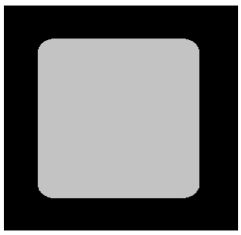
新芯微电子
NewChip
Microelectronics

# N3D-0650-004

## Silicon Carbide Schottky Diode Chip

| Part Number | Die Size | Anode | Cathode |
|---|---|---|---|
| SIC-0650-004 | 1.18 x 1.18 mm² | Al | Ni/Ag |



### Maximum Ratings

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 650 | V | | |
| $I_F$ | Continuous Forward Current | 4.8 | A | $T_C$=150° C | |
| $V_R$ | DC Peak Blocking Voltage | 650 | V | | |
| $T_J$, $T_{stg}$ | Operating Junction and Storage Temperature | -55 to +175 | ° C | | |

### Electrical Characteristics

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | 1.5<br>1.8 | 1.8<br>2.0 | V | $I_F$ = 4 A $T_J$=25°C<br>$I_F$ = 4 A $T_J$=175°C | Figure 1 |
| $I_R$ | Reverse Current | 1<br>12 | 20<br>100 | μA | $V_R$ = 650 V $T_J$=25°C<br>$V_R$ = 650 V $T_J$=175°C | Figure 2 |
| $Q_C$ | Total Capacitive Charge | 9.5 | | nC | $V_R$ = 400 V, $T_J$ = 25°C<br>$Q_C=\int_0^{V_R} C(V)dV$ | Figure 4 |
| C | Total Capacitance | 185<br>19.0<br>16.7 | | pF | $V_R$ = 0 V, $T_J$ = 25°C, f = 1 MHz<br>$V_R$ = 200 V, $T_J$ = 25°C, f = 1 MHz<br>$V_R$ = 400 V, $T_J$ = 25°C, f = 1 MHz | Figure 3 |
| $E_C$ | Capacitance Stored Energy | 2.4 | | μJ | $V_R$ = 400 V | |

### Mechanical Parameters

| Parameter | Typ. | Unit |
|---|---|---|
| Die Size | 1.18 x 1.18 | mm |
| Anode Pad Size | 0.92 x 0.92 | mm |
| Anode Pad Opening | 0.70 x 0.70 | mm |
| Thickness | 180 ± 10% | μm |
| Wafer Size | 100 | mm |
| Anode Metalization (Al) | 4 | μm |
| Cathode Metalization (Ni/Ag) | 1.5 | μm |
| Frontside Passivation | Polyimide | |

## Typical Performance

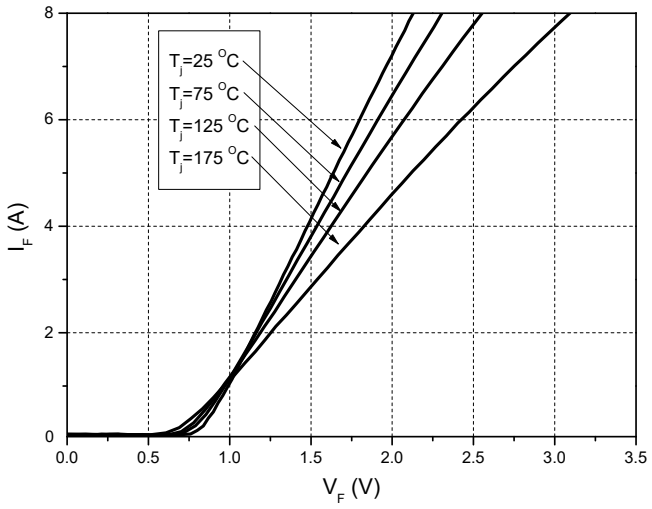



Figure 1. Forward Characteristics

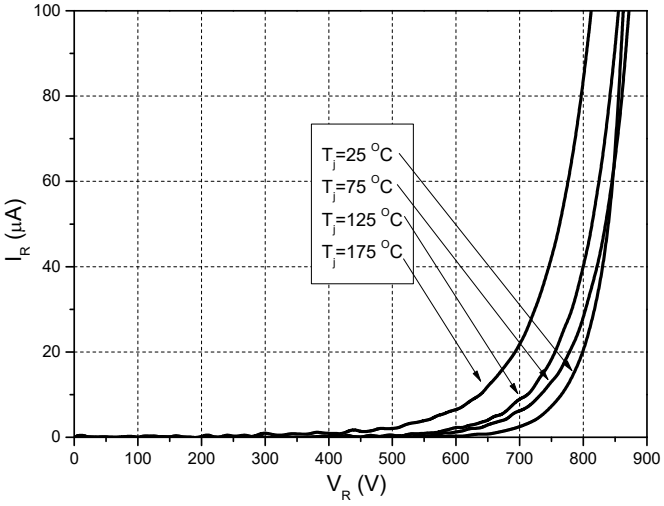



Figure 2. Reverse Characteristics

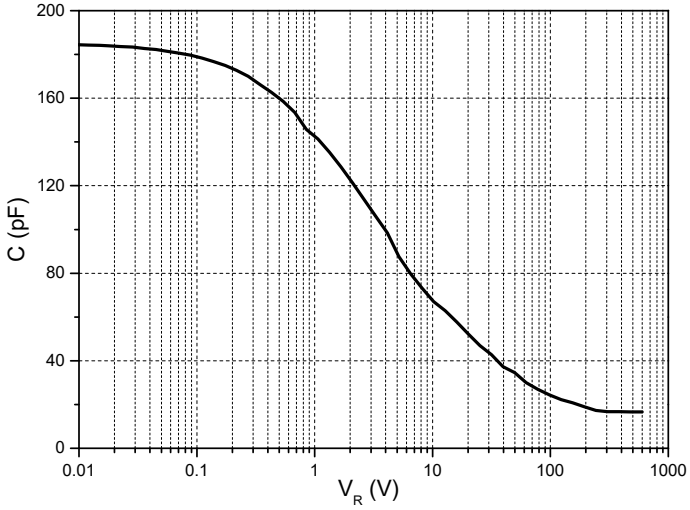



Figure 3. Capacitance vs. Reverse Voltage

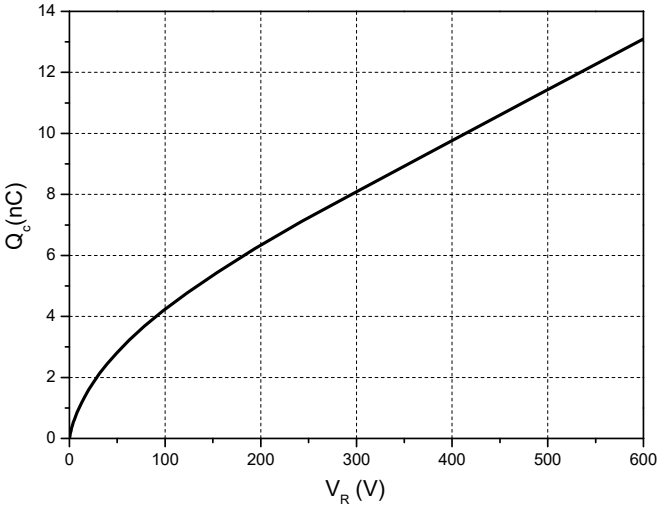
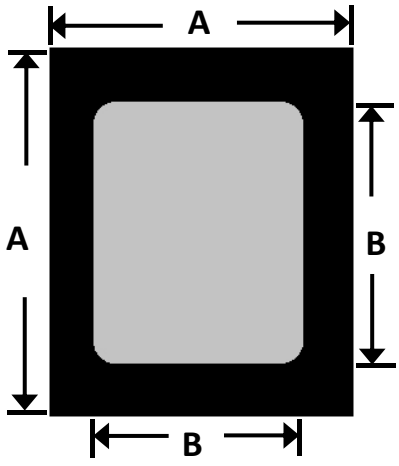



Figure 4. Total Capacitance Charge vs. Reverse Voltage

## Chip Dimensions




| Symbol | Dimension(mm) |
|---|---|
| A | 1.18 |
| B | 0.70 |