Bulletin PD-20489 rev. A 02/03

International
IOR Rectifier

# 60CTTN015

## TRENCH SCHOTTKY RECTIFIER 60 Amp

### Major Ratings and Characteristics

| Characteristics | | Values | Units |
|---|---|---|---|
| $I_{F(AV)}$ | Rectangular waveform PerDevice | 60 | A |
| $V_{RRM}$ | | 15 | V |
| $I_{FSM}$ | @ tp = 5 µs sine | 1800 | A |
| $V_F$ | @30Apk, $T_J$=125°C (typical) per leg | 0.3 | V |
| $T_J$ | range | -55to150 | ℃ |

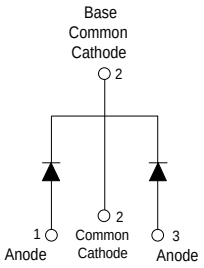
### Description/ Features

This center tap Schottky rectifier has been optimized for low forward voltage drop. The proprietary sub-micron technology allows for low power loss both in forward and reverse conduction.

- 150 °C $T_J$ operation
- Center tap configuration
- Low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance

### Case Styles

60CTTN015




TO-220

## Voltage Ratings

| | Part number | 60CTTN015 |
|---|---|---|
| $V_R$ | Max. DC Reverse Voltage (V) @ $T_J$ = 150°C | 15 |

## Absolute Maximum Ratings

| | Parameters | Values | Units | Conditions | |
|---|---|---|---|---|---|
| $I_{F(AV)}$ | Max. Average Forward (Per Leg) | 30 | A | 50% duty cycle @ $T_C$ = 130°C, rectangular wave form | |
| | Current (Per Device) | 60 | | | |
| $I_{FSM}$ | Max. Peak One Cycle Non-Repetitive | 1800 | A | 5µs Sine or 3µs Rect. pulse | Following any rated load condition and with rated $V_{RRM}$ applied |
| | Surge Current (Per Leg) | 340 | | 10ms Sine or 6ms Rect. pulse | |
| $E_{AS}$ | Non-Repetitive Avalanche Energy (Per Leg) | 9.0 | mJ | $T_J$ = 25 °C, $I_{AS}$ = 2 Amps, L = 4.5 mH | |
| $I_{AR}$ | Repetitive Avalanche Current (Per Leg) | 2 | A | Current decaying linearly to zero in 1 µsec Frequency limited by $T_J$ max. $V_A$ = 1.5 x $V_R$ typical | |

## Electrical Specifications

| | Parameters | Typ | Max | Units | Conditions | |
|---|---|---|---|---|---|---|
| $V_{FM}$ | Max. Forward Voltage Drop (Per Leg) (1) | 0.41 | 0.44 | V | @ 30A | $T_J$ = 25°C |
| | | 0.48 | 0.53 | V | @ 60A | |
| | | 0.33 | 0.36 | V | @ 30A | $T_J$ = 125°C |
| | | 0.44 | 0.47 | V | @ 60A | |
| | | 0.30 | 0.32 | V | @ 30A | $T_J$ = 150°C |
| | | 0.42 | 0.45 | V | @ 60A | |
| $I_{RM}$ | Max. Reverse Leakage Current (Per Leg) (1) | 0.4 | 2 | mA | $T_J$ = 25 °C | $V_R$ = rated $V_R$ |
| | | 31 | 50 | mA | $T_J$ = 100°C | $V_R$ = 5V |
| | | 120 | 250 | mA | $T_J$ = 125 °C | $V_R$ = rated $V_R$ |
| $C_T$ | Junction Capacitance (Per Leg) | 3000 | - | pF | $V_R$ = 10$V_{DC}$ (test signal range 100KHz to 1MHz) 25°C | |
| $L_S$ | Series Inductance (Per Leg) | 8.0 | - | nH | Measured lead to lead 5mm from package body | |
| dv/dt | Max. Voltage Rate of Change | - | 10000 | V/µs | (Rated $V_R$) | |

(1) Pulse Width < 300µs, Duty Cycle < 2%

## Thermal-Mechanical Specifications

| | Parameters | | Values | Units | Conditions |
|---|---|---|---|---|---|
| $T_J$ | Max. Junction Temperature Range | | -55 to 150 | °C | |
| $T_{stg}$ | Max. Storage Temperature Range | | -55 to 150 | °C | |
| $R_{thJC}$ | Max. Thermal Resistance Junction to Case (Per Leg) | | 1.2 | °C/W | DC operation |
| $R_{thCS}$ | Typical Thermal Resistance, Case to Heatsink | | 0.5 | °C/W | Mounting surface, smooth and greased |
| wt | Approximate Weight | | 2(0.07) | g(oz.) | |
| T | Mounting Torque | Min. | 6(5) | Kg-cm (lbf-in) | |
| | | Max. | 12(10) | | |
| | Case Style | | TO-220AB | | |

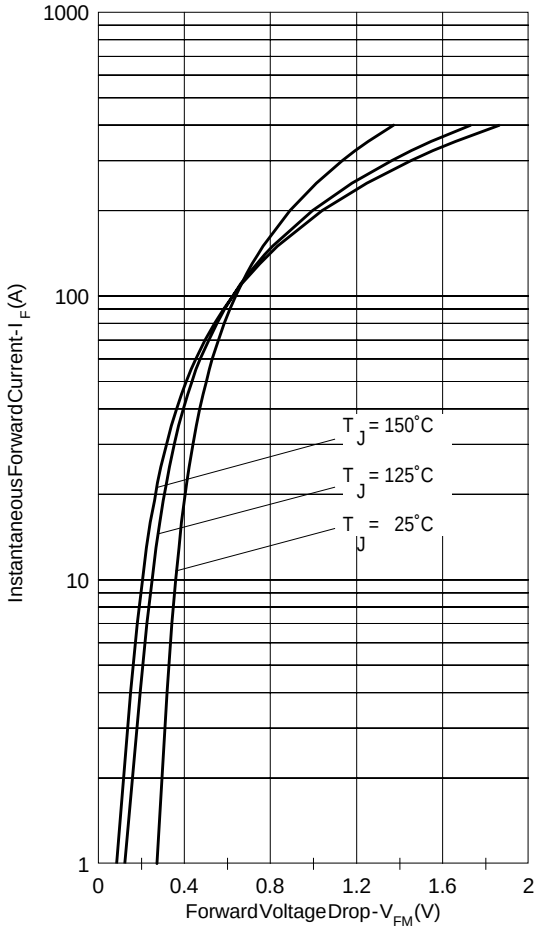



Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

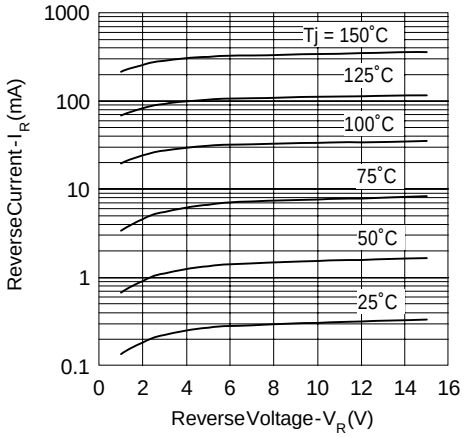



Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

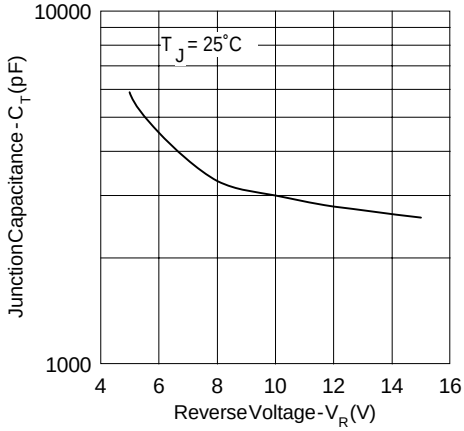



Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

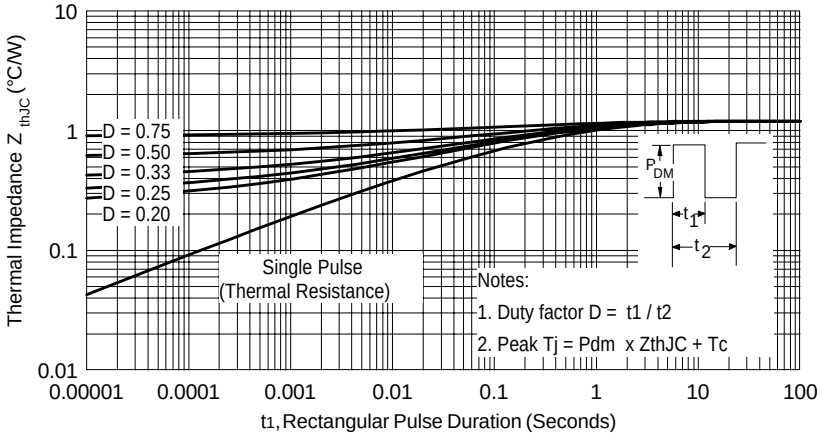



Fig. 4 - Max. Thermal Impedance $Z_{thJC}$ Characteristics (Per Leg)

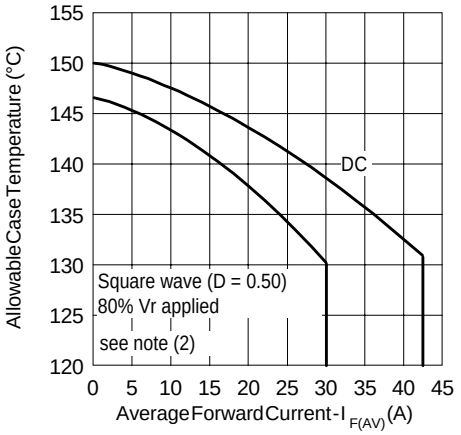



Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

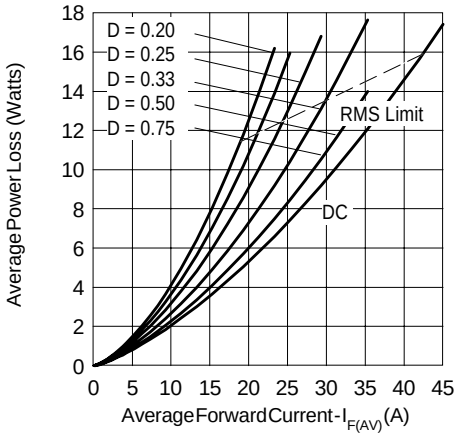



Fig. 6 - Forward Power Loss Characteristics (Per Leg)

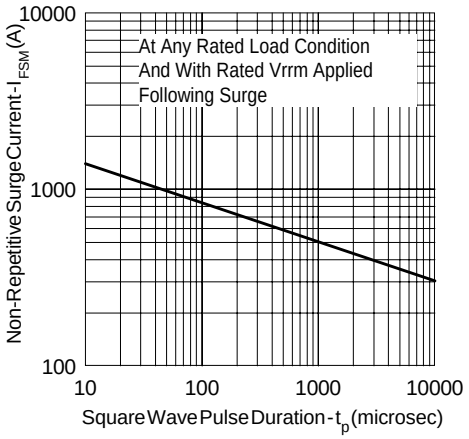



Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

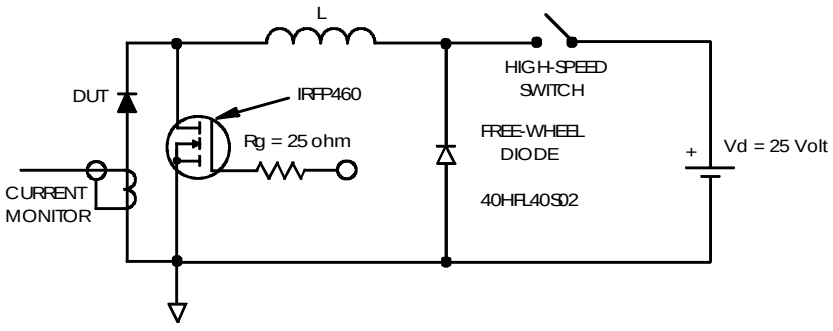
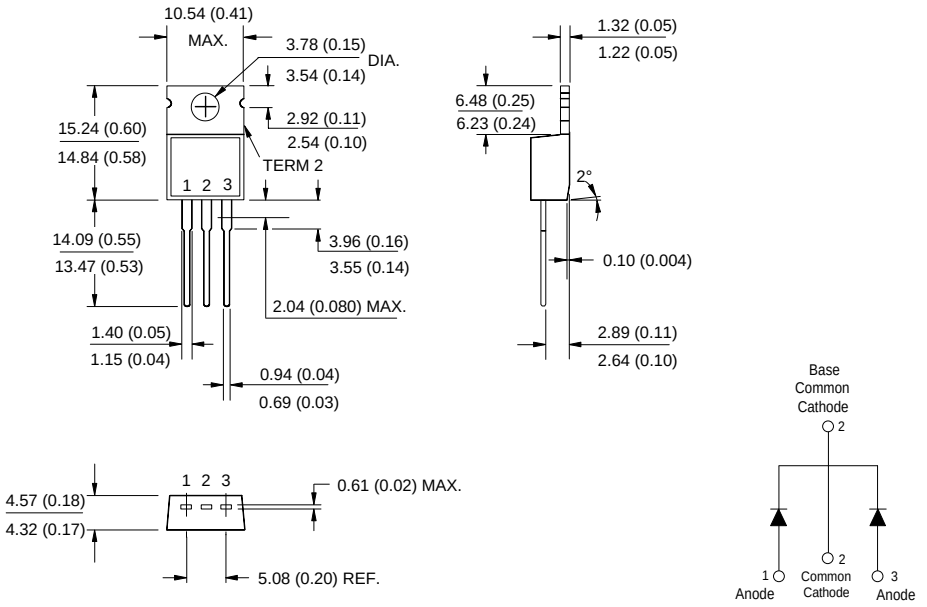



Fig. 8 - Unclamped Inductive Test Circuit

**(2)** Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$ ;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ ($I_{F(AV)}$ / D) (see Fig. 6);
$Pd_{REV}$ = Inverse Power Loss = $V_{R1} \times I_R$ (1 - D); $I_R$ @ 80% $V_R$ applied

## Outline Table




**Conform to JEDEC outline TO-220AB**
Dimensions in millimeters and (inches)

Data and specifications subject to change without notice.
This product has been designed for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
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