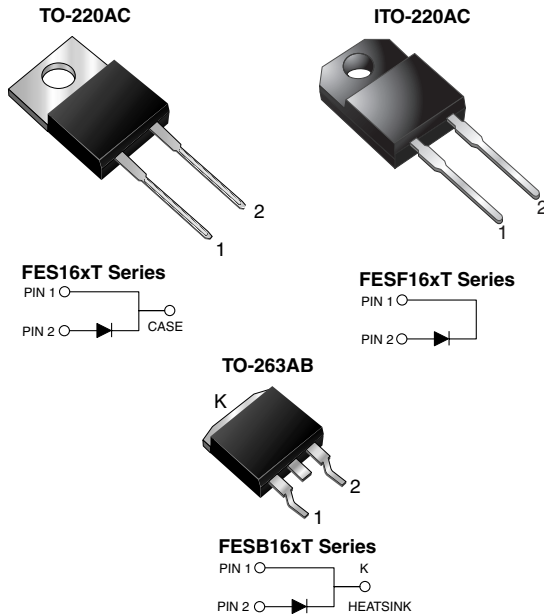


Ultrafast Plastic Rectifier



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- 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 high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching 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

| | |
|--------------------|-------------------------|
| $I_{F(AV)}$ | 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 |
| $T_J \text{ max.}$ | 150 °C |

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)

| PARAMETER | SYMBOL | FES 16AT | FES 16BT | FES 16CT | FES 16DT | FES 16FT | FES 16GT | FES 16HT | FES 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 $T_C = 100$ °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 |
| Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1$ min | V_{AC} | 1500 | | | | | | | | V |

FES(F,B)16AT thru FES(F,B)16JT

Vishay General Semiconductor



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

Note:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|-----------------|-----|------|------|--------------------|
| PARAMETER | SYMBOL | FES | FESF | FESB | UNIT |
| Typical thermal resistance, junction to case | $R_{\theta JC}$ | 1.2 | 1.7 | 1.2 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|-------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC | FES16JT-E3/45 | 1.78 | 45 | 50/tube | Tube |
| ITO-220AC | FESF16JT-E3/45 | 1.80 | 45 | 50/tube | Tube |
| TO-263AB | FESB16JT-E3/45 | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | FESB16JT-E3/81 | 1.33 | 81 | 800/reel | Tape and reel |
| TO-220AC | FES16JT-E3/45 ⁽¹⁾ | 1.78 | 45 | 50/tube | Tube |
| ITO-220AC | FESF16JT-E3/45 ⁽¹⁾ | 1.80 | 45 | 50/tube | Tube |
| TO-263AB | FESB16JT-E3/45 ⁽¹⁾ | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | FESB16JT-E3/81 ⁽¹⁾ | 1.33 | 81 | 800/reel | Tape and reel |

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

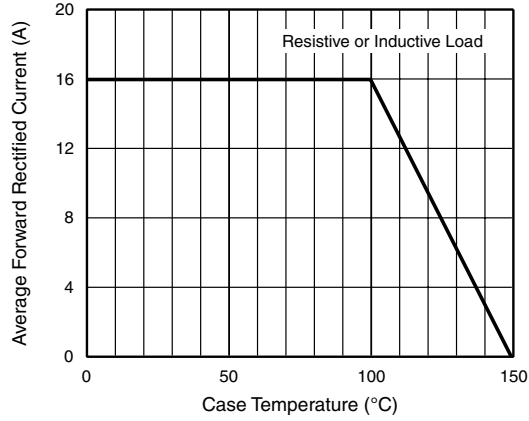


Figure 1. Maximum Forward Current Derating Curve

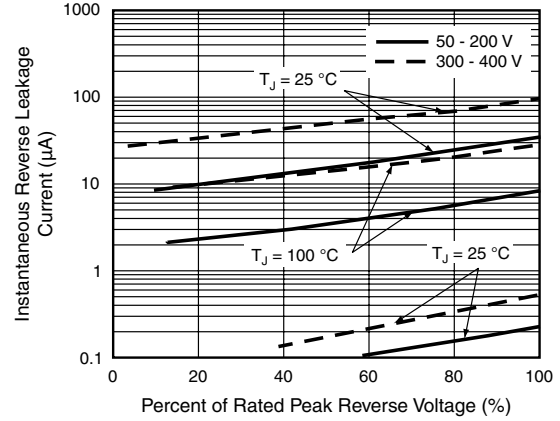


Figure 4. Typical Reverse Leakage Characteristics

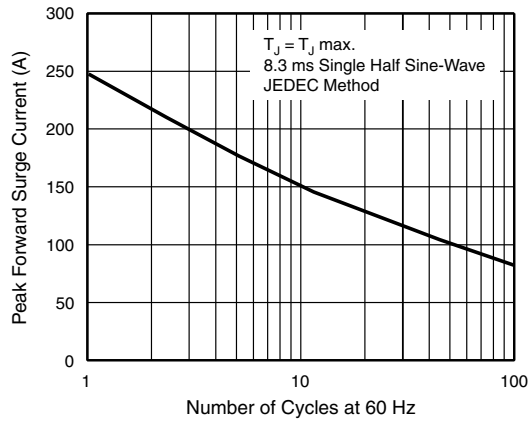


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

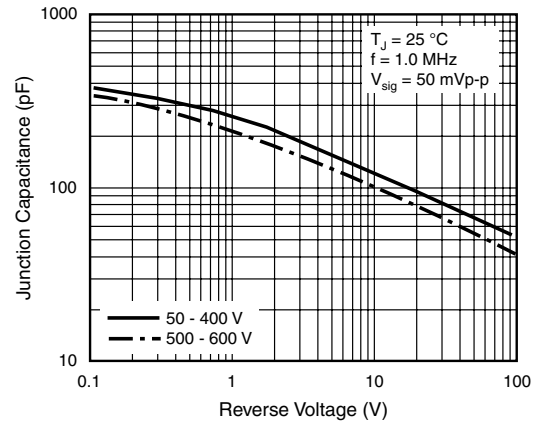


Figure 5. Typical Junction Capacitance

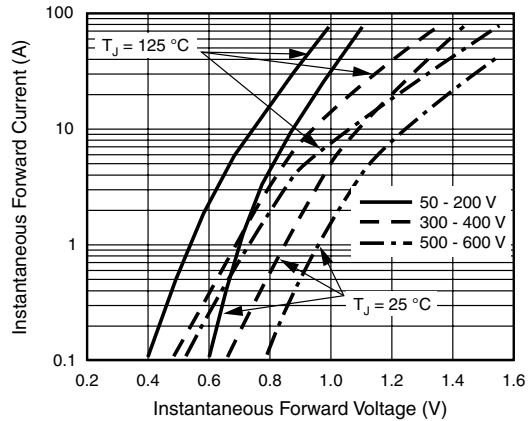
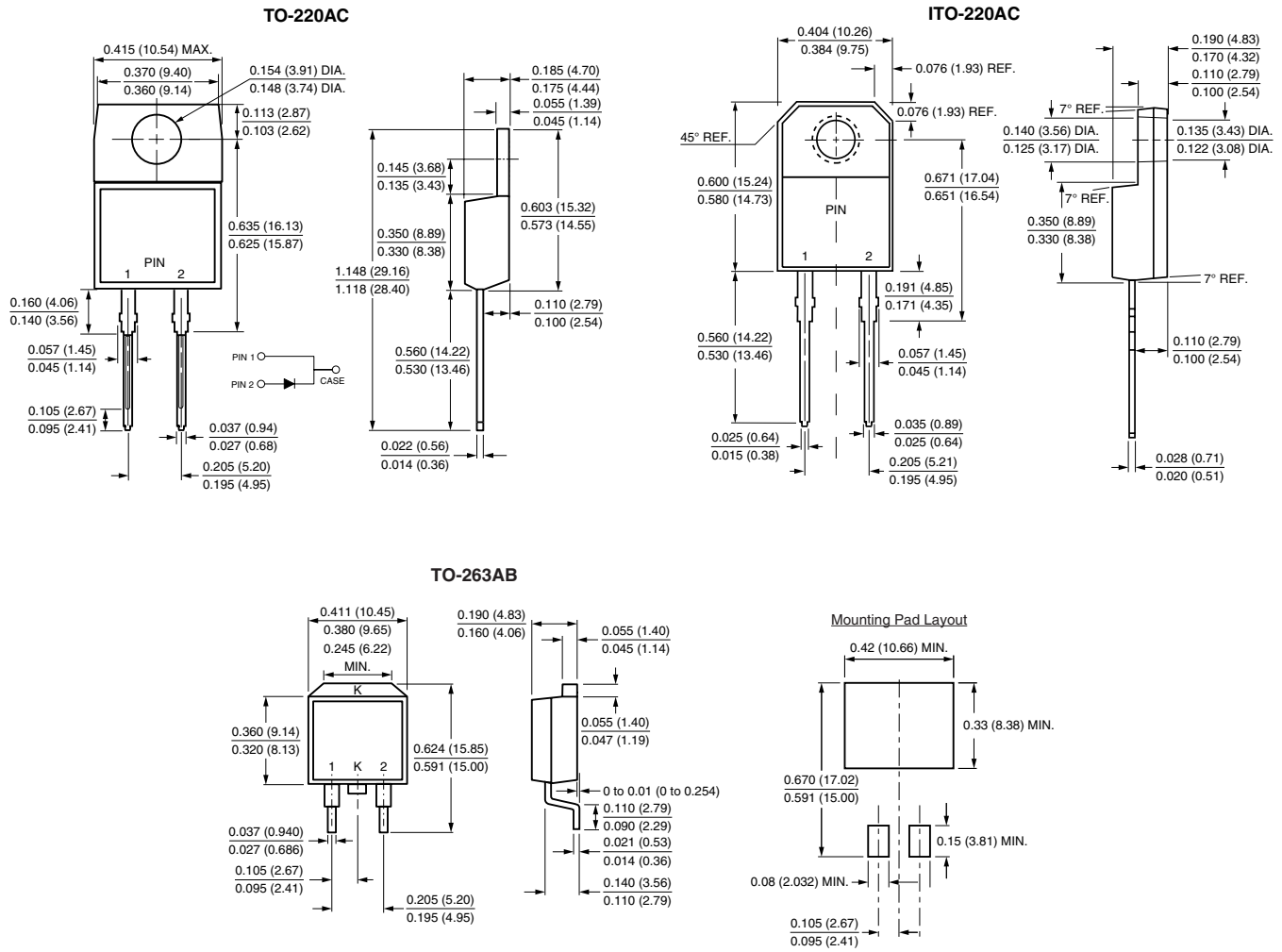


Figure 3. Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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