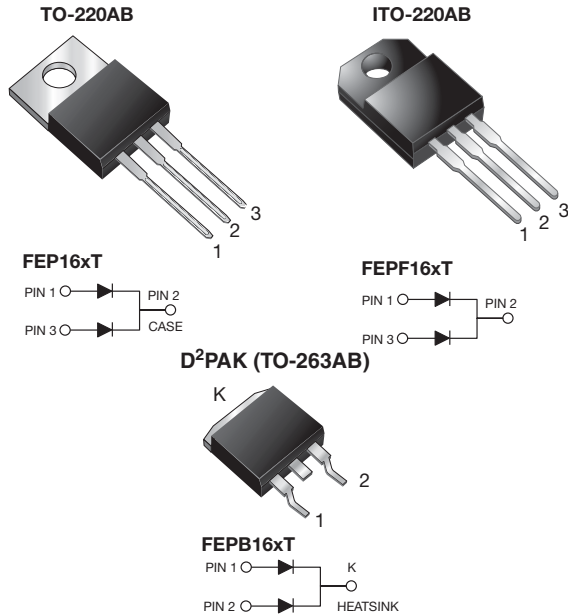




**THE DATASHEET OF
FEP16DT-E3/45**



Dual Common Cathode Ultrafast Plastic Rectifier



RoHS
COMPLIANT

FEATURES

- Power pack
- Glass passivated pellet 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 275 °C max. 10 s, per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHE3 (for ITO-220AB and D²PAK (TO-263AB) package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

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

DESIGN SUPPORT TOOLS AVAILABLE



3D Models

| PRIMARY CHARACTERISTICS | |
|-------------------------|--|
| $I_{F(AV)}$ | 2 x 8.0 A |
| V_{RRM} | 50 V to 600 V |
| I_{FSM} | 200 A, 125 A |
| t_{rr} | 35 ns, 50 ns |
| V_F | 0.95 V, 1.30 V, 1.50 V |
| T_J max. | 150 °C |
| Package | TO-220AB, ITO-220AB, D ² PAK (TO-263AB) |
| Circuit configurations | Common cathode |

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified ("X" denotes revision code e.g. A, B,...)

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs max.

| MAXIMUM RATINGS ($T_C = 25\text{ °C}$ unless otherwise noted) | | | | | | | | | | |
|--|----------------|-------------|---------|---------|---------|---------|---------|---------|---------|------|
| PARAMETER | SYMBOL | FEP16AT | FEP16BT | FEP16CT | FEP16DT | FEP16FT | FEP16GT | FEP16HT | FEP16JT | 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 per diode | I_{FSM} | 200 | | | | 125 | | | | A |
| Operating storage and temperature range | T_J, T_{STG} | -55 to +150 | | | | | | | | °C |
| Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1\text{ min}$ | V_{AC} | 1500 | | | | | | | | V |



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | | | | | | |
|---|---|--|-------------|----------|----------|----------|----------|----------|----------|----------|----------|---------------|----|
| PARAMETER | TEST CONDITIONS | | SYMBOL | FEP 16AT | FEP 16BT | FEP 16CT | FEP 16DT | FEP 16FT | FEP 16GT | FEP 16HT | FEP 16JT | UNIT | |
| Maximum instantaneous forward voltage per diode | 8.0 A | | $V_F^{(1)}$ | 0.95 | | | 1.30 | | 1.50 | | | V | |
| Maximum DC reverse current per diode at rated DC blocking voltage | $T_C = 25\text{ }^\circ\text{C}$ | | I_R | 10 | | | | | | | | μA | |
| | $T_C = 100\text{ }^\circ\text{C}$ | | | 500 | | | | | | | | | |
| Maximum reverse recovery time per diode | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | | t_{rr} | 35 | | | 50 | | | | | ns | |
| Typical junction capacitance per diode | 4.0 V, 1 MHz | | C_J | 85 | | | | | 60 | | | | 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 | FEP | FEPF | FEPB | UNIT |
| Typical thermal resistance from junction to case per diode | $R_{\theta JC}$ | 2.2 | 3.1 | 2.2 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|---|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | FEP16JT-E3/45 | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | FEPF16JT-E3/45 | 1.97 | 45 | 50/tube | Tube |
| TO-263AB | FEPB16JT-E3/45 | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | FEPB16JT-E3/81 | 1.35 | 81 | 800/reel | Tape and reel |
| ITO-220AB | FEPF16JT <small>THE3_A/P</small> ⁽¹⁾ | 1.97 | P | 50/tube | Tube |
| TO-263AB | FEPB16JT <small>THE3_A/P</small> ⁽¹⁾ | 1.35 | P | 50/tube | Tube |
| TO-263AB | FEPB16JT <small>THE3_A/I</small> ⁽¹⁾ | 1.35 | I | 800/reel | Tape and reel |

Note

(1) AEC-Q101 qualified, available in ITO-220AB and TO-263AB package



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

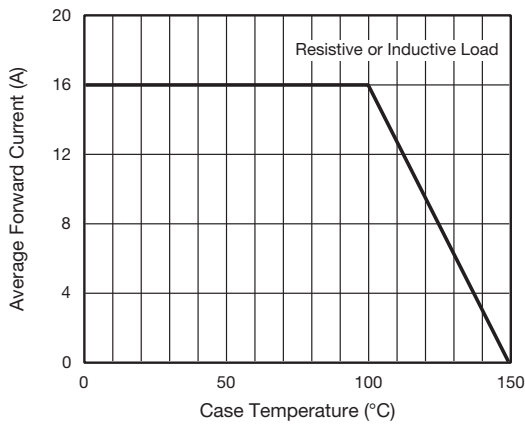


Fig. 1 - Forward Current Derating Curve

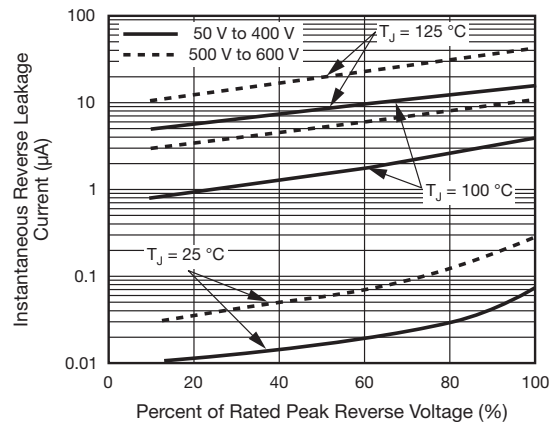


Fig. 4 - Typical Reverse Characteristics Per Diode

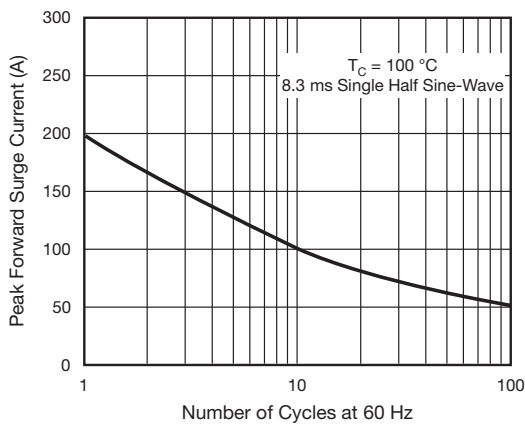


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

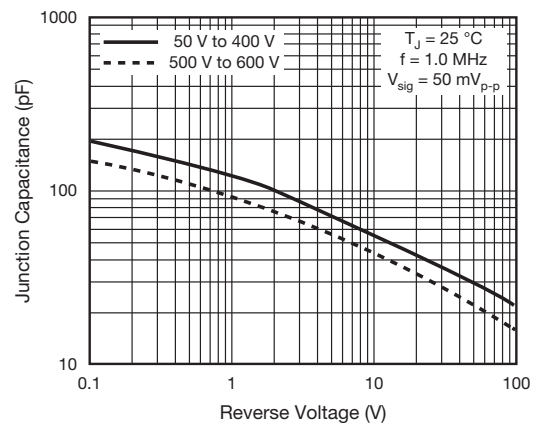


Fig. 5 - Typical Junction Capacitance Per Diode

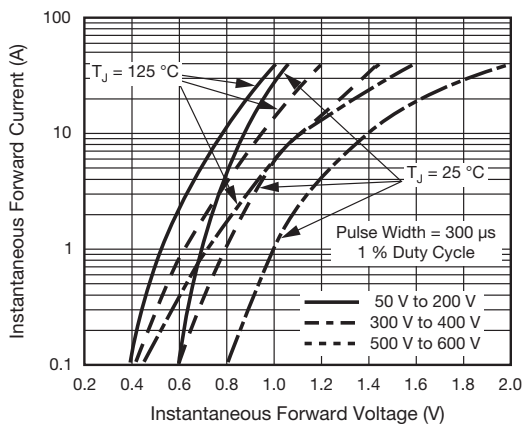
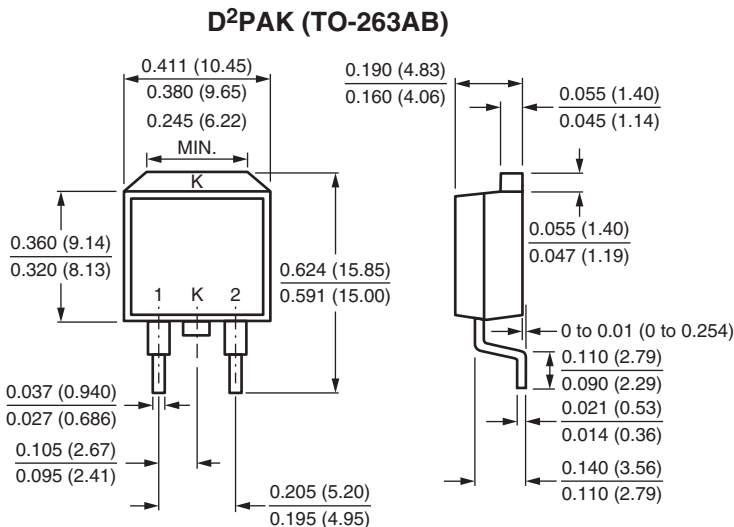
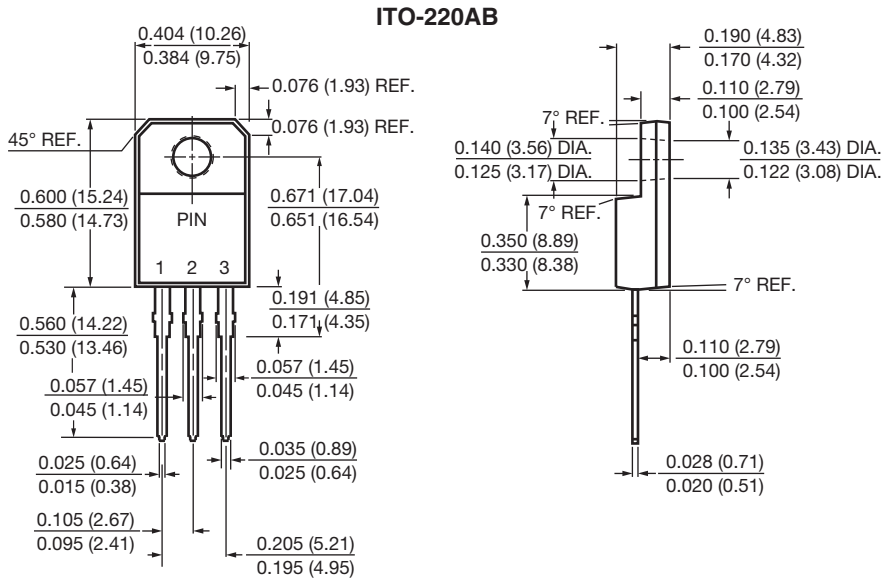
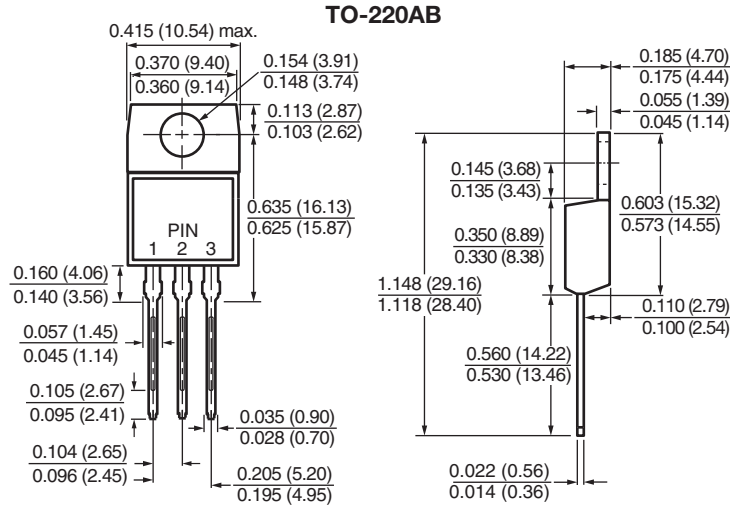


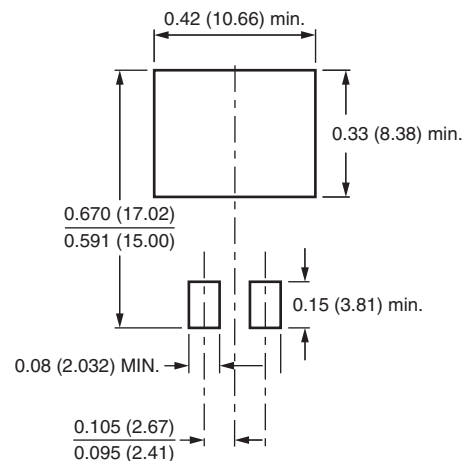
Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Mounting Pad Layout





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