Preliminary Data Sheet PD-20568 rev. B 03/99

International
IOR Rectifier

# 40L15CT
# 40L15CTS
# 40L15CT1

## SCHOTTKY RECTIFIER

2 x 20 Amps

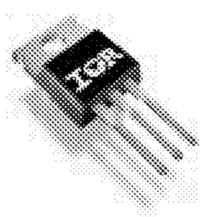
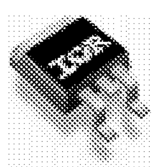
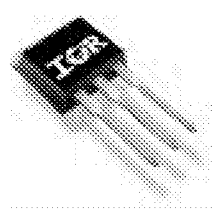
### Major Ratings and Characteristics

| Characteristics | Values | Units |
|---|---|---|
| $I_{F(AV)}$ Rectangular waveform | 40 | A |
| $V_{RRM}$ | 15 | V |
| $I_{FSM}$ @ tp = 5 μs sine | 700 | A |
| $V_F$ @19Apk, $T_J$=125°C (per leg, Typical) | 0.25 | V |
| $T_J$ | - 55 to 125 | °C |

### Description/Features

This center tap Schottky rectifier has been optimized for Ultra low forward voltage drop. This device has been specifically designed to be the best solution as OR-ing diode in fault tolerant power supplies equipment.

- Center tap TO-220, $D^2$Pak and TO-262 packages
- High efficiency
- Ultra low forward voltage drop
- Optimized for OR-ing application

| Case Styles | | |
|---|---|---|
| 40L15CT | 40L15CTS | 40L15CT1 |
|  |  |  |
| TO-220AB | $D^2$PAK | TO-262 |

## Voltage Ratings

| | Part number | | Values |
|---|---|---|---|
| $V_R$ | Max. DC Reverse Voltage (V) | @ $T_J$ = 100 °C | 15 |
| $V_{RWM}$ | Max. Working Peak Reverse Voltage (V) | @ $T_J$ = 100 °C | |

## Absolute Maximum Ratings

| | Parameters | Values | Units | Conditions | |
|---|---|---|---|---|---|
| $I_{F(AV)}$ | Max. Average Forward (Per Leg) | 20 | A | 50% duty cycle @ $T_C$ = 85 °C, rectangular wave form | |
| | Current * See Fig. 5 (Per Device) | 40 | | | |
| $I_{FSM}$ | Max. Peak One Cycle Non-Repetitive | 700 | A | 5µs Sine or 3µs Rect. pulse | Following any rated load condition and with rated $V_{RRM}$ applied |
| | Surge Current (Per Leg) * See Fig. 7 | 330 | | 10ms Sine or 6ms Rect. pulse | |
| $E_{AS}$ | Non-Repetitive Avalanche Energy (Per Leg) | 10 | mJ | $T_J$ = 25 °C, $I_{AS}$ = 2 Amps, L = 6 mH | |
| $I_{AR}$ | Repetitive Avalanche Current (Per Leg) | 2 | A | Current decaying linearly to zero in 1 µsec<br>Frequency limited by $T_J$ max. $V_A$ = 1.5 x $V_R$ typical | |

## Electrical Specifications

| | Parameters | Values Typ. | Values Max. | Units | Conditions | |
|---|---|---|---|---|---|---|
| $V_{FM}$ | Forward Voltage Drop (Per Leg) * See Fig. 1 (1) | - | 0.41 | V | @ 19A | $T_J$ = 25 °C |
| | | - | 0.52 | V | @ 40A | |
| | | 0.25 | 0.33 | V | @ 19A | $T_J$ = 125 °C |
| | | 0.37 | 0.50 | V | @ 40A | |
| $I_{RM}$ | Reverse Leakage Current (Per Leg) * See Fig. 2 (1) | - | 10 | mA | $T_J$ = 25 °C | $V_R$ = rated $V_R$ |
| | | - | 600 | mA | $T_J$ = 100 °C | |
| $V_{F(TO)}$ | Threshold Voltage | 0.182 | | V | $T_J$ = $T_J$ max. | |
| $r_t$ | Forward Slope Resistance | 7.6 | | mΩ | | |
| $C_T$ | Max. Junction Capacitance (Per Leg) | - | 2000 | pF | $V_R$ = 5$V_{DC}$, (test signal range 100Khz to 1Mhz) 25 °C | |
| $L_S$ | Typical Series Inductance (Per Leg) | 8 | - | nH | Measured lead to lead 5mm from package body | |
| dv/dt | Max. Voltage Rate of Change (Rated $V_R$) | 10,000 | | V/ µs | | |

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

## Thermal-Mechanical Specifications

| | Parameters | | Values | Units | Conditions |
|---|---|---|---|---|---|
| $T_J$ | Max. Junction Temperature Range | | -55 to 125 | °C | |
| $T_{stg}$ | Max. Storage Temperature Range | | -55 to 150 | °C | |
| $R_{thJC}$ | Max. Thermal Resistance Junction to Case (Per Leg) | | 1.5 | °C/W | DC operation *See Fig. 4 |
| $R_{thCS}$ | Typical Thermal Resistance Case to Heatsink | | 0.50 | °C/W | Mounting surface, smooth and greased<br>Only for TO-220 |
| $R_{thJA}$ | Max. Thermal Resistance Junction to Ambient | | 40 | °C/W | DC operation<br>For D2Pak and TO-262 |
| wt | Approximate Weight | | 2(0.07) | g(oz.) | |
| T | Mounting Torque | Min. | 6(5) | Kg-cm (lbf-in) | Non-lubricated threads |
| | | Max. | 12(10) | | |

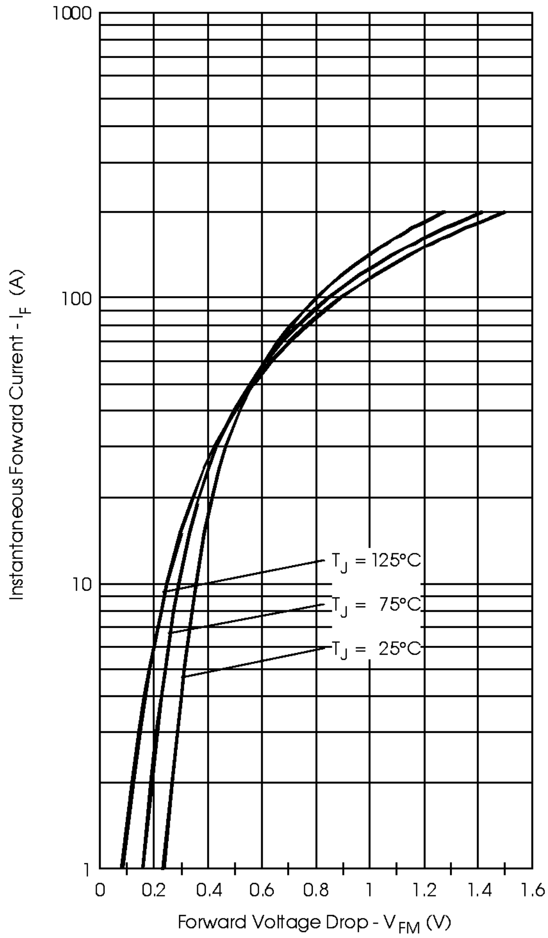



Fig. 1 - Maximum Forward Voltage Drop Characteristics

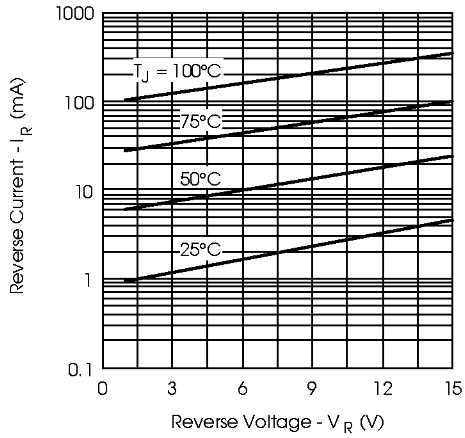



Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

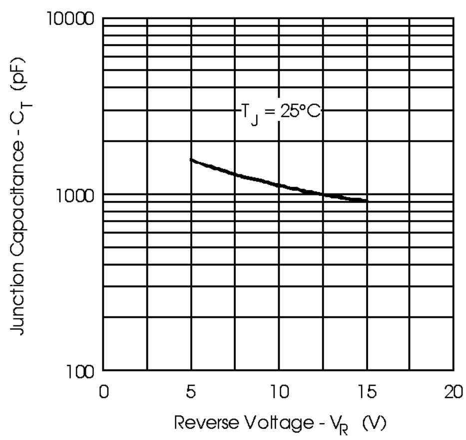



Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

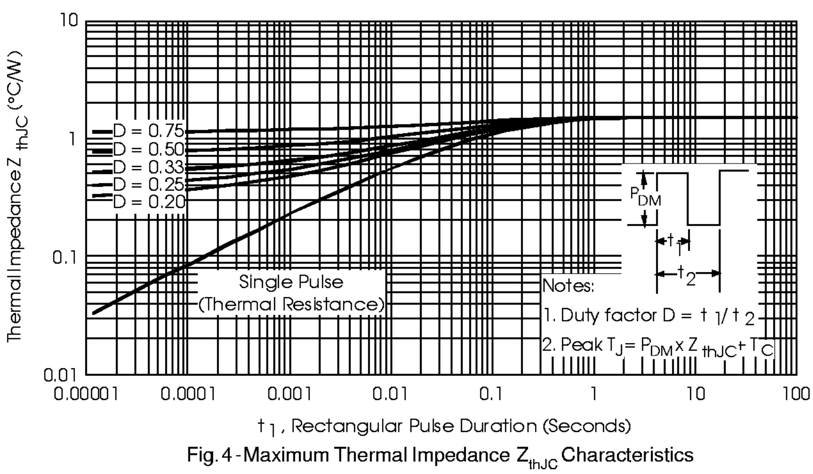



Fig. 4 - Maximum Thermal Impedance $Z_{thJC}$ Characteristics

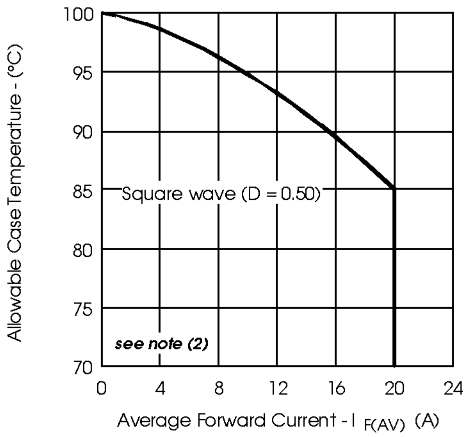



Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

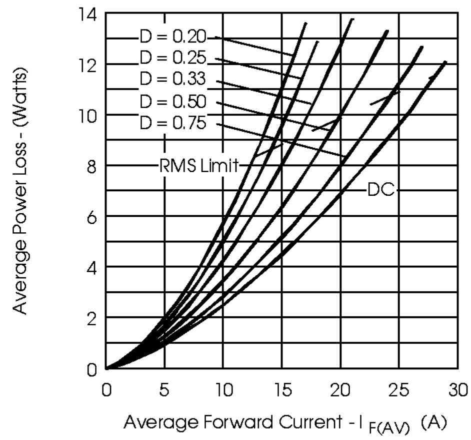



Fig. 6 - Forward Power Loss Characteristics

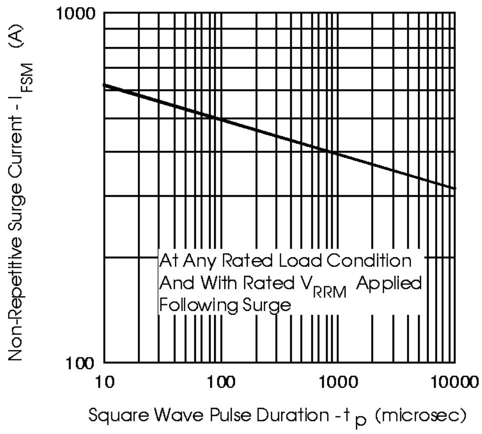



Fig. 7 - Maximum Non-Repetitive Surge Current

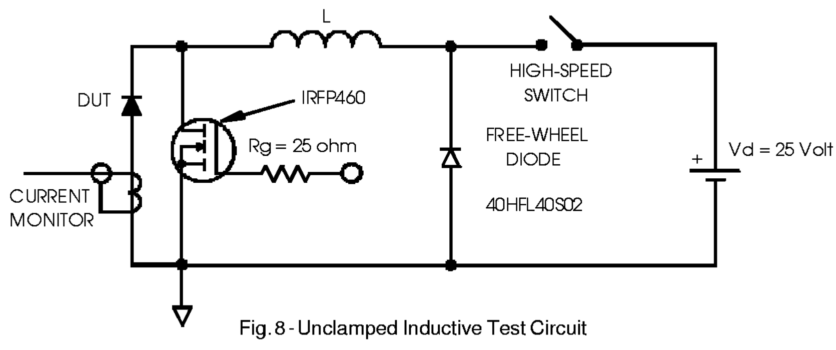


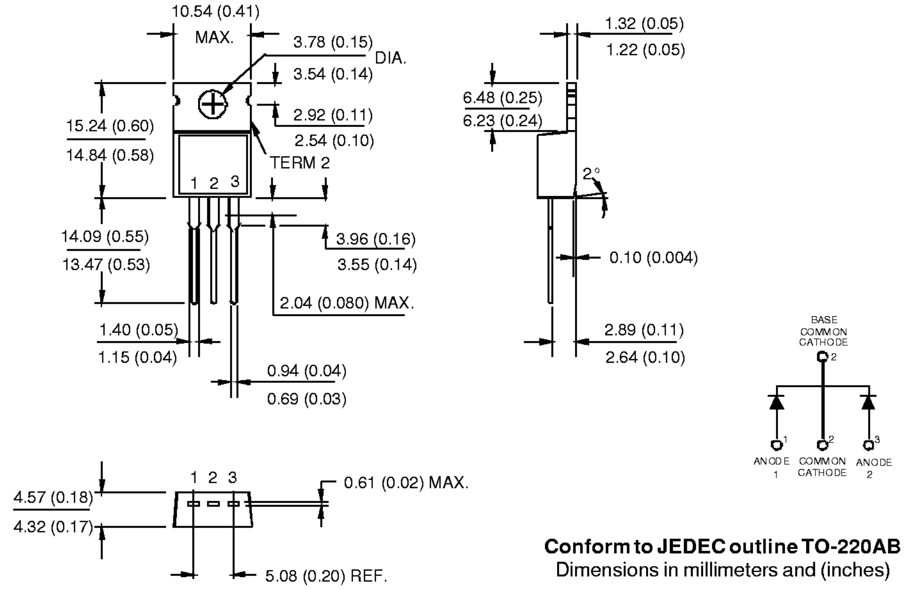

Fig. 8 - Unclamped Inductive Test Circuit

**(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);

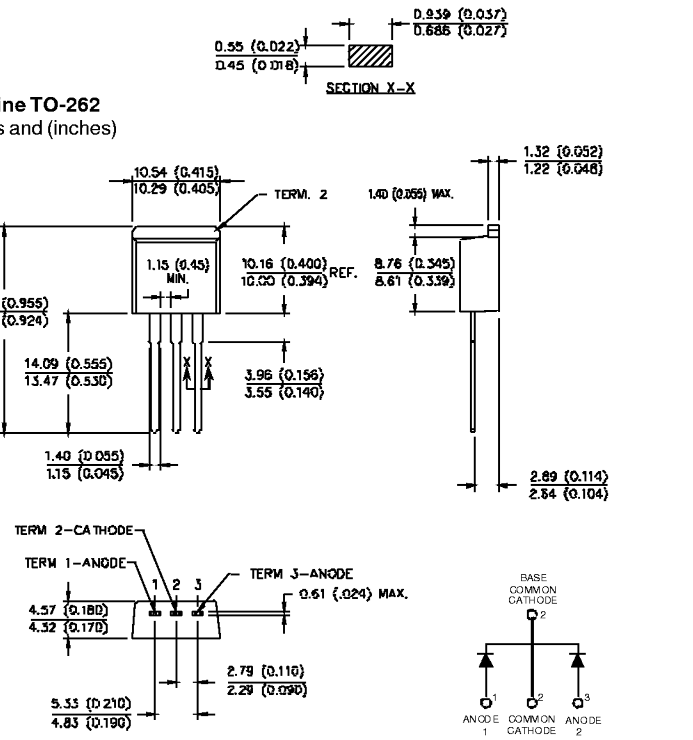
$Pd_{REV}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R$ @ $V_{R1}$ = 80% rated $V_R$

## Outline Table

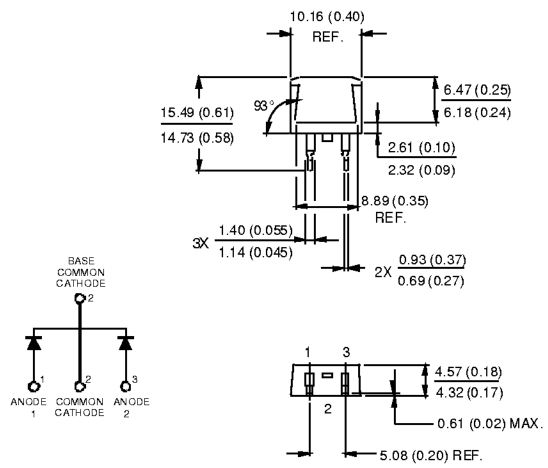


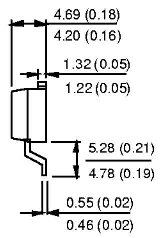

**Conform to JEDEC outline TO-220AB**
Dimensions in millimeters and (inches)

**Modified JEDEC outline TO-262**
Dimensions in millimeters and (inches)

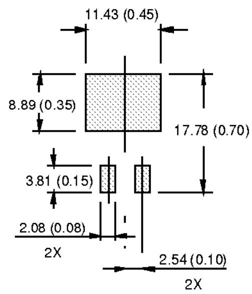


## Outline Table



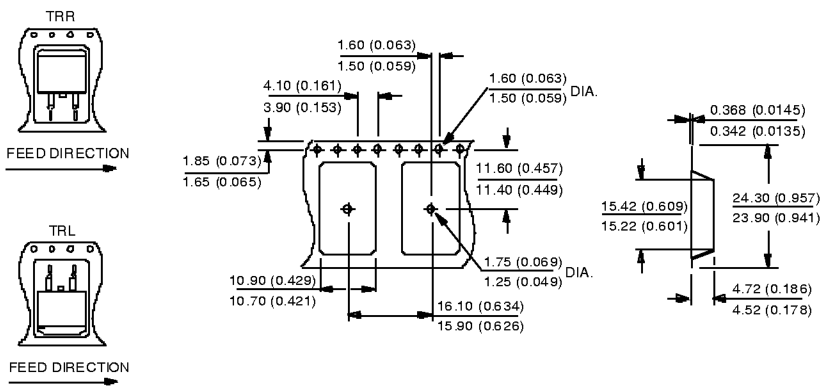



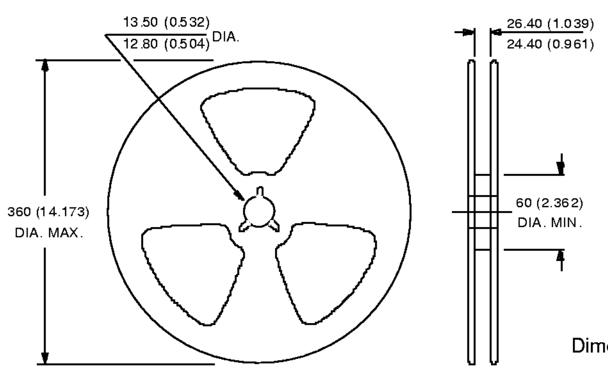

MINIMUM RECOMMENDED FOOTPRINT




**Conform to JEDEC outline D²Pak (SMD-220)**
Dimensions in millimeters and (inches)

## Tape & Reel Information




**SMD-220 Tape & Reel**
When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 800 pieces per reel for both TRL and TRR.

Dimensions in millimeters and (inches)