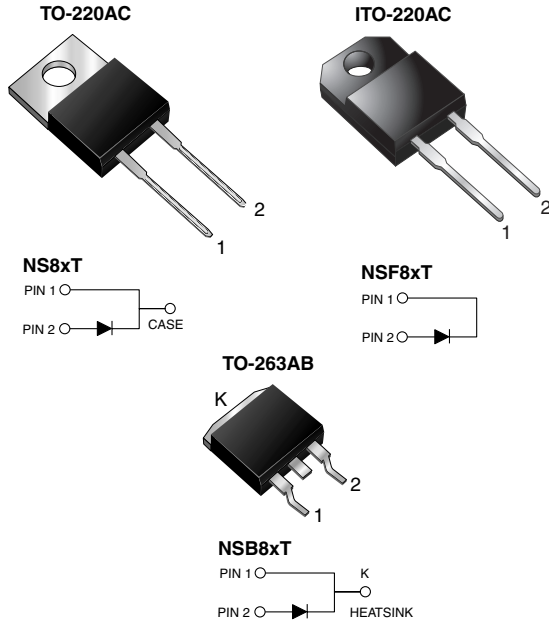


## Glass Passivated General Purpose Plastic Rectifier



### FEATURES

- Glass passivated chip junction
- Low forward voltage drop
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application.

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### PRIMARY CHARACTERISTICS

|                    |                |
|--------------------|----------------|
| $I_{F(AV)}$        | 8.0 A          |
| $V_{RRM}$          | 50 V to 1000 V |
| $I_{FSM}$          | 125 A          |
| $V_F$              | 1.1 V          |
| $T_J \text{ max.}$ | 150 °C         |

### MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)

| PARAMETER                                                                        | SYMBOL         | NS8AT         | NS8BT | NS8DT | NS8GT | NS8JT | NS8KT | NS8MT | UNIT |
|----------------------------------------------------------------------------------|----------------|---------------|-------|-------|-------|-------|-------|-------|------|
| Maximum repetitive peak reverse voltage                                          | $V_{RRM}$      | 50            | 100   | 200   | 400   | 600   | 800   | 1000  | V    |
| Maximum RMS voltage                                                              | $V_{RMS}$      | 35            | 70    | 140   | 280   | 420   | 560   | 700   | V    |
| Maximum DC blocking voltage                                                      | $V_{DC}$       | 50            | 100   | 200   | 400   | 600   | 800   | 1000  | V    |
| Maximum average forward rectified current at $T_C = 100 \text{ °C}$              | $I_{F(AV)}$    | 8.0           |       |       |       |       |       |       | A    |
| Peak forward surge current 8.3 ms single sine-wave superimposed on rated load    | $I_{FSM}$      | 125           |       |       |       |       |       |       | A    |
| Operating junction and storage temperature range                                 | $T_J, T_{STG}$ | - 55 to + 150 |       |       |       |       |       |       | °C   |
| Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1 \text{ min}$ | $V_{AC}$       | 1500          |       |       |       |       |       |       | V    |

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                 |                                                   |                |           |       |       |       |       |       |       |      |
|----------------------------------------------------------------------------|-----------------|---------------------------------------------------|----------------|-----------|-------|-------|-------|-------|-------|-------|------|
| PARAMETER                                                                  | TEST CONDITIONS |                                                   | SYMBOL         | NS8AT     | NS8BT | NS8DT | NS8GT | NS8JT | NS8KT | NS8MT | UNIT |
| Maximum instantaneous forward voltage <sup>(1)</sup>                       | 8.0 A           | T <sub>J</sub> = 25 °C                            | V <sub>F</sub> | 1.1       |       |       |       |       |       |       | V    |
| Maximum DC reverse current at rated DC blocking voltage                    |                 | T <sub>J</sub> = 25 °C<br>T <sub>J</sub> = 100 °C | I <sub>R</sub> | 10<br>100 |       |       |       |       |       |       | μA   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz    |                                                   | C <sub>J</sub> | 55        |       |       |       |       |       |       | pF   |

**Note:**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |      |       |       |                      |
|---------------------------------------------------------------------------------------------|-----------------|------|-------|-------|----------------------|
| PARAMETER                                                                                   | SYMBOL          | NSxT | NSFxT | NSBxT | UNIT                 |
| Typical thermal resistance from junction to case                                            | $R_{\theta JC}$ | 3.0  | 5.0   | 3.0   | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                             |                 |              |               |               |
|---------------------------------------|-----------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N               | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC                              | NS8JT-E3/45                 | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                             | NSF8JT-E3/45                | 1.95            | 45           | 50/tube       | Tube          |
| TO-263AB                              | NSB8JT-E3/45                | 1.77            | 45           | 50/tube       | Tube          |
| TO-263AB                              | NSB8JT-E3/81                | 1.77            | 81           | 800/reel      | Tape reel     |
| TO-220AC                              | NS8JT-E3/45 <sup>(1)</sup>  | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                             | NSF8JT-E3/45 <sup>(1)</sup> | 1.95            | 45           | 50/tube       | Tube          |
| TO-263AB                              | NSB8JT-E3/45 <sup>(1)</sup> | 1.77            | 45           | 50/tube       | Tube          |
| TO-263AB                              | NSB8JT-E3/81 <sup>(1)</sup> | 1.77            | 81           | 800/reel      | Tape reel     |

**Note:**

(1) Automotive grade AEC Q101 qualified

### RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

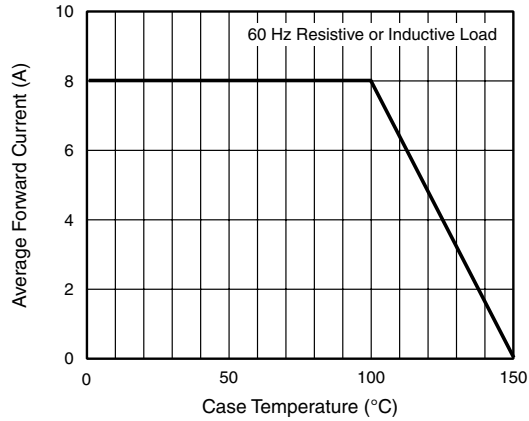


Figure 1. Forward Current Derating Curve

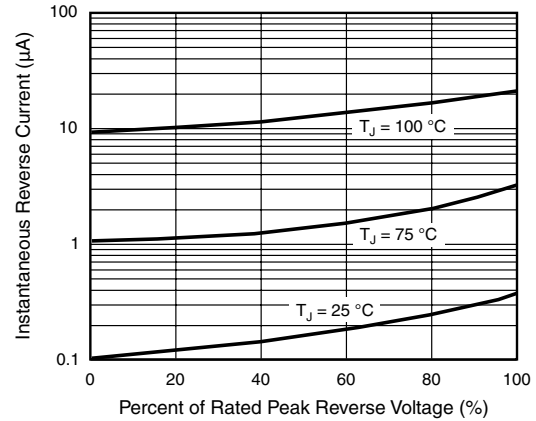


Figure 4. Typical Reverse Characteristics

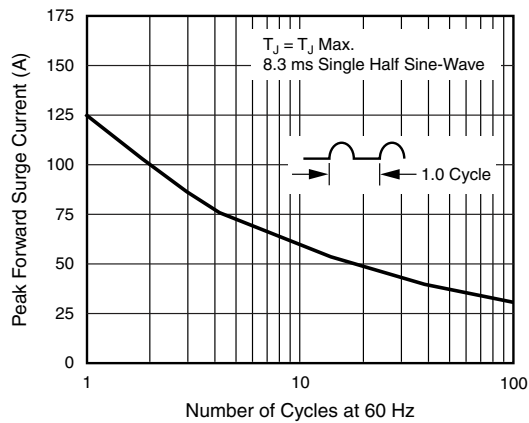


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

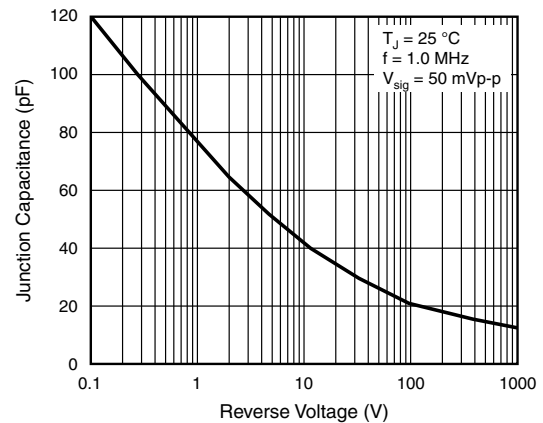


Figure 5. Typical Junction Capacitance Per Leg

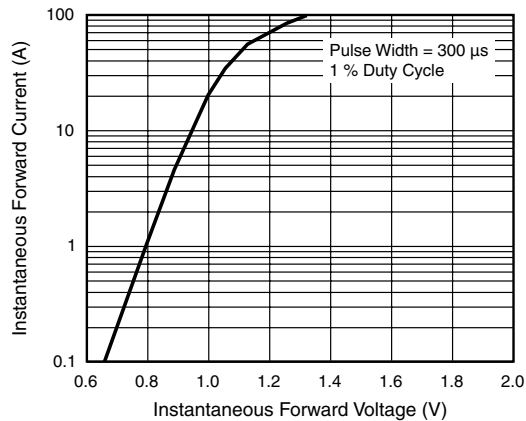
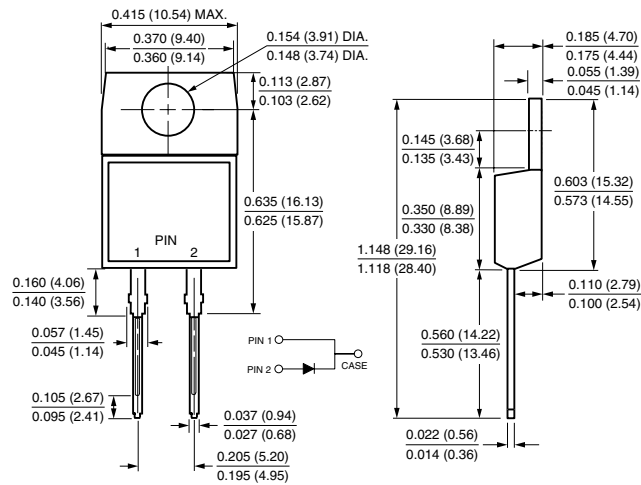


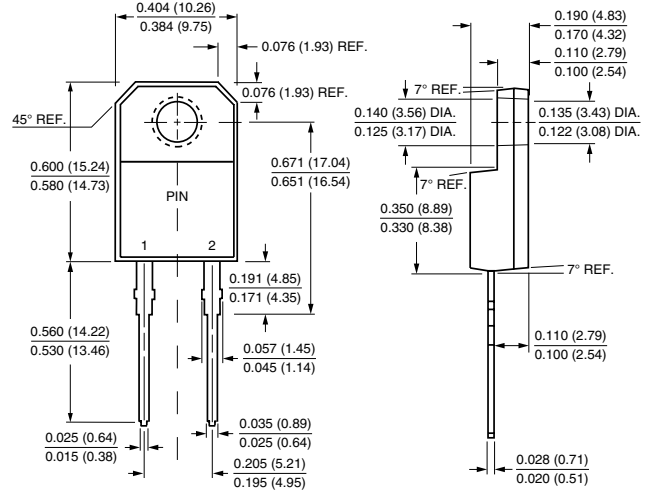
Figure 3. Typical Instantaneous Forward Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

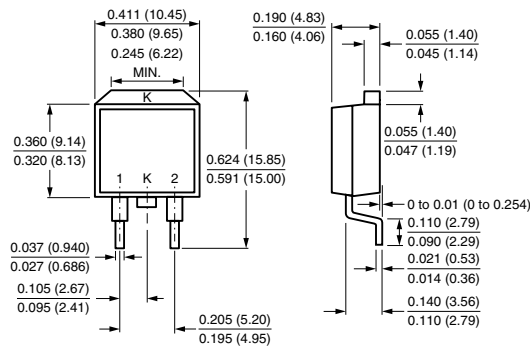
TO-220AC



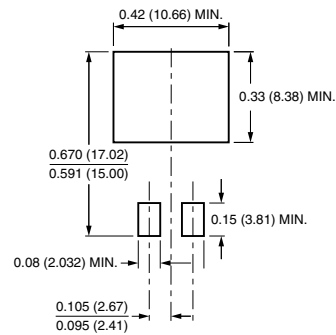
ITO-220AC



TO-263AB



Mounting Pad Layout





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