

International  
**IOR** Rectifier

30CPQ080PbF  
30CPQ100PbF

SCHOTTKY RECTIFIER

30 Amp

$$I_{F(AV)} = 30\text{Amp}$$
$$V_R = 80 - 100\text{V}$$

Major Ratings and Characteristics

| Characteristics                                    | Values     | Units              |
|----------------------------------------------------|------------|--------------------|
| $I_{F(AV)}$ Rectangular waveform                   | 30         | A                  |
| $V_{RRM}$                                          | 80-100     | V                  |
| $I_{FSM}$ @tp=5μssine                              | 920        | A                  |
| $V_F$ @15 Apk, $T_J=125^{\circ}\text{C}$ (per leg) | 0.67       | V                  |
| $T_J$                                              | -55 to 175 | $^{\circ}\text{C}$ |

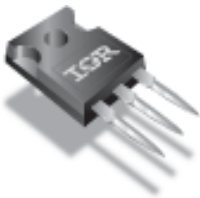
Description/ Features

The 30CPQ...PbF 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.

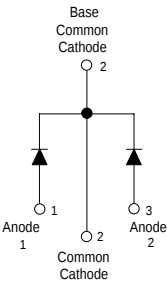
- 175° C  $T_J$  operation
- Center tap TO-247 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

Case Styles

30CPQ...PbF



TO-247AC



# 30CPQ080PbF, 30CPQ100PbF

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## Voltage Ratings

| Part number                                     | 30CPQ080PbF | 30CPQ100PbF |
|-------------------------------------------------|-------------|-------------|
| $V_R$ Max. DC Reverse Voltage (V)               | 80          | 100         |
| $V_{RWM}$ Max. Working Peak Reverse Voltage (V) |             |             |

## Absolute Maximum Ratings

| Parameters                                                                        | 30CPQ... | Units | Conditions                                                                                                                          |
|-----------------------------------------------------------------------------------|----------|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| $I_{F(AV)}$ Max. Average Forward Current<br>* See Fig. 5                          | 30       | A     | 50% duty cycle @ $T_C = 140^\circ\text{C}$ , rectangular wave form                                                                  |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7 | 920      | A     | 5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse                                                                                 |
|                                                                                   | 240      |       | 10ms Sine or 6ms Rect. pulse                                                                                                        |
| $E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)                                | 7.50     | mJ    | Following any rated load condition and with rated $V_{RRM}$ applied<br>$T_J = 25^\circ\text{C}$ , $I_{AS} = 0.50$ Amps, $L = 60$ mH |
| $I_{AR}$ Repetitive Avalanche Current (Per Leg)                                   | 0.50     | A     | Current decaying linearly to zero in 1 $\mu\text{sec}$<br>Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical            |

## Electrical Specifications

| Parameters                                                       | 30CPQ... | Units            | Conditions                                                              |
|------------------------------------------------------------------|----------|------------------|-------------------------------------------------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)    | 0.86     | V                | @ 15A                                                                   |
|                                                                  | 1.05     | V                | @ 30A                                                                   |
|                                                                  | 0.67     | V                | @ 15A                                                                   |
|                                                                  | 0.81     | V                | @ 30A                                                                   |
| $I_{RM}$ Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1) | 0.55     | mA               | $T_J = 25^\circ\text{C}$                                                |
|                                                                  | 7        | mA               | $T_J = 125^\circ\text{C}$                                               |
| $C_T$ Max. Junction Capacitance (Per Leg)                        | 500      | pF               | $V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$ |
| $L_S$ Typical Series Inductance (Per Leg)                        | 7.5      | nH               | Measured lead to lead 5mm from package body                             |
| $dv/dt$ Max. Voltage Rate of Change                              | 10000    | V/ $\mu\text{s}$ | (Rated $V_R$ )                                                          |

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

## Thermal-Mechanical Specifications

| Parameters        |                                                        | 30CPQ...        | Units   | Conditions                            |                        |  |
|-------------------|--------------------------------------------------------|-----------------|---------|---------------------------------------|------------------------|--|
| T <sub>J</sub>    | Max. Junction Temperature Range                        | -55 to 175      | °C      |                                       |                        |  |
| T <sub>stg</sub>  | Max. Storage Temperature Range                         | -55 to 175      | °C      |                                       |                        |  |
| R <sub>thJC</sub> | Max. Thermal Resistance Junction to Case (Per Leg)     | 2.20            | °C/W    | DC operation                          | * See Fig. 4           |  |
| R <sub>thJC</sub> | Max. Thermal Resistance Junction to Case (Per Package) | 1.10            | °C/W    | DC operation                          |                        |  |
| R <sub>thCS</sub> | Typical Thermal Resistance, Case to Heatsink           | 0.24            | °C/W    | Mounting surface , smooth and greased |                        |  |
| wt                | Approximate Weight                                     | 6 (0.21)        | g (oz.) |                                       |                        |  |
| T                 | Mounting Torque                                        | Min.            | 6 (5)   | Kg-cm<br>(lbf-in)                     | Non-lubricated threads |  |
|                   |                                                        | Max.            | 12 (10) |                                       |                        |  |
| Case Style        |                                                        | TO-247AC(TO-3P) |         | JEDEC                                 |                        |  |
| Device Marking    |                                                        | 30CPQ080        |         |                                       |                        |  |
|                   |                                                        | 30CPQ100        |         |                                       |                        |  |

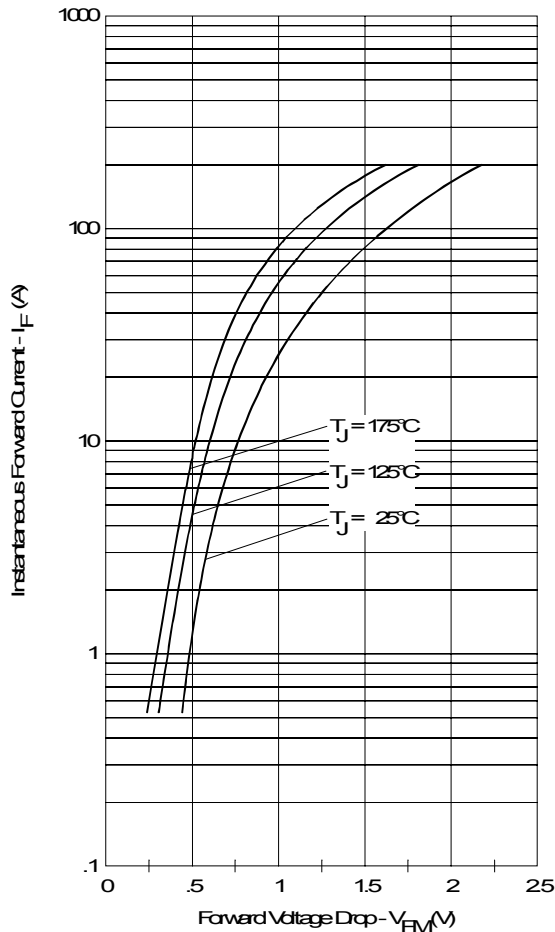


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

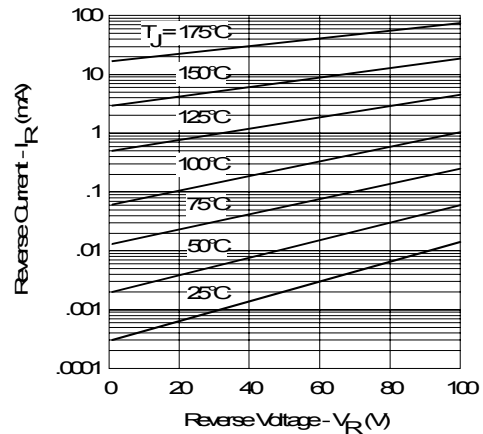


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

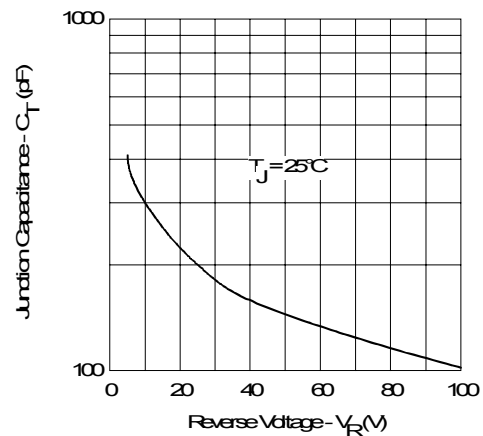


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

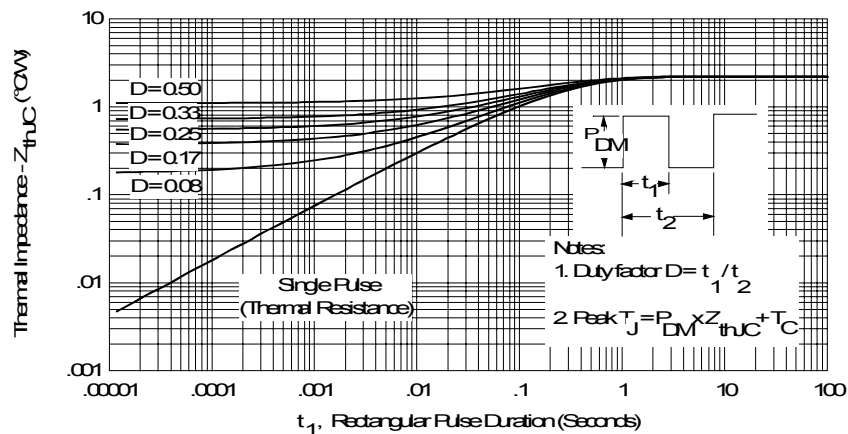


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

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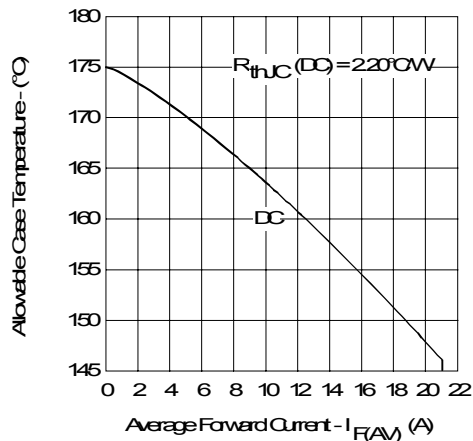


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

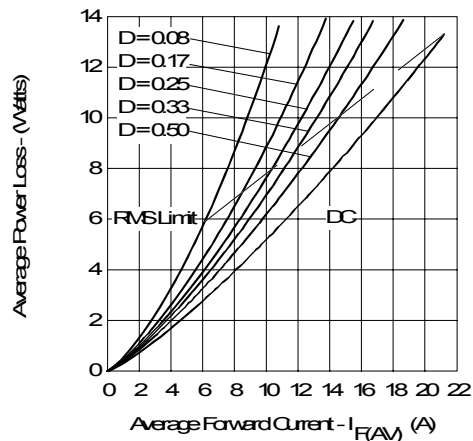


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

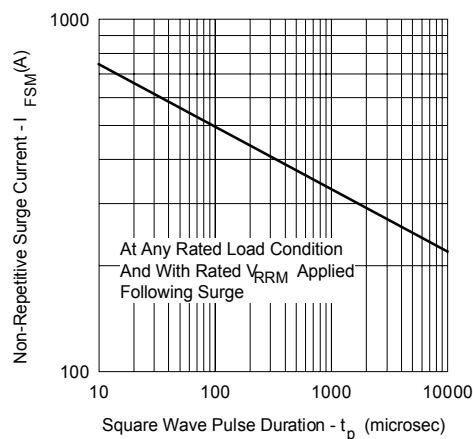


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

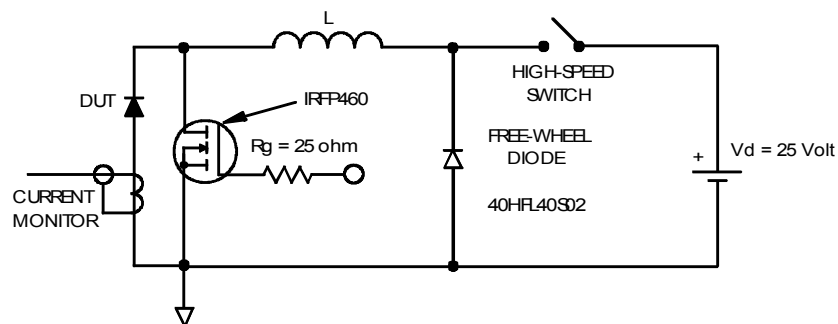
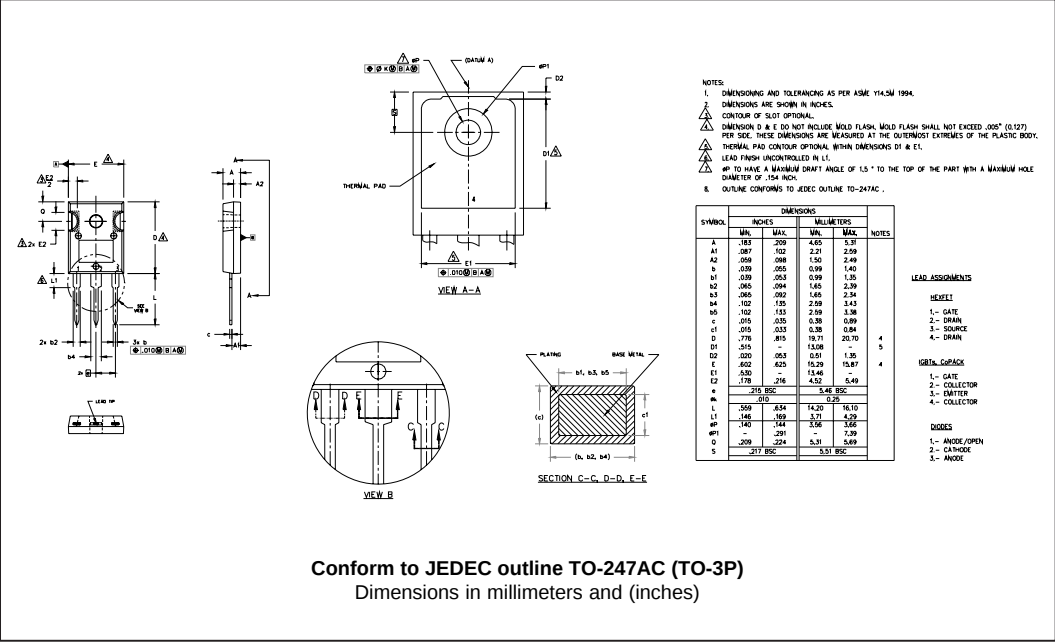
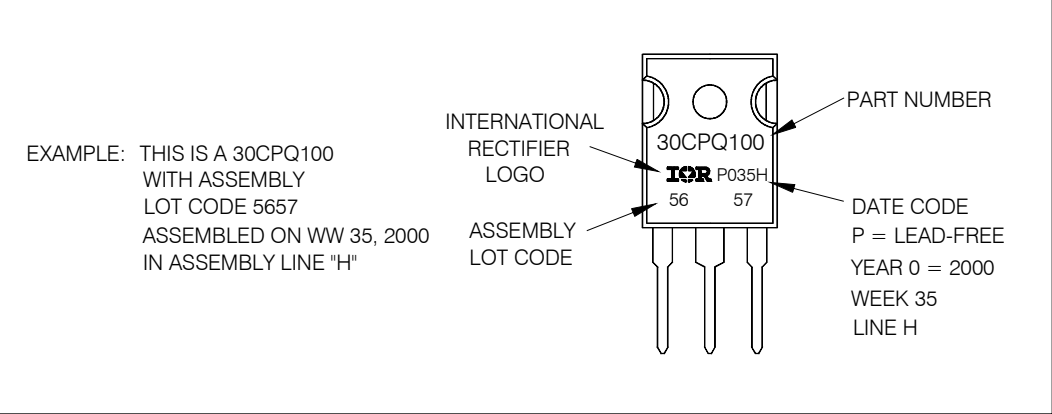


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



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### Ordering Information Table

| Device Code |   |                                         |   |     |     |
|-------------|---|-----------------------------------------|---|-----|-----|
| 30          | C | P                                       | Q | 100 | PbF |
| 1           | 2 | 3                                       | 4 | 5   | 6   |
| 1           | - | Current Rating                          |   |     |     |
| 2           | - | Circuit Configuration                   |   |     |     |
|             |   | C = Common Cathode                      |   |     |     |
| 3           | - | Package                                 |   |     |     |
|             |   | P = TO-247                              |   |     |     |
| 4           | - | Schottky "Q" Series                     |   |     |     |
| 5           | - | Voltage Code                            |   |     |     |
| 6           | - | • none = Standard Production            |   |     |     |
|             |   | • PbF = Lead-Free                       |   |     |     |
|             |   | Tube Standard Pack Quantity : 25 pieces |   |     |     |

080 = 80V

100 = 100V

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

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IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105  
TAC Fax: (310) 252-7309  
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