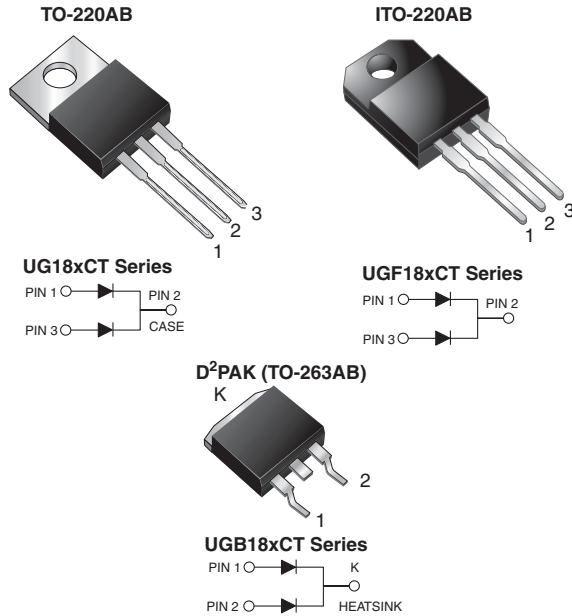


## Dual Common Cathode Ultrafast Plastic Rectifier



### 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 and D²PAK (TO-263AB) package)
- 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.

### DESIGN SUPPORT TOOLS AVAILABLE



| PRIMARY CHARACTERISTICS |                                       |
|-------------------------|---------------------------------------|
| $I_{F(AV)}$             | 18 A                                  |
| $V_{RRM}$               | 50 V to 200 V                         |
| $I_{FSM}$               | 175A                                  |
| $t_{rr}$                | 20 ns                                 |
| $V_F$                   | 0.95 V                                |
| $T_J$ max.              | 150 °C                                |
| Package                 | TO-220AB, ITO-220AB, D²PAK (TO-263AB) |
| Circuit configuration   | Common cathode                        |

### MECHANICAL DATA

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

Molding compound meets UL 94V-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 JESD22-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 maximum

| MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)                               |                |             |         |         |         |      |
|--|----------------|-------------|---------|---------|---------|------|
| PARAMETER  | SYMBOL         | UG18ACT     | UG18BCT | UG18CCT | UG18DCT | UNIT |
| Max. repetitive peak reverse voltage   | $V_{RRM}$      | 50          | 100     | 150     | 200     | V    |
| Max. RMS voltage   | $V_{RMS}$      | 35          | 70      | 105     | 140     | V    |
| Max. DC blocking voltage   | $V_{DC}$       | 50          | 100     | 150     | 200     | V    |
| Max. average forward rectified current at $T_C = 105\text{ °C}$                              | $I_{F(AV)}$    | 18          |         |         |         | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 175         |         |         |         | A    |
| Operating junction and storage temperature range   | $T_J, T_{STG}$ | -65 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          | UG18ACT | UG18BCT | UG18CCT | UG18DCT | UNIT |
| Max. instantaneous forward voltage per diode <sup>(1)</sup>                | 9.0 A  | T <sub>J</sub> = 100 °C | V <sub>F</sub>  | 1.1     |         |         | V       |      |
|  | 20 A   |                         |                 | 1.2     |         |         |         |      |
|  | 5.0 A  |                         |                 | 0.95    |         |         |         |      |
| Max. DC reverse current at rated DC blocking voltage per diode             | T <sub>A</sub> = 25 °C   |                         | I <sub>R</sub>  | 10      |         |         | μA      |      |
|  | T <sub>A</sub> = 100 °C  |                         |                 | 300     |         |         |         |      |
| Max. 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> | 20      |         |         | ns      |      |
| Max. reverse recovery time per diode                                       | I <sub>F</sub> = 9.0 A, V <sub>R</sub> = 30 V, dl/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub> | T <sub>J</sub> = 25 °C  | t <sub>rr</sub> | 30      |         |         | ns      |      |
|  |  | T <sub>J</sub> = 100 °C |                 | 50      |         |         |         |      |
| Max. stored charge per diode   | I <sub>F</sub> = 9.0 A, V <sub>R</sub> = 30 V, dl/dt = 50 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub> | T <sub>J</sub> = 25 °C  | Q <sub>rr</sub> | 20      |         |         | nC      |      |
|  |  | T <sub>J</sub> = 100 °C |                 | 45      |         |         |         |      |
| Typical junction capacitance per diode                                     | at 4.0 V, 1 MHz  |                         | C <sub>J</sub>  | 30      |         |         | pF      |      |

**Notes**

<sup>(1)</sup> Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted) |                  |      |       |       |      |
|---|------------------|------|-------|-------|------|
| PARAMETER   | SYMBOL           | UG18 | UGF18 | UGB18 | UNIT |
| Typical thermal resistance from junction to case per diode              | R <sub>θJC</sub> | 4.0  | 6.0   | 4.0   | °C/W |

| ORDERING INFORMATION (EXAMPLE) |                                |                 |              |               |               |
|--------------------------------|--------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | UG18DCT-E3/45                  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | UGF18DCT-E3/45                 | 2.00            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB18DCT-E3/45                 | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB18DCT-E3/81                 | 1.35            | 81           | 800/reel      | Tape and reel |
| ITO-220AB                      | UGF18DCTHE3_A/P <sup>(1)</sup> | 2.00            | P            | 50/tube       | Tube          |
| TO-263AB                       | UGB18DCTHE3_A/P <sup>(1)</sup> | 1.35            | P            | 50/tube       | Tube          |
| TO-263AB                       | UGB18DCTHE3_A/I <sup>(1)</sup> | 1.35            | I            | 800/reel      | Tape and reel |

**Note**

<sup>(1)</sup> 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)

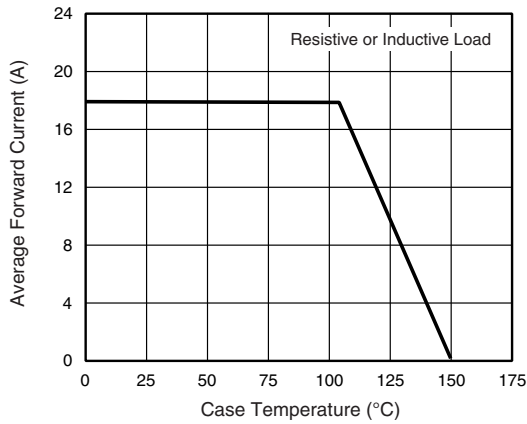


Fig. 1 - Forward Current Derating Curve

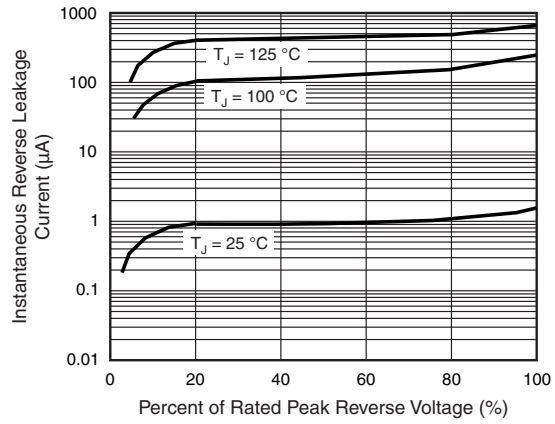


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

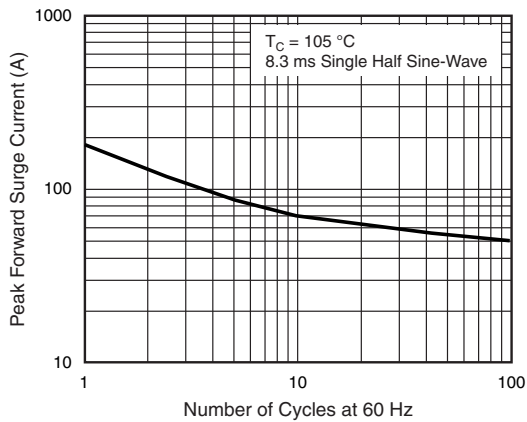


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

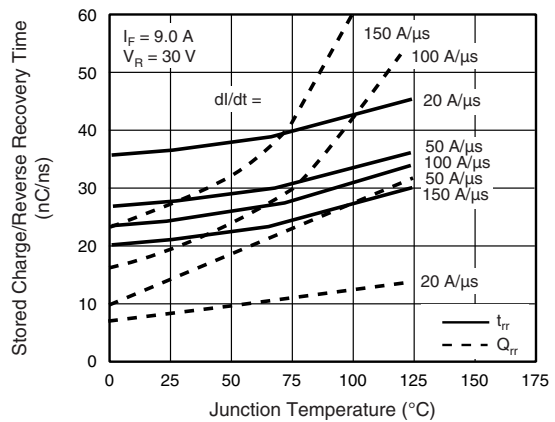


Fig. 5 - Reverse Switching Characteristics Per Diode

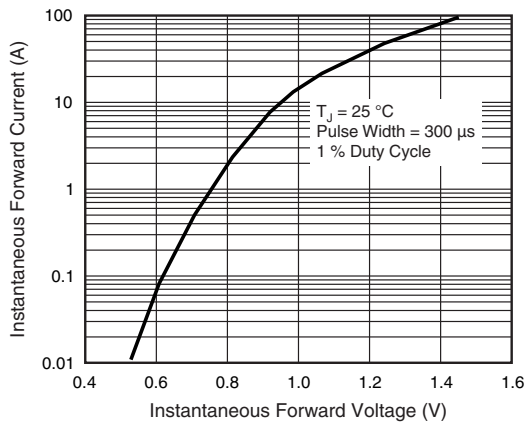


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

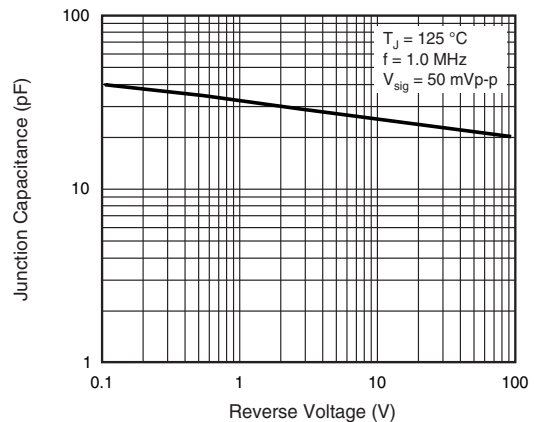
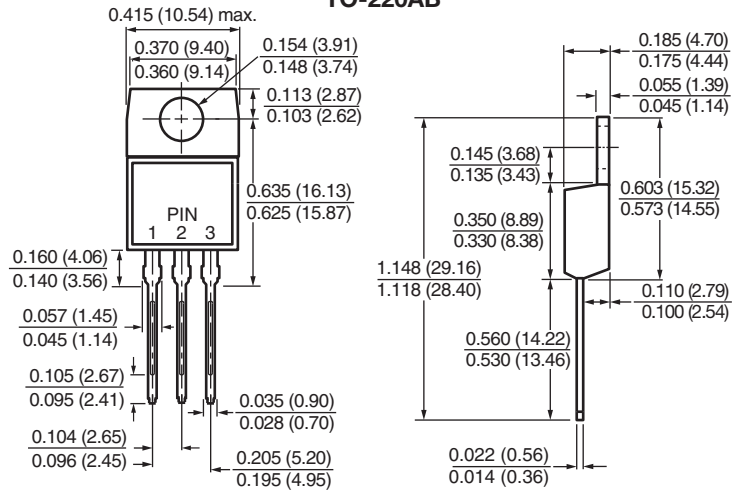


Fig. 6 - Typical Junction Capacitance Per Diode

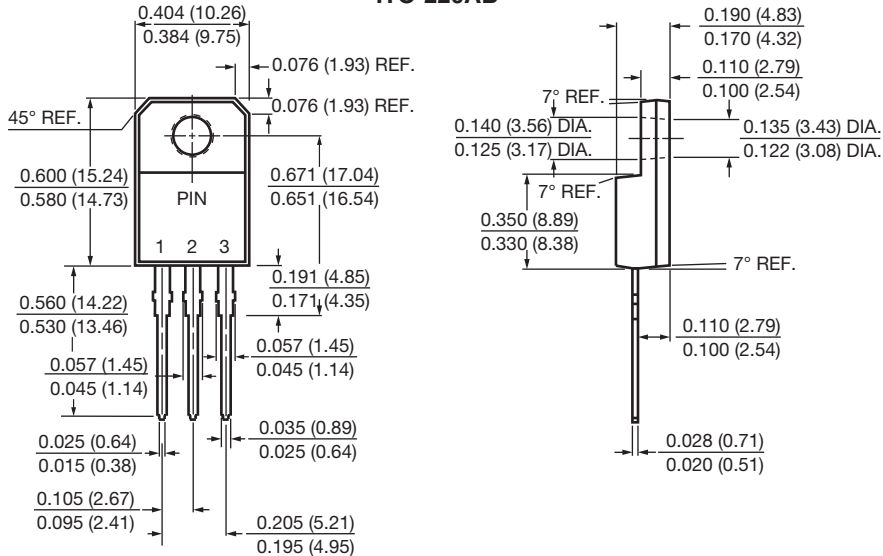


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

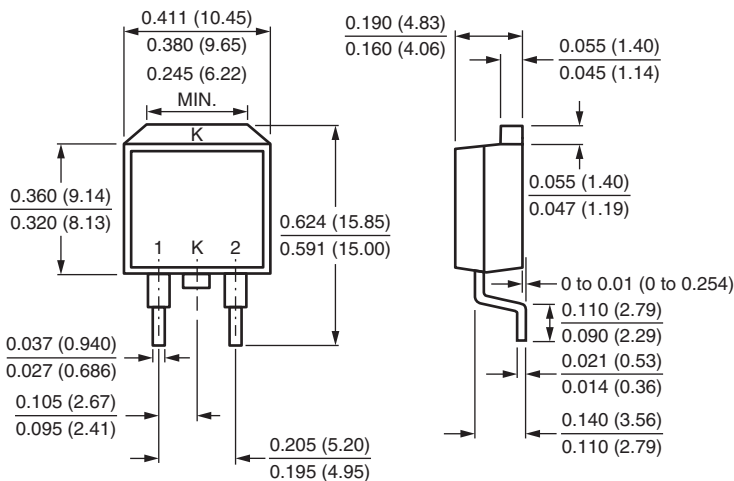
### TO-220AB



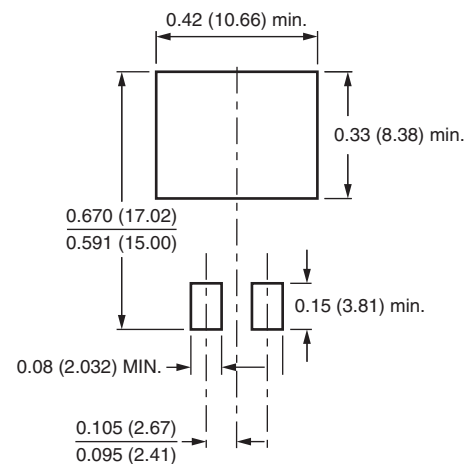
### ITO-220AB



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



### Mounting Pad Layout





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