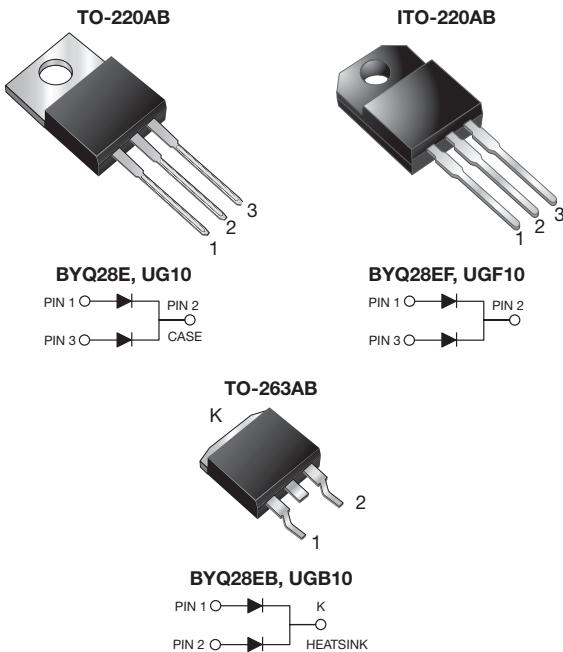


Dual Common Cathode Ultrafast Rectifier



FEATURES

- Power pack
- Glass passivated pallet 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 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

AUTOMOTIVE GRADE Available



RoHS COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3 - RoHS-compliant, automotive grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-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 5.0 A
V_{RRM}	100 V to 200 V
I_{FSM}	55 A
t_{rr}	25 ns
V_F	0.895 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	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 $T_C = 100$ °C per diode	$I_{F(AV)}$	10			A
total device per diode		5.0			
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 $t_p = 100$ µs	I_{RSM}	0.2			A
Electrostatic discharge capacitor voltage, human body model: $C = 250$ pF, $R = 1.5$ kΩ	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 $t = 1$ min	V_{AC}	1500			V

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage per diode	$I_F = 10 \text{ A}$	$T_J = 25^\circ\text{C}$	V_F ⁽¹⁾	1.25	V
	$I_F = 5 \text{ A}$			1.10	
				0.895	
Maximum reverse current per diode at working peak reverse voltage		$T_J = 25^\circ\text{C}$	I_R	10	μA
		$T_J = 100^\circ\text{C}$		200	
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

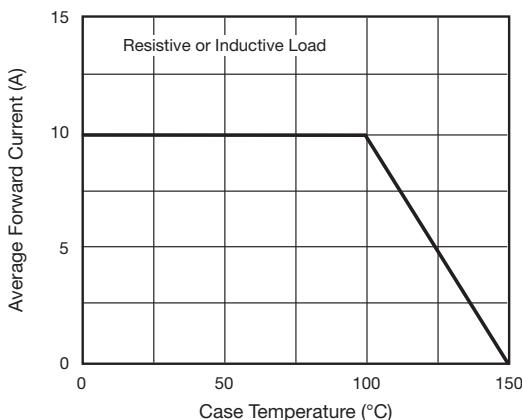
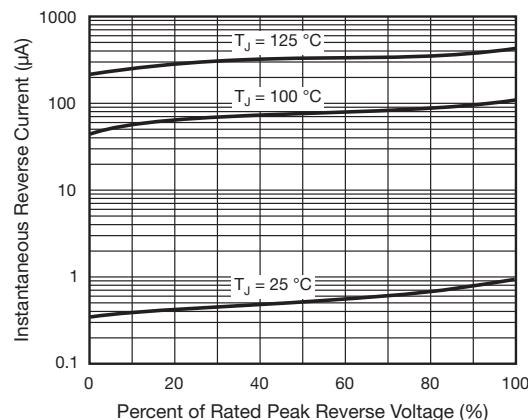
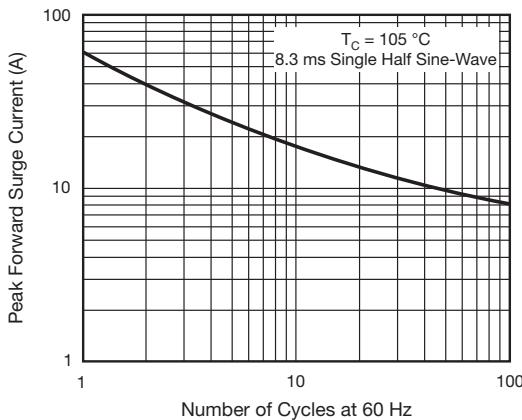
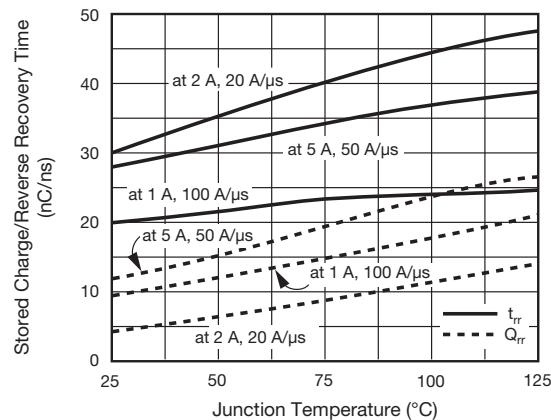
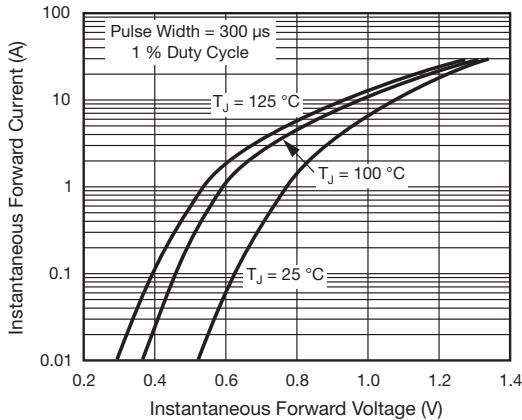
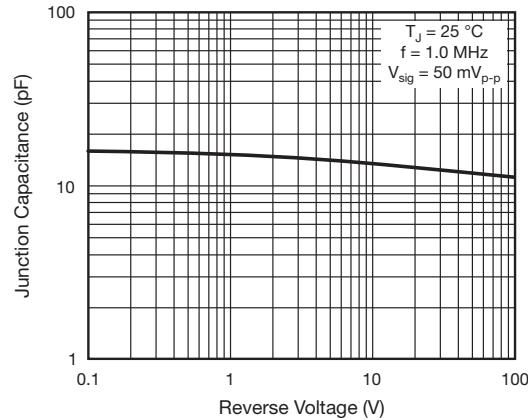
⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ 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	$^\circ\text{C}/\text{W}$
	$R_{\theta JC}$	4.5	6.7	4.8	

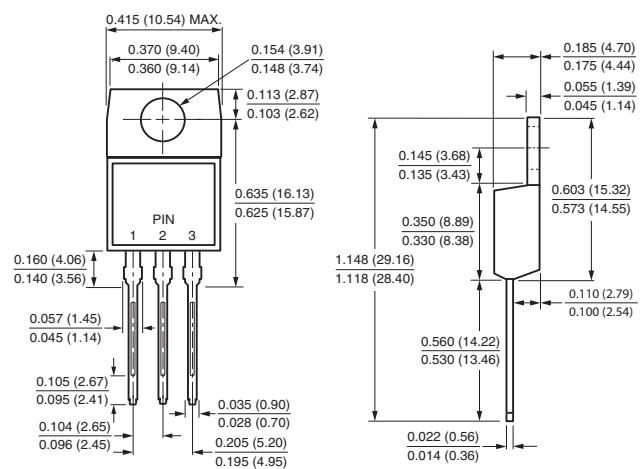
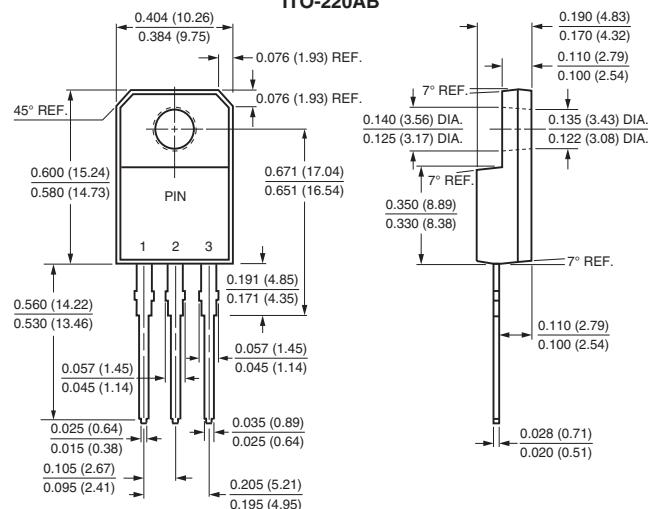
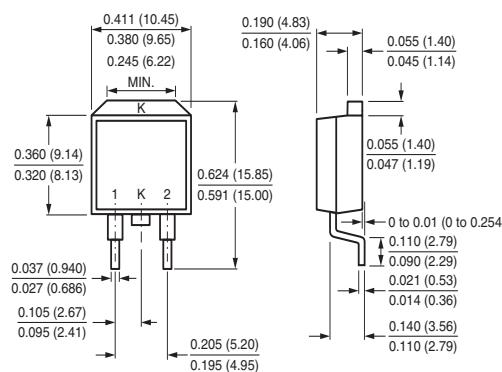
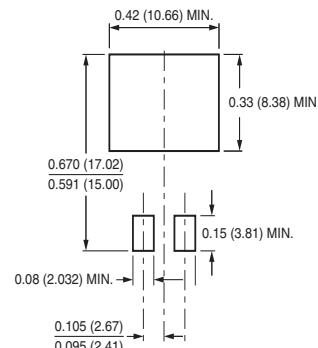
ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	BYQ28E-200-E3/45	1.80	45	50/tube	Tube
ITO-220AB	BYQ28EF-200-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYQ28EB-200-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYQ28EB-200-E3/81	1.77	81	800/reel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

Note

⁽¹⁾ Automotive grade

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

Fig. 1 - Forward Current Derating Curve

Fig. 4 - Typical Reverse Characteristics Per Diode

Fig. 2 - Maximum 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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