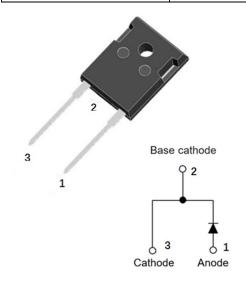


# Silicon Carbide Schottky Diode

| $V_{RRM}$            | 1200V |
|----------------------|-------|
| I <sub>F 135°C</sub> | 20A   |
| Q <sub>c</sub>       | 53nC  |



#### **Features**

Positive temperature coefficient

Temperature-independent switching

Maximum working temperature at 175 °C

Unipolar devices and zero reverse recovery current

Zero forward recovery current

Essentially no switching losses

Reduction of heat sink requirements

High-frequency operation

Reduction of EMI

#### **Typical Applications**

Typical applications are in power factor correction(PFC), solar inverter, uninterruptible power supply, motor drives, photovoltaic inverter, electric car and charger.

#### **Mechanical Data**

Package: TO-247AC

Terminals: Tin plated leads

Polarity: As marked

## Maximum Ratings (T<sub>C</sub>=25 Unless otherwise specified

| PARAMTETER  | SYMBOL              | UNIT             | VALUE          |
|---|---------------------|------------------|----------------|
| Device marking code   |                     |                  | D112010NQG2    |
| Reverse voltage (repetitive peak) @ T <sub>j</sub> =25°C  | $V_{RRM}$           | V                | 1200           |
| Reverse voltage (Surge Peak)<br>@ T <sub>j</sub> =25°C  | $V_{RSM}$           | V                | 1200           |
| Reverse voltage (DC)<br>@ T <sub>j</sub> =25°C  | V <sub>DC</sub>     | V                | 1200           |
| Continuous forward current @ T <sub>c</sub> =25°C<br>T <sub>c</sub> =135°C<br>T <sub>c</sub> =163°C | I <sub>F</sub>      | Α                | 40<br>20<br>10 |
| Non-repetitive peak forward surge current @ T <sub>c</sub> =25°C, tp=10ms, Half Sine Wave           | I <sub>FSM</sub>    | А                | 85             |
| Power Dissipation@ T <sub>c</sub> =25°C<br>T <sub>c</sub> =110°C                                    | P <sub>TOT</sub>    | W                | 266<br>115     |
| i²t Value@ Tc=25°C ,tp=10ms   | i²dt                | A <sup>2</sup> S | 36             |
| Operating junction and Storage temperature range  | $T_{j}$ , $T_{stg}$ | °C               | -55 to +175    |

# YJD112010NQG2

#### **Electrical Characteristics**

| PARAMTETER                             | SYMBOL         | UNIT | TEST CONDITIONS                                  | Тур. | Max. |
|--|----------------|------|--|------|------|
| Forward voltage drop                   | V <sub>F</sub> | V    | I <sub>F</sub> =10A, T <sub>j</sub> =25°C        | 1.42 | 1.54 |
|  |                |      | I <sub>F</sub> =10A, T <sub>j</sub> =175°C       | 2.1  |      |
| Reverse leakage current I <sub>R</sub> |                |      | V <sub>R</sub> =1200V, T <sub>j</sub> =25°C      | 1.3  | 13   |
|  | IR             |      | V <sub>R</sub> =1200V, T <sub>j</sub> =175°C     | 6    |      |
| Total capacitive charge                | Qc             | nC   | $V_R=800V$ , $T_j=25$ °C , ${}_{0}{}^{VR}C(V)dV$ | 53   |      |
| Total capacitance                      | С              | pF   | V <sub>R</sub> =0V, f=1MHZ                       | 700  |      |
|  |                |      | V <sub>R</sub> =400V, f=1MHZ                     | 49   |      |
|  |                |      | V <sub>R</sub> =800V, f=1MHZ                     | 39   |      |
| Capacitance Stored Energy              | Ec             |      | V <sub>R</sub> =800V                             | 14   |      |

## Thermal Characteristics T<sub>a</sub>=25 Unless otherwise specified

| PARAMETER          | SYMBOL          | UNIT | VALUE |
|--------------------|-----------------|------|-------|
| Thermal resistance | R <sub>-c</sub> | °C W | 0.56  |

## **Characteristics** (Typical)

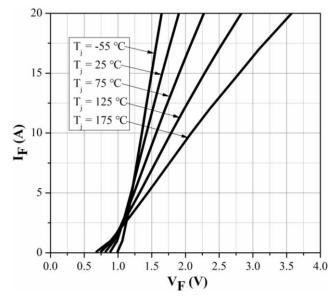


Figure 1. Forward Characteristics

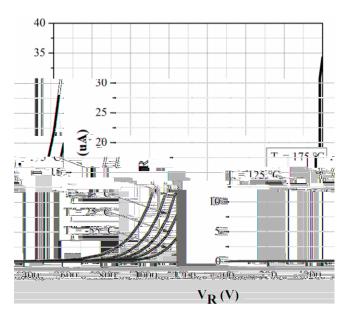
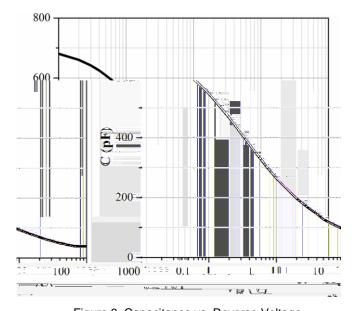
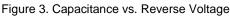


Figure 2. Reverse Characteristic







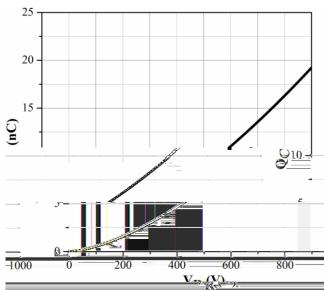


Figure 4. Total Capacitance Charge vs. Reverse Voltage

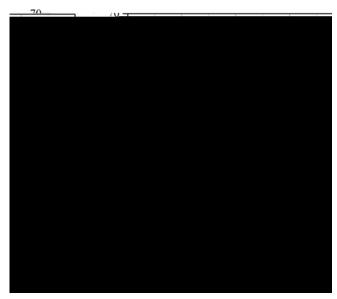


Figure 5. Capacitance Stored Energy

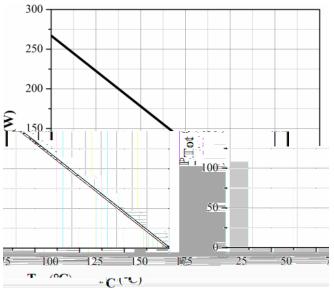


Figure 6. Power Derating

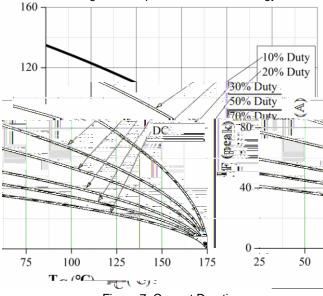


Figure 7. Current Derating

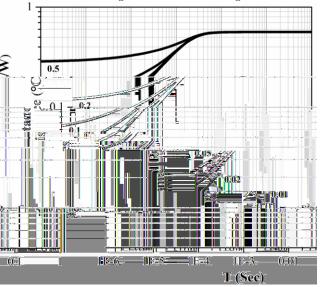


Figure 8. Transient Thermal Impedance



YJD112010NQG2

#### **Outline Dimensions**

| TO247-AC |      |      |  |  |
|----------|------|------|--|--|
| Dim      | Min  | Max  |  |  |
| Α        | 4.80 | 5.20 |  |  |
| A1       | 2.21 | 2.61 |  |  |



### YJD112010NQG2

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