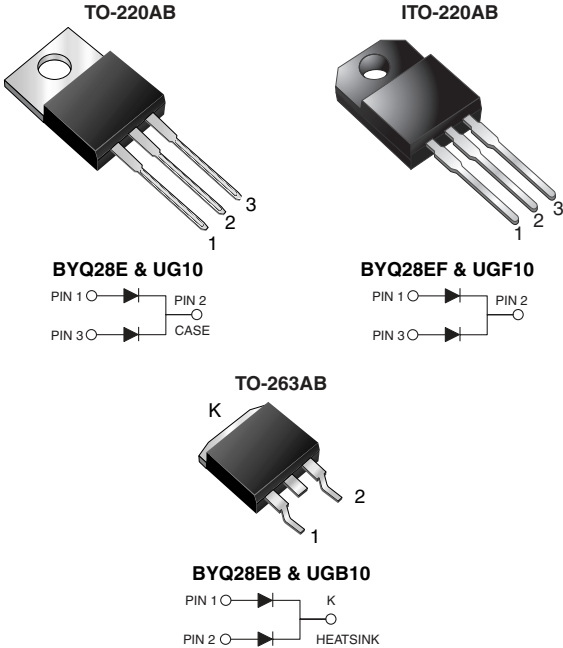




## Dual Common Cathode Ultrafast Rectifier



### FEATURES

- Glass passivated chip junction
- Ultrafast recovery times
- 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 260 °C, 40 s (for TO-220AB and ITO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, dc-to-dc converters and polarity protection application.

### MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** As marked

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

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	5 A x 2
$V_{RRM}$	100 V, 150 V, 200 V
$I_{FSM}$	55 A
$t_{rr}$	25 ns
$V_F$	0.895 V
$T_J \text{ max.}$	150 °C

### MAXIMUM RATINGS ( $T_C = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	UG10BCT	UG10CCT	UG10DCT	UNIT
		BYQ28E-100	BYQ28E-150	BYQ28E-200	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	150	200	V
Working peak reverse voltage	$V_{RWM}$	100	150	200	V
Maximum DC blocking voltage	$V_{DC}$	100	150	200	V
Maximum average forward rectified current at $T_C = 100 \text{ °C}$ total device per diode	$I_{F(AV)}$	10 5			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	55			A
Non-repetitive peak reverse current per diode at $t_p = 100 \text{ }\mu\text{s}$	$I_{RSM}$	0.2			A
Electrostatic discharge capacitor voltage, human body model: C = 250 pF, R = 1.5 k $\Omega$	$V_C$	8			kV
Operating junction and storage temperature range	$T_J, T_{STG}$	- 40 to + 150			°C
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1 \text{ min}$	$V_{AC}$	1500			V

# BYQ28E(F,B)-100 thru BYQ28E(F,B)-200, UG(F,B)10BCT

Vishay General Semiconductor



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 10\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F$	1.25	V
	$I_F = 5\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$		1.10	
	$I_F = 5\text{ A}$	$T_J = 150\text{ }^\circ\text{C}$		0.895	
Maximum reverse current per diode at working peak reverse voltage		$T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	$I_R$	10 200	$\mu\text{A}$
Maximum reverse recovery time per diode	$I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$		$t_{rr}$	25	ns
Maximum 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
Maximum stored charge per diode	$I_F = 2\text{ A}$ , $dI/dt = 20\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$		$Q_{rr}$	9	nC

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	UG10	UGF10	UGB10	UNIT
		BYQ28E	BYQ28EF	BYQ28EB	
Typical thermal resistance per diode, junction to ambient	$R_{\theta JA}$	50	55	50	$^\circ\text{C}/\text{W}$
Typical thermal resistance per diode, junction to case	$R_{\theta JC}$	4.5	6.7	4.8	

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	BYQ28E-200-E3/45	1.80	45	50/tube	Tube
ITO-220AB	BYQ28EF-200-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYQ28EB-200-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYQ28EB-200-E3/81	1.77	81	800/reel	Tape reel
TO-220AB	BYQ28E-200HE3/45 <sup>(1)</sup>	1.80	45	50/tube	Tube
ITO-220AB	BYQ28EF-200HE3/45 <sup>(1)</sup>	1.95	45	50/tube	Tube
TO-263AB	BYQ28EB-200HE3/45 <sup>(1)</sup>	1.77	45	50/tube	Tube
TO-263AB	BYQ28EB-200HE3/81 <sup>(1)</sup>	1.77	81	800/reel	Tape reel

**Note:**

(1) Automotive grade AEC Q101 qualified



**RATINGS AND CHARACTERISTICS CURVES**

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

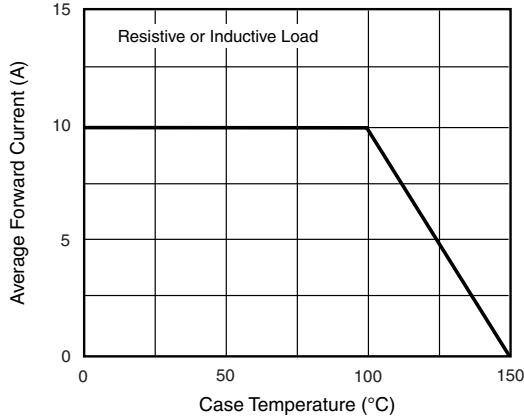


Figure 1. Forward Current Derating Curve

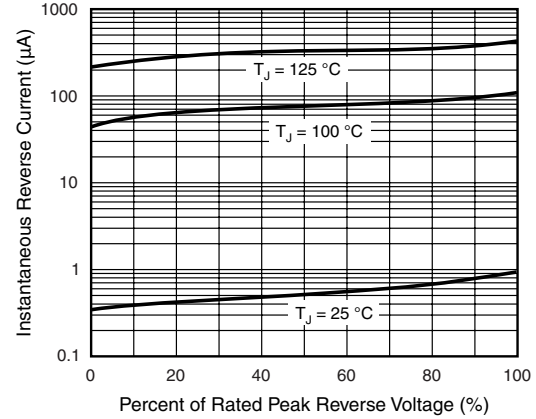


Figure 4. Typical Reverse Characteristics Per Diode

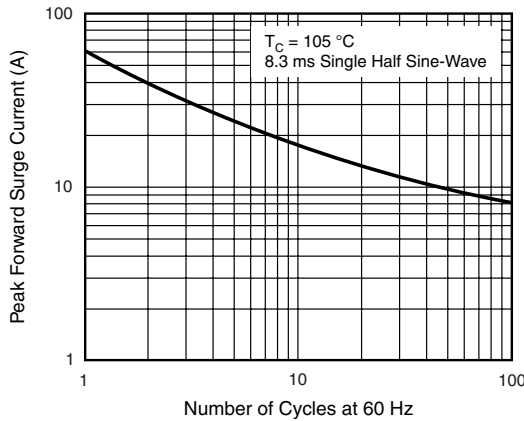


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

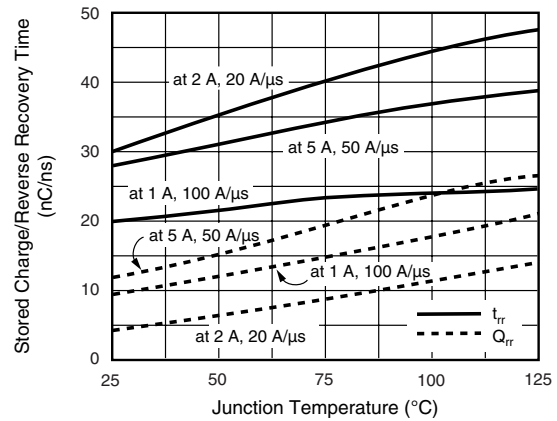


Figure 5. Reverse Switching Characteristics Per Diode

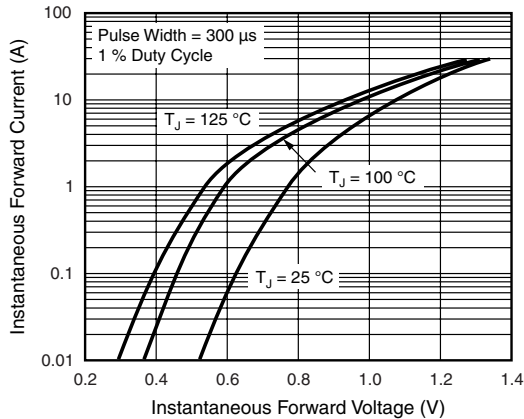


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

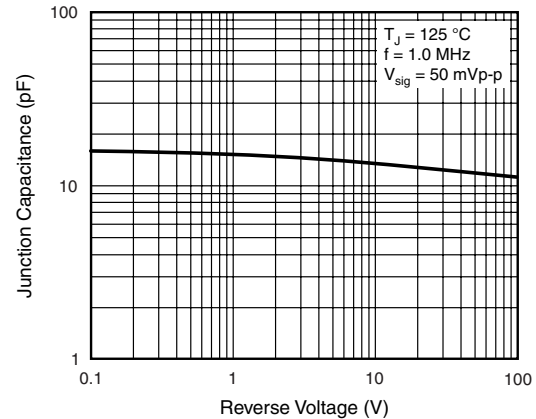


Figure 6. Typical Junction Capacitance Per Diode

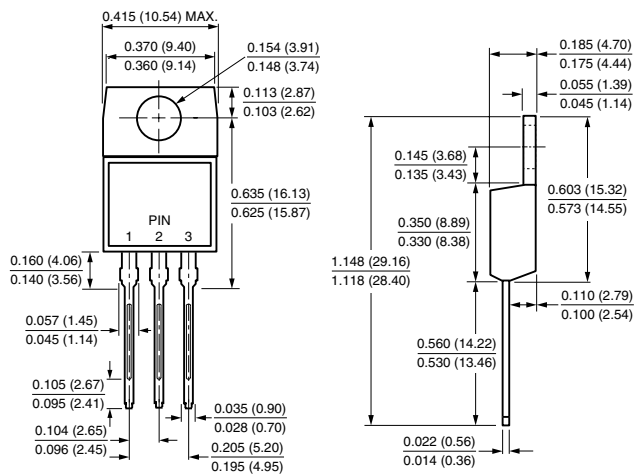
# BYQ28E(F,B)-100 thru BYQ28E(F,B)-200, UG(F,B)10BCT

Vishay General Semiconductor

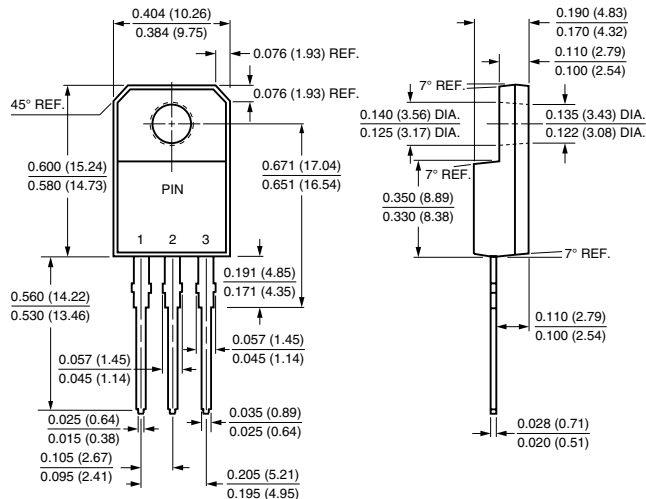


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

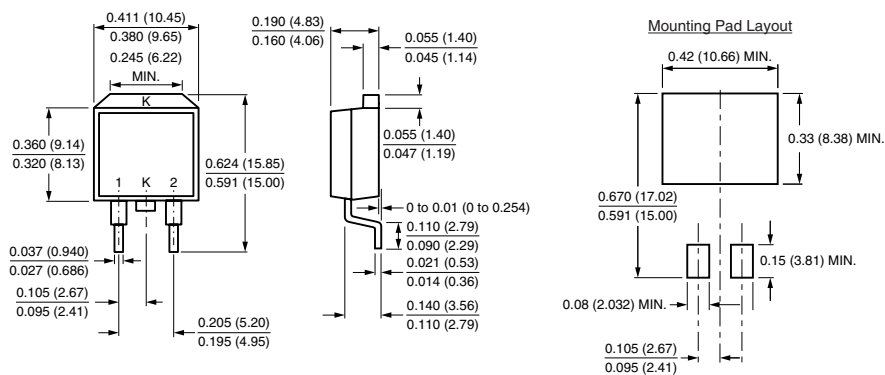
**TO-220AB**



**ITO-220AB**



**TO-263AB**





## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.