

I2124 rev. B 10/99

International  
**IOR** Rectifier

**QUIETIR** Series  
8EWF..S

SURFACE MOUNTABLE  
FAST SOFT RECOVERY  
DIODE

|                                                                                   |                                                                        |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------|
|  | $V_F < 1.2V @ 8A$<br>$t_{rr} = 55ns$<br>$V_{RRM} 200 \text{ to } 600V$ |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------|

Description/Features

The 8EWF..S fast soft recovery **QUIETIR** rectifier series has been optimized for combined short reverse recovery time, low forward voltage drop and low leakage current

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

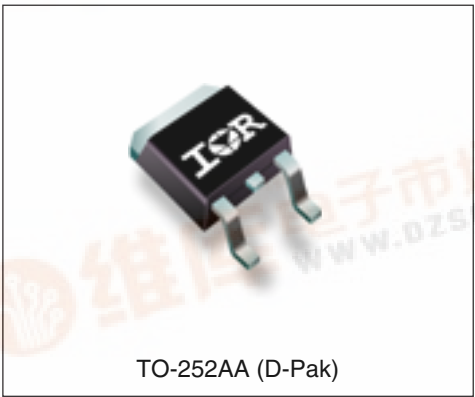
Typical applications are both:

- Output rectification and freewheeling diode in inverters, choppers and converters.
- Input rectifications where severe restrictions on conducted EMI should be met.

Major Ratings and Characteristics

| Characteristics                 | 8EWF..S    | Units       |
|---------------------------------|------------|-------------|
| $I_{F(AV)}$ Sinusoidal waveform | 8          | A           |
| $V_{RRM}$                       | 200 to 600 | V           |
| $I_{FSM}$                       | 170        | A           |
| $V_F @ 8A, T_J = 25^{\circ}C$   | 1.2        | V           |
| $t_{rr} @ 1A, 100A/\mu s$       | 55         | ns          |
| $T_J$                           | -40 to 150 | $^{\circ}C$ |

Package Outline



## 8EWF..S QUIETIR Series

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### Voltage Ratings

| Part Number | $V_{RRM}$ , maximum<br>peak reverse voltage<br>V | $V_{RSM}$ , maximum non repetitive<br>peak reverse voltage<br>V | $I_{RRM}$<br>150°C<br>mA |
|-------------|--------------------------------------------------|-----------------------------------------------------------------|--------------------------|
| 8EWF02S     | 200                                              | 300                                                             | 3                        |
| 8EWF04S     | 400                                              | 500                                                             |                          |
| 8EWF06S     | 600                                              | 700                                                             |                          |

### Absolute Maximum Ratings

| Parameters                                                    | 8EWF..S | Units         | Conditions                                                  |
|---------------------------------------------------------------|---------|---------------|-------------------------------------------------------------|
| $I_{F(AV)}$ Max. Average Forward Current                      | 8       | A             | @ $T_C = 96^\circ\text{C}$ , 180° conduction half sine wave |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive<br>Surge Current | 170     | A             | 10ms Sine pulse, rated $V_{RRM}$ applied                    |
|                                                               | 200     |               | 10ms Sine pulse, no voltage reappplied                      |
| $I^2t$ Max. $I^2t$ for fusing                                 | 140     | $A^2s$        | 10ms Sine pulse, rated $V_{RRM}$ applied                    |
|                                                               | 200     |               | 10ms Sine pulse, no voltage reappplied                      |
| $I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing                   | 2000    | $A^2\sqrt{s}$ | $t = 0.1$ to 10ms, no voltage reappplied                    |

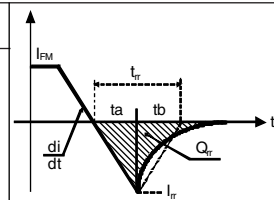
### Electrical Specifications

| Parameters                            | 8EWF..S | Units     | Conditions                     |
|---------------------------------------|---------|-----------|--------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop    | 1.2     | V         | @ 8A, $T_J = 25^\circ\text{C}$ |
| $r_t$ Forward slope resistance        | 16      | $m\Omega$ | $T_J = 150^\circ\text{C}$      |
| $V_{F(TO)}$ Threshold voltage         | 1.13    | V         |                                |
| $I_{RM}$ Max. Reverse Leakage Current | 0.1     | mA        | $T_J = 25^\circ\text{C}$       |
|                                       | 3       |           | $T_J = 150^\circ\text{C}$      |

$V_R = \text{rated } V_{RRM}$

### Typical Reverse Recovery Characteristics

| Parameters                        | 8EWF..S | Units   | Conditions                                                      |
|-----------------------------------|---------|---------|-----------------------------------------------------------------|
| $t_{rr}$ Reverse Recovery Time    | 140     | ns      | $I_F @ 8A_{pk}$<br>@ 25A/ $\mu s$<br>@ $T_J = 25^\circ\text{C}$ |
| $I_{rr}$ Reverse Recovery Current | 2.6     | A       |                                                                 |
| $Q_{rr}$ Reverse Recovery Charge  | 0.25    | $\mu C$ |                                                                 |
| S Snap Factor $t_b/t_a$           | 0.5     | -       |                                                                 |



### Thermal-Mechanical Specifications

| Parameters                                                           | 8EWF..S         | Units  | Conditions     |
|----------------------------------------------------------------------|-----------------|--------|----------------|
| $T_J$ Max. Junction Temperature Range                                | -40 to 150      | °C     |                |
| $T_{stg}$ Max. Storage Temperature Range                             | -40 to 150      | °C     |                |
| Soldering Temperature                                                | 240             | °C     | for 10 seconds |
| $R_{thJC}$ Max. Thermal Resistance Junction to Case                  | 2.5             | °C/W   | DC operation   |
| $R_{thJA}$ Typ. Thermal Resistance Junction to Ambient (PCB Mount)** | 50              | °C/W   |                |
| wt Approximate Weight                                                | 1(0.03)         | g(oz.) |                |
| Case Style                                                           | TO-252AA(D-Pak) |        |                |

\*\*When mounted on 1" square (650mm<sup>2</sup>) PCB of FR-4 or G-10 material 4 oz (140μm) copper 40°C/W  
For recommended footprint and soldering techniques refer to application note #AN-994

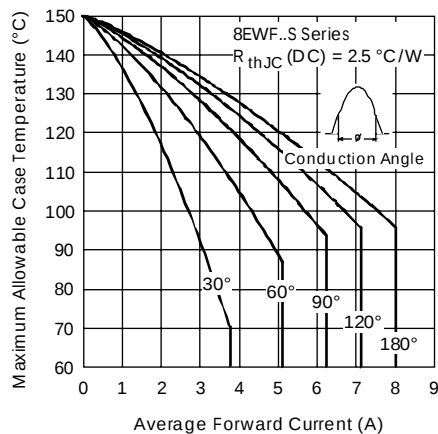


Fig. 1 - Current Rating Characteristics

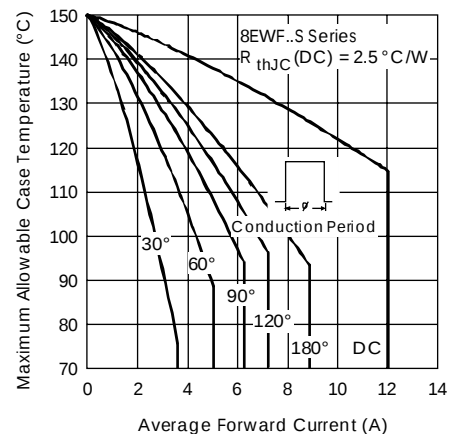


Fig. 2 - Current Rating Characteristics

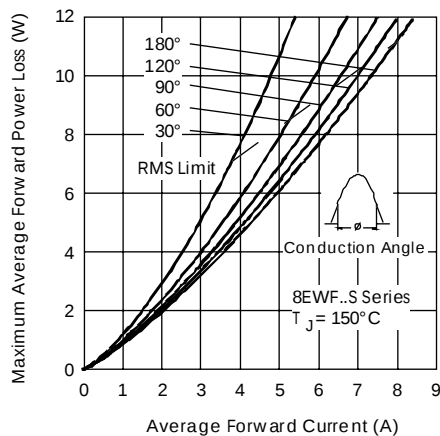


Fig. 3 - Forward Power Loss Characteristics

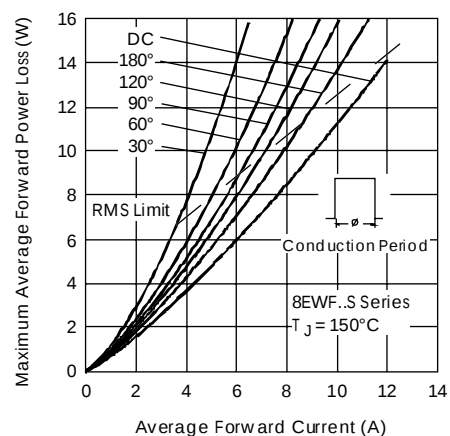


Fig. 4 - Forward Power Loss Characteristics

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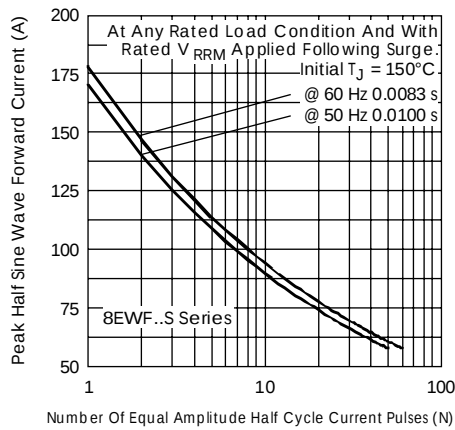


Fig. 5 - Maximum Non-Repetitive Surge Current

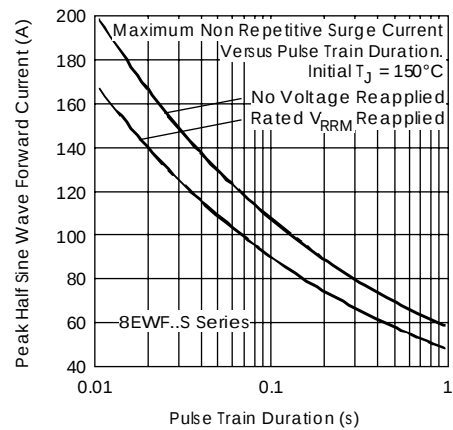


Fig. 6 - Maximum Non-Repetitive Surge Current

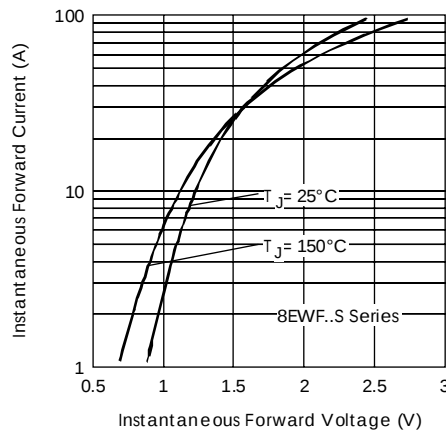


Fig. 7 - Forward Voltage Drop Characteristics

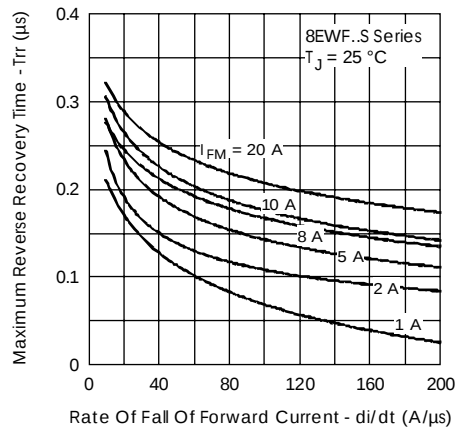


Fig. 8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

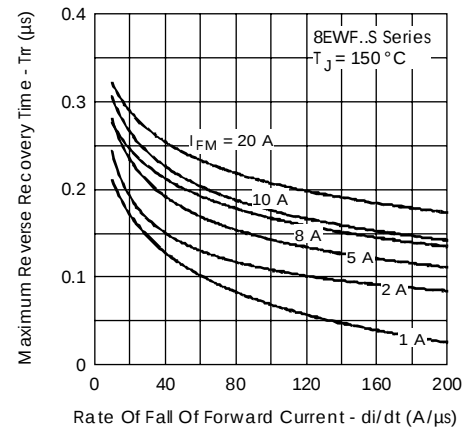


Fig. 9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

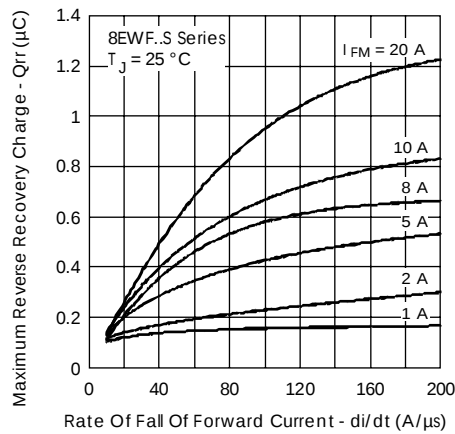


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

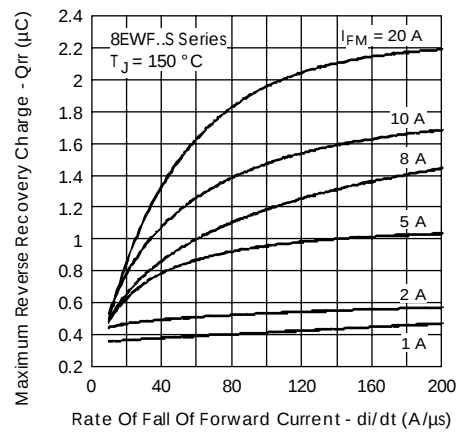


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

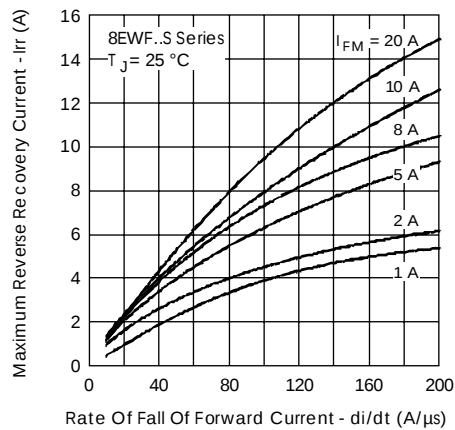


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

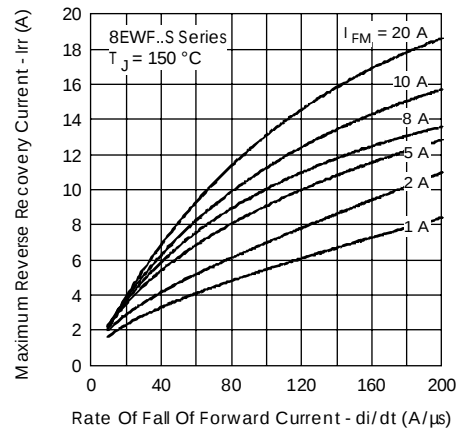


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

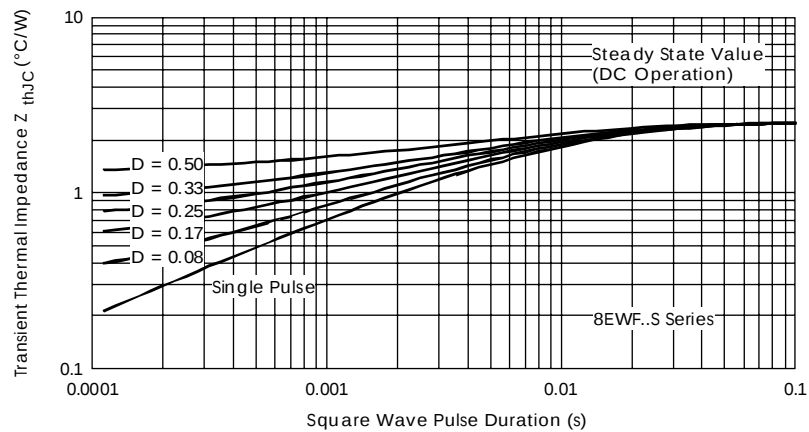


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

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Ordering Information Table

**Device Code**

|   |   |   |   |    |   |     |
|---|---|---|---|----|---|-----|
| 8 | E | W | F | 06 | S | TRL |
| 1 | 2 | 3 | 4 | 5  | 6 | 7   |

**1** - Current Rating

**2** - Circuit Configuration:  
E = Single Diode

**3** - Package:  
W = D-Pak

**4** - Type of Silicon:  
F = Fast Soft Recovery Rectifier

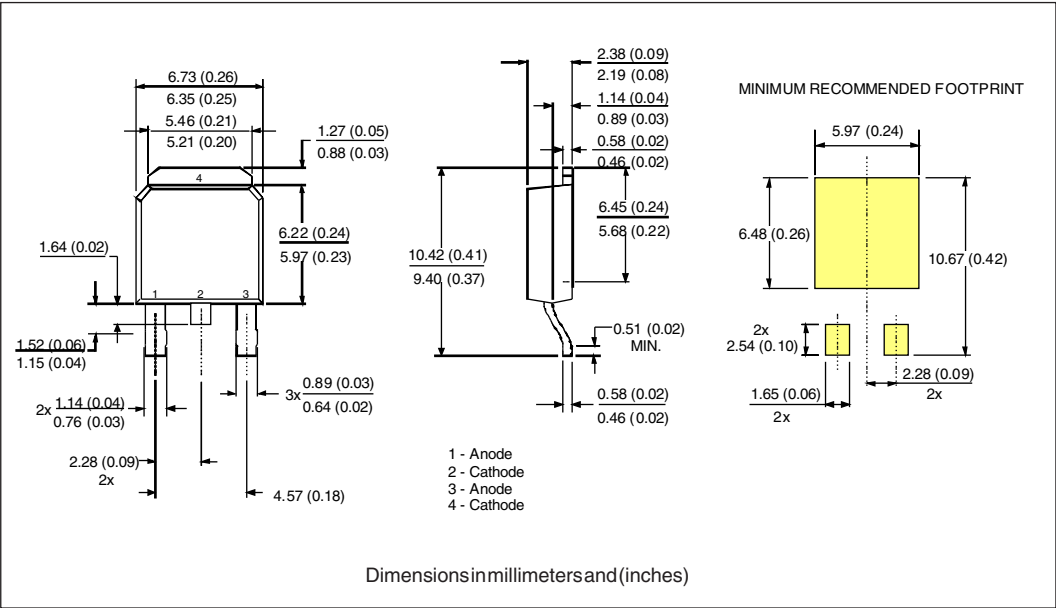
**5** - Voltage code: Code x 100 =  $V_{RRM}$

**6** - S = Surface Mountable

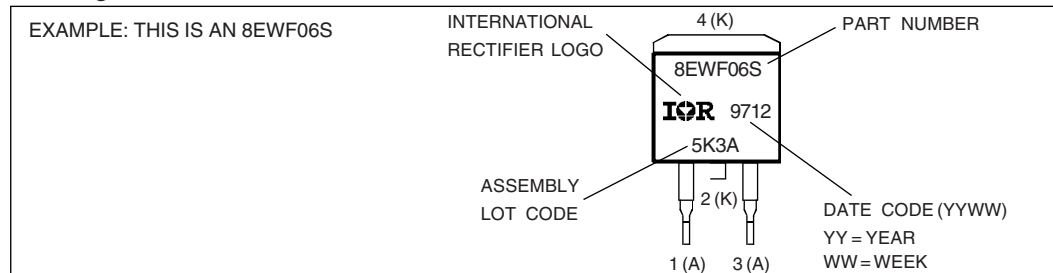
**7** - Tape and Reel Option:  
TRL = Left Orientation Reel  
TRR = Right Orientation Reel

|    |   |      |
|----|---|------|
| 02 | = | 200V |
| 04 | = | 400V |
| 06 | = | 600V |

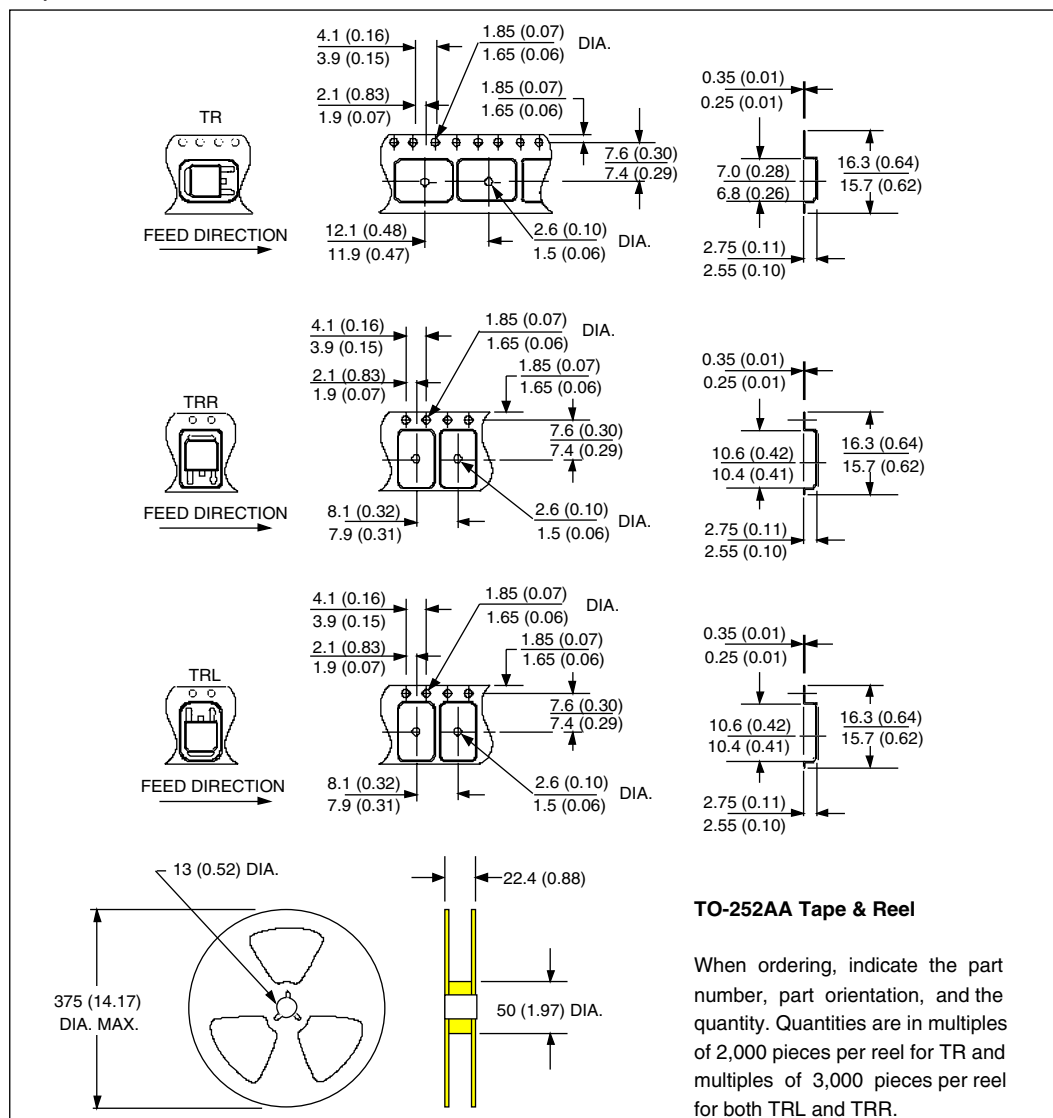
Outline Table



## Marking Information



## Tape & Reel Information



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Data and specifications subject to change without notice.