## Features

- Zero Reverse Recovery Current
- Merged PiN Schottky (MPS) Diodes Technologies
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. “Green” Device (Note 1)
- Lead Free Finish/RoHS Compliant(Note 2) ("P" Suffix designates RoHS Compliant. See ordering information)

## Benefits

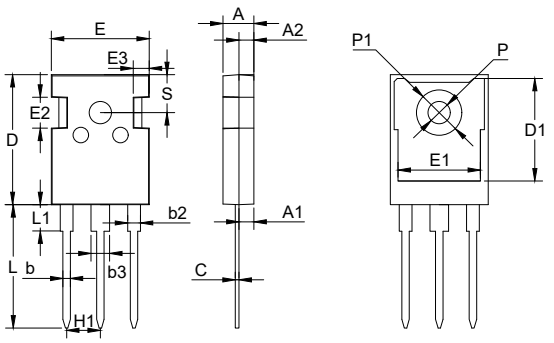
- Temperature-Independent Performance
- Low Switching Loss
- Low Heat Dissipation Requirements

## Applications

- Switching Power Supply
- Power Factor Correction
- Motor Drive, Traction
- Charging Pile

# 30Amp Silicon Carbide Schottky Diode 650 Volts

## TO-247AB



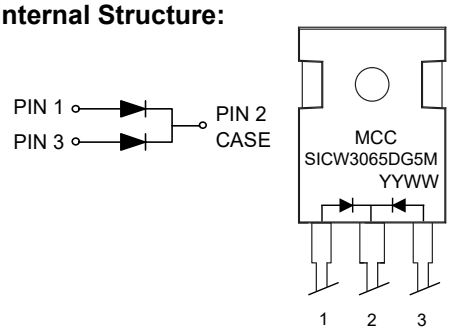

## Maximum Ratings

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage@ $T_j$=25°C | | $V_{RRM}$ | 650 | V |
| Surge Peak Reverse Voltage@ $T_j$=25°C | | $V_{RSM}$ | 650 | V |
| DC Reverse Voltage@ $T_j$=25°C | | $V_{DC}$ | 650 | V |
| Continuous forward Current | @$T_C$=25°C | $I_F$ | 41/82 | A |
| | @$T_C$=135°C | | 19/38 | |
| | @$T_C$=147°C | | 15/30 | |
| Non-repetitive Peak Forward Surge Current @$T_C$=25°C, $t_p$=10ms, Half Sine Pulse | | $I_{FSM}$ | 160(3) | A |
| Power Dissipation | @$T_C$=25°C | $P_D$ | 135/267 | W |
| | @$T_C$=110°C | | 58/116 | |
| $i^2t$ Value@ TC=25°C ,tp=10ms | | $\int i^2dt$ | 128(3) | $A^2S$ |

Note:1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. High Temperature Solder Exemptions Applied, see EU Directive Annex 7a.
3.Per Leg

**Internal Structure:**




Device Code: SICW3065DG5M
YYWW:Date Code (Year&Week)

| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | 0.189 | 0.205 | 4.80 | 5.20 | |
| A1 | 0.087 | 0.103 | 2.21 | 2.61 | |
| A2 | 0.073 | 0.085 | 1.85 | 2.15 | |
| b | 0.039 | 0.055 | 1.00 | 1.40 | |
| b2 | 0.075 | 0.087 | 1.91 | 2.21 | |
| C | 0.020 | 0.028 | 0.50 | 0.70 | |
| D | 0.815 | 0.839 | 20.70 | 21.30 | |
| D1 | 0.640 | 0.663 | 16.25 | 16.85 | |
| E | 0.610 | 0.634 | 15.50 | 16.10 | |
| E1 | 0.512 | 0.535 | 13.00 | 13.60 | |
| E2 | 0.189 | 0.205 | 4.80 | 5.20 | |
| E3 | 0.091 | 0.106 | 2.30 | 2.70 | |
| L | 0.772 | 0.796 | 19.62 | 20.22 | |
| L1 | - | 0.169 | - | 4.30 | |
| P | 0.134 | 0.150 | 3.40 | 3.80 | Φ |
| P1 | | 0.287 | - | 7.30 | Φ |
| S | 0.242 | | 6.15 | | TYP |
| H1 | 0.214 | | 5.44 | | TYP |
| b3 | 0.110 | 0.126 | 2.80 | 3.20 | |

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

| Parameter | Symbol | Conditions | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Forward Voltage | $V_F$ | $I_F$=15A, $T_J$=25°C | 1.30 | 1.60 | V |
| | | $I_F$=15A, $T_J$=175°C | 1.65 | | V |
| Reverse Leakage Current | $I_R$ | $V_R$=650V, $T_J$=25°C | 0.5 | 25 | μA |
| | | $V_R$=650V, $T_J$=175°C | 10 | | μA |
| Total Capacitive Charge | $Q_C$ | $V_R$=400V | 53 | | nC |
| Total capacitance | C | $V_R$=0V, f=1MHz | 980 | | pF |
| | | $V_R$=200V, f=1MHz | 100 | | pF |
| | | $V_R$=400V, f=1MHz | 98 | | pF |
| Capacitance Stored Energy | $E_C$ | $V_R$=400V | 8.5 | | μJ |

**Thermal characteristics**

| Parameter | Symbol | Min | Typ | Max | Units |
|---|---|---|---|---|---|
| Operating Junction Temperature Range | $T_J$ | -55 | | 175 | °C |
| Storage Temperature Range | $T_{stg}$ | -55 | | 175 | °C |
| Thermal Resistance from Junction to Case (Per Leg) | $Rth_{J-C}$ | | 1.11 | | °C/W |
| Thermal Resistance from Junction to Case (Device) | $Rth_{J-C}$ | | 0.56 | | °C/W |

## Curve Characteristics

Fig. 1 - Typical Forward Characteristics

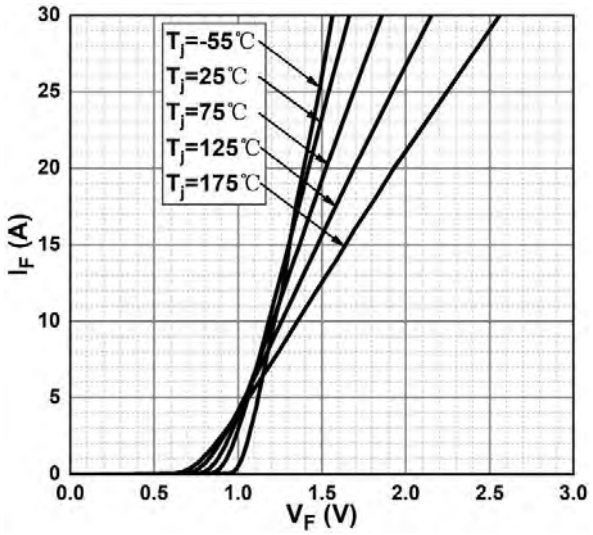



Fig. 2 - Typical Reverse Leakage Characteristics

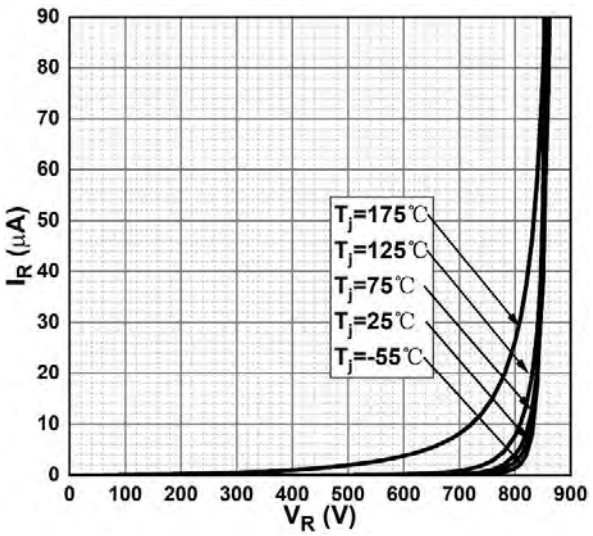



Figure 3. Capacitance vs. Reverse Voltage

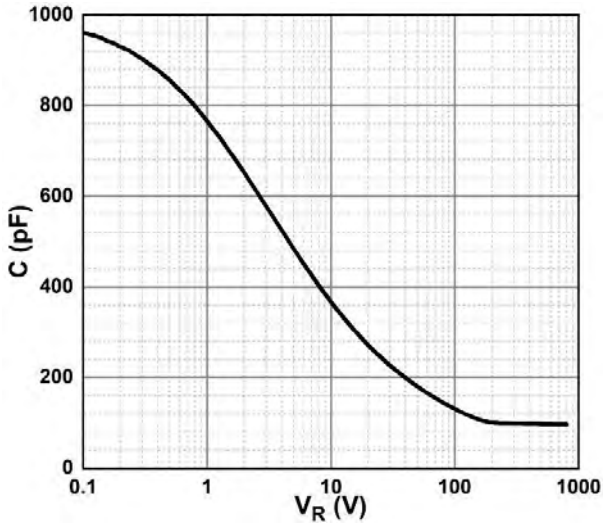



Figure 4. Total Capacitance Charge vs. Reverse Voltage

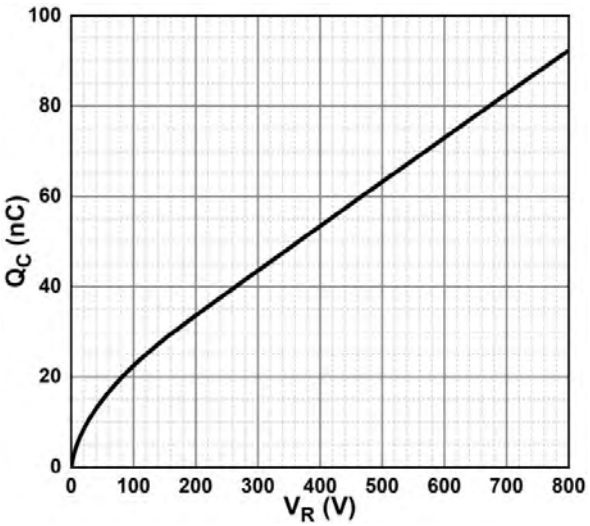



Figure 5. Capacitance Stored Energy

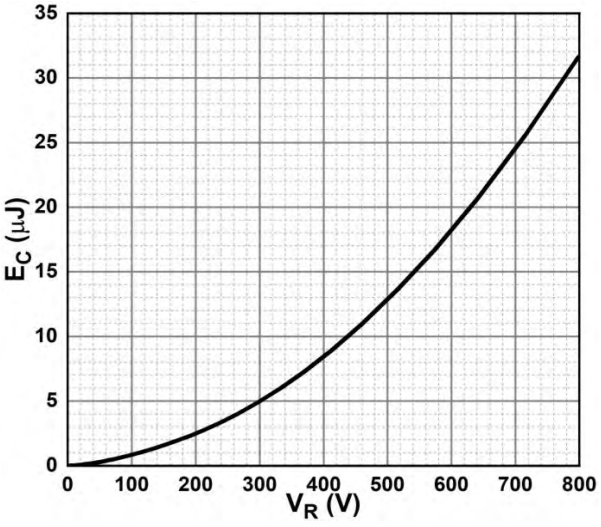
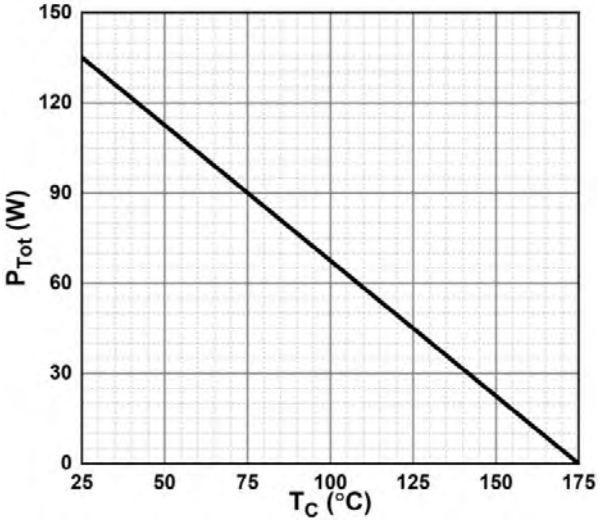



Figure 6. Power Derating



## Curve Characteristics

Fig. 7 - Current Derating

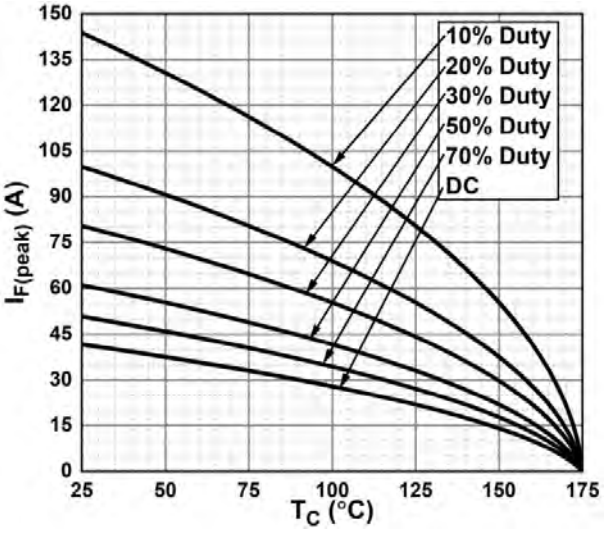
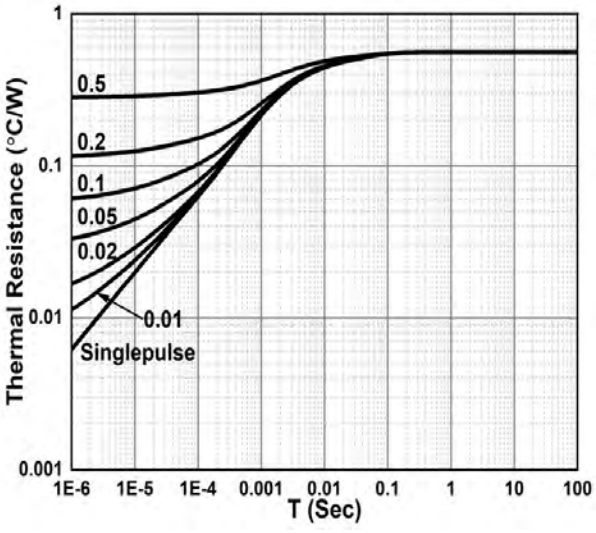



Fig. 8 - Transient Thermal Impedance



## Ordering Information

| Device | Packing |
|---|---|
| Part Number-BP | Bulk: 30pcs/Tube |