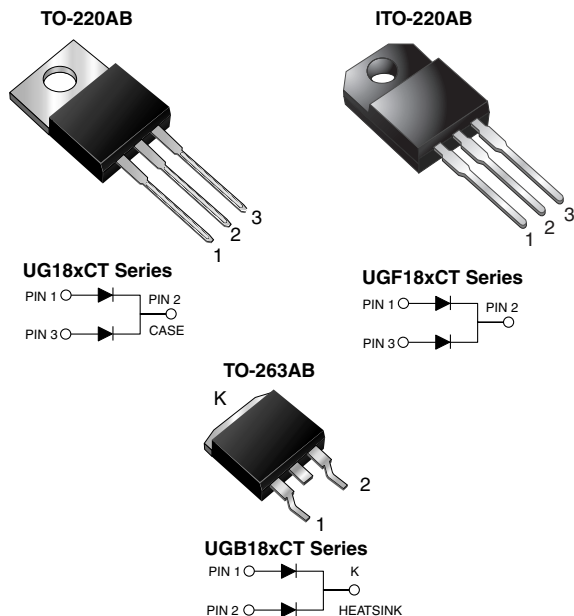


## Dual Common Cathode Ultrafast Plastic Rectifier



### FEATURES

- Power pack
- Glass passivated 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
- 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.

### PRIMARY CHARACTERISTICS

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

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, TO-263AB

Molding compound meets UL 94V-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 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 ( $T_C = 25$ °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 $T_C = 105$ °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)<br>from terminal to heatsink $t = 1$ 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, dI/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, dI/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  $\mu\text{s}$  pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |      |       |       |                             |
|--------------------------------------------------------------------------------------|-----------------|------|-------|-------|-----------------------------|
| PARAMETER                                                                            | SYMBOL          | UG18 | UGF18 | UGB18 | UNIT                        |
| Typical thermal resistance from junction to case per diode                           | $R_{\theta JC}$ | 4.0  | 6.0   | 4.0   | $^{\circ}\text{C}/\text{W}$ |

| 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 |
| TO-220AB                       | UG18DCTHE3/45 <sup>(1)</sup>  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | UGF18DCTHE3/45 <sup>(1)</sup> | 2.00            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB18DCTHE3/45 <sup>(1)</sup> | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB18DCTHE3/81 <sup>(1)</sup> | 1.35            | 81           | 800/reel      | Tape and reel |

**Note**

<sup>(1)</sup> AEC-Q101 qualified



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

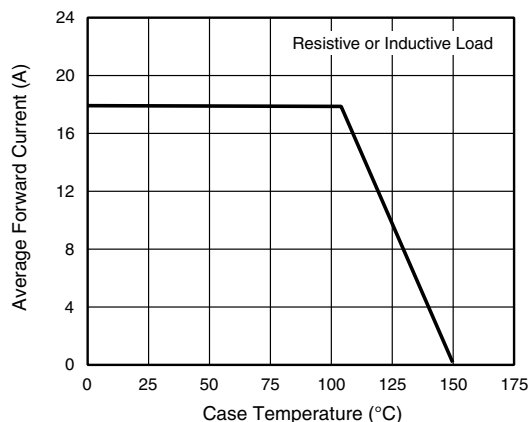


Fig. 1 - Forward Current Derating Curve

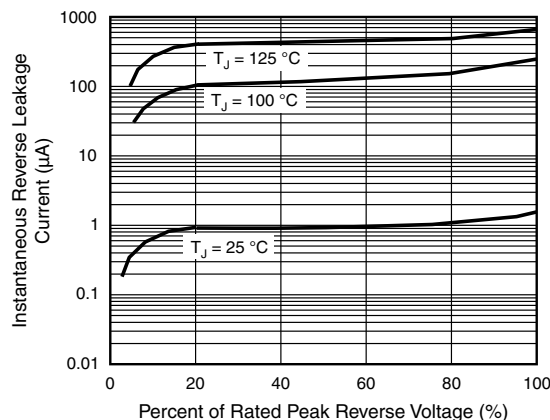


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

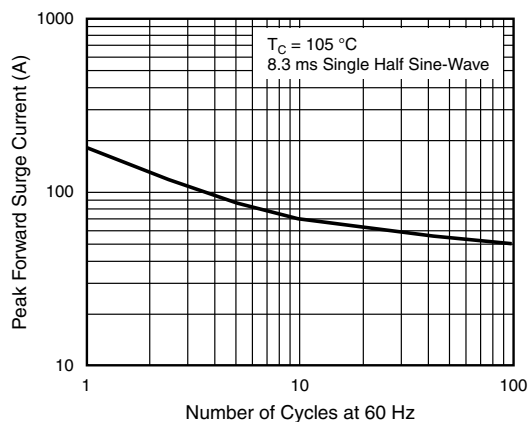


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

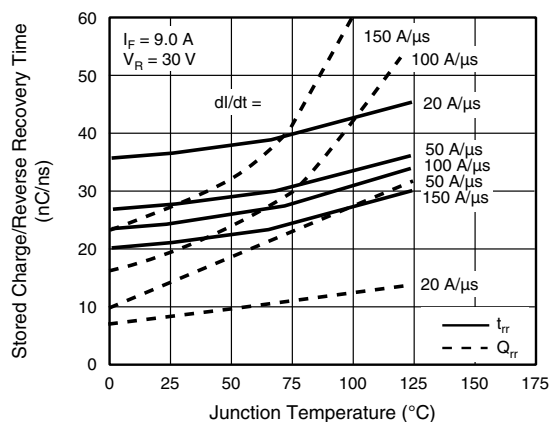


Fig. 5 - Reverse Switching Characteristics Per Diode

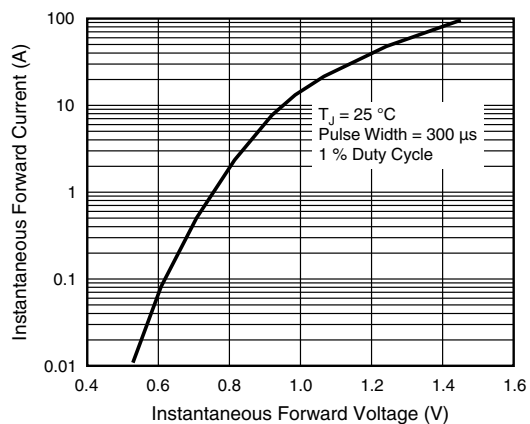


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

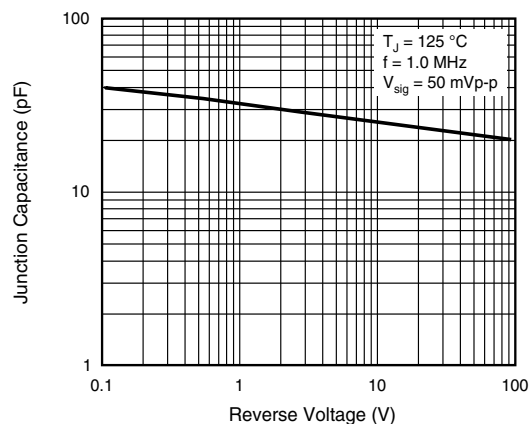
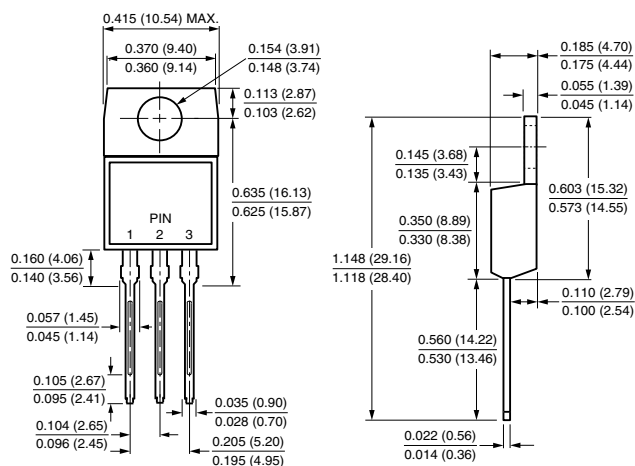


Fig. 6 - Typical Junction Capacitance Per Diode

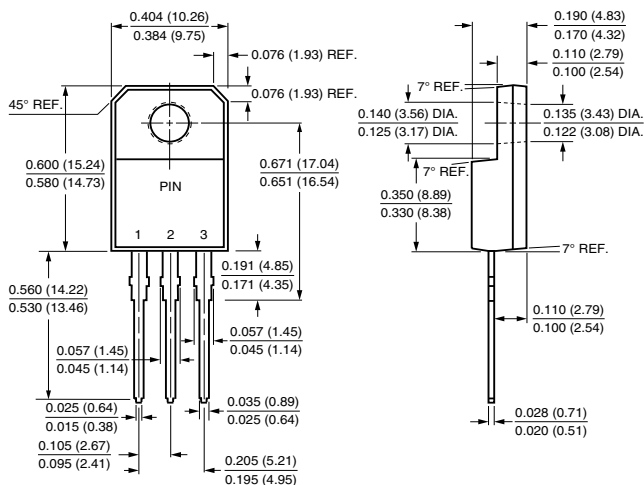


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

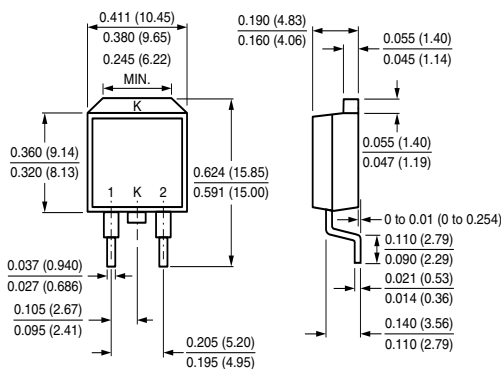
TO-220AB



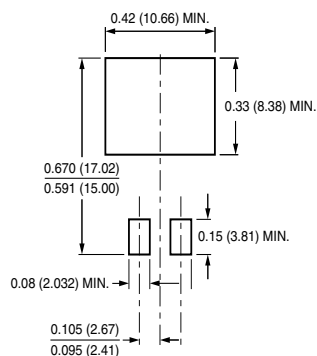
ITO-220AB



TO-263AB



Mounting Pad Layout





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