



10CTQ150
10CTQ150S
10CTQ150-1

SCHOTTKY RECTIFIER

10 Amp


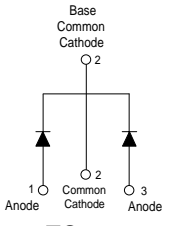

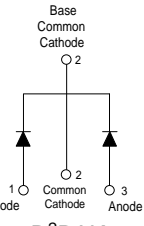

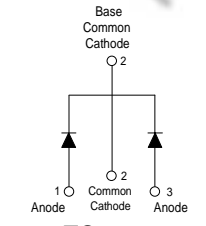
Major Ratings and Characteristics

| Characteristics | Values | Units |
|--|------------|------------|
| $I_{F(AV)}$ Rectangular waveform | 10 | A |
| V_{RRM} | 150 | V |
| I_{FSM} @ $t_p = 5 \mu s$ sine | 620 | A |
| V_F @ 5 Apk, $T_J = 125^\circ C$ (per leg) | 0.73 | V |
| T_J range | -55 to 175 | $^\circ C$ |

Description/ Features

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° C T_J operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

| Case Styles | | |
|--|---|---|
| <p>10CTQ150</p>  <p>Base Common Cathode</p>  <p>TO-220</p> | <p>10CTQ150S</p>  <p>Base Common Cathode</p>  <p>D²PAK</p> | <p>10CTQ150 -1</p>  <p>Base Common Cathode</p>  <p>TO-262</p> |

Voltage Ratings

| Parameters | 10CTQ150 10CTQ150S 10CTQ150-1 |
|---|-------------------------------------|
| V_R Max. DC Reverse Voltage (V) | 150 |
| V_{RWM} Max. Working Peak Reverse Voltage (V) | |

Absolute Maximum Ratings

| Parameters | Values | Units | Conditions |
|--|--------|-------|--|
| $I_{F(AV)}$ Max. Average Forward (Per Leg) Current * See Fig. 5 (Per Device) | 5 | A | 50% duty cycle @ $T_C = 155^\circ\text{C}$, rectangular wave form |
| | 10 | | |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7 | 620 | A | 5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse |
| | 115 | | |
| E_{AS} Non-Repetitive Avalanche Energy (Per Leg) | 6.75 | mJ | $T_J = 25^\circ\text{C}$, $I_{AS} = 0.30$ Amps, $L = 150$ mH |
| I_{AR} Repetitive Avalanche Current (Per Leg) | 0.30 | A | Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical |

Electrical Specifications

| Parameters | Values | Units | Conditions |
|--|--------|------------------|---|
| V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1) | 0.93 | V | @ 5A |
| | 1.10 | V | @ 10A |
| | 0.73 | V | @ 5A |
| | 0.86 | V | @ 10A |
| I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1) | 0.05 | mA | $T_J = 25^\circ\text{C}$ |
| | 7 | mA | $T_J = 125^\circ\text{C}$ |
| $V_{F(TO)}$ Threshold Voltage | 0.468 | V | $T_J = T_J$ max. |
| r_t Forward Slope Resistance | 28 | m Ω | |
| C_T Max. Junction Capacitance (Per Leg) | 200 | pF | $V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C |
| L_S Typical Series Inductance (Per Leg) | 8.0 | nH | Measured lead to lead 5mm from package body |
| dv/dt Max. Voltage Rate of Change (Rated V_R) | 10000 | V/ μs | |

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

Thermal-Mechanical Specifications

| Parameters | Values | Units | Conditions |
|---|------------|---------------------------|--------------------------------------|
| T_J Max. Junction Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| T_{stg} Max. Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg) | 3.50 | $^\circ\text{C}/\text{W}$ | DC operation |
| R_{thJC} Max. Thermal Resistance Junction to Case (Per Package) | 1.75 | $^\circ\text{C}/\text{W}$ | DC operation |
| R_{thCS} Typical Thermal Resistance, Case to Heatsink (only for TO-220) | 0.50 | $^\circ\text{C}/\text{W}$ | 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) | |

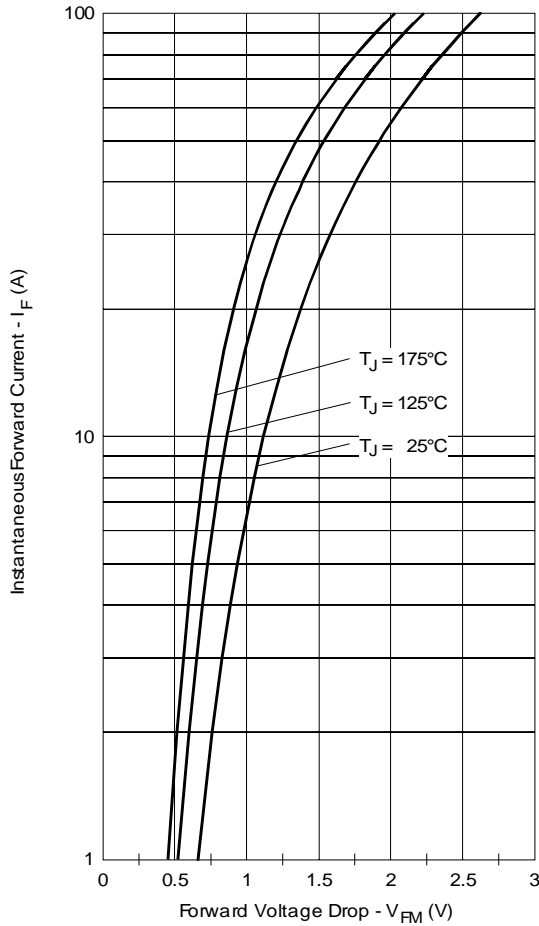


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

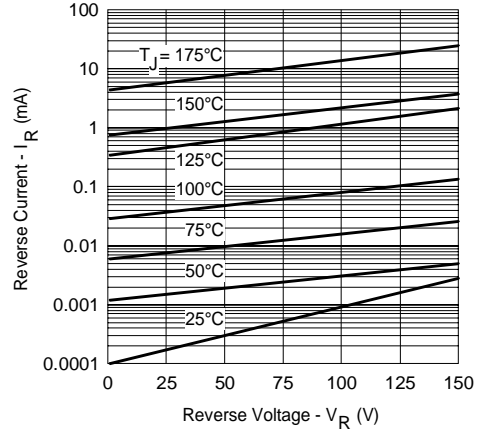


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

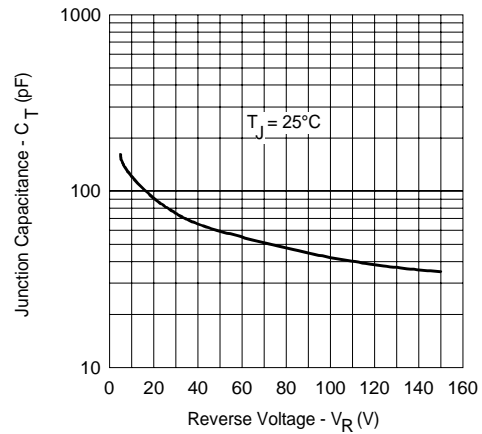


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

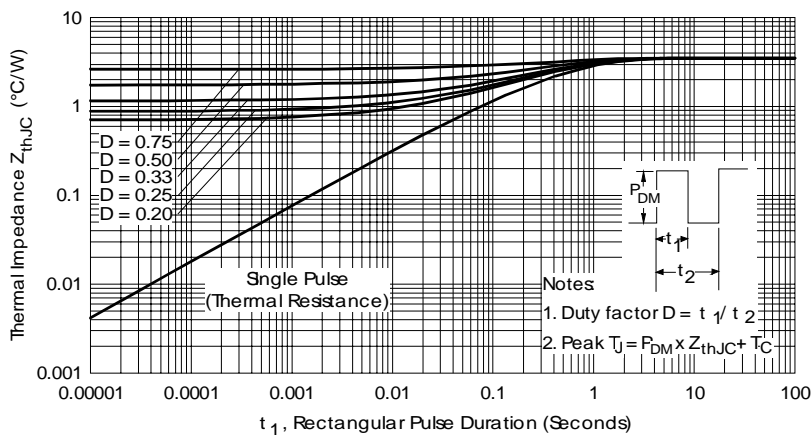


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

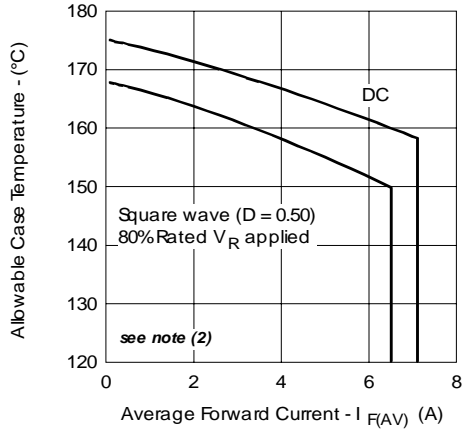


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

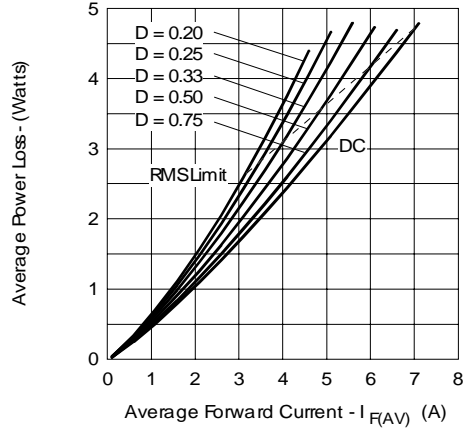


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

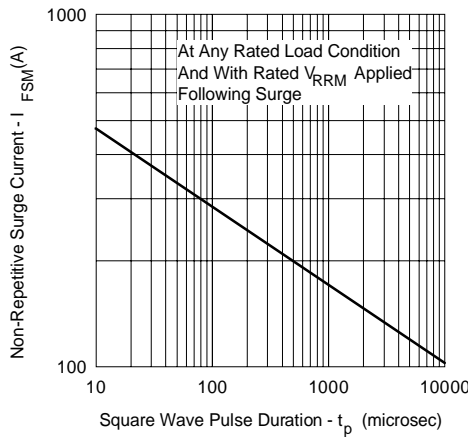


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

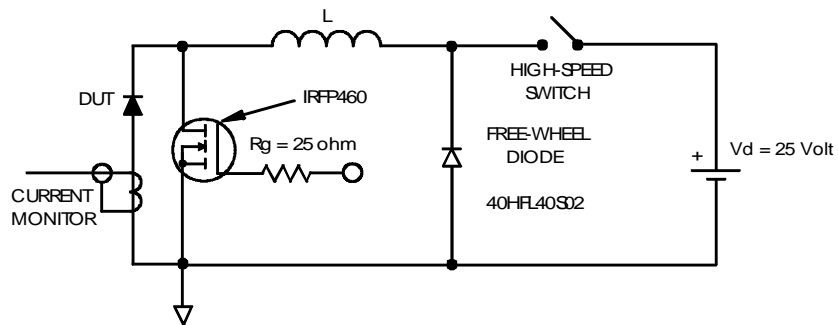


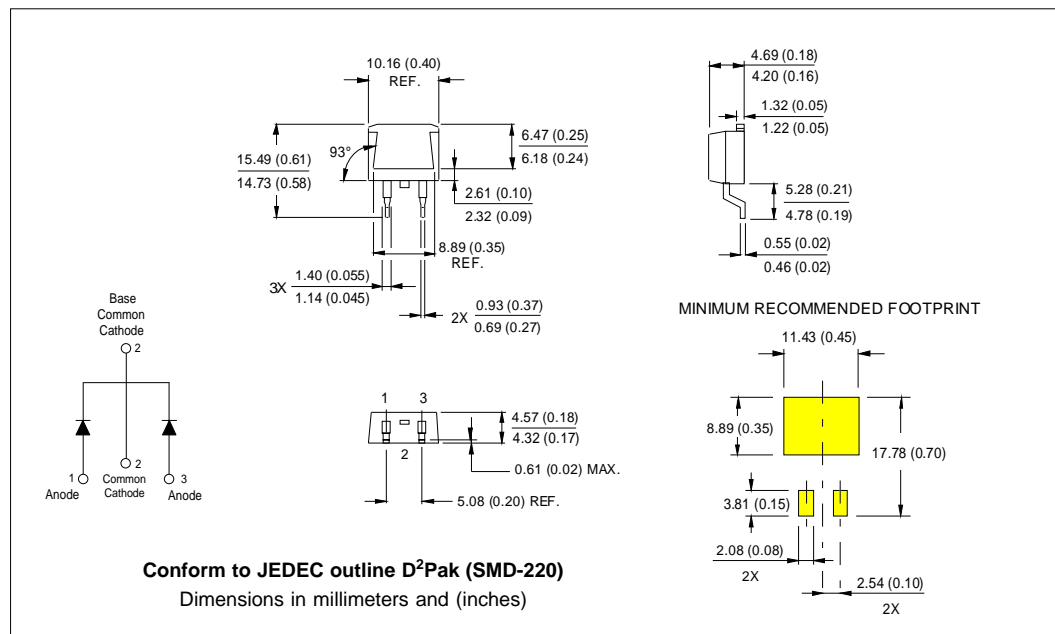
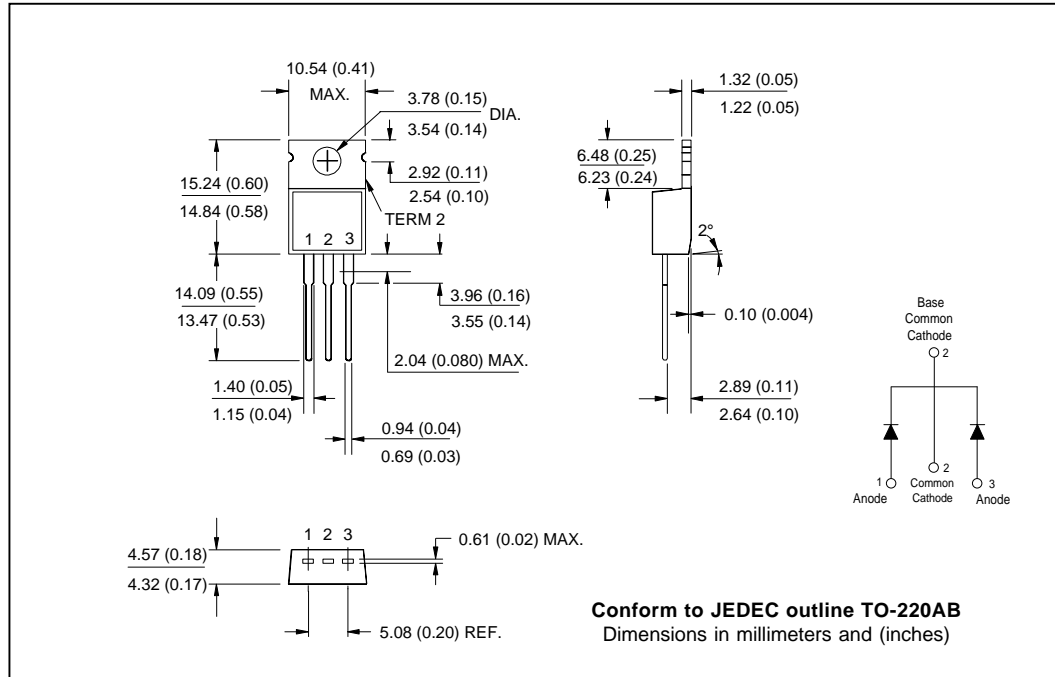
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;

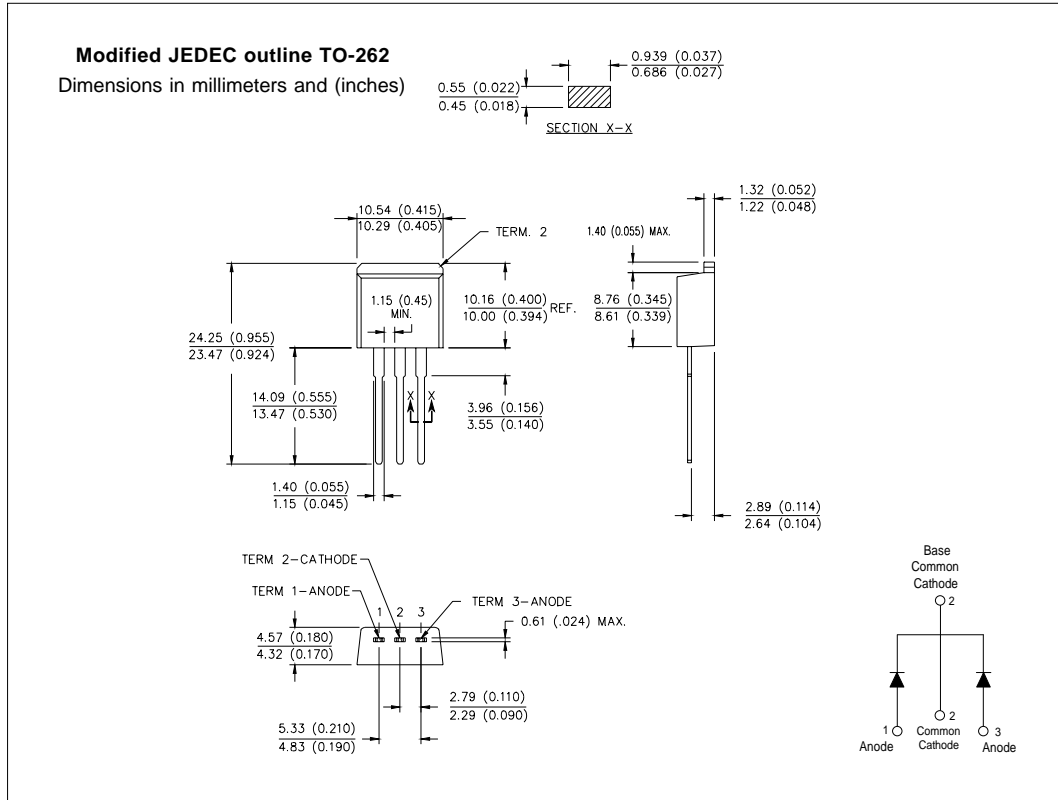
$Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D); I_R @ V_{R1} = 10V$

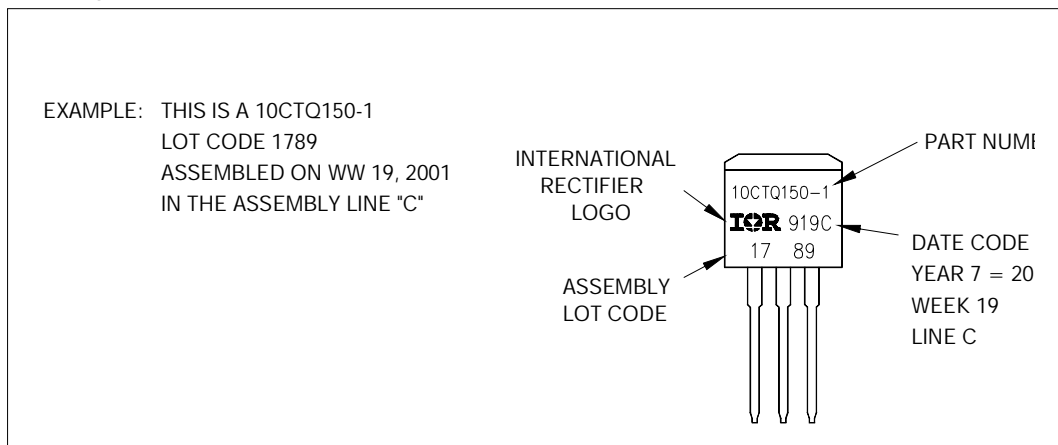
Outline Table



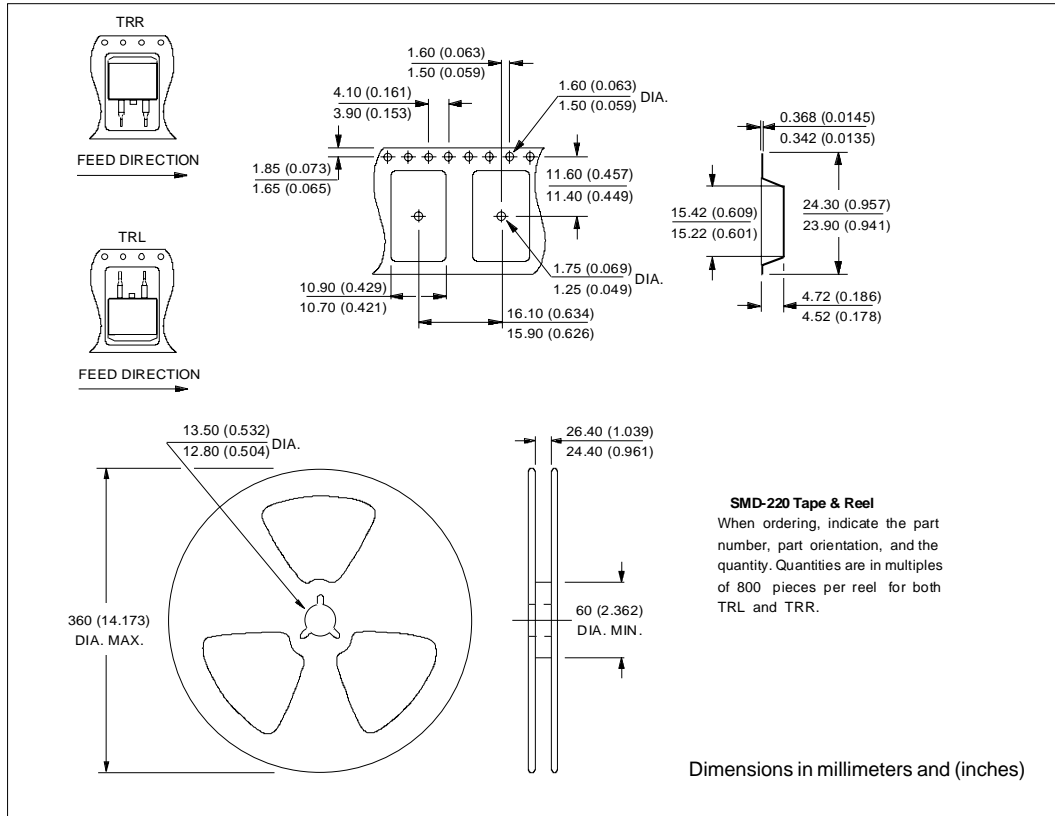
Outline Table



Marking Information



Tape & Reel Information



Ordering Information Table

| Device Code | | | | | |
|-------------|---|--------------------------------------|---|-----|----|
| 10 | C | T | Q | 150 | -1 |
| ① | ② | ③ | ④ | ⑤ | ⑥ |
| 1 | - | Essential Part Number | | | |
| 2 | - | C = Common Cathode | | | |
| 3 | - | T = TO-220 | | | |
| 4 | - | Q = Schottky Q Series | | | |
| 5 | - | Voltage Rating 150 = 150V | | | |
| 6 | - | 1 = TO-262 S = D ² Pak | | | |

10CTQ150, 10CTQ150S, 10CTQ150-1

Bulletin PD-2.291 rev. C 03/03

International
IOR Rectifier

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

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