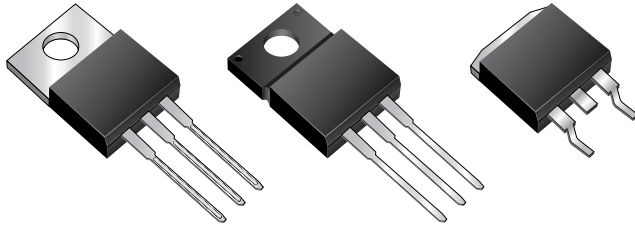


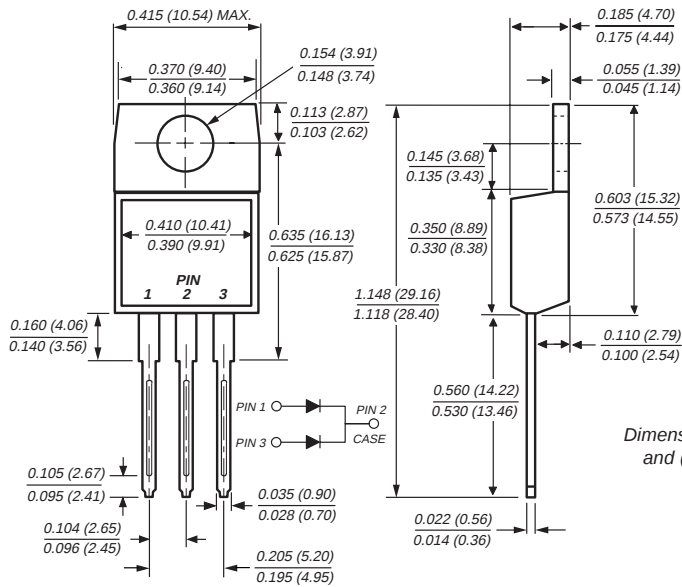


## Dual Ultrafast Soft Recovery Rectifiers

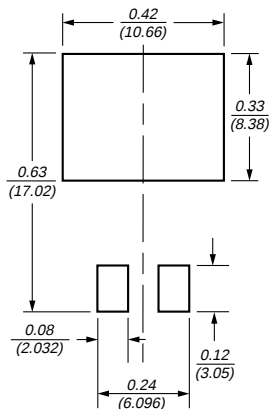


Reverse Voltage 100 to 200 V  
Forward Current 10 A  
Reverse Recovery Time 20ns

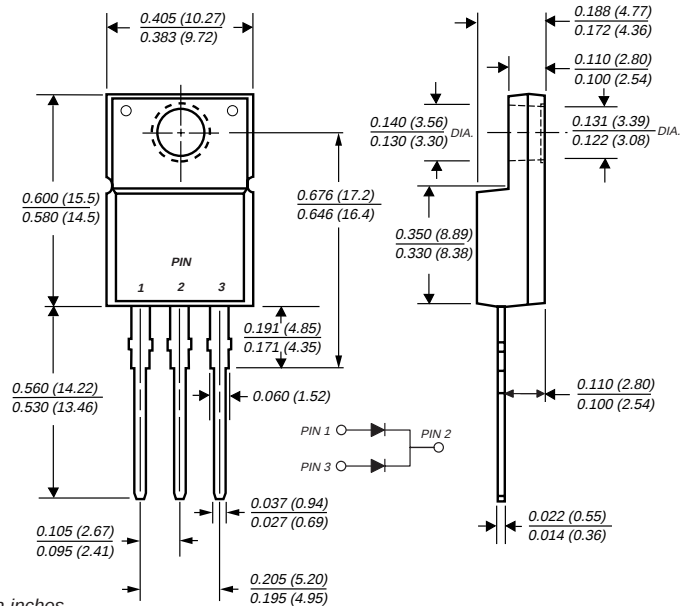
**TO-220AB (BYQ28E, UG10 Series)**



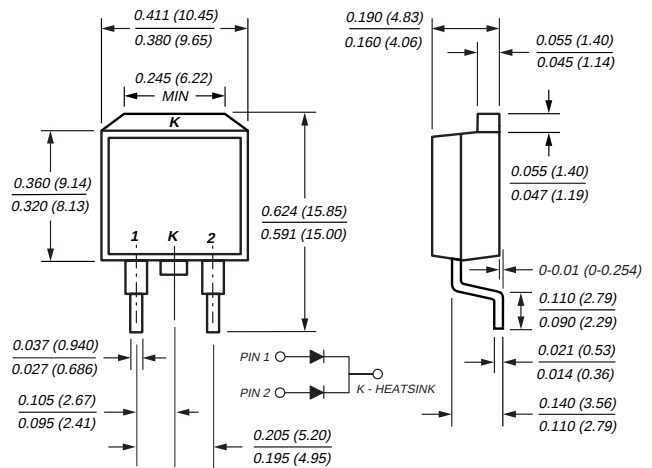
**Mounting Pad Layout  
TO-263AB**



**ITO-220AB (BYQ28EF, UGF10 Series)**



**TO-263AB (BYQ28EB, UGB10 Series)**



## Features

- Plastic package has Underwriters Laboratories Flammability Classification 94V-0
- High reverse energy capability
- Excellent high temperature switching
- High temperature soldering guaranteed: 250°C/10 seconds at terminals
- Glass passivated chip junction
- Soft recovery characteristics

## Mechanical Data

**Case:** JEDEC TO-220AB, ITO-220AB & TO-263AB molded plastic body

**Terminals:** Plated leads, solderable per MIL-STD-750, Method 2026

**Polarity:** As marked **Mounting Position:** Any

**Mounting Torque:** 10 in-lbs maximum

**Weight:** 0.08 oz., 2.24 g

## Maximum Ratings (T<sub>C</sub> = 25°C unless otherwise noted)

| Parameter                                                                                                      | Symbol                            | UG10BCT                                         | UG10CCT    | UG10DCT    | Unit |
|----------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------|------------|------------|------|
|                                                                                                                |                                   | BYQ28E-100                                      | BYQ28E-150 | BYQ28E-200 |      |
| Maximum repetitive peak reverse voltage                                                                        | V <sub>RRM</sub>                  | 100                                             | 150        | 200        | V    |
| Working peak reverse voltage                                                                                   | V <sub>RWM</sub>                  | 100                                             | 150        | 200        | V    |
| Maximum DC blocking voltage                                                                                    | V <sub>DC</sub>                   | 100                                             | 150        | 200        | V    |
| Maximum average forward rectified current <i>Total device</i><br>at T <sub>C</sub> = 100°C <i>Per leg</i>      | I <sub>F(AV)</sub>                | 10<br>5                                         |            |            | A    |
| Peak forward surge current<br>8.3ms single half sine-wave superimposed<br>on rated load (JEDEC Method) per leg | I <sub>FSM</sub>                  | 55                                              |            |            | A    |
| Non-repetitive peak reverse current per leg<br>at t <sub>p</sub> = 100μs                                       | I <sub>RSM</sub>                  | 0.2                                             |            |            | A    |
| Electrostatic discharge capacitor voltage,<br>Human body model: C = 250pF, R = 1.5kΩ                           | V <sub>C</sub>                    | 8                                               |            |            | KV   |
| Operating junction and storage temperature range                                                               | T <sub>J</sub> , T <sub>STG</sub> | -40 to +150                                     |            |            | °C   |
| RMS Isolation voltage (BYQ28EF, UGF types)<br>from terminals to heatsink with t = 1 second, RH ≤ 30%           | V <sub>ISOL</sub>                 | 4500 (NOTE 1)<br>3500 (NOTE 2)<br>1500 (NOTE 3) |            |            | V    |

## Electrical Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

| Parameter                                                                                                                                                                                                   | Symbol          | Value                 | Unit |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------|------|
| Maximum instantaneous forward voltage per leg (Note 4)<br>at I <sub>F</sub> = 10A, T <sub>J</sub> = 25°C<br>at I <sub>F</sub> = 5A, T <sub>J</sub> = 25°C<br>at I <sub>F</sub> = 5A, T <sub>J</sub> = 150°C | V <sub>F</sub>  | 1.25<br>1.10<br>0.895 | V    |
| Maximum reverse current per leg T <sub>J</sub> = 25°C<br>at working peak reverse voltage (Note 4) T <sub>J</sub> = 100°C                                                                                    | I <sub>R</sub>  | 10<br>200             | μA   |
| Maximum reverse recovery time per leg at<br>I <sub>F</sub> = 1.0A, di/dt = 100A/μs, V <sub>R</sub> = 30V, I <sub>rr</sub> = 0.1I <sub>RM</sub>                                                              | t <sub>rr</sub> | 25                    | ns   |
| Maximum reverse recovery time per leg at<br>I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>rr</sub> = 0.25A                                                                                           | t <sub>rr</sub> | 20                    | ns   |
| Maximum stored charge per leg<br>I <sub>F</sub> = 2A, di/dt = 20A/μs, V <sub>R</sub> = 30V, I <sub>rr</sub> = 0.1I <sub>RM</sub>                                                                            | Q <sub>rr</sub> | 9                     | nC   |

## Thermal Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

| Parameter                                        | Symbol           | UG10   | UGF10   | UGB10   | Unit |
|--------------------------------------------------|------------------|--------|---------|---------|------|
|                                                  |                  | BYQ28E | BYQ28EF | BYQ28EB |      |
| Typical thermal resistance — junction to ambient | R <sub>θJA</sub> | 50     | 55      | 50      | °C/W |
| per leg — junction to case                       | R <sub>θJC</sub> | 4.5    | 6.7     | 4.5     | °C/W |

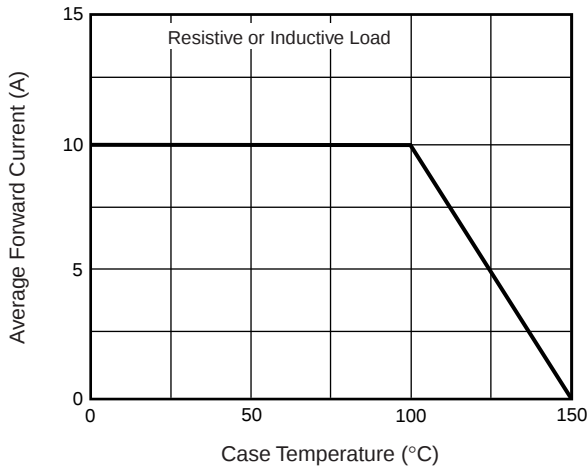
### Notes:

- (1) Clip mounting (on case), where lead does not overlap heatsink with 0.110" offset
- (2) Clip mounting (on case), where leads do overlap heatsink
- (3) Screw mounting with 4-40 screw, where washer diameter is ≤ 4.9 mm (0.19")
- (4) Pulse test: 300μs pulse width, 1% duty cycle

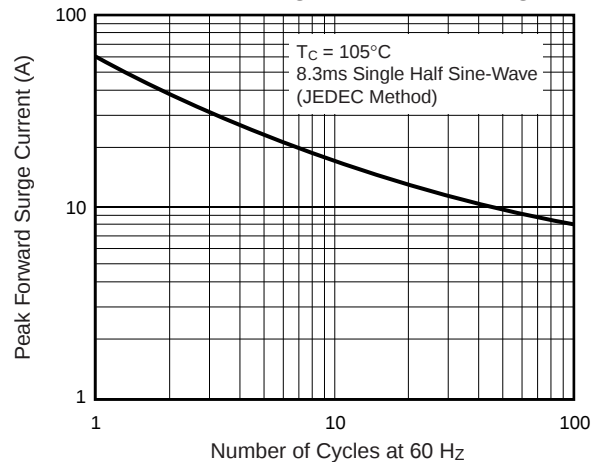


## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

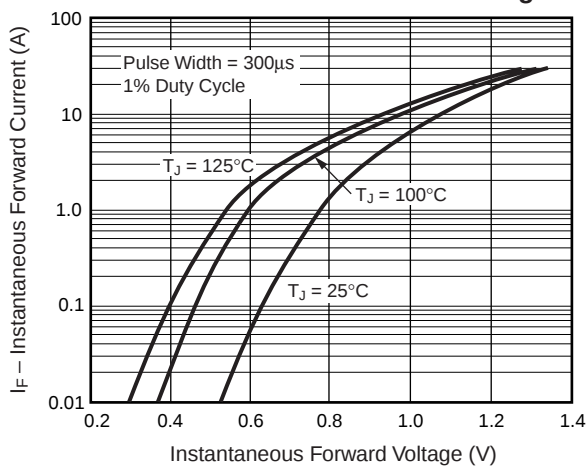
### Forward Current Derating Curve



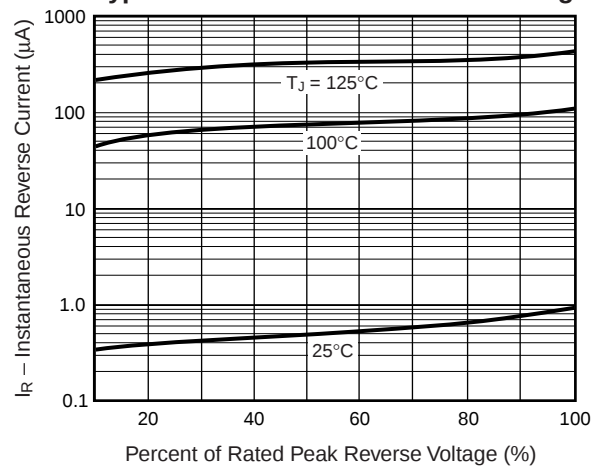
### Maximum Non-Repetitive Peak Forward Surge Current Per Leg



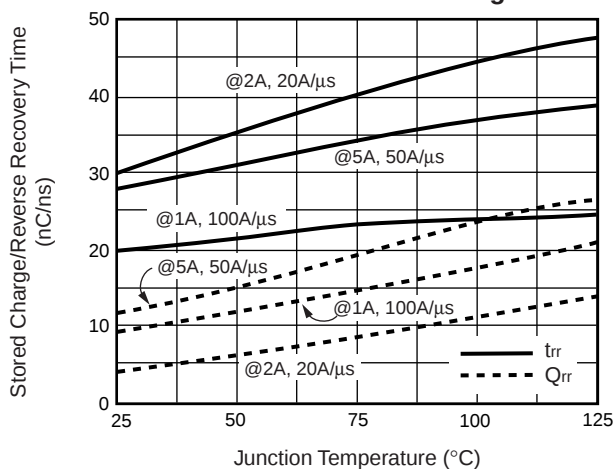
### Typical Instantaneous Forward Characteristics Per Leg



### Typical Reverse Characteristics Per Leg



### Reverse Switching Characteristics Per Leg



### Typical Junction Capacitance Per Leg

