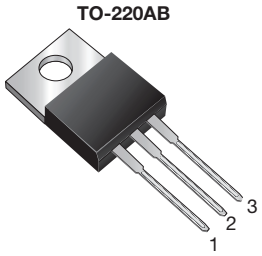
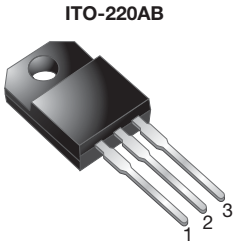
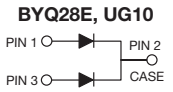
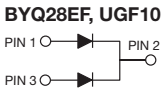
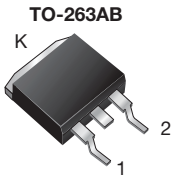
Dual Common Cathode Ultrafast Rectifier

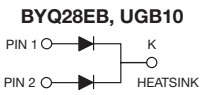












FEATURES

- 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	total device	$I_{F(AV)}$	10			A
	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 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**VALUE**	**UNIT**
Maximum instantaneous forward voltage per diode	I_F = 10 A	T_J = 25 °C	V_F (1)	1.25	V
	I_F = 5 A			1.10	
		T_J = 150 °C		0.895	
Maximum reverse current per diode at working peak reverse voltage		T_J = 25 °C	I_R	10	µA
		T_J = 100 °C		200	
Maximum reverse recovery time per diode	I_F = 1.0 A, dI/dt = 100 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	25	ns
Maximum reverse recovery time per diode	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	20	ns
Maximum stored charge per diode	I_F = 2 A, dI/dt = 20 A/µs, V_R = 30 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 °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	°C/W
Typical thermal resistance per diode, junction to case	$R_{\theta JC}$	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 °C unless otherwise noted)

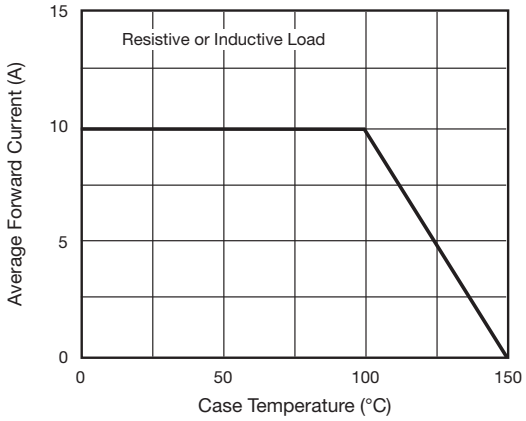


Fig. 1 - Forward Current Derating Curve

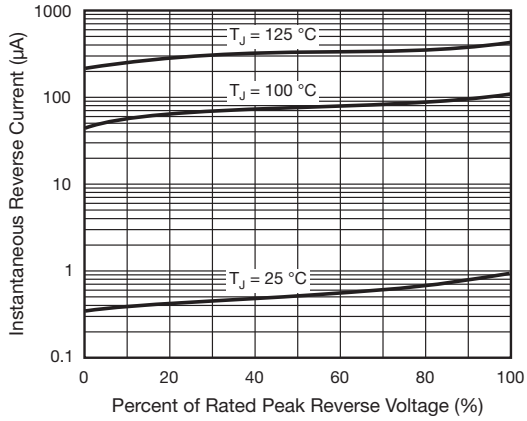


Fig. 4 - Typical Reverse Characteristics Per Diode

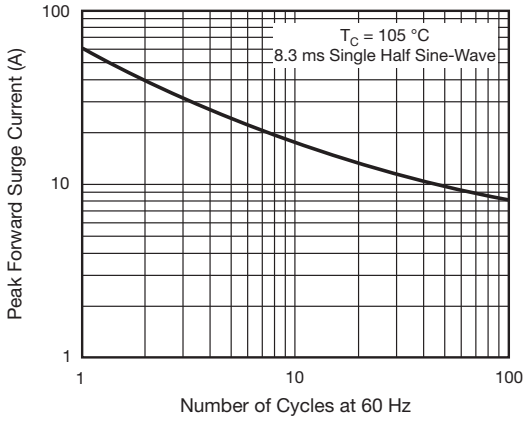


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

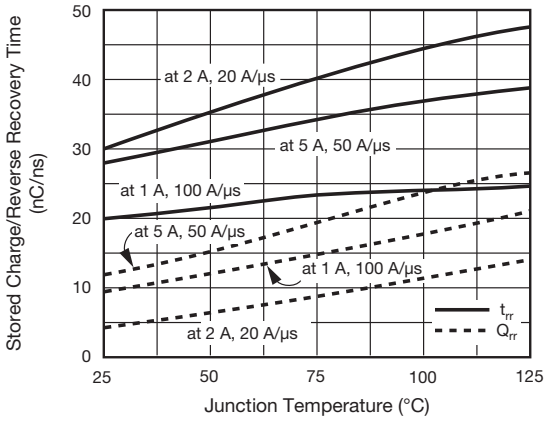


Fig. 5 - Reverse Switching Characteristics Per Diode

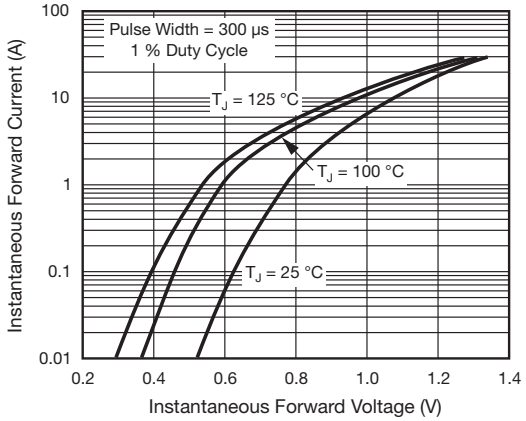


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

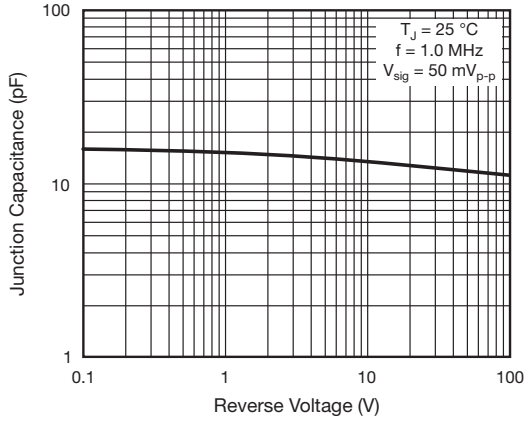
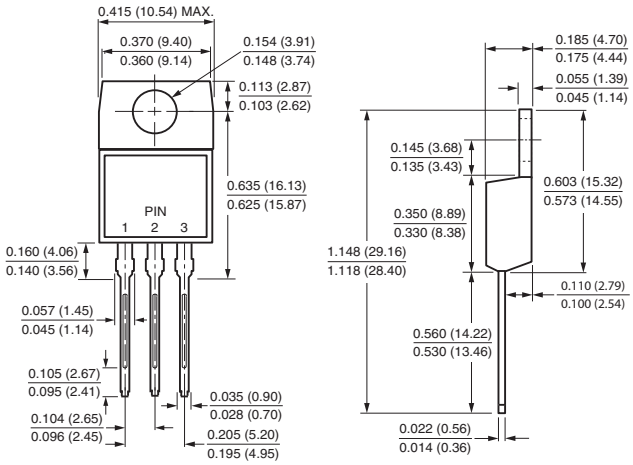


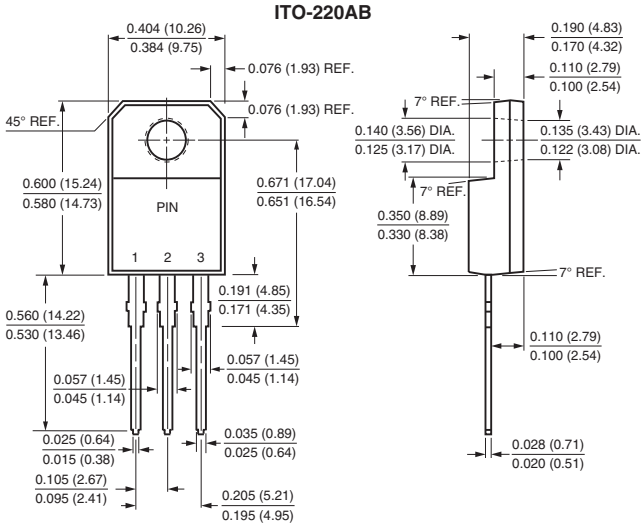
Fig. 6 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

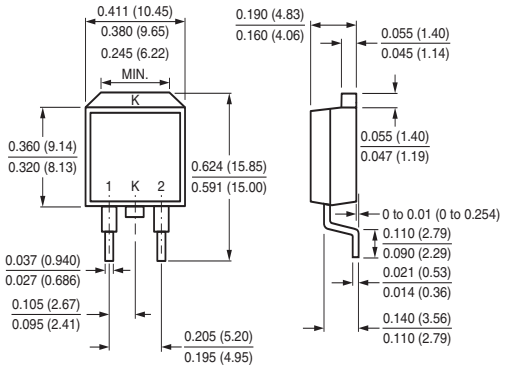
TO-220AB



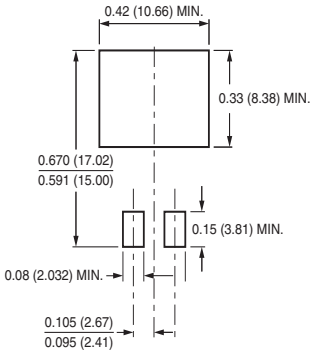
ITO-220AB



TO-263AB



Mounting Pad Layout



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