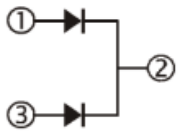
# Silicon Carbide Schottky Barrier Diode

| | | | |
|---|---|---|---|
| $V_{RRM}$ | 650 V | $I_F$ | 2 x 20 A |
| $V_{F(Typ.)}$ | 1.5 V | $Q_C$ | 46.7 nC |

**TO-247AD-3LD**


## Features

- Temperature Independent Switching Behavior
- High Surge Current Capability
- Low Conduction Loss
- Zero Reverse Recovery
- High junction temperature 175 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

## Mechanical Data

- Case: TO-247AD-3LD molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.2198 ounces, 6.231 grams

## Application

- PFC, UPS, PV Inverter, EV Charging Station, Welder

## Maximum Ratings and Thermal Characteristics ($T_C$ = 25 °C unless otherwise specified)

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|---|---|---|---|---|
| Repetitive Peak Reverse Voltage | | $V_{RRM}$ | 650 | V |
| DC Blocking Voltage | | $V_{DC}$ | 650 | V |
| Continuous Forward Current (Per Leg/Device) | $T_C$= 140 °C | $I_F$ | 20 / 40 | A |
| Repetitive Peak Surge Current<br>*Half Sine Wave, D=0.1* (Per Leg) | $T_C$= 25 °C , $t_p$ =10ms<br>$T_C$=125 °C , $t_p$ =10ms | $I_{FRM}$ | 72<br>72 | A |
| Peak Forward Surge Current<br>*Half Sine Wave* (Per Leg) | $T_C$= 25 °C , $t_p$ =10ms<br>$T_C$=125 °C , $t_p$ =10ms | $I_{FSM}$ | 96<br>60 | A |
| Peak Forward Surge Current<br>$t_p$ *=10us, Pulse* (Per Leg) | | | 880 | A |
| Maximum Power Dissipation (Per Leg) | | $P_{total}$ | 176.5 | W |
| Operating Junction Temperature Range | | $T_J$ | -55~175 | °C |
| Storage Temperature Range | | $T_{STG}$ | -55~175 | °C |

**Electrical Characteristics** (Per Leg) ($T_C$ = 25 °C unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|
| Forward Voltage Drop | $V_F$ | $I_F$ = 20 A, $T_J$ = 25 °C | - | 1.5 | 1.7 | V |
| | | $I_F$ = 20 A, $T_J$ = 175 °C | - | 1.9 | - | |
| Reverse Leakage Current | $I_R$ | $V_R$ = 650 V, $T_J$ = 25 °C | - | 3.2 | 120 | µA |
| | | $V_R$ = 650 V, $T_J$ = 175 °C | - | 0.06 | - | mA |
| Total Capacitive Charge | $Q_C$ | $I_F$ = 20 A, $V_R$ = 400V | - | 46.7 | - | nC |
| Total Capacitance | C | $V_R$ = 1V, f = 1MHz | - | 759 | - | pF |
| | | $V_R$ = 200V, f = 1MHz | - | 87 | - | pF |
| | | $V_R$ = 400V, f = 1MHz | - | 65 | - | pF |
| Capacitance Stored Energy | $E_C$ | $V_R$ = 400V | - | 7.3 | - | µJ |
| Thermal Resistance | $R_{\theta JC}$ | | - | 0.85 | - | °C/W |

## TYPICAL CHARACTERISTIC CURVES ( Per Leg )

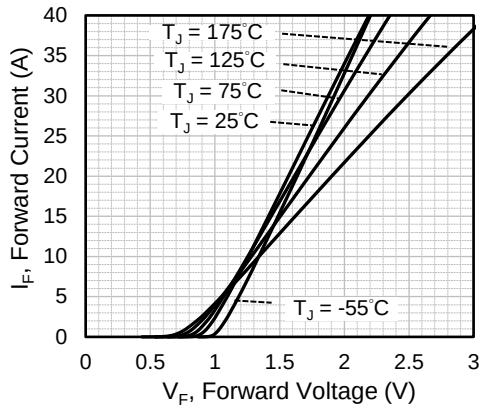



Fig.1 Forward Characteristics

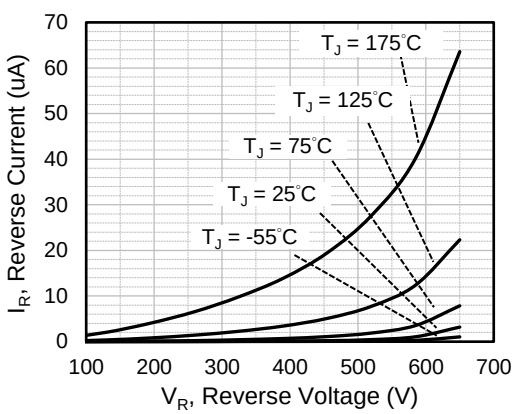



Fig.2 Reverse Characteristics

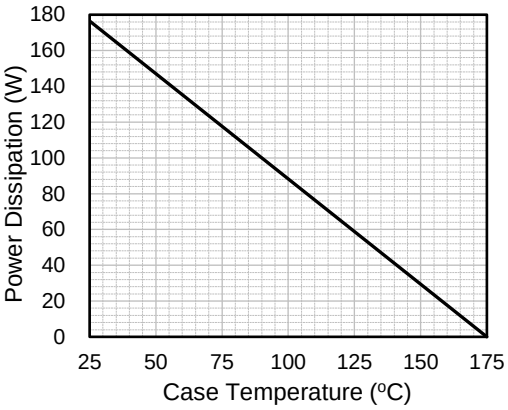



Fig.3 Power Derating Curve

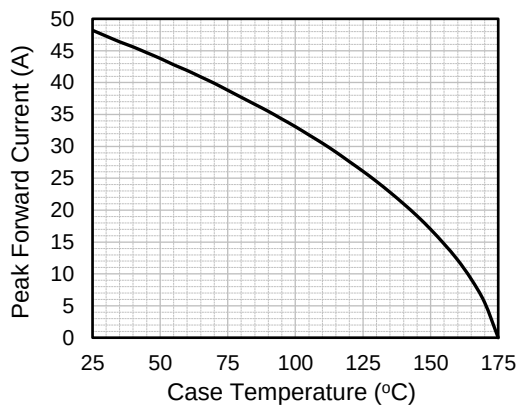



Fig.4 Current Derating Curve

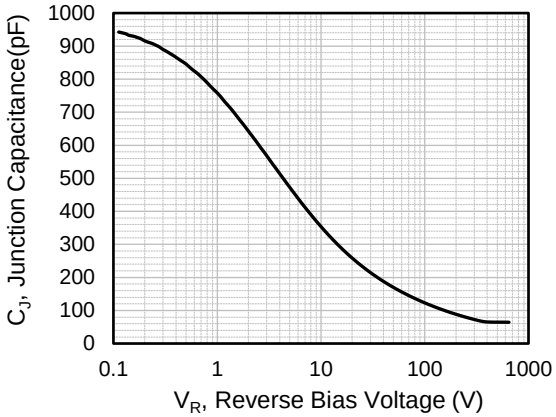



Fig.5 Typical Junction Capacitance

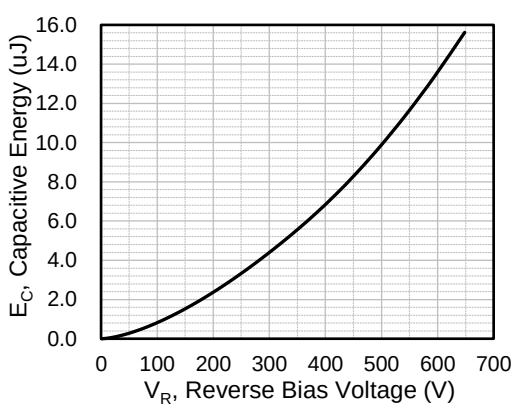


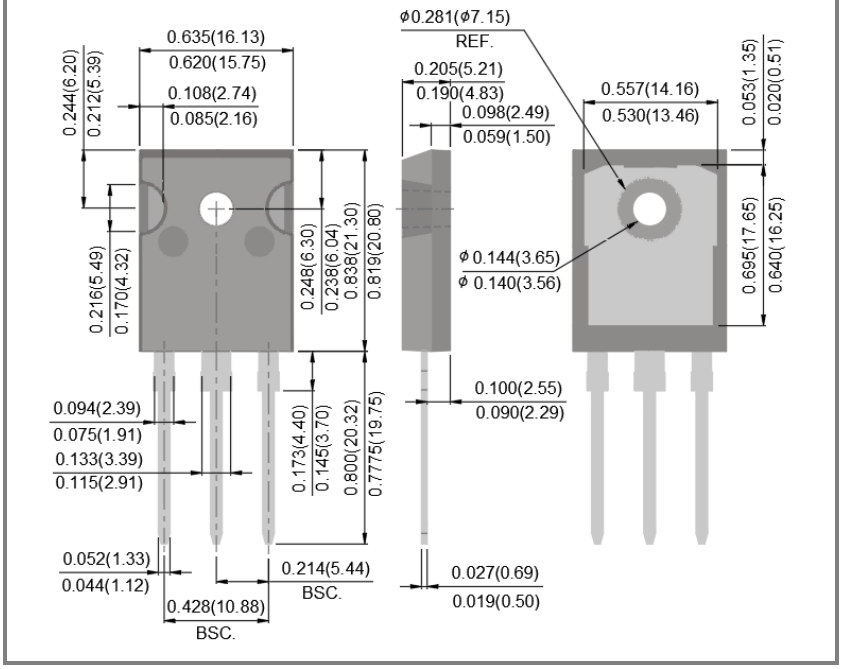

Fig.6 Capacitance Stored Energy

## Product and Packing Information

| Part No. | Package Type | Packing Type | Marking |
|---|---|---|---|
| PCDH4065CCG1 | TO-247AD-3LD | 30pcs / Tube | CDH4065CCG1 |

## Packaging Information

TO-247AD-3LD Dimension — Unit: inch(mm)



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