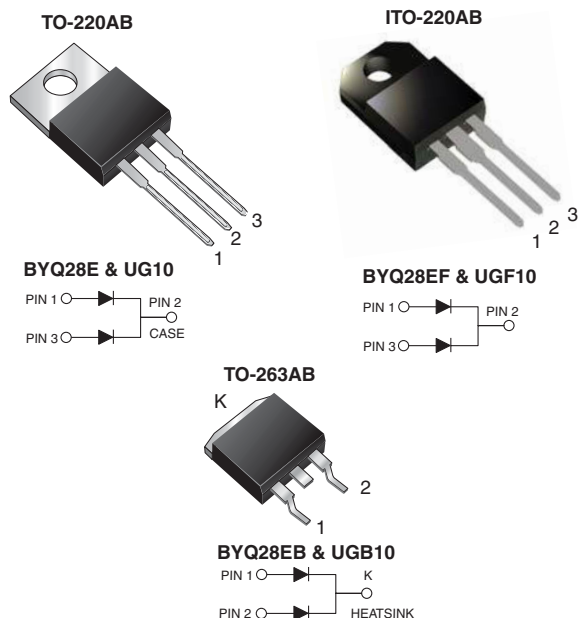




Dual Common Cathode Ultrafast Rectifier



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-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds (for TO-220AB & ITO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

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

MAJOR RATINGS AND 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 max.	150 °C

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-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

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 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 $t_p = 100$ 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 $t = 1$ minute	V_{AC}	1500			V

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage per diode ⁽¹⁾	at $I_F = 10\text{ A}$, $T_j = 25\text{ }^{\circ}\text{C}$ at $I_F = 5\text{ A}$, $T_j = 25\text{ }^{\circ}\text{C}$ at $I_F = 5\text{ A}$, $T_j = 150\text{ }^{\circ}\text{C}$	V_F	1.25 1.10 0.895	V
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	μA
Maximum reverse recovery time per diode	at $I_F = 1.0\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1 I_{RM}$	t_{rr}	25	ns
Maximum reverse recovery time per diode	at $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	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 °C unless otherwise noted)						
PARAMETER		SYMBOL	UG10	UGF10	UGB10	UNIT
			BYQ28E	BYQ28EF	BYQ28EB	
Typical thermal resistance per diode	- junction to ambient	R _{θJA}	50	55	50	°C/W
	- junction to case	R _{θJC}	4.5	6.7	4.8	

ORDERING INFORMATION					
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

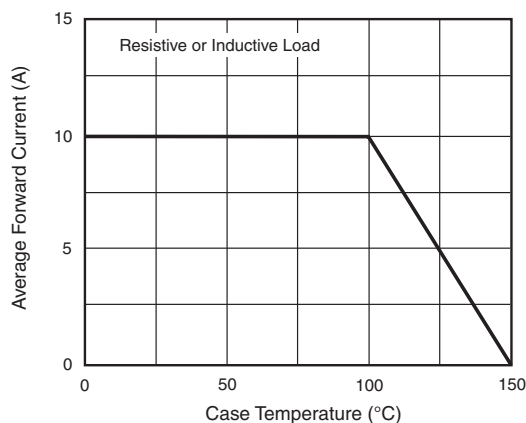
RATINGS AND CHARACTERISTICS CURVES($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Forward Current Derating Curve

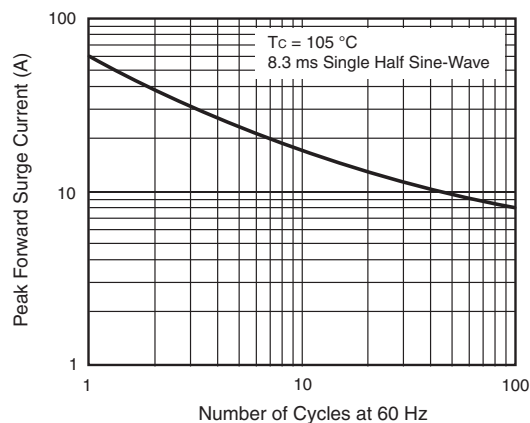


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

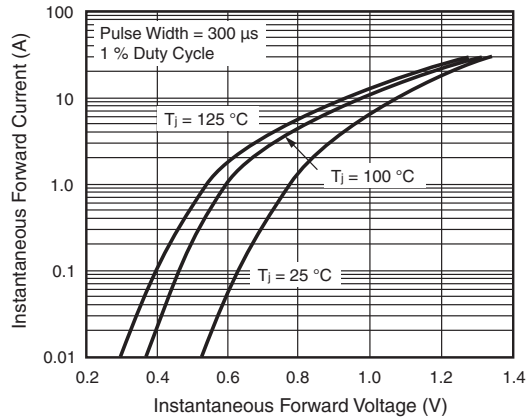


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

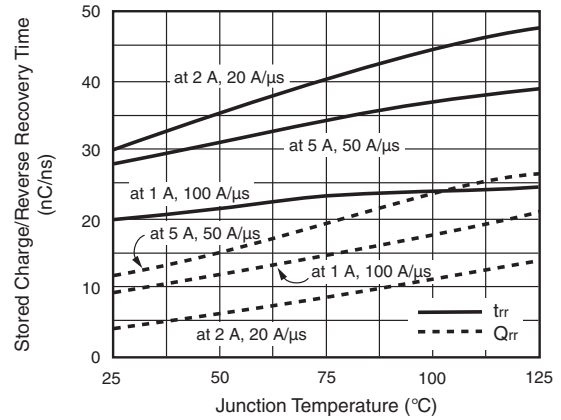


Figure 5. Reverse Switching Characteristics Per Diode

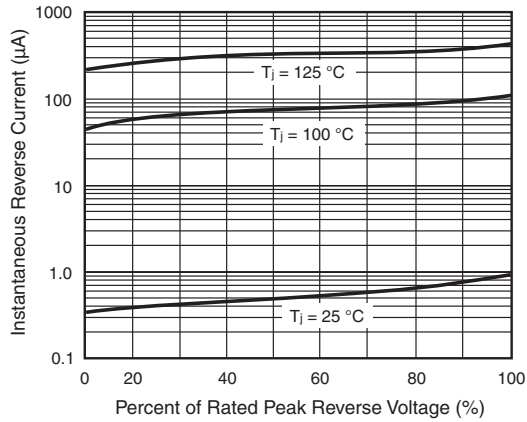


Figure 4. Typical Reverse Characteristics Per Diode

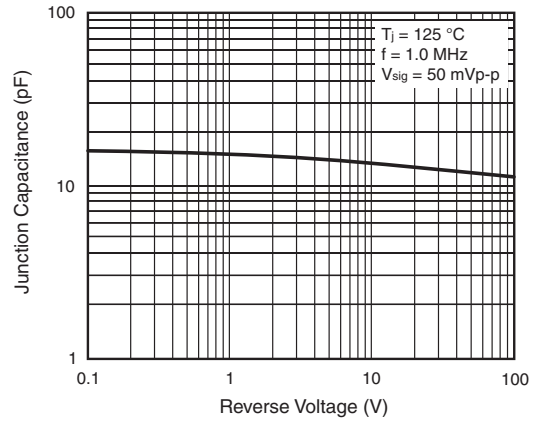
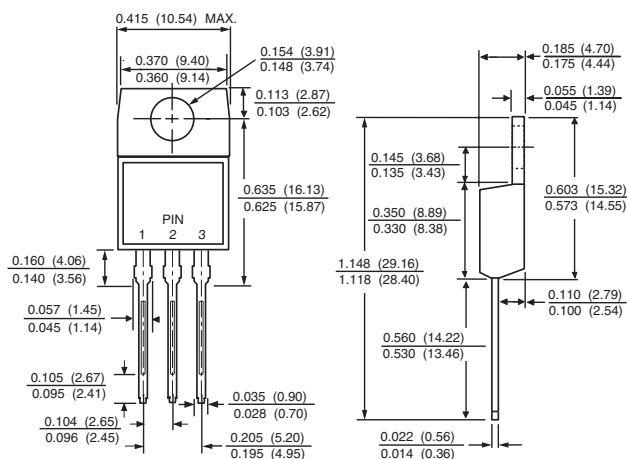


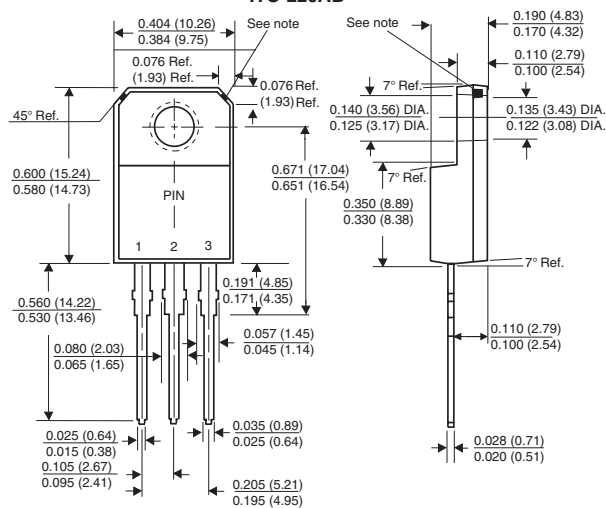
Figure 6. Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

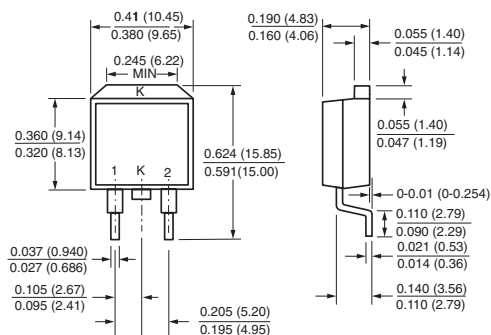


ITO-220AB

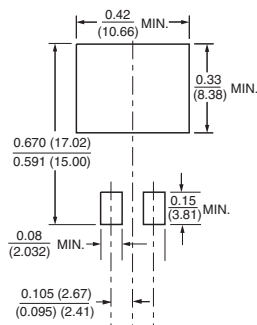


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

TO-263AB



Mounting Pad Layout





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