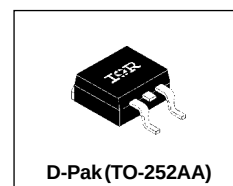


## 30WQ10FN

### SCHOTTKY RECTIFIER

3.5 Amp



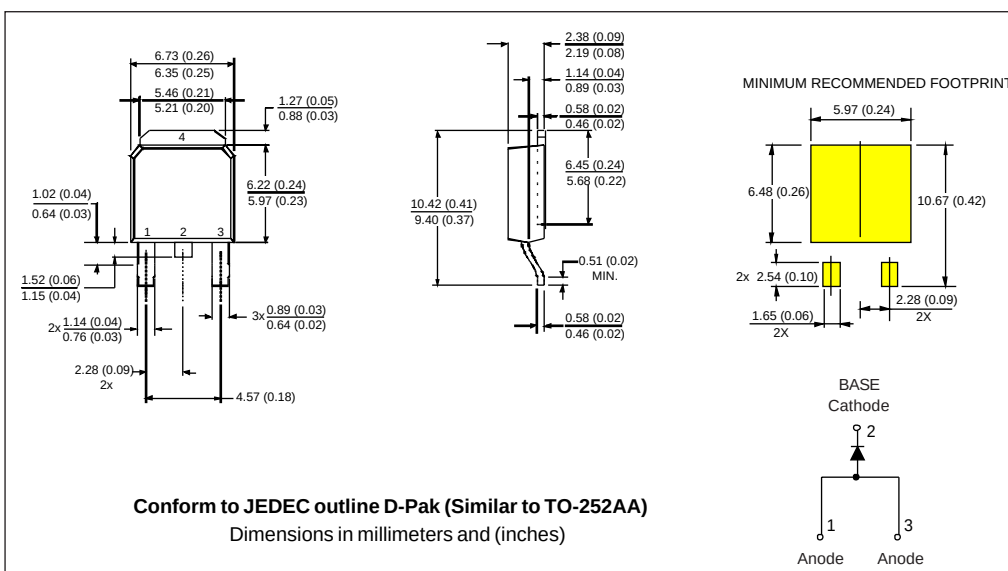
#### Major Ratings and Characteristics

| Characteristics                          | 30WQ10FN   | Units      |
|------------------------------------------|------------|------------|
| $I_{F(AV)}$ Rectangular waveform         | 3.5        | A          |
| $V_{RRM}$                                | 100        | V          |
| $I_{FSM}$ @ $t_p = 5 \mu s$ sine         | 440        | A          |
| $V_F$ @ $3 A_{pk}$ , $T_J = 125^\circ C$ | 0.63       | V          |
| $T_J$                                    | -40 to 150 | $^\circ C$ |

#### Description/Features

The 30WQ10FN surface mount Schottky rectifier has been designed for applications requiring low forward drop and small foot prints on PC board. Typical applications are in disk drives, switching power supplies, converters, free-wheeling diodes, battery charging, and reverse battery protection.

- Popular D-PAK outline
- Small foot print, surface moutable
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



## 30WQ10FN

PD-20523 rev. B 10/98

International  
IR Rectifier

### Voltage Ratings

| Part number                                     | 30WQ10FN |
|-------------------------------------------------|----------|
| $V_R$ Max. DC Reverse Voltage (V)               | 100      |
| $V_{RWM}$ Max. Working Peak Reverse Voltage (V) |          |

### Absolute Maximum Ratings

| Parameters                                                              | 30WQ10FN | Units | Conditions                                                         |
|-------------------------------------------------------------------------|----------|-------|--------------------------------------------------------------------|
| $I_{F(AV)}$ Max. Average Forward Current<br>* See Fig. 5                | 3.5      | A     | 50% duty cycle @ $T_C = 135^\circ\text{C}$ , rectangular wave form |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7 | 440      | A     | 5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse                |
|                                                                         | 70       |       | 10ms Sine or 6ms Rect. pulse                                       |

Following any rated load condition and with rated  $V_{RWM}$  applied

### Electrical Specifications

| Parameters                                                | 30WQ10FN | Units            | Conditions                                                              |
|-----------------------------------------------------------|----------|------------------|-------------------------------------------------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop<br>* See Fig. 1 (1)    | 0.81     | V                | @ 3A                                                                    |
|                                                           | 0.96     | V                | @ 6A                                                                    |
|                                                           | 0.63     | V                | @ 3A                                                                    |
|                                                           | 0.74     | V                | @ 6A                                                                    |
| $I_{RM}$ Max. Reverse Leakage Current<br>* See Fig. 2 (1) | 1        | mA               | $T_J = 25^\circ\text{C}$                                                |
|                                                           | 4.9      | mA               | $T_J = 125^\circ\text{C}$                                               |
| $V_{F(TO)}$ Threshold Voltage                             | 0.48     | V                | $T_J = T_J \text{ max.}$                                                |
| $r_t$ Forward Slope Resistance                            | 30.89    | m $\Omega$       |                                                                         |
| $C_T$ Typical Junction Capacitance                        | 92       | pF               | $V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$ |
| $L_S$ Typical Series Inductance                           | 5.0      | nH               | Measured lead to lead 5mm from package body                             |
| $dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )        | 10,000   | V/ $\mu\text{s}$ |                                                                         |

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

### Thermal-Mechanical Specifications

| Parameters                                          | 30WQ10FN   | Units              | Conditions                |
|-----------------------------------------------------|------------|--------------------|---------------------------|
| $T_J$ Max. Junction Temperature Range               | -40 to 150 | $^\circ\text{C}$   |                           |
| $T_{stg}$ Max. Storage Temperature Range            | -40 to 150 | $^\circ\text{C}$   |                           |
| $R_{thJC}$ Max. Thermal Resistance Junction to Case | 4.7        | $^\circ\text{C/W}$ | DC operation * See Fig. 4 |
| wt Approximate Weight                               | 0.3(0.01)  | g(oz.)             |                           |
| Case Style                                          | D - PAK    |                    | Similar to TO-252AA       |

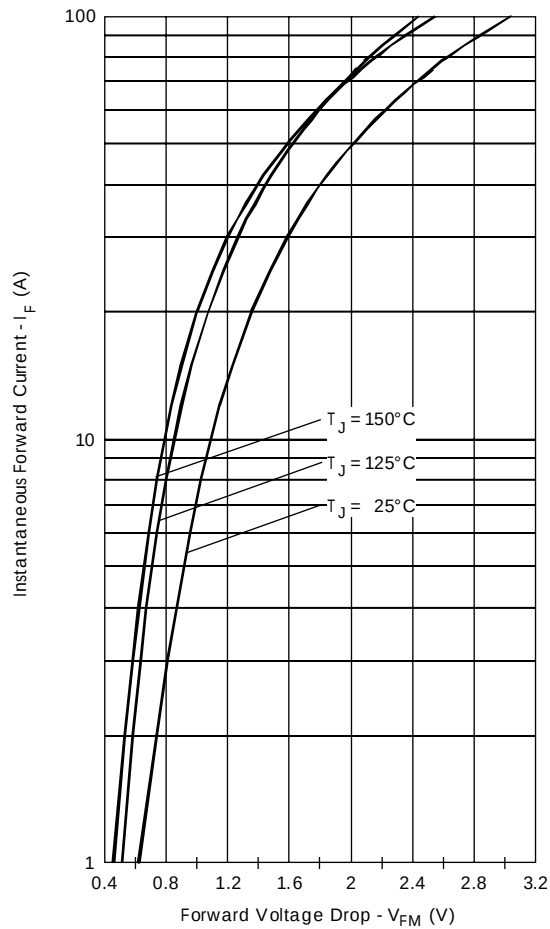


Fig. 1 - Maximum Forward Voltage Drop Characteristics

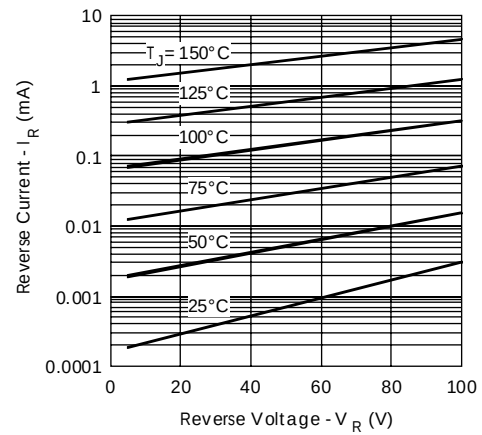


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

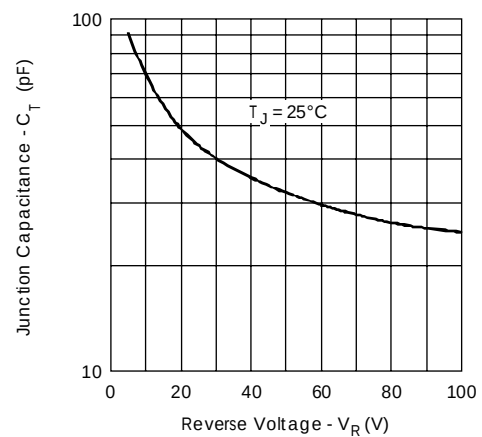


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

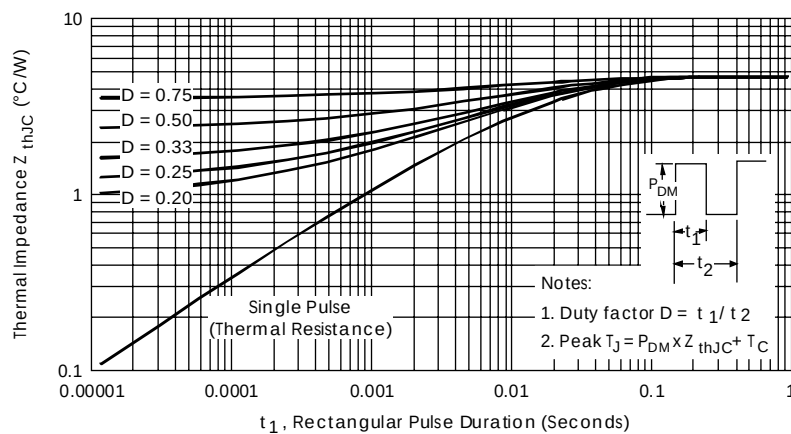


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

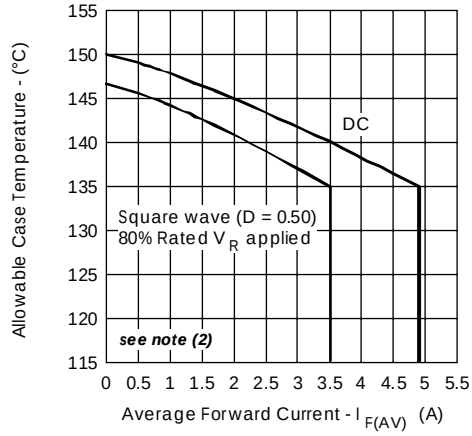


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

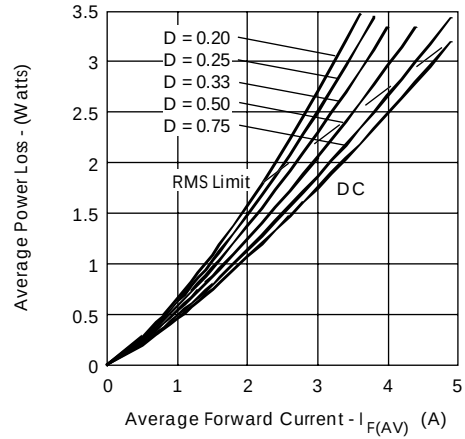


Fig. 6 - Forward Power Loss Characteristics

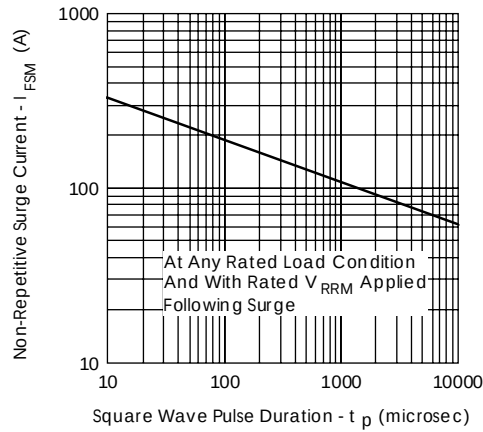


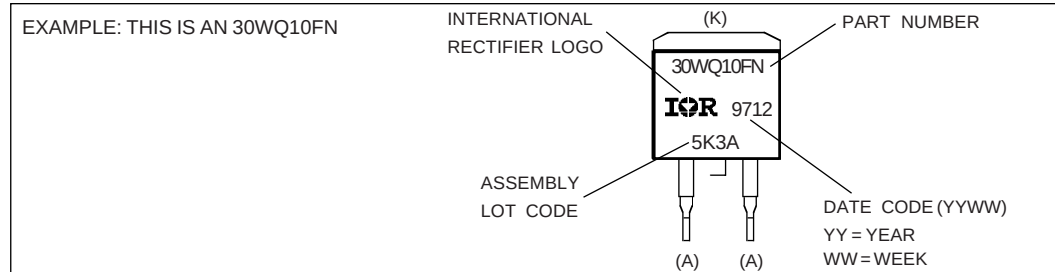
Fig. 7 - Maximum Non-Repetitive Surge Current

(2) Formula used:  $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$ ;

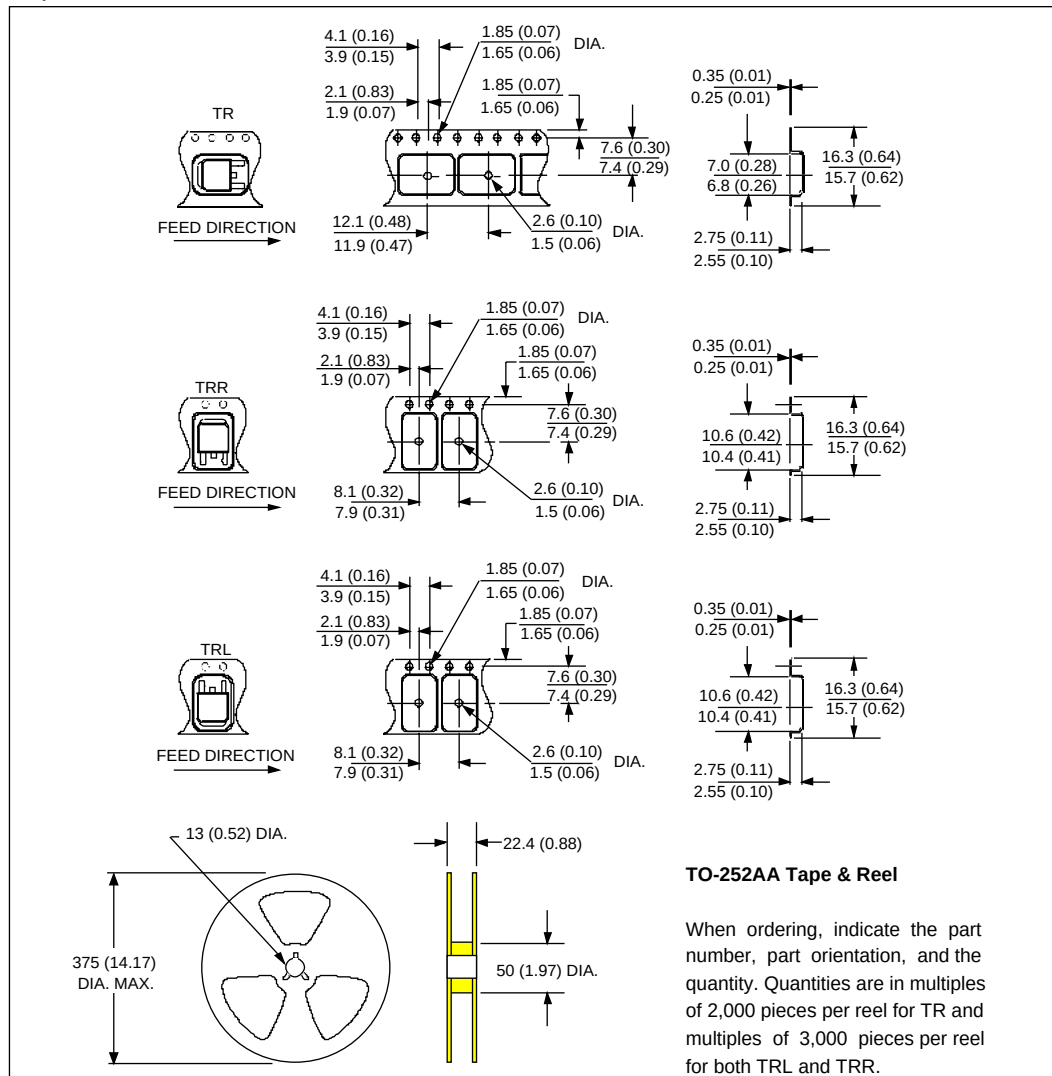
$P_d$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

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

## Marking Information



## Tape & Reel Information



30WQ10FN

PD-20523 rev. B 10/98

International  
**IOR** Rectifier

International  
**IOR** Rectifier

**WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245 U.S.A. Tel: (310) 322 3331. Fax: (310) 322 3332.  
**EUROPEAN HEADQUARTERS:** Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020. Fax: ++ 44 1883 733408.  
**IR CANADA:** 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. Fax: (905) 475 8801.  
**IR GERMANY:** Saalburgstrasse 157, 61350 Bad Homburg. Tel: ++ 49 6172 96590. Fax: ++ 49 6172 965933.  
**IR ITALY:** Via Liguria 49, 10071 Borgaro, Torino. Tel: ++ 39 11 4510111. Fax: ++ 39 11 4510220.  
**IR FAR EAST:** K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.  
**IR SOUTHEAST ASIA:** 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994. Tel: ++ 65 838 4630.  
**IR TAIWAN:** 16 Fl. Suite D.207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan. Tel: 886 2 2377 9936.

<http://www.irf.com>

Fax-On-Demand: +44 1883 733420

Data and specifications subject to change without notice.