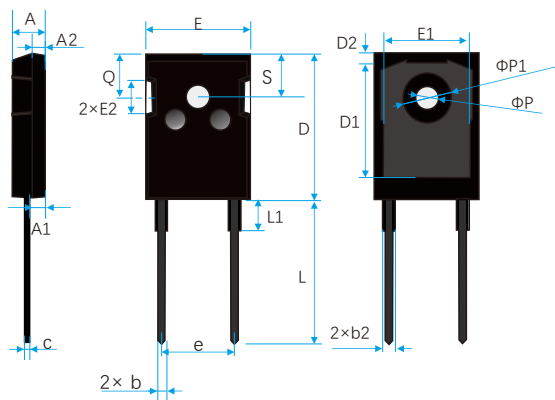


FIG.4-REVERSE CHARACTERISTICS



## 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      |       | 1.35  |
| D2     | 0.51       |       |       |
| E1     | 13.30      |       |       |
| ΦP1    |            | 7.20  |       |

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