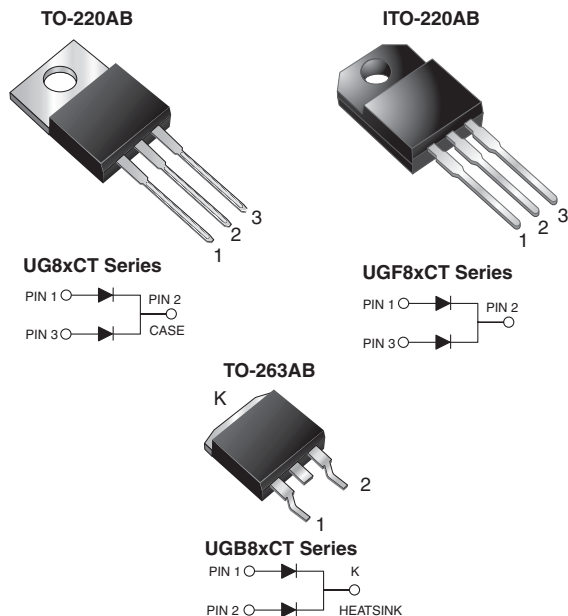


## Dual Common Cathode Ultrafast Plastic Rectifier



### FEATURES

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- 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 (for ITO-220AB and TO-263AB package)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### TYPICAL APPLICATIONS

For use in high voltage and high frequency power factor corrector, freewheeling diodes and secondary DC/DC rectification application.

### 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 max.

### PRIMARY CHARACTERISTICS

|                      |                               |
|----------------------|-------------------------------|
| $I_{F(AV)}$          | 2 x 4.0 A                     |
| $V_{RRM}$            | 500 V to 600 V                |
| $I_{FSM}$            | 65 A                          |
| $t_{rr}$             | 25 ns                         |
| $V_F$ at $I_F = 4$ A | 1.50 V                        |
| $T_J$ max.           | 150 °C                        |
| Package              | TO-220AB, ITO-220AB, TO-263AB |
| Diode variations     | Common cathode                |

### MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)

| PARAMETER                                                                                    | SYMBOL         | UG8HCT      | UG8JCT | UNIT |
|----------------------------------------------------------------------------------------------|----------------|-------------|--------|------|
| Max. repetitive peak reverse voltage                                                         | $V_{RRM}$      | 500         | 600    | V    |
| Max. working reverse voltage                                                                 | $V_{RWM}$      | 400         | 480    | V    |
| Max. RMS voltage                                                                             | $V_{RMS}$      | 350         | 420    | V    |
| Max. DC blocking voltage                                                                     | $V_{DC}$       | 500         | 600    | V    |
| Max. average forward rectified current                                                       | $I_{F(AV)}$    | 8.0         |        | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 65          |        | A    |
| Operating junction and storage temperature range                                             | $T_J, T_{STG}$ | -55 to +150 |        | °C   |
| Isolation voltage (ITO-220AB only) 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          | UG8HCT | UG8JCT | UNIT |
| Max. instantaneous forward voltage per diode <sup>(1)</sup>                | I <sub>F</sub> = 4 A                                                                                    | T <sub>J</sub> = 25 °C  | V <sub>F</sub>  | 1.75   |        | V    |
|                                                                            | I <sub>F</sub> = 4 A                                                                                    | T <sub>J</sub> = 125 °C |                 | 1.50   |        |      |
| Max. DC reverse current per diode at V <sub>RWM</sub>                      |                                                                                                         | T <sub>J</sub> = 25 °C  | I <sub>R</sub>  | 30     |        | μA   |
|                                                                            |                                                                                                         | T <sub>J</sub> = 100 °C |                 | 800    |        | μA   |
|                                                                            |                                                                                                         | T <sub>J</sub> = 125 C  |                 | 4      |        | mA   |
| 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> | 25     |        | ns   |
| Max. reverse recovery time per diode                                       | I <sub>F</sub> = 1.0 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>   |                         | t <sub>rr</sub> | 50     |        | ns   |
| Typical softness factor (t <sub>b</sub> /t <sub>a</sub> )                  | I <sub>F</sub> = 4.0 A, dI/dt = 240 A/μs, V <sub>R</sub> = 400 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub> |                         | S               | 0.9    |        | -    |
| Max. reverse recovery current per diode                                    | I <sub>F</sub> = 4.0 A, dI/dt = 32 A/μs, V <sub>R</sub> = 400 V, T <sub>C</sub> = 125 °C                |                         | I <sub>RM</sub> | 3.0    |        | A    |
| Max. reverse recovery current per diode                                    | I <sub>F</sub> = 4.0 A, dI/dt = 240 A/μs, V <sub>R</sub> = 400 V, T <sub>C</sub> = 125 °C               |                         | I <sub>RM</sub> | 8.0    |        | A    |
| Peak forward recovery time per diode                                       | I <sub>F</sub> = 4.0 A, dI/dt = 64 A/μs, V <sub>F</sub> = 1.1 V <sub>F max.</sub>                       |                         | t <sub>fr</sub> | 500    |        | ns   |

**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          | UG8 | UGF8 | UGB8 | UNIT                        |
| Typical thermal resistance from junction to case per diode                           | $R_{\theta JC}$ | 3.5 | 6.0  | 3.5  | $^{\circ}\text{C}/\text{W}$ |

| ORDERING INFORMATION (Example) |                              |                 |              |               |               |
|--------------------------------|------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | UG8JCT-E3/45                 | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | UGF8JCT-E3/45                | 2.00            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB8JCT-E3/45                | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB8JCT-E3/81                | 1.35            | 81           | 800/reel      | Tape and reel |
| ITO-220AB                      | UGF8JCTHE3/45 <sup>(1)</sup> | 2.00            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB8JCTHE3/45 <sup>(1)</sup> | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                       | UGB8JCTHE3/81 <sup>(1)</sup> | 1.35            | 81           | 800/reel      | Tape and reel |

**Note**

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



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

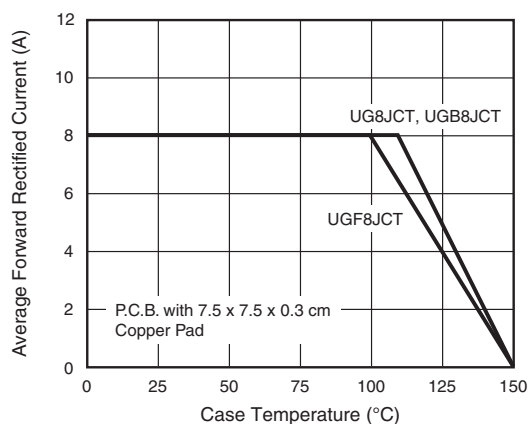


Fig. 1 - Max. Forward Current Derating Curve

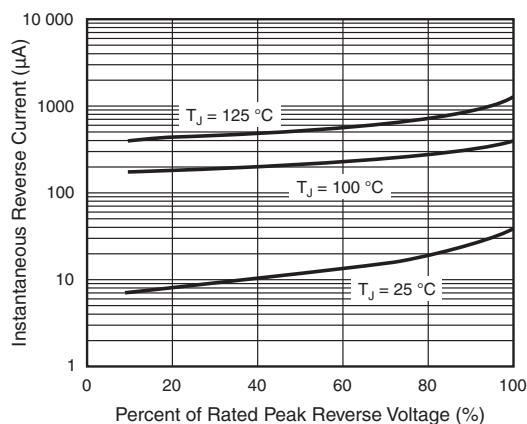


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

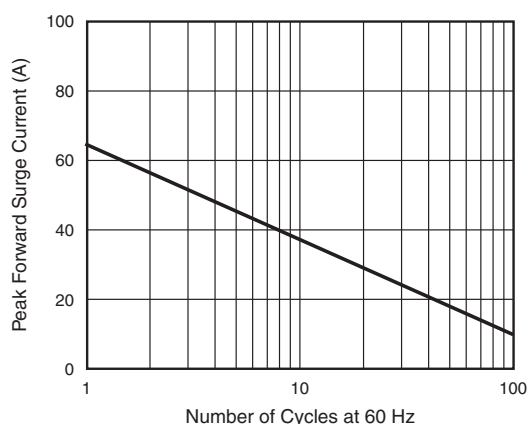


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

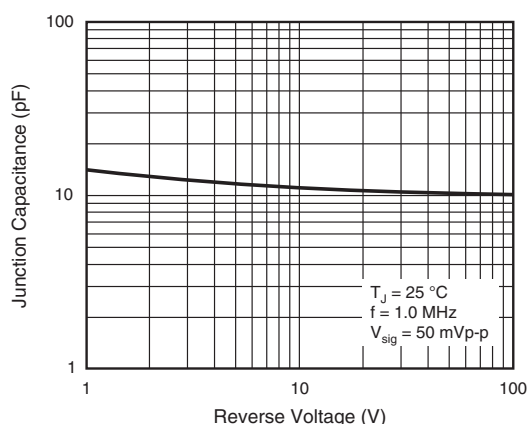


Fig. 5 - Typical Junction Capacitance Per Diode

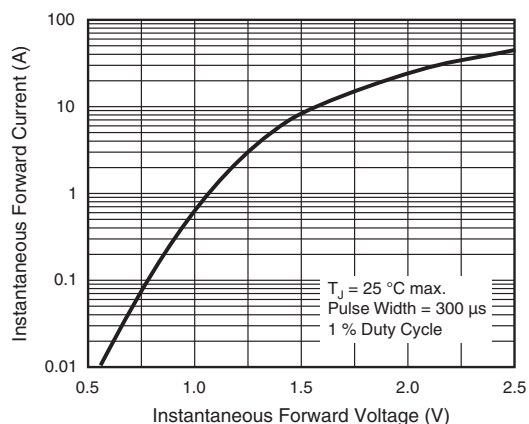


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

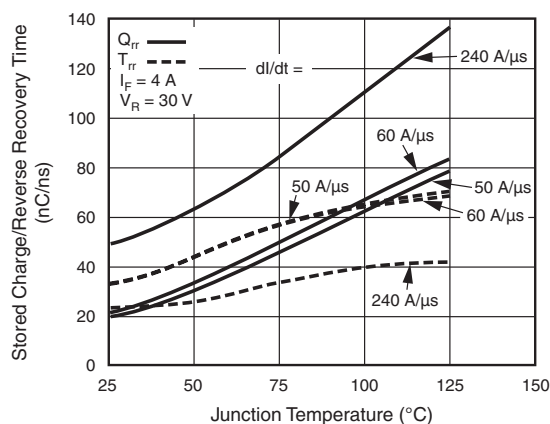
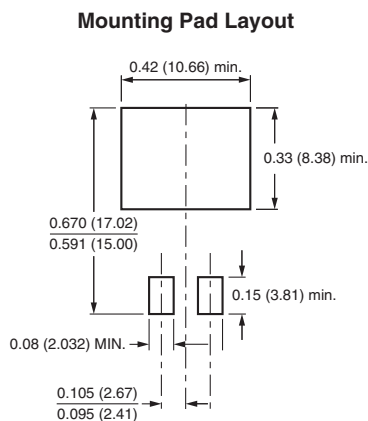
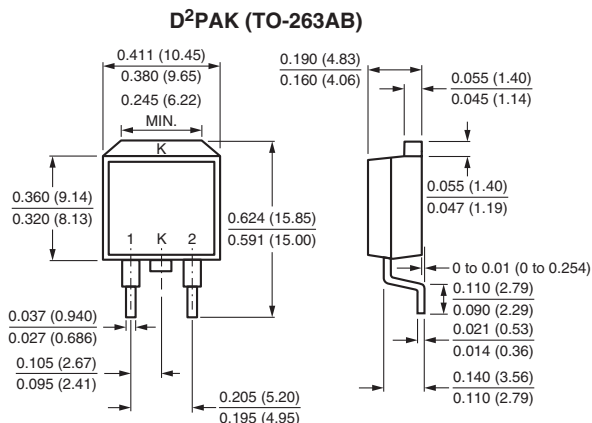
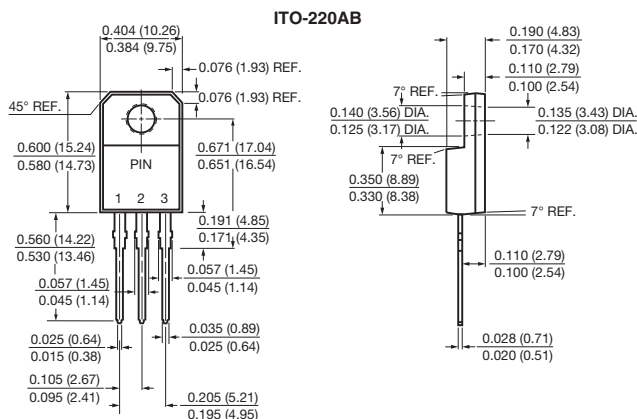
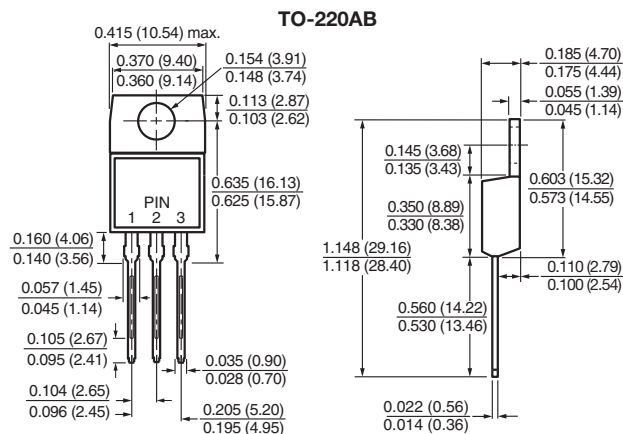


Fig. 6 - Reverse Switching Characteristics Per Diode



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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