

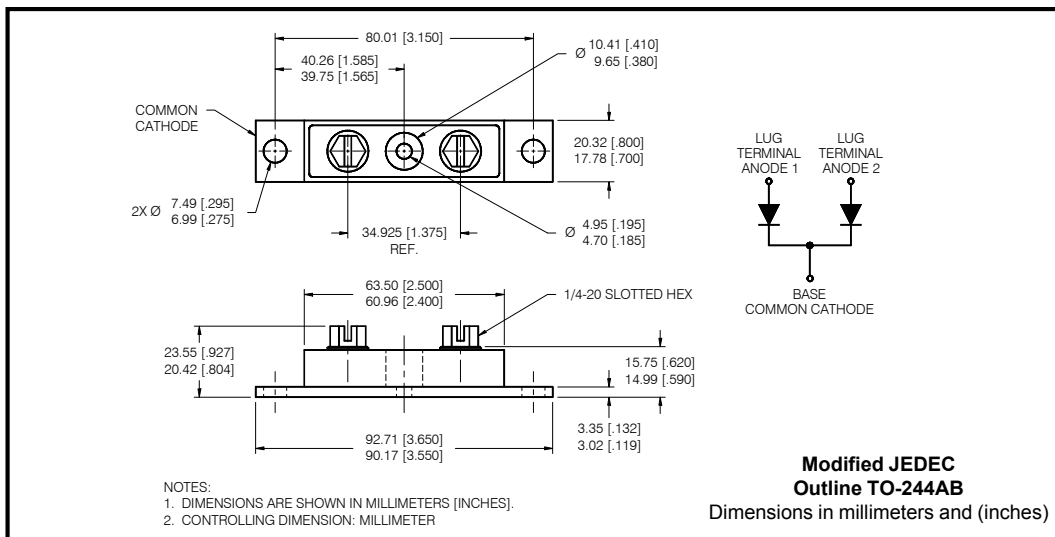
#### Major Ratings and Characteristics

| Characteristics                                  | 225CNQ...  | Units            |
|--------------------------------------------------|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform                 | 220        | A                |
| $V_{RRM}$ range                                  | 15         | V                |
| $I_{FSM}$ @tp=5 $\mu$ s sine                     | 10,800     | A                |
| $V_F$ @110Apk, $T_J=125^\circ\text{C}$ (per leg) | 0.32       | V                |
| $T_J$ range                                      | -55 to 125 | $^\circ\text{C}$ |

#### Description/Features

The 225CNQ center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125  $^\circ\text{C}$  junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125 $^\circ\text{C}$   $T_J$  operation ( $V_R < 5\text{V}$ )
- Center tap module
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance



## 225CNQ015 Series

Bulletin PD-2.294 rev. D 07/01

International  
**IR** Rectifier

### Voltage Ratings

| Part number                                     | 225CNQ015 |
|-------------------------------------------------|-----------|
| $V_R$ Max. DC Reverse Voltage (V)               | 15        |
| $V_{RWM}$ Max. Working Peak Reverse Voltage (V) |           |

### Absolute Maximum Ratings

| Parameters         |                                                                         | 225CNQ | Units | Conditions                                                                                                                            |                                                                            |  |
|--------------------|-------------------------------------------------------------------------|--------|-------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--|
| I <sub>F(AV)</sub> | Max. Average Forward Current<br>* See Fig. 5                            | 220    | A     | 50% duty cycle @ T <sub>C</sub> = 74 °C, rectangular wave form                                                                        |                                                                            |  |
| I <sub>FSM</sub>   | Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7 | 10,800 | A     | 5μs Sine or 3μs Rect. pulse                                                                                                           | Following any rated load condition and with rated V <sub>RRM</sub> applied |  |
|                    |                                                                         | 1700   |       | 10ms Sine or 6ms Rect. pulse                                                                                                          |                                                                            |  |
| E <sub>AS</sub>    | Non-Repetitive Avalanche Energy (Per Leg)                               | 9      | mJ    | T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 2 Amps, L = 4.5 mH                                                                          |                                                                            |  |
| I <sub>AR</sub>    | Repetitive Avalanche Current (Per Leg)                                  | 2      | A     | Current decaying linearly to zero in 1 μsec<br>Frequency limited by T <sub>J</sub> max. V <sub>A</sub> = 3.0 x V <sub>R</sub> typical |                                                                            |  |

### Electrical Specifications

| Parameters      |                                                            | 225CNQ | Units | Conditions                                                                  |                                       |
|-----------------|------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------|---------------------------------------|
| V <sub>FM</sub> | Max. Forward Voltage Drop<br>(Per Leg) * See Fig. 1 (1)    | 0.38   | V     | @ 110A                                                                      | T <sub>J</sub> = 25 °C                |
|                 |                                                            | 0.49   | V     | @ 220A                                                                      |                                       |
|                 |                                                            | 0.32   | V     | @ 110A                                                                      | T <sub>J</sub> = 75 °C                |
|                 |                                                            | 0.42   | V     | @ 220A                                                                      |                                       |
| I <sub>RM</sub> | Max. Reverse Leakage Current<br>(Per Leg) * See Fig. 2 (1) | 40     | mA    | T <sub>J</sub> = 25 °C                                                      | V <sub>R</sub> = rated V <sub>R</sub> |
|                 |                                                            | 2000   | mA    | T <sub>J</sub> = 125 °C                                                     |                                       |
|                 |                                                            | 1780   | mA    | T <sub>J</sub> = 100 °C                                                     | V <sub>R</sub> = 12 V                 |
|                 |                                                            | 1080   | mA    | T <sub>J</sub> = 100 °C                                                     | V <sub>R</sub> = 5 V                  |
| C <sub>T</sub>  | Max. Junction Capacitance (Per Leg)                        | 7700   | pF    | V <sub>R</sub> = 5V <sub>DC</sub> ; (test signal range 100Khz to 1Mhz) 25°C |                                       |
| L <sub>S</sub>  | Typical Series Inductance (Per Leg)                        | 7.0    | nH    | From top of terminal hole to mounting plane                                 |                                       |
| dv/dt           | Max. Voltage Rate of Change<br>(Rated V <sub>R</sub> )     | 10,000 | V/ μs |                                                                             |                                       |

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle <2%

### Thermal-Mechanical Specifications

| Parameters                                                        | 225CNQ               | Units              | Conditions                           |
|-------------------------------------------------------------------|----------------------|--------------------|--------------------------------------|
| $T_J$ Max. Junction Temperature Range                             | -55 to 125           | $^\circ\text{C}$   |                                      |
| $T_{stg}$ Max. Storage Temperature Range                          | -55 to 150           | $^\circ\text{C}$   |                                      |
| $R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)     | 0.40                 | $^\circ\text{C/W}$ | DC operation *See Fig. 4             |
| $R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Package) | 0.20                 | $^\circ\text{C/W}$ | DC operation                         |
| $R_{thCS}$ Typical Thermal Resistance, Case to Heatsink           | 0.10                 | $^\circ\text{C/W}$ | Mounting surface, smooth and greased |
| wt Approximate Weight                                             | 79 (2.80)            | g (oz.)            |                                      |
| T Mounting Torque                                                 | Base Min.            | 24 (20)            | Kg-cm (lbf-in)                       |
|                                                                   | Base Max.            | 35 (30)            |                                      |
|                                                                   | Center Hole Typ.     | 13.5 (12)          |                                      |
|                                                                   | Terminal Torque Min. | 35 (30)            |                                      |
|                                                                   | Terminal Torque Max. | 46 (40)            |                                      |
| Case Style                                                        | TO-244AB             |                    | Modified JEDEC                       |

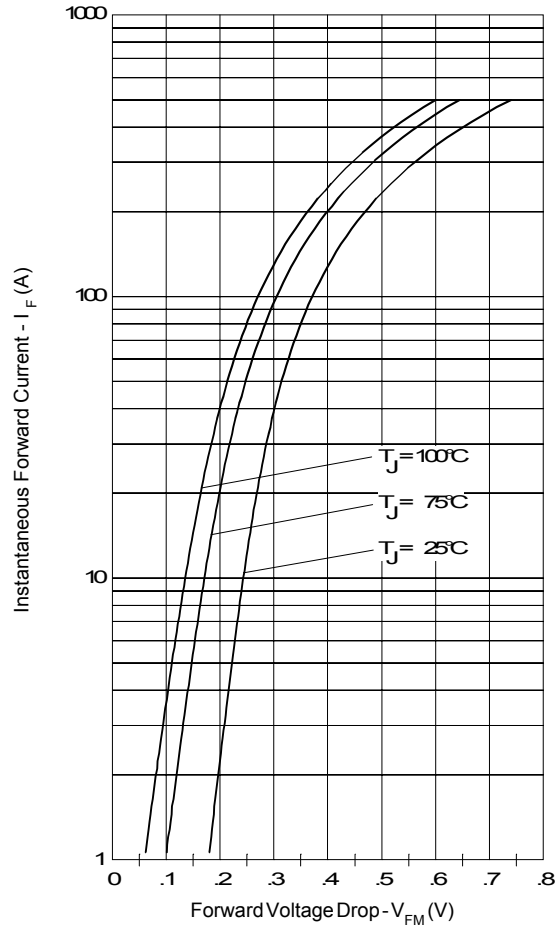


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

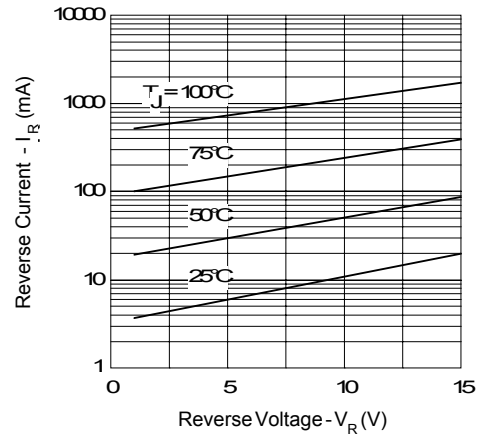


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

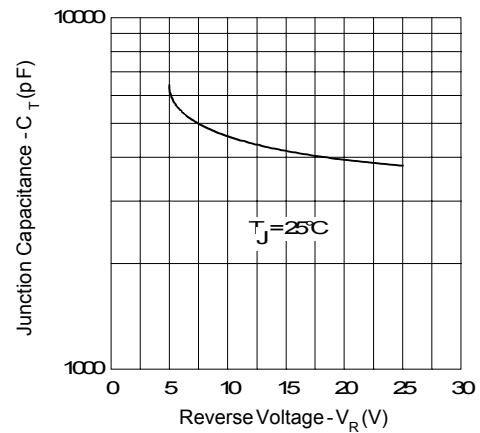


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

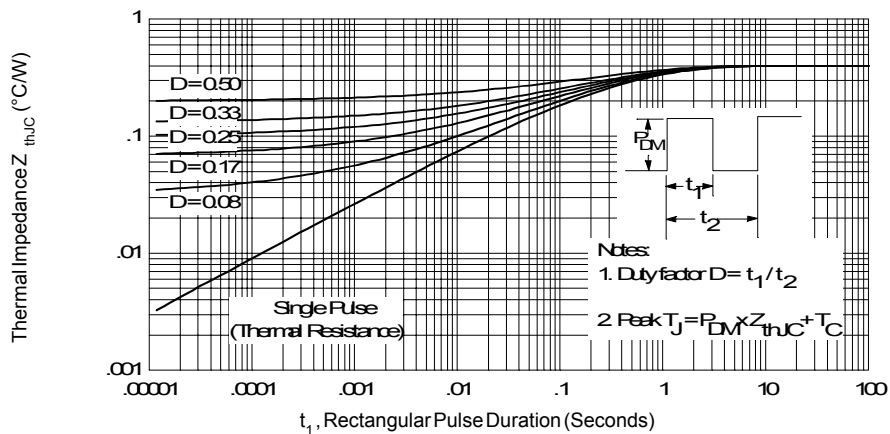


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

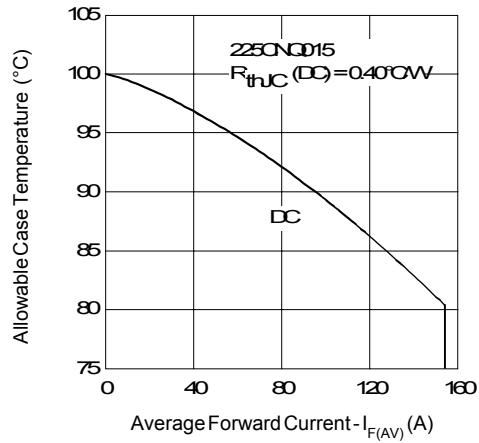


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

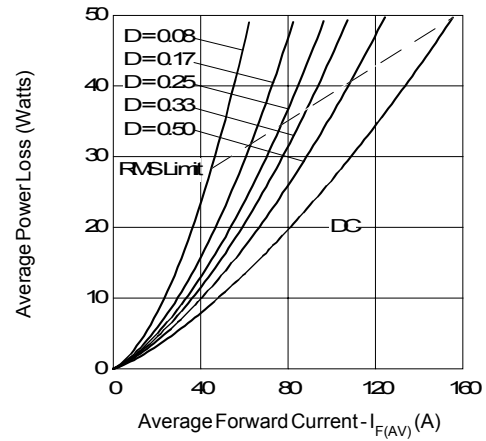


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

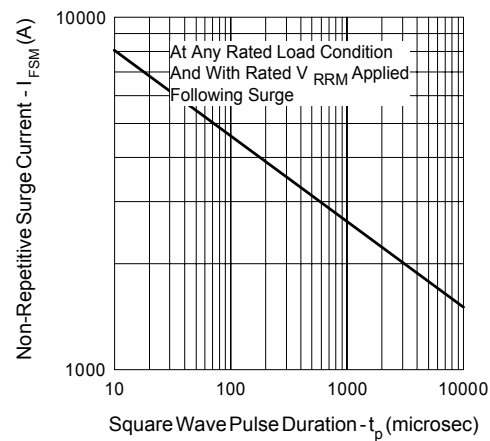


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

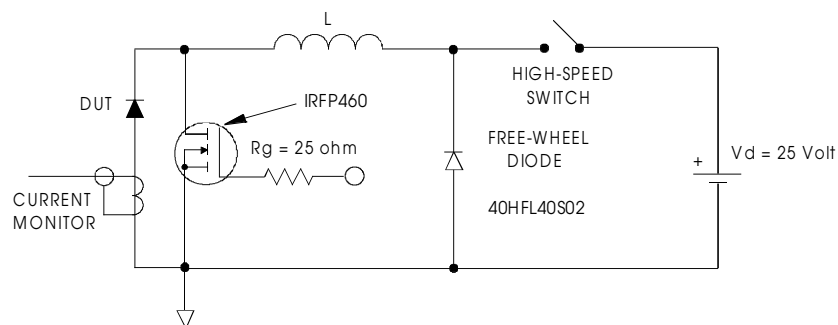


Fig. 8 - Unclamped Inductive Test Circuit

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.

International  
**IOR** Rectifier

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