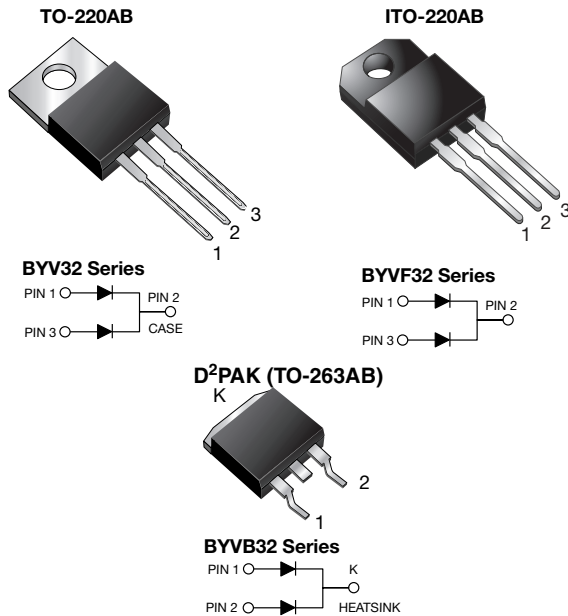


## Dual Common-Cathode Ultrafast Rectifier



### LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS |  |
|-------------------------|--|
| $I_{F(AV)}$             | 18 A   |
| $V_{RRM}$               | 50 V to 200 V                                      |
| $I_{FSM}$               | 150 A  |
| $t_{rr}$                | 25 ns  |
| $V_F$                   | 0.85 V   |
| $T_J \text{ max.}$      | 150 °C   |
| Package                 | TO-220AB, ITO-220AB, D <sup>2</sup> PAK (TO-263AB) |
| Circuit configuration   | Common cathode                                     |

### FEATURES

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low forward voltage drop
- 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)
    - base P/NHM3 (for D<sup>2</sup>PAK (TO-263AB) package)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**  
 Available

### 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, D<sup>2</sup>PAK (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,....)

Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Base P/NHM3 - RoHS-compliant, halogen-free, AEC-Q101 qualified

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

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** as marked

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



| MAXIMUM RATINGS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)                   |                |                       |                         |                         |                                       |                  |
|--|----------------|-----------------------|-------------------------|-------------------------|---------------------------------------|------------------|
| PARAMETER  | SYMBOL         | BYV32-50<br>BYVF32-50 | BYV32-100<br>BYVF32-100 | BYV32-150<br>BYVF32-150 | BYV32-200<br>BYVF32-200<br>BYVB32-200 | 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 $T_C = 125\text{ }^\circ\text{C}$               | $I_{F(AV)}$    | 18                    |                         |                         |                                       | A                |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 150                   |                         |                         |                                       | A                |
| Operating storage and temperature range  | $T_J, T_{STG}$ | -65 to +150           |                         |                         |                                       | $^\circ\text{C}$ |
| 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      | BYV32-50<br>BYVF32-50 | BYV32-100<br>BYVF32-100 | BYV32-150<br>BYVF32-150 | BYV32-200<br>BYVF32-200<br>BYVB32-200 | UNIT          |
| Maximum instantaneous forward voltage per diode                                       | $I_F = 20\text{ A}$  | $T_J = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 1.15                  |                         |                         |                                       | V             |
|   | $I_F = 5.0\text{ A}$   | $T_J = 100\text{ }^\circ\text{C}$ |             | 0.85                  |                         |                         |                                       |               |
| Maximum DC reverse current per diode at rated DC blocking voltage                     |  |                                   | $I_R$       | 10                    |                         |                         |                                       | $\mu\text{A}$ |
|   |  |                                   |             | 600                   |                         |                         |                                       |               |
| Maximum reverse recovery time per diode   | $I_F = 1\text{ A}, V_R = 30\text{ V}$<br>$di/dt = 100\text{ A}/\mu\text{s},$<br>$I_{rr} = 10\% I_{RM}$ |                                   | $t_{rr}$    | 25                    |                         |                         |                                       | ns            |
| Typical junction capacitance per diode  | 4.0 V, 1 MHz   |                                   | $C_J$       | 45                    |                         |                         |                                       | 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          | BYV | BYVF | BYVB | UNIT                      |
| Typical thermal resistance from junction to case per diode                         | $R_{\theta JC}$ | 1.6 | 5.0  | 1.6  | $^\circ\text{C}/\text{W}$ |

| ORDERING INFORMATION (Example) |                                  |                 |              |               |               |
|--------------------------------|----------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                    | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | BYV32-200-E3/45                  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | BYVF32-200-E3/45                 | 1.97            | 45           | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB)  | BYVB32-200-M3/I                  | 1.35            | I            | 800/reel      | Tape and reel |
| ITO-220AB                      | BYVF32-200HE3_A/P <sup>(1)</sup> | 1.97            | P            | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB)  | BYVB32-200HM3/I <sup>(1)</sup>   | 1.35            | I            | 800/reel      | Tape and reel |

**Note**(1) AEC-Q101 qualified, available in ITO-220AB and D<sup>2</sup>PAK (TO-263AB) package



RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

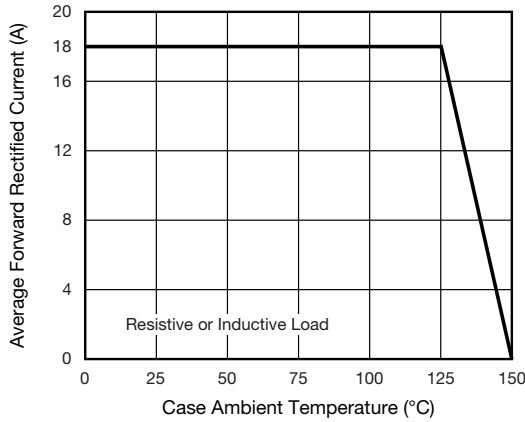


Fig. 1 - Forward Current Derating Curve

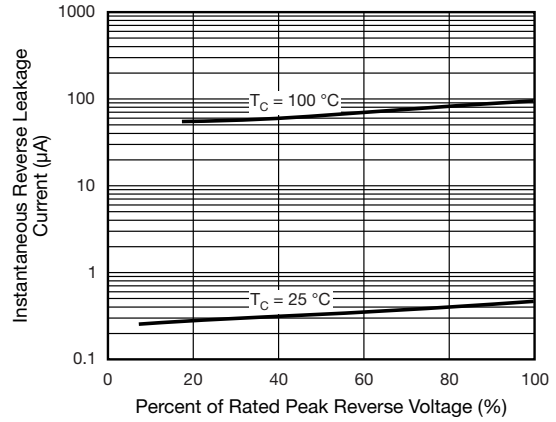


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

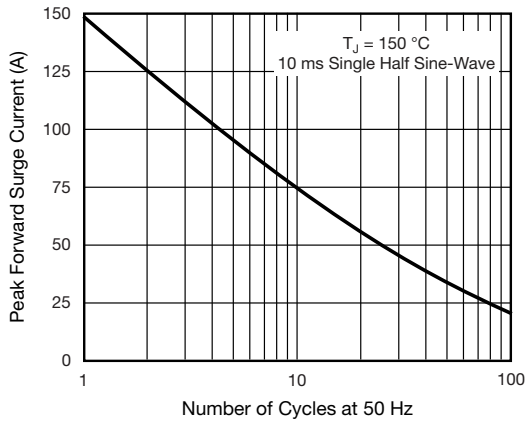


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

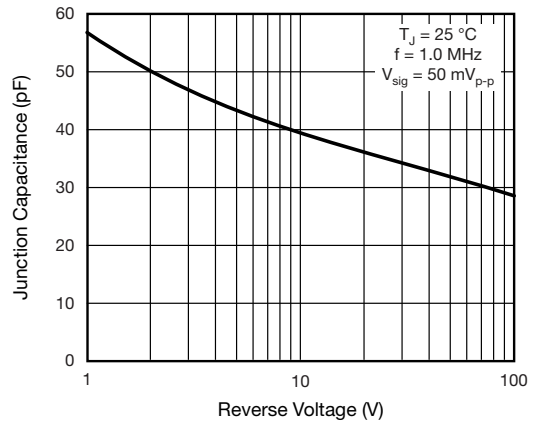


Fig. 5 - Typical Junction Capacitance Per Diode

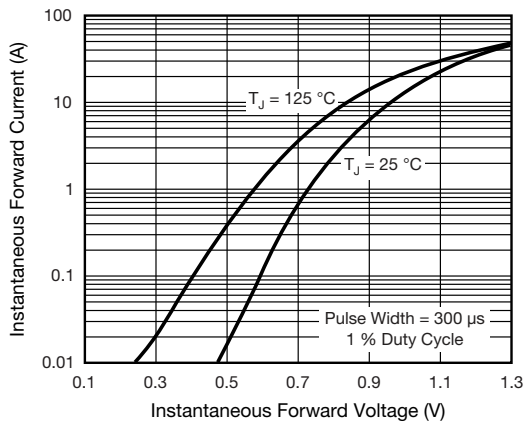
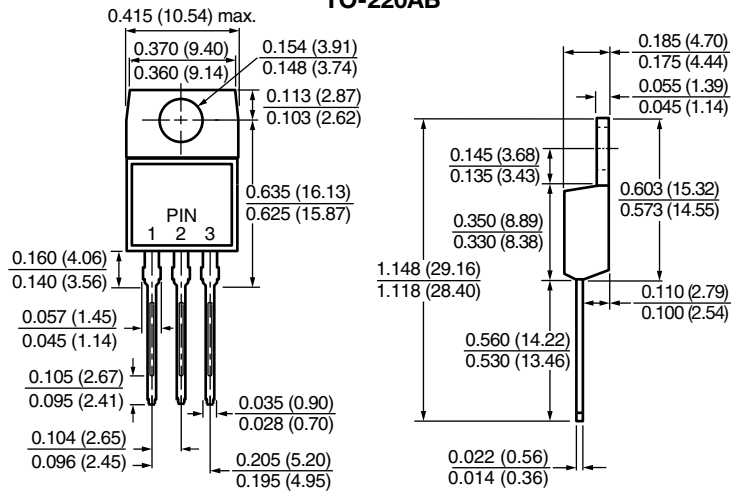


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

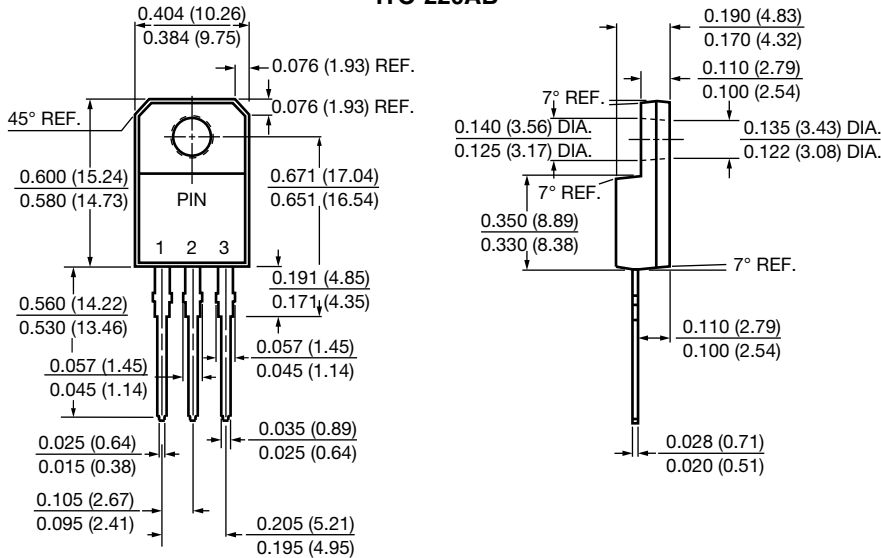


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

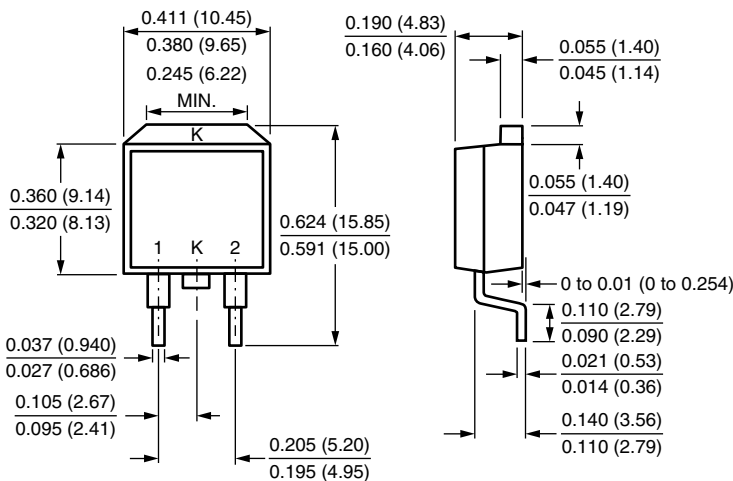
TO-220AB



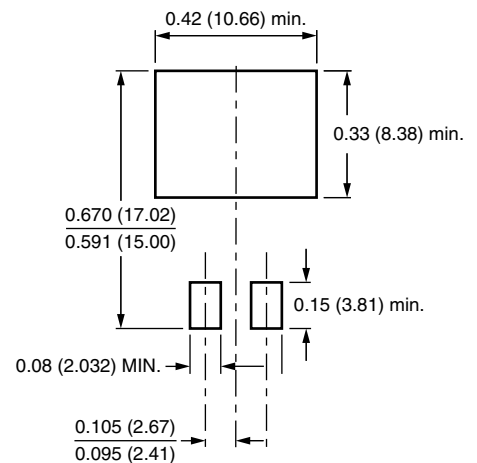
ITO-220AB



D<sup>2</sup>PAK (TO-263AB)



Mounting Pad Layout





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