



## JCD60SJ65ACT SiC Schottky Diode

Rev.2.2

### DESCRIPTION

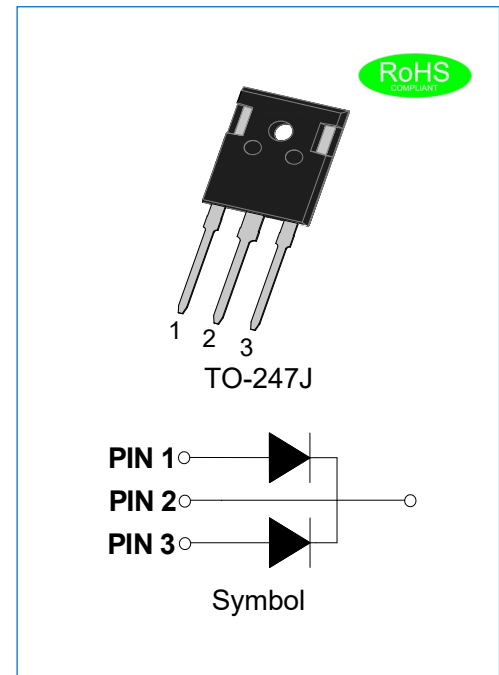
- ✧ 650V Schottky diode
- ✧ Zero reverse recovery current
- ✧ Zero forward recovery voltage
- ✧ High frequency operation
- ✧ Switching characteristics independent of temperature
- ✧ Fast switch
- ✧ Positive temperature coefficient of forward voltage ( $V_F$ )

### BENEFIT

- ✧ Lower switching loss
- ✧ No thermal runaway in parallel devices
- ✧ Lower heatsink dependent

### APPLICATION

- ✧ Switch mode power supplies(SMPS)
- ✧ Boost diodes in PFC or DC/DC stages
- ✧ Free wheeling diodes in inverter stages
- ✧ AC/DC converters



### ABSOLUTE MAXIMUM RATING (Rating at 25°C junction temperature unless otherwise specified.)

| Parameter                                 |   | Symbol      | Value       | Unit             |
|---|---|-------------|-------------|------------------|
| Maximum repetitive peak reverse voltage   |   | $V_{RRM}$   | 650         | V                |
| Maximum DC blocking voltage               |   | $V_{DC}$    | 650         | V                |
| Average forward current                   | $T_C=150^\circ\text{C}$                                 | $I_{F(AV)}$ | 30*<br>60** | A                |
| Repetitive peak forward surge current     | $t_P=10\text{ms}, T_C=25^\circ\text{C}$                 | $I_{FRM}$   | 200*        | A                |
| Non-repetitive peak forward surge current | $t_P=10\text{ms}, T_C=25^\circ\text{C}$                 | $I_{FSM}$   | 240*        | A                |
| Non-repetitive peak forward surge current | $T_C=25^\circ\text{C}, t_P=10\mu\text{s}, \text{Pulse}$ | $I_{FMax}$  | 1600*       | A                |
| Power dissipation                         | $T_C=25^\circ\text{C}$                                  | $P_{tot}$   | 283*        | W                |
|   | $T_C=110^\circ\text{C}$                                 |             | 123*        |                  |
| Operating junction temperature range      |   | $T_j$       | -55 to+175  | $^\circ\text{C}$ |
| Storage temperature range                 |   | $T_{stg}$   | -55 to+175  | $^\circ\text{C}$ |

## ELECTRICAL CHARACTERISTICS (Rating at 25°C junction temperature unless otherwise specified.)

| Parameter                 | Conditions                  | Symbol | Value |      |      | Unit    |
|---------------------------|-----------------------------|--------|-------|------|------|---------|
|                           |                             |        | Min.  | Typ. | Max. |         |
| Forward voltage           | $I_F=30A, T_j=25^\circ C$   | $V_F$  | -     | 1.45 | 1.80 | V       |
|                           | $I_F=30A, T_j=175^\circ C$  |        | -     | 1.95 | 2.40 |         |
| Reverse current           | $V_R=650V, T_j=25^\circ C$  | $I_R$  | -     | 2    | 20   | $\mu A$ |
|                           | $V_R=650V, T_j=175^\circ C$ |        | -     | 40   | 200  |         |
| Total capacitance         | $V_R=0V, f=1MHz$            | C      | -     | 2050 | -    | pF      |
|                           | $V_R=200V, f=1MHz$          |        | -     | 162  | -    |         |
|                           | $V_R=400V, f=1MHz$          |        | -     | 137  | -    |         |
| Total capacitance charge  | $V_R=400V, T_j=25^\circ C$  | $Q_C$  | -     | 85   | -    | nC      |
| Capacitance stored energy | $V_R=400V$                  | $E_C$  | -     | 21   | -    | $\mu J$ |

## THERMAL CHARACTERISTICS

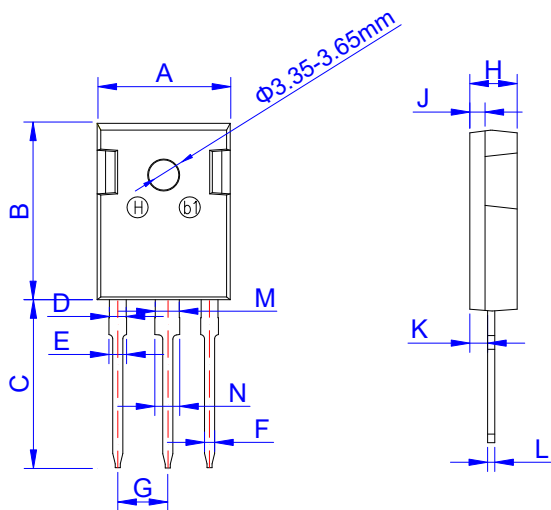
| Symbol        | Parameter        | Value | Unit         |
|---------------|------------------|-------|--------------|
| $R_{th(j-c)}$ | Junction to case | 0.53  | $^\circ C/W$ |

Note: \*per leg, \*\*per device

## ORDERING INFORMATION

|   |  |                                     |                  |   |                                  |                                   |
|---|--|-------------------------------------|------------------|---|----------------------------------|-----------------------------------|
| <p><b>J</b></p> <p>JieJie Microelectronics Co., Ltd</p> <p>SiC Schottky Diode</p> | <p><b>CD</b></p> <p><math>I_{F(AV)}=60A</math></p> | <p><b>60</b></p> <p>SJ: TO-247J</p> | <p><b>SJ</b></p> | <p><b>65</b></p> <p><math>V_{RRM}:650V</math></p> | <p><b>A</b></p> <p>Version A</p> | <p><b>CT</b></p> <p>Dual chip</p> |
|---|--|-------------------------------------|------------------|---|----------------------------------|-----------------------------------|

## PACKAGE MECHANICAL DATA



TO-247J

| Ref. | Dimensions  |       |       |        |       |       |
|------|-------------|-------|-------|--------|-------|-------|
|      | Millimeters |       |       | Inches |       |       |
|      | Min.        | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| A    | 15.50       | 15.80 | 16.10 | 0.610  | 0.622 | 0.634 |
| B    | 20.80       | 21.00 | 21.20 | 0.819  | 0.827 | 0.835 |
| C    | 19.70       | 20.00 | 20.30 | 0.776  | 0.787 | 0.799 |
| D    | 1.80        | 2.00  | 2.20  | 0.071  | 0.079 | 0.087 |
| E    | 1.90        | 2.10  | 2.30  | 0.075  | 0.083 | 0.091 |
| F    | 1.00        | 1.20  | 1.40  | 0.039  | 0.047 | 0.055 |
| G    | 5.25        |       | 5.65  | 0.207  |       | 0.222 |
| H    | 4.80        | 5.00  | 5.20  | 0.189  | 0.197 | 0.205 |
| J    | 1.90        | 2.00  | 2.10  | 0.075  | 0.079 | 0.083 |
| K    | 2.20        | 2.35  | 2.50  | 0.087  | 0.093 | 0.098 |
| L    | 0.41        | 0.60  | 0.79  | 0.016  | 0.024 | 0.031 |
| M    | 2.80        | 3.00  | 3.20  | 0.110  | 0.118 | 0.126 |
| N    | 2.90        | 3.10  | 3.30  | 0.114  | 0.122 | 0.130 |

## CHARACTERISTICS CURVE

FIG.1: Forward characteristics

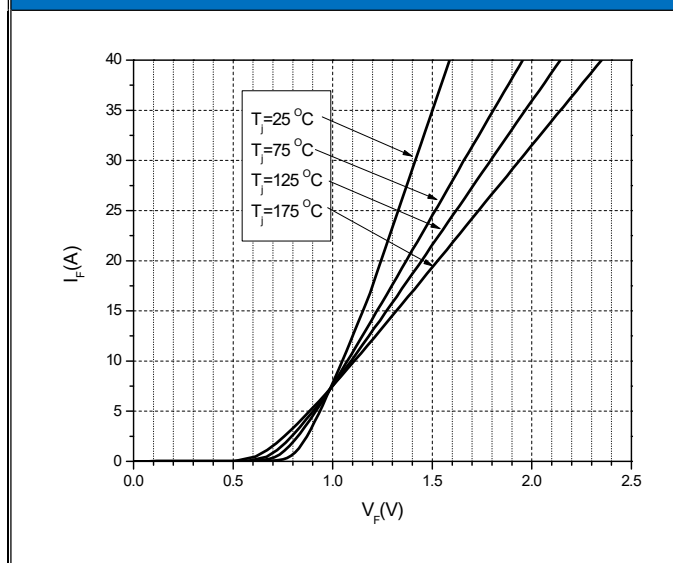
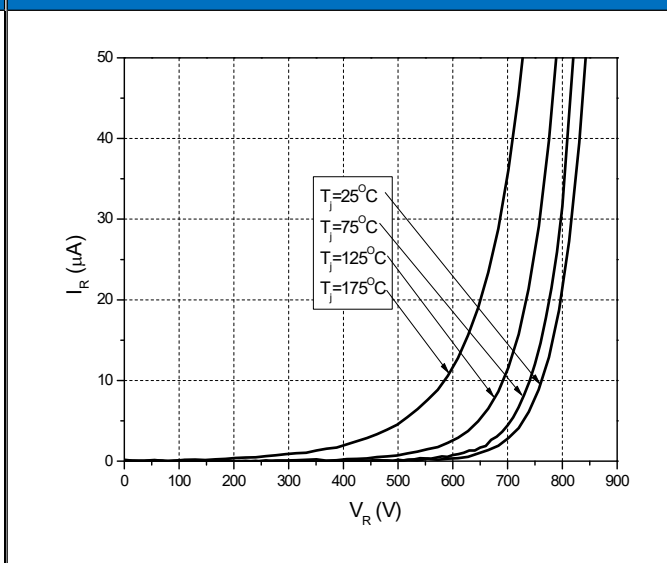


FIG.2: Reverse characteristics



CHARACTERISTICS CURVE

FIG.3: Capacitance vs. reverse voltage

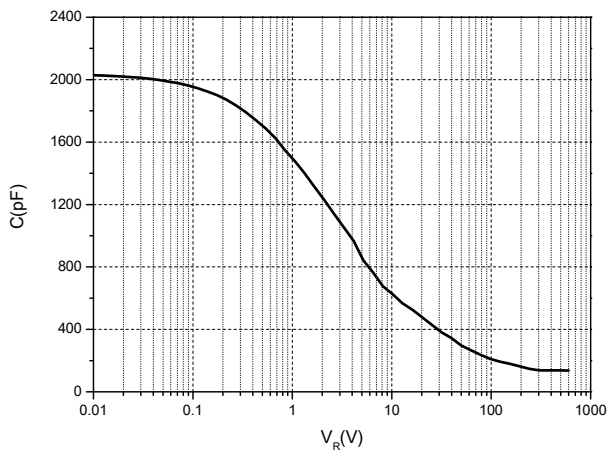


FIG.4: Transient thermal impedance

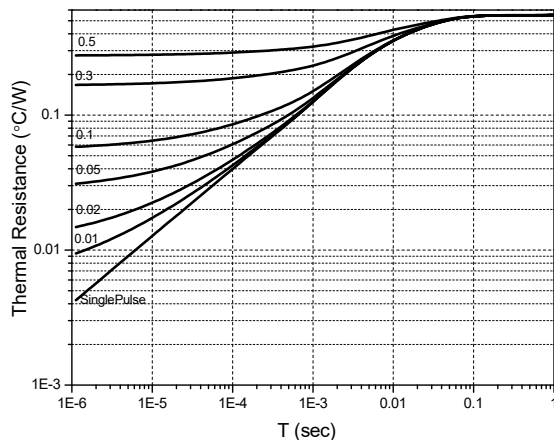


FIG.5: Capacitance charge vs. reverse voltage

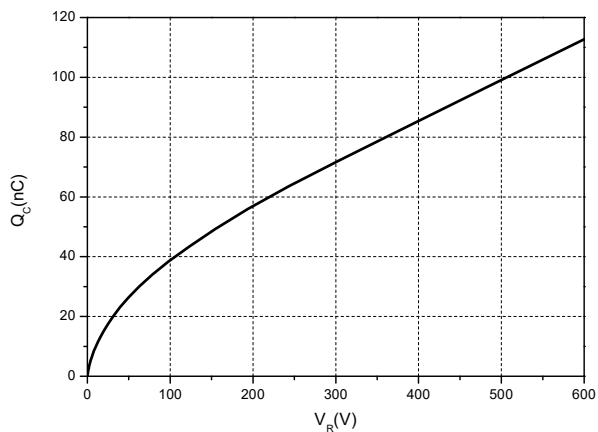


FIG.6: Capacitance stored energy

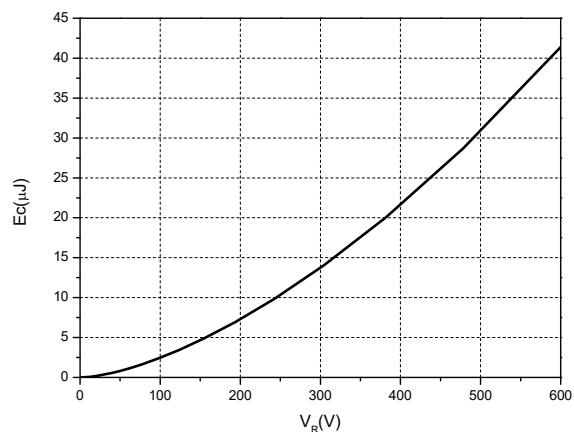


FIG.7: Power derating

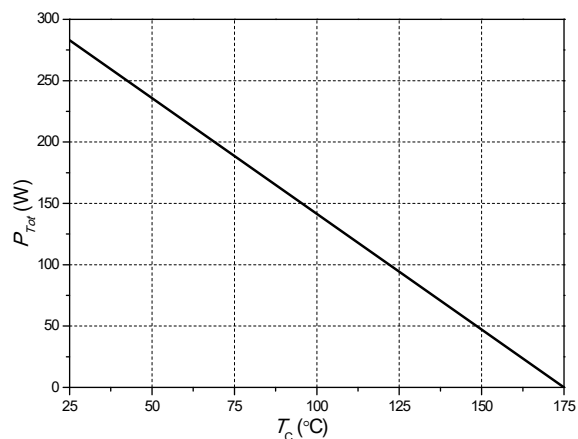
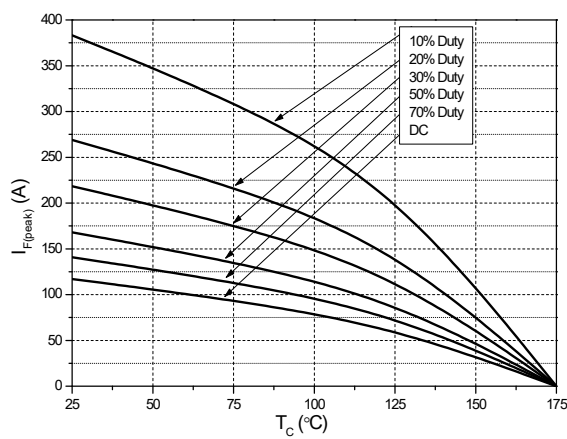


FIG.8: Current derating




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