

Features

- Zero Reverse Recovery Current
- Positive Temperature Coefficient
- High-Speed Switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant(Note 1) ("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

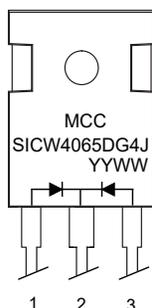
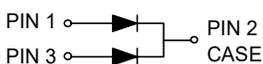
Maximum Ratings

| 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 | 51/102 | A |
| | @T _C =135°C | 23/46 | |
| | @T _C =144°C | 20/40 | |
| Non-repetitive Peak Forward Surge Current @T _C =25°C, t _p =10ms, Half Sine Pulse | I _{FSM} | 135 ⁽³⁾ | A |
| Power Dissipation | @T _C =25°C | 168/333 | W |
| | @T _C =110°C | 73/144 | |

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.
2. Per Leg

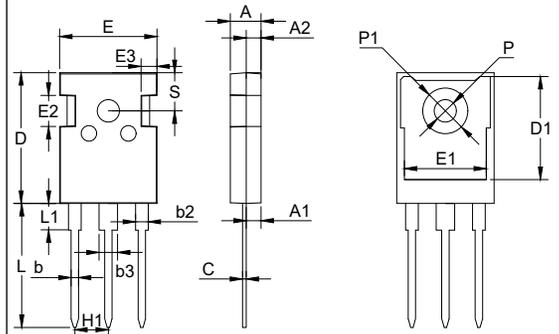
Internal Structure:



Device Code: SICW4065DG4J
YYWW:Date Code (Year&Week)

**40Amp
Silicon Carbide
Schottky Barrier
Rectifier
650 Volts**

TO-247AB



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 | $I_F=20A, T_J=25^\circ C$ | 1.38 | 1.60 | V |
| | | $I_F=20A, T_J=175^\circ C$ | 1.75 | | V |
| Reverse Leakage Current | I_R | $V_R=650V, T_J=25^\circ C$ | 0.5 | 25 | μA |
| | | $V_R=650V, T_J=175^\circ C$ | 5 | | μA |
| Total Capacitive Charge | Q_C | $V_R=400V$ | 61 | | nC |
| Total capacitance | C | $V_R=0V, f=1MHz$ | 1150 | | pF |
| | | $V_R=200V, f=1MHz$ | 113 | | pF |
| | | $V_R=400V, f=1MHz$ | 107 | | pF |
| Capacitance Stored Energy | E_C | $V_R=400V$ | 7.5 | | μJ |

Thermal characteristics

| Parameter | Symbol | Min | Typ | Max | Units |
|--|----------------|-----|------|-----|--------------|
| Operating Junction Temperature Range | T_J | -55 | | 175 | $^\circ C$ |
| Storage Temperature Range | T_{stg} | -55 | | 175 | $^\circ C$ |
| Thermal Resistance from Junction to Case (Per Leg) | $R_{th_{J-C}}$ | | 0.89 | | $^\circ C/W$ |
| Thermal Resistance from Junction to Case (Device) | $R_{th_{J-C}}$ | | 0.45 | | $^\circ C/W$ |

Curve Characteristics

Fig. 1 - Typical Forward Characteristics

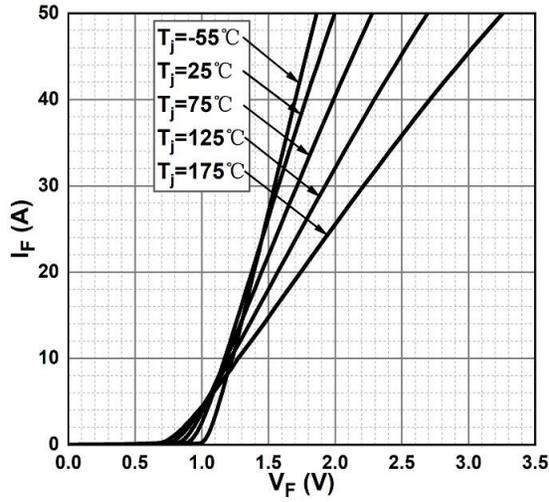


Fig. 2 - Typical Reverse Leakage Characteristics

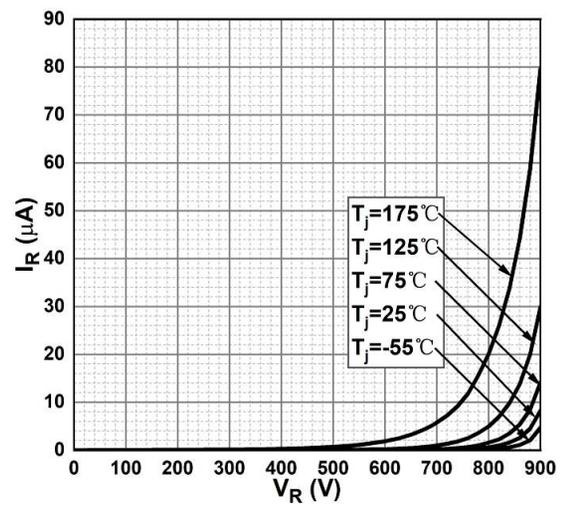


Figure 3. Capacitance vs. Reverse Voltage

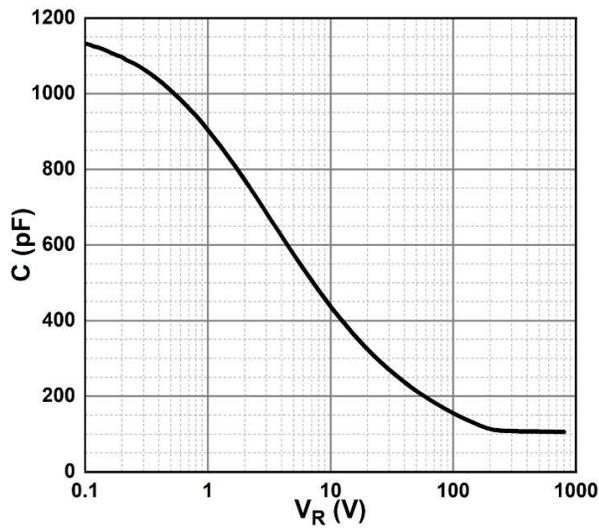


Figure 4. Total Capacitance Charge vs. Reverse Voltage

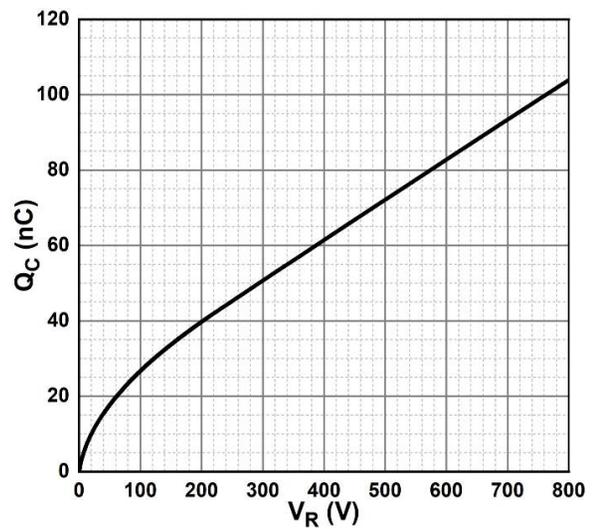


Figure 5. Capacitance Stored Energy

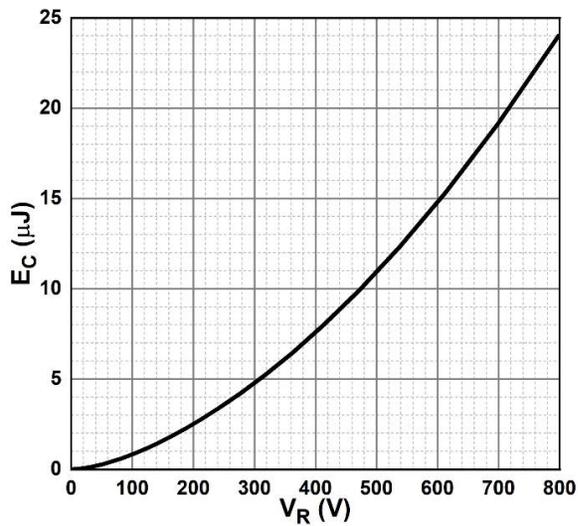
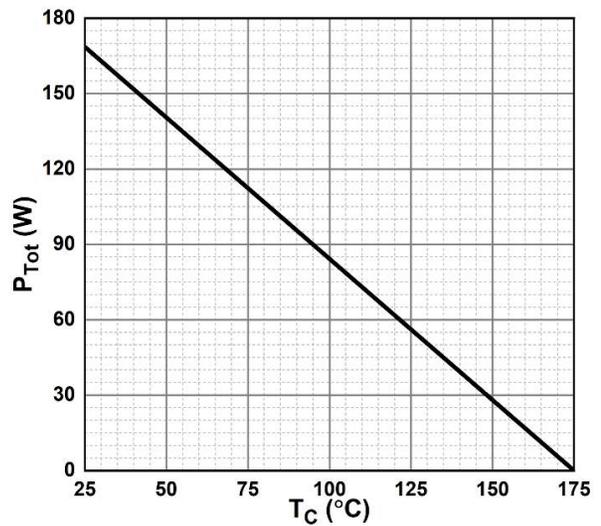


Figure 6. Power Derating



Curve Characteristics

Fig. 7 - Current Derating

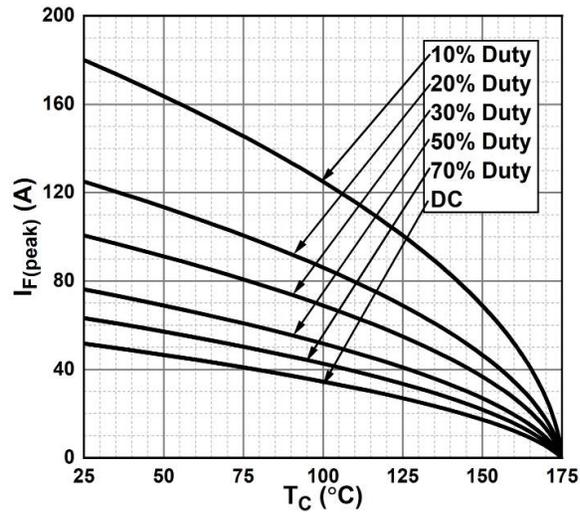
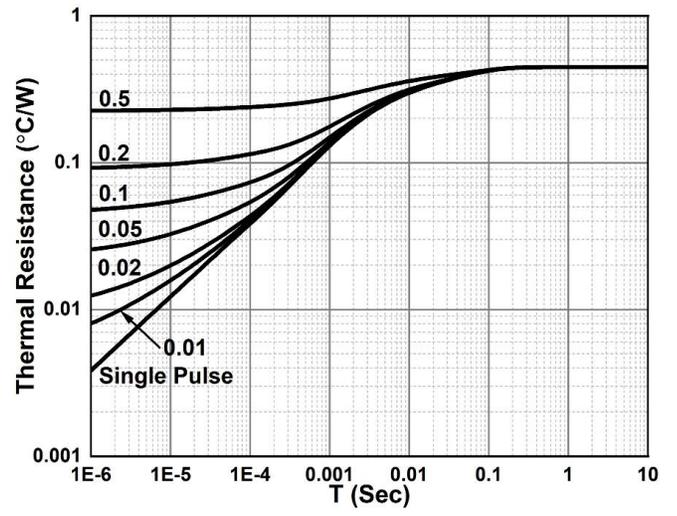


Fig. 8 - Transient Thermal Impedance



Ordering Information

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

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