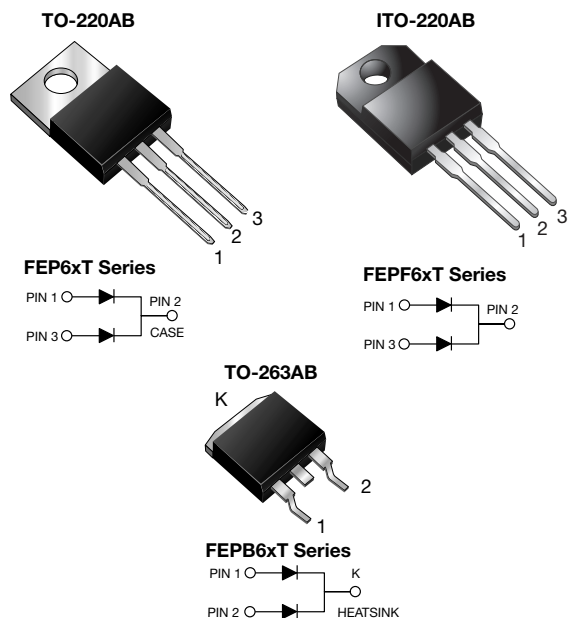


## Dual Common Cathode Ultrafast Rectifier



### FEATURES

- Power pack
- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low leakage current
- 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
- 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-220AB, ITO-220AB, TO-263AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

**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.

| PRIMARY CHARACTERISTICS |                               |
|-------------------------|-------------------------------|
| $I_{F(AV)}$             | 6.0 A                         |
| $V_{RRM}$               | 50 V to 200 V                 |
| $I_{FSM}$               | 75 A                          |
| $t_{rr}$                | 35 ns                         |
| $V_F$                   | 0.975 V                       |
| $T_J$ max.              | 150 °C                        |
| Package                 | TO-220AB, ITO-220AB, TO-263AB |
| Diode variations        | Common cathode                |

| MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)                               |                |               |        |        |        |      |
|----------------------------------------------------------------------------------------------|----------------|---------------|--------|--------|--------|------|
| PARAMETER                                                                                    | SYMBOL         | FEP6AT        | FEP6BT | FEP6CT | FEP6DT | UNIT |
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$      | 50            | 100    | 150    | 200    | V    |
| Maximum RMS voltage                                                                          | $V_{RMS}$      | 35            | 70     | 105    | 140    | V    |
| Maximum DC blocking voltage                                                                  | $V_{DC}$       | 50            | 100    | 150    | 200    | V    |
| Maximum average forward rectified current at $T_C = 105\text{ °C}$                           | $I_{F(AV)}$    | 6.0           |        |        |        | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 75            |        |        |        | 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 <sub>C</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                               |        |        |        |        |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-------------------------------|--------|--------|--------|--------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL                        | FEP6AT | FEP6BT | FEP6CT | FEP6DT | UNIT |
| Maximum instantaneous forward voltage per diode                            | 3.0 A                                                                    |                         | V <sub>F</sub> <sup>(1)</sup> | 0.975  |        |        |        | V    |
| Maximum DC reverse current at rated DC blocking voltage per diode          |                                                                          | T <sub>C</sub> = 25 °C  | I <sub>R</sub>                | 5.0    |        |        |        | μA   |
|                                                                            |                                                                          | T <sub>C</sub> = 100 °C |                               | 50     |        |        |        |      |
| Maximum reverse recovery time per diode                                    | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 35     |        |        |        | ns   |
| Typical junction capacitance per diode                                     | 4.0 V, 1 MHz                                                             |                         | C <sub>J</sub>                | 28     |        |        |        | pF   |

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

| THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |      |       |       |                      |
|--------------------------------------------------------------------------------------|-----------------|------|-------|-------|----------------------|
| PARAMETER                                                                            | SYMBOL          | FEP6 | FEPF6 | FEPB6 | UNIT                 |
| Typical thermal resistance from junction to case per diode                           | $R_{\theta JC}$ | 3.6  | 5.1   | 3.6   | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) |                              |                 |              |               |               |
|--------------------------------|------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | FEP6DT-E3/45                 | 1.81            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | FEPF6DT-E3/45                | 1.97            | 45           | 50/tube       | Tube          |
| TO-263AB                       | FEPB6DT-E3/45                | 1.33            | 45           | 50/tube       | Tube          |
| TO-263AB                       | FEPB6DT-E3/81                | 1.33            | 81           | 800/reel      | Tape and reel |
| TO-220AB                       | FEP6DTHE3/45 <sup>(1)</sup>  | 1.81            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | FEPF6DTHE3/45 <sup>(1)</sup> | 1.97            | 45           | 50/tube       | Tube          |
| TO-263AB                       | FEPB6DTHE3/45 <sup>(1)</sup> | 1.33            | 45           | 50/tube       | Tube          |
| TO-263AB                       | FEPB6DTHE3/81 <sup>(1)</sup> | 1.33            | 81           | 800/reel      | Tape and reel |

**Note**

(1) AEC-Q101 qualified



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

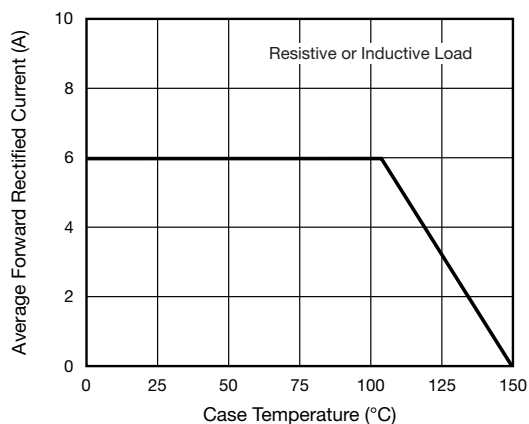


Fig. 1 - Maximum Forward Current Derating Curve

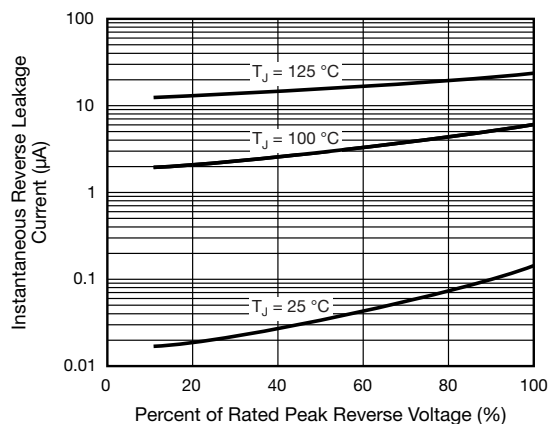


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

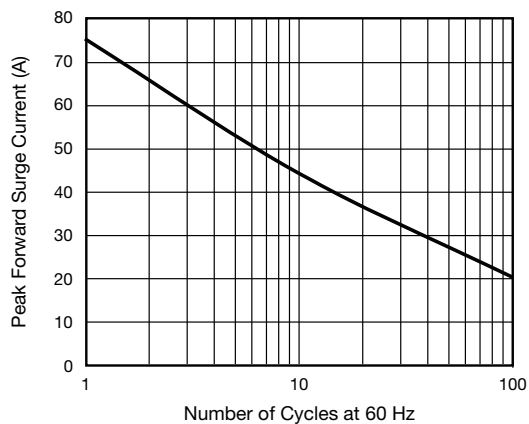


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

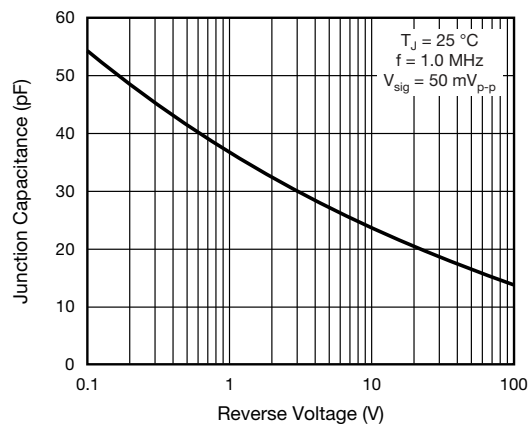


Fig. 5 - Typical Junction Capacitance Per Diode

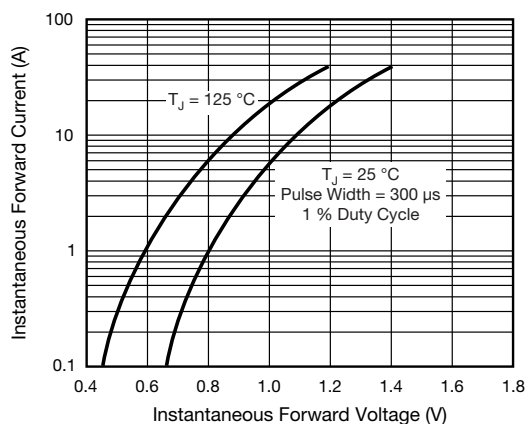
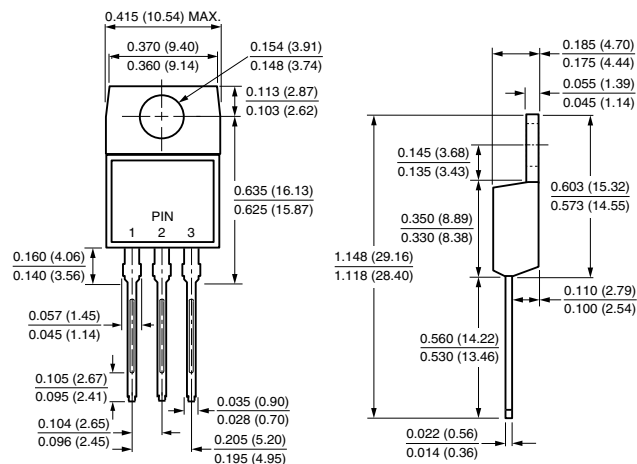


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

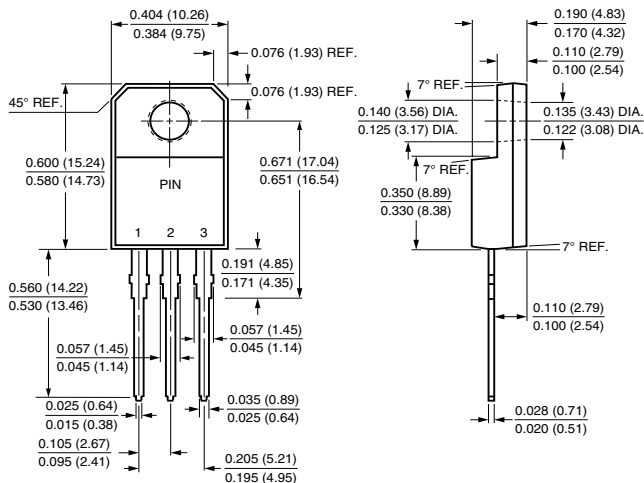


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

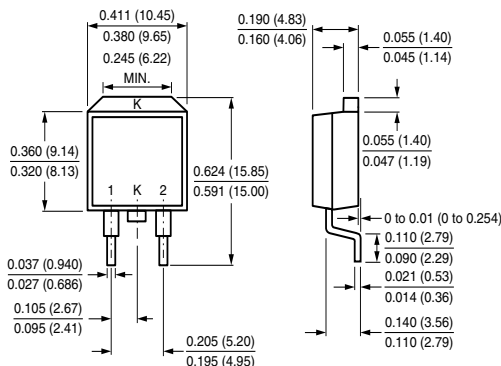
TO-220AB



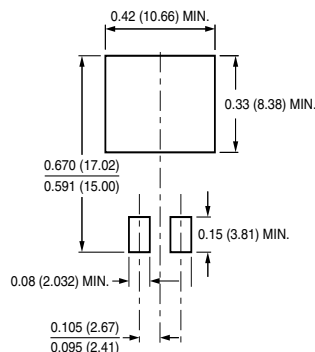
ITO-220AB



TO-263AB



Mounting Pad Layout





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