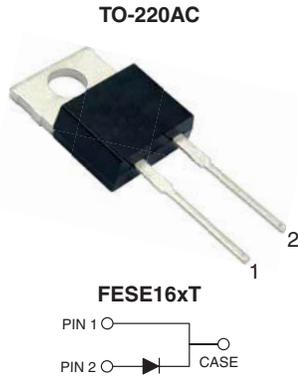


## Ultrafast Plastic Rectifier



### FEATURES

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, DC/DC converters, and other power switching application.

### MECHANICAL DATA

**Case:** TO-220AC

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs max.

| PRIMARY CHARACTERISTICS |                         |
|-------------------------|-------------------------|
| $I_{F(AV)}$             | 16 A                    |
| $V_{RRM}$               | 50 V to 600 V           |
| $I_{FSM}$               | 250 A                   |
| $t_{rr}$                | 35 ns, 50 ns            |
| $V_F$                   | 0.975 V, 1.30 V, 1.50 V |
| $T_J$ max.              | 150 °C                  |
| Package                 | TO-220AC                |
| Diode variations        | Single die              |

| MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)                     |                |             |           |           |           |           |           |           |           |      |
|--|----------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| PARAMETER  | SYMBOL         | FESE 16AT   | FESE 16BT | FESE 16CT | FESE 16DT | FESE 16FT | FESE 16GT | FESE 16HT | FESE 16JT | UNIT |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 50          | 100       | 150       | 200       | 300       | 400       | 500       | 600       | V    |
| Maximum RMS voltage  | $V_{RMS}$      | 35          | 70        | 105       | 140       | 210       | 280       | 350       | 420       | V    |
| Maximum DC blocking voltage  | $V_{DC}$       | 50          | 100       | 150       | 200       | 300       | 400       | 500       | 600       | V    |
| Maximum average forward rectified current at $T_C = 100\text{ °C}$                 | $I_{F(AV)}$    | 16          |           |           |           |           |           |           |           | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 250         |           |           |           |           |           |           |           | A    |
| Operating storage and temperature range  | $T_J, T_{STG}$ | -65 to +150 |           |           |           |           |           |           |           | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |   |                      |           |           |           |           |           |           |           |           |      |               |
|--|---|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|---------------|
| PARAMETER  | TEST CONDITIONS   | SYMBOL               | FESE 16AT | FESE 16BT | FESE 16CT | FESE 16DT | FESE 16FT | FESE 16GT | FESE 16HT | FESE 16JT | UNIT |               |
| Maximum instantaneous forward voltage  | 16 A  | $V_F$ <sup>(1)</sup> | 0.975     |           |           |           | 1.30      |           | 1.50      |           | V    |               |
| Maximum DC reverse current at rated DC blocking voltage                                      | $T_C = 25\text{ }^\circ\text{C}$  | $I_R$                | 10        |           |           |           |           |           |           |           |      | $\mu\text{A}$ |
|  | $T_C = 100\text{ }^\circ\text{C}$   |                      | 500       |           |           |           |           |           |           |           |      |               |
| Maximum reverse recovery time  | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$ | $t_{rr}$             | 35        |           |           |           | 50        |           |           |           | ns   |               |
| Typical junction capacitance   | 4.0 V, 1 MHz  | $C_J$                | 175       |           |           |           |           |           | 145       |           | pF   |               |

**Note**

<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| <b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |           |           |           |           |           |           |           |           |      |                    |
|---|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|--------------------|
| PARAMETER   | SYMBOL          | FESE 16AT | FESE 16BT | FESE 16CT | FESE 16DT | FESE 16FT | FESE 16GT | FESE 16HT | FESE 16JT | UNIT |                    |
| Typical thermal resistance, junction to case  | $R_{\theta JC}$ | 1.2       |           |           |           |           |           |           |           |      | $^\circ\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC                              | FESE16JT-E3/45 | 1.78            | 45           | 50/tube       | Tube          |

**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

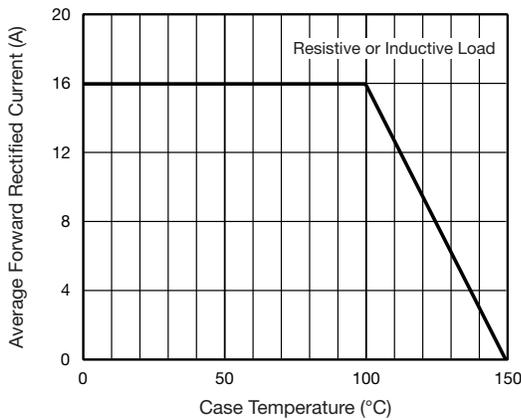


Fig. 1 - Maximum Forward Current Derating Curve

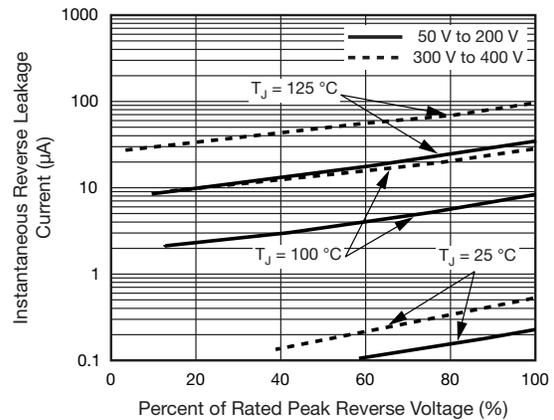


Fig. 4 - Typical Reverse Leakage Characteristics

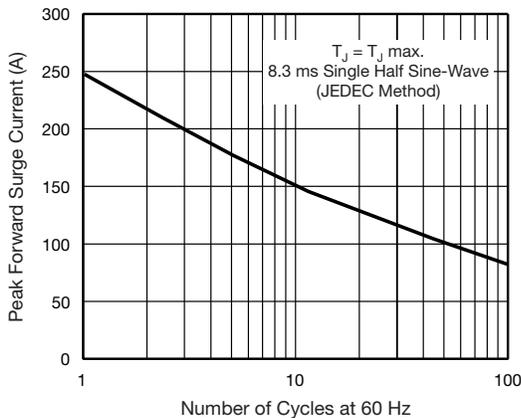


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

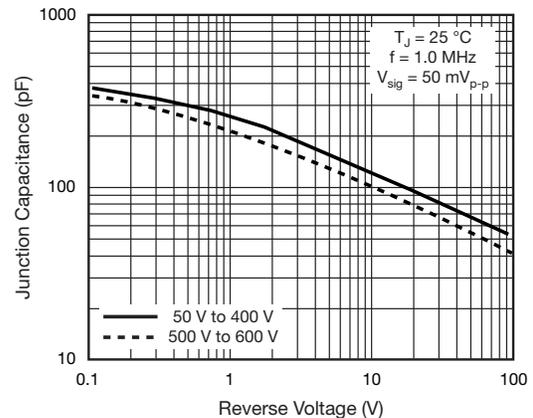


Fig. 5 - Typical Junction Capacitance

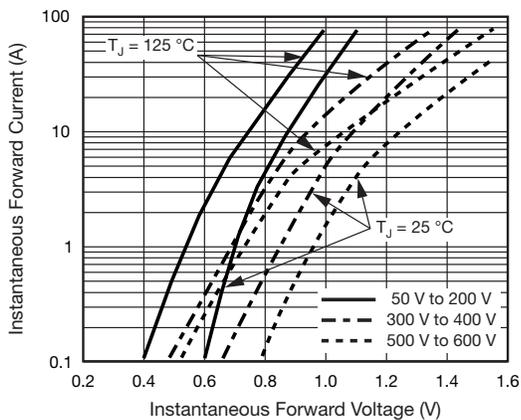
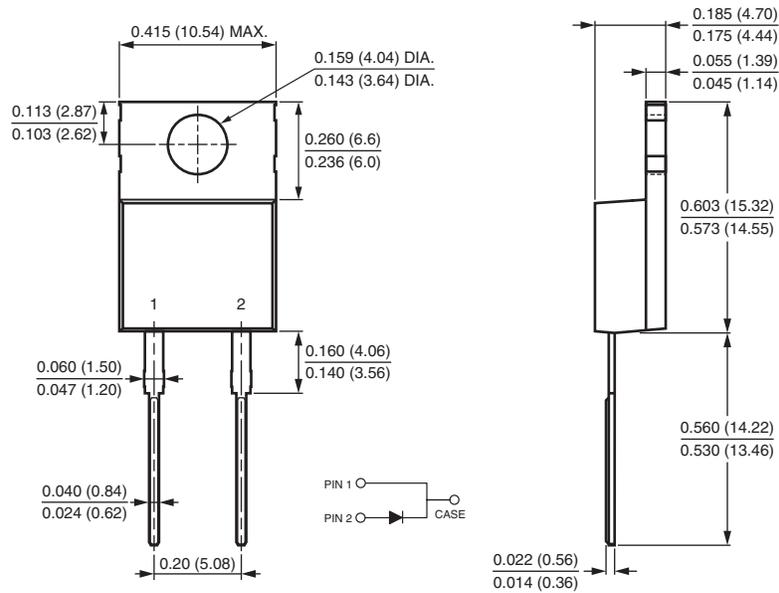


Fig. 3 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC





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