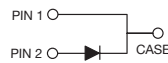


Ultrafast Rectifier


FESE16XT Series

FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Low leakage current
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see 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 maximum

| PRIMARY CHARACTERISTICS | |
|-------------------------|-----------------|
| $I_{F(AV)}$ | 16 A |
| V_{RRM} | 50 V to 400 V |
| I_{FSM} | 250 A |
| t_{rr} | 35 ns, 50 ns |
| V_F | 0.975 V, 1.30 V |
| $T_J \text{ max.}$ | 150 °C |

| MAXIMUM RATINGS ($T_A = 25 \text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | |
|--|----------------|---------------|----------|----------|----------|----------|----------|------|
| PARAMETER | SYMBOL | FESE16AT | FESE16BT | FESE16CT | FESE16DT | FESE16FT | FESE16GT | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | 300 | 400 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 105 | 140 | 210 | 280 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | 300 | 400 | V |
| Maximum average forward rectified current at $T_C = 100 \text{ }^\circ\text{C}$ | $I_{F(AV)}$ | 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 |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | |
|--|--|-------------------------------|----------|----------|----------|----------|----------|----------|------|
| PARAMETER | TEST CONDITIONS | SYMBOL | FESE16AT | FESE16BT | FESE16CT | FESE16DT | FESE16FT | FESE16GT | UNIT |
| Maximum instantaneous forward voltage | 16 A | V _F ⁽¹⁾ | 0.975 | | | | 1.30 | | V |
| Maximum DC reverse current | at rated V _R | T _C = 25 °C | 10 | | | | | | μA |
| | | T _C = 100 °C | 500 | | | | | | |
| Maximum reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | t _{rr} | 35 | | | | 50 | | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | C _J | 175 | | | | | | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | |
|---|---------------------------------|----------|----------|----------|----------|----------|----------|------|
| PARAMETER | SYMBOL | FESE16AT | FESE16BT | FESE16CT | FESE16DT | FESE16FT | FESE16GT | UNIT |
| Typical thermal resistance | R _{θJC} | 1.2 | | | | | | °C/W |
| | R _{θJA} ⁽¹⁾ | 50 | | | | | | |

Note

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/R_{θJA}

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC | FESE16GT-E3/45 | 1.86 | 45 | 50/tube | Tube |

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

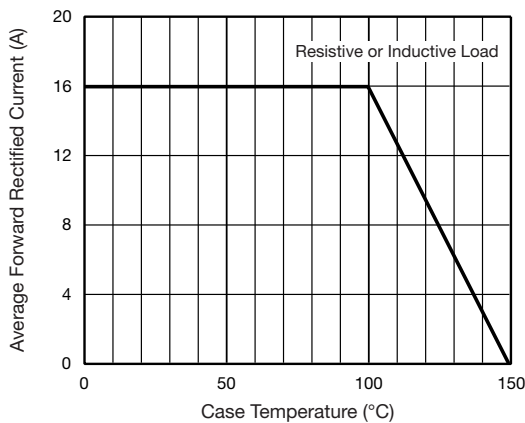


Fig. 1 - Maximum Forward Current Derating Curve

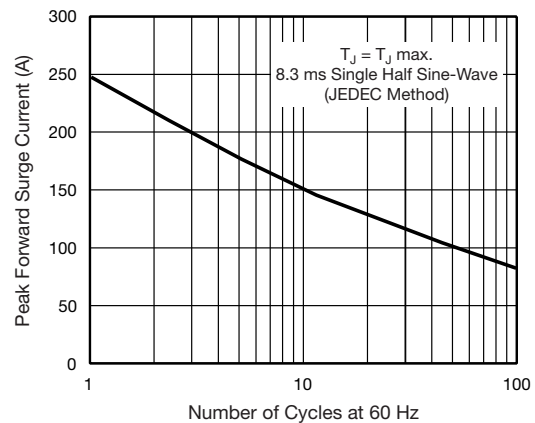


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

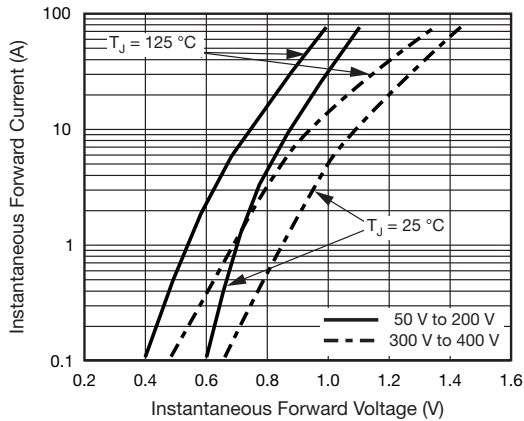


Fig. 3 - Typical Instantaneous Forward Characteristics

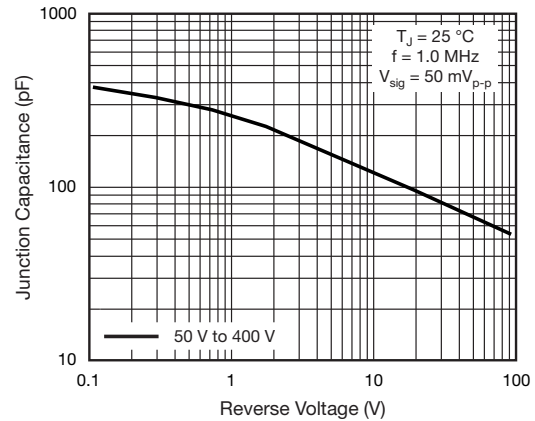


Fig. 5 - Typical Junction Capacitance

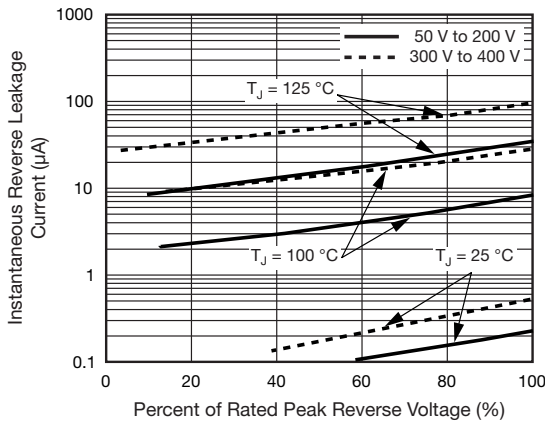
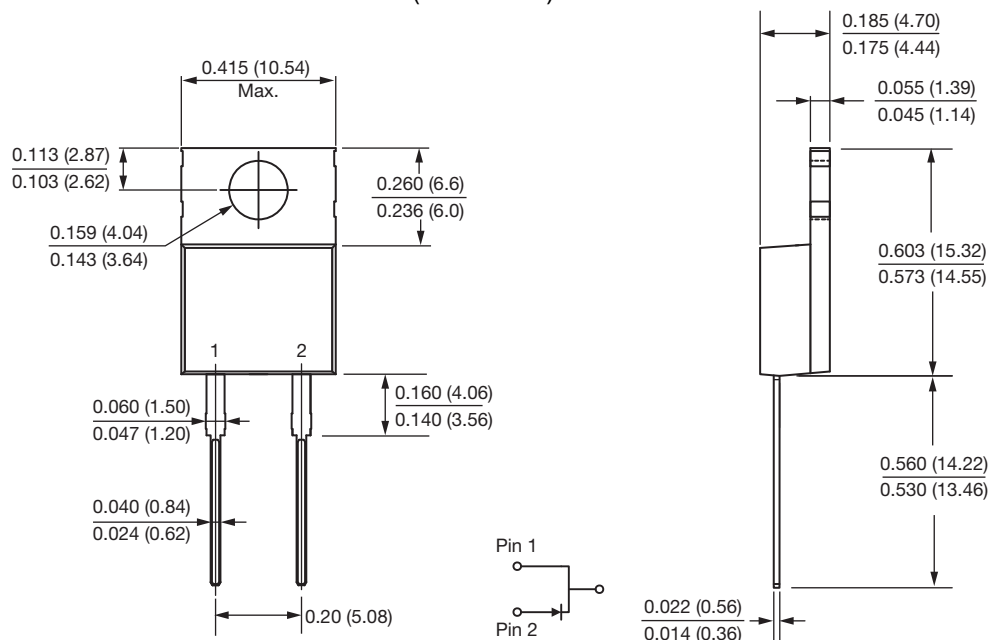


Fig. 4 - Typical Reverse Leakage Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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