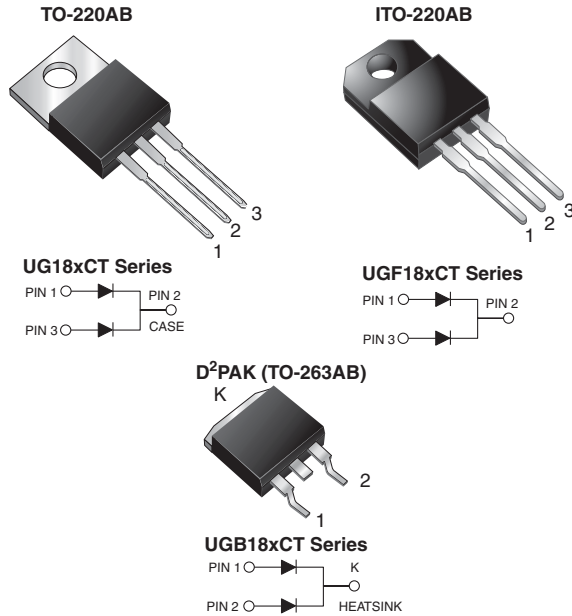


Dual Common Cathode Ultrafast Plastic Rectifier



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



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



3D Models

| 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 ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | |
|---|--|-----------------------------------|----------|-----------------------------------|---------|---------|---------------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | UG18ACT | UG18BCT | UG18CCT | UG18DCT | UNIT |
| Max. instantaneous forward voltage per diode ⁽¹⁾ | 9.0 A | $T_J = 100\text{ }^\circ\text{C}$ | V_F | 1.1 | | | V | |
| | 20 A | | | 1.2 | | | | |
| | 5.0 A | | | 0.95 | | | | |
| Max. DC reverse current at rated DC blocking voltage per diode | | | I_R | $T_A = 25\text{ }^\circ\text{C}$ | | | μA | |
| | | | | $T_A = 100\text{ }^\circ\text{C}$ | | | | |
| Max. reverse recovery time per diode | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | | t_{rr} | 20 | | | ns | |
| Max. reverse recovery time per diode | $I_F = 9.0\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s},$ $I_{rr} = 10\% I_{RM}$ | $T_J = 25\text{ }^\circ\text{C}$ | t_{rr} | 30 | | | ns | |
| | | $T_J = 100\text{ }^\circ\text{C}$ | | 50 | | | | |
| Max. stored charge per diode | $I_F = 9.0\text{ A}, V_R = 30\text{ V},$ $di/dt = 50\text{ A}/\mu\text{s},$ $I_{rr} = 10\% I_{RM}$ | $T_J = 25\text{ }^\circ\text{C}$ | Q_{rr} | 20 | | | nC | |
| | | $T_J = 100\text{ }^\circ\text{C}$ | | 45 | | | | |
| Typical junction capacitance per diode | at 4.0 V, 1 MHz | | C_J | 30 | | | pF | |

Notes

⁽¹⁾ Pulse test: 300 μs 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 |
| ITO-220AB | UGF18DCTHE3_A/P ⁽¹⁾ | 2.00 | P | 50/tube | Tube |
| TO-263AB | UGB18DCTHE3_A/P ⁽¹⁾ | 1.35 | P | 50/tube | Tube |
| TO-263AB | UGB18DCTHE3_A/I ⁽¹⁾ | 1.35 | I | 800/reel | Tape and reel |

Note

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



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

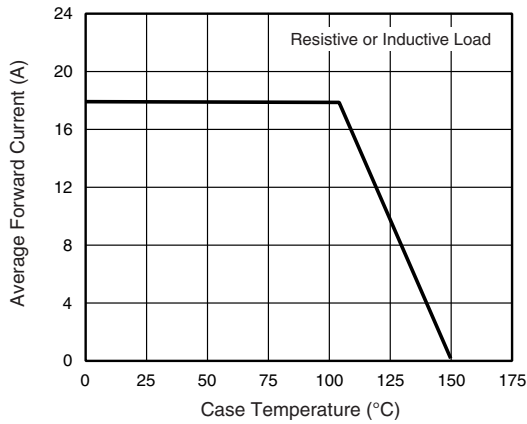


Fig. 1 - Forward Current Derating Curve

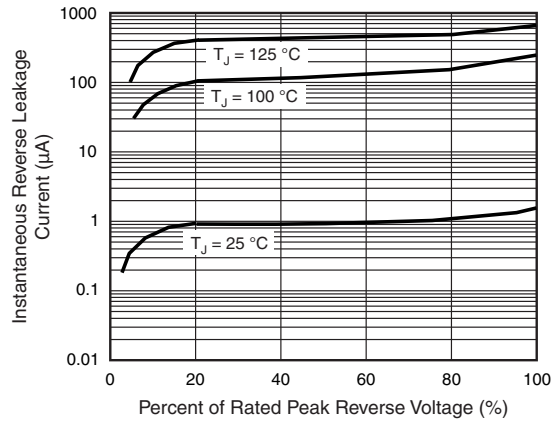


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

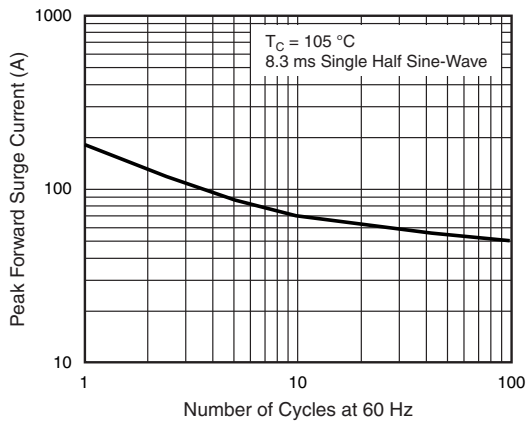


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

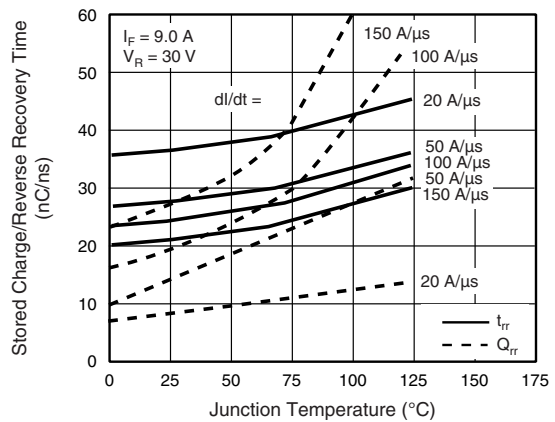


Fig. 5 - Reverse Switching Characteristics Per Diode

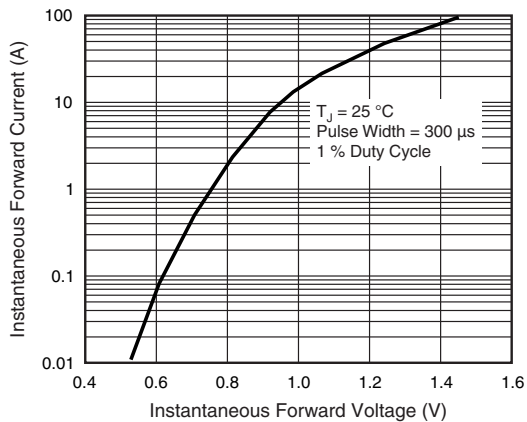


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

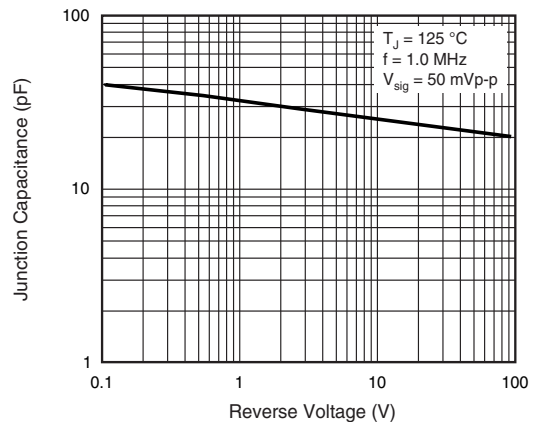
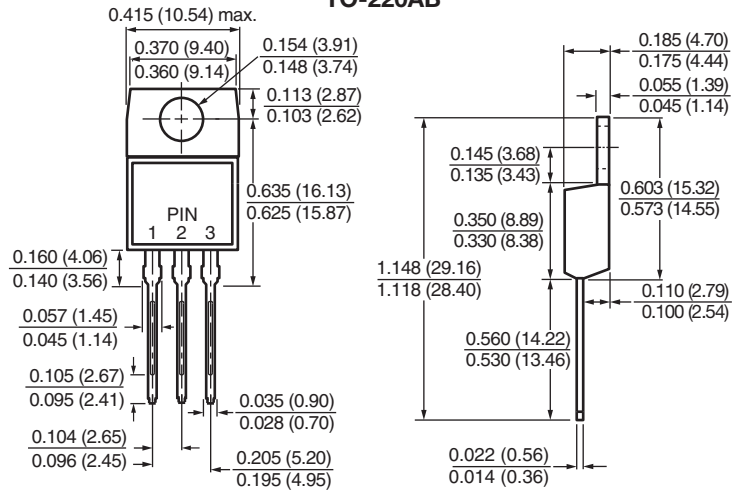


Fig. 6 - Typical Junction Capacitance Per Diode

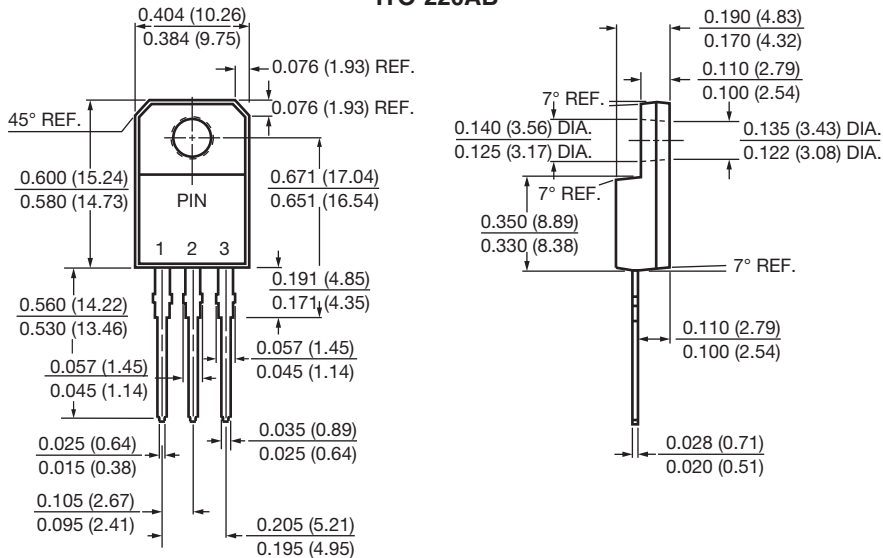


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

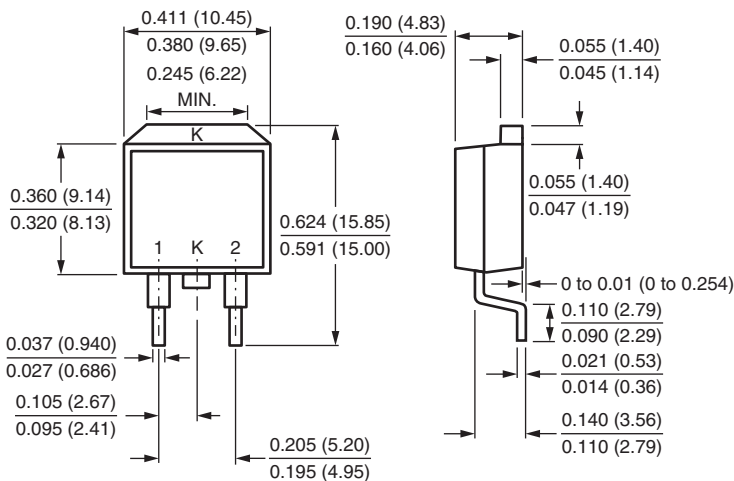
TO-220AB



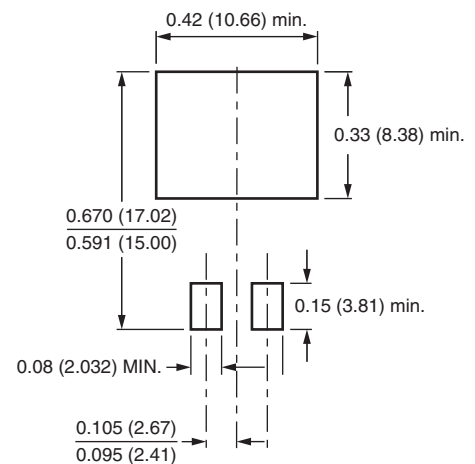
ITO-220AB



D²PAK (TO-263AB)



Mounting Pad Layout





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