



# S i l i c o n C a r b i d e S c h o t t k y D i o d e

|                    |      |
|--------------------|------|
| $V_{RRM}$          | 650V |
| $I_{F66^{\circ}C}$ | 20A  |
| $Q_C$              | 62nC |



## Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar device and zero recovery current
- Zero forward current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI

## Typical Applications

Typical applications are in power factor inverter, uninterruptible power supply, inverter, electric car and charger.

## Mechanical

- **Package** TO-220AC  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminal** Insulated leads
- **Polarity** As marked

## Maximum Ratings (unless otherwise specified)

| PARAMETER                                                                                          | SYMBOL         | UNIT          | VALUE       |
|----------------------------------------------------------------------------------------------------|----------------|---------------|-------------|
| Device marking code                                                                                |                |               | D106520FQG2 |
| Reverse voltage (repetitive peak)<br>@ $T_J = 25^{\circ}C$                                         | $V_{RRM}$      | V             | 650         |
| Reverse voltage (Surge Peak)<br>@ $T_J = 25^{\circ}C$                                              | $V_{RSM}$      | V             | 650         |
| Reverse voltage (DC)<br>@ $T_J = 25^{\circ}C$                                                      | $V_{DC}$       | V             | 650         |
| Continuous forward current @ $T_J = 25^{\circ}C$                                                   | $I_F$          | A             | 24          |
| Continuous forward current @ $T_J = 65^{\circ}C$                                                   |                |               | 20          |
| Non-repetitive peak forward surge current<br>@ $T_C = 25^{\circ}C$ , $t_p = 10ms$ , Half Sine Wave | $I_{FSM}$      | A             | 160         |
| Power Dissipation @ $T_J = 25^{\circ}C$                                                            | $P_{TOT}$      | W             | 47          |
| Power Dissipation @ $T_J = 100^{\circ}C$                                                           |                |               | 20          |
| $\theta_{JA}$ Value @ $T_C = 25^{\circ}C$ , $t_p = 10ms$                                           | $\theta_{JA}$  | $^{\circ}C/W$ | 128         |
| Operating junction and Storage Temperature range                                                   | $T_J, T_{STG}$ | $^{\circ}C$   | -55 to +175 |



## Y J D106520 F Q G2

### ■Electrical Characteristics

| PARAMETER                 | SYMBOL | UNIT    | TEST CONDITION                                             | Typ.  | Max. |
|---------------------------|--------|---------|------------------------------------------------------------|-------|------|
| Forward voltage drop      | F      | V       | $I_F = 2.0 A, T_J = 25^\circ C$                            | 1.35  | 1.55 |
|                           |        |         | $I_F = 2.0 A, T_J = 175^\circ C$                           | 1.75  | -    |
| Reverse leakage current   | R      | $\mu A$ | $V_R = 650 V, T_J = 25^\circ C$                            | 1     | 25   |
|                           |        |         | $V_R = 650 V, T_J = 175^\circ C$                           | 5     | -    |
| Total capacitive charge   | C      | nC      | $V_R = 400 V, T_J = 25^\circ C$<br>$Q_C = \int I_C (V) dt$ | 62    | -    |
| Total capacitance         |        |         | $V_R = 0 V, f = 1 MHz$                                     | 1157  | -    |
|                           |        |         | $V_R = 200 V, f = 1 MHz$                                   | 115.6 | -    |
|                           |        |         | $V_R = 400 V, f = 1 MHz$                                   | 107   | -    |
| Capacitance Stored Energy | gy c   | $\mu J$ | $V_R = 400 V$                                              | 7.8   | -    |

### ■Thermal Characteristics (at 25 $^\circ C$ unless otherwise specified)

| PARAMETER          | SYMBOL           | UNIT         | Value |
|--------------------|------------------|--------------|-------|
| Thermal resistance | $R_{\theta J-C}$ | $^\circ C/W$ | 3.2   |

### ■Typical Characteristics

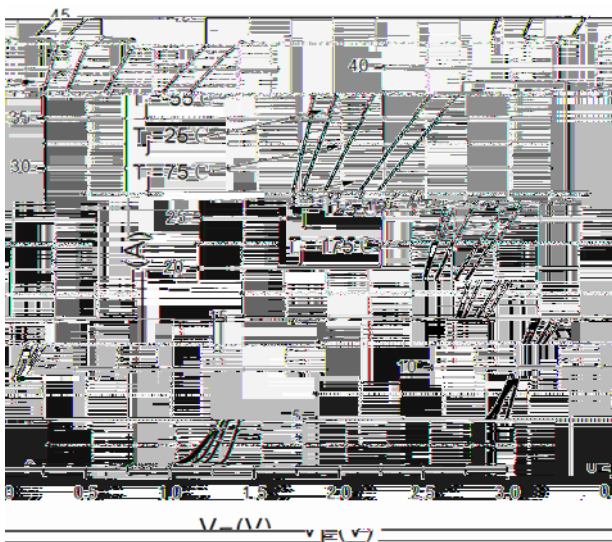


Figure 1. Forward Character

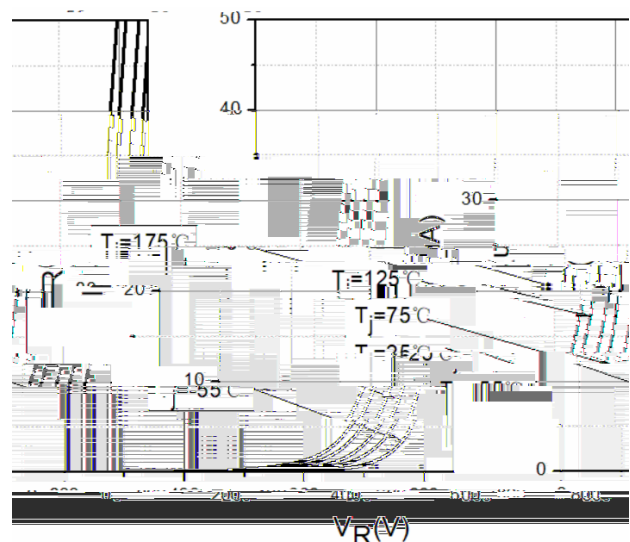


Figure 2. Reverse Characteristic

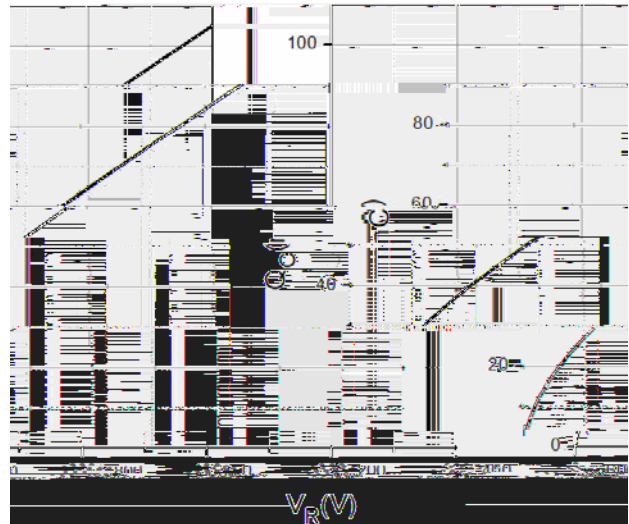
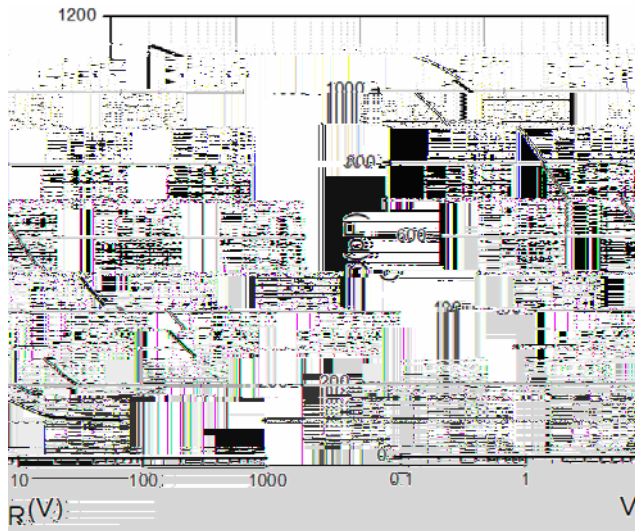


Figure 3. Capacitance vs. Reverse Voltage Figure 4. Total Capacitance Charge vs. Reverse Voltage

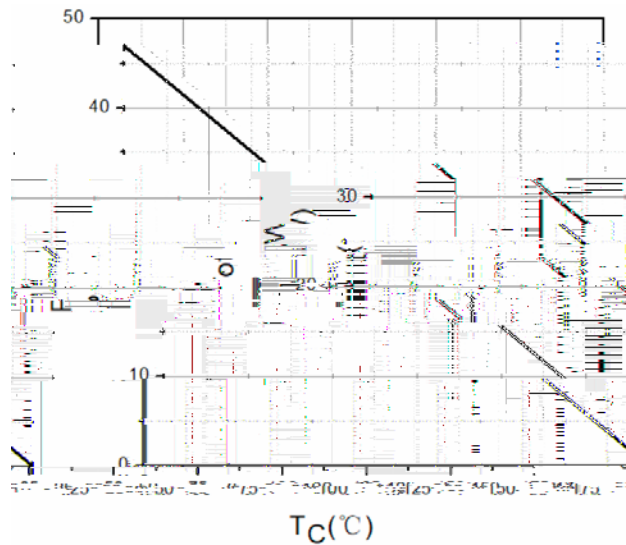
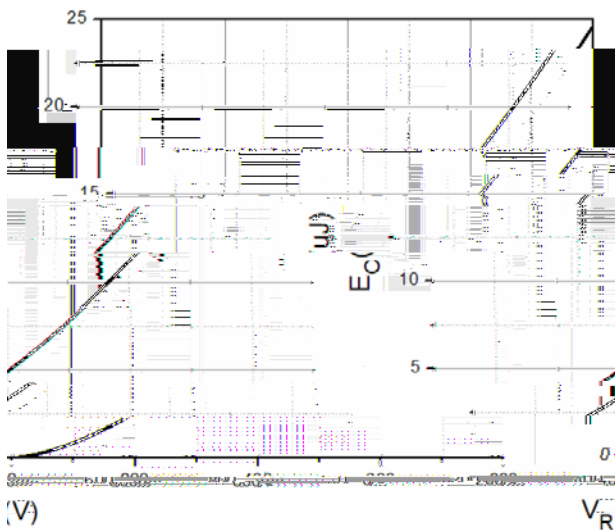


Figure 5. Capacitance Energy Storage

Figure 6. Power Derating

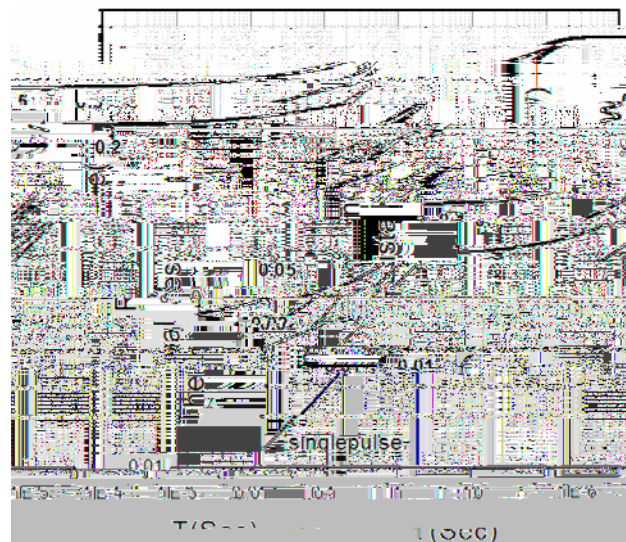
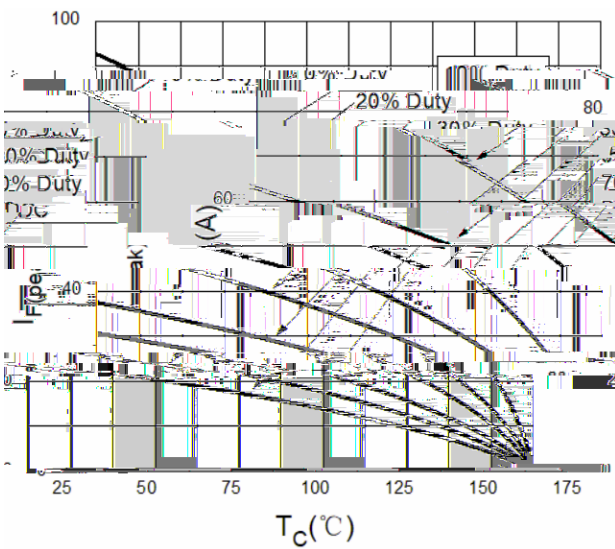


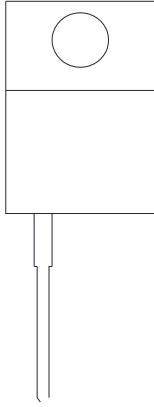
Figure 7. Current Derating

Figure 8. Junction Thermal Impedance



## Y J D106520 F Q G2

### ■ Outline Dimensions



| I T O-220AC |          |          |
|-------------|----------|----------|
| Dim         | Min      | Max      |
| A           | 9 . 8    | 10 . 2   |
| B           | 2 . 2 5  | 2 . 7 5  |
| C           | 2 . 9 5  | 3 . 4 5  |
| D           | 14 . 7 5 | 15 . 2 5 |
| E           | 3 . 5    | 4 . 1    |
| F           | 0 . 4 5  | 0 . 7 5  |
| G           | 0 . 4 5  | 0 . 7 5  |
| H           | 13 . 3 5 | 14 . 1 5 |
| I           | 4 . 9 7  | 5 . 2 3  |
| J           | 4 . 3    | 4 . 8    |
| K           | 2 . 5    | 2 . 7 4  |
| L           | 2 . 5 8  | 2 . 8 2  |
| M           | 1 . 0 3  | 1 . 4 3  |

