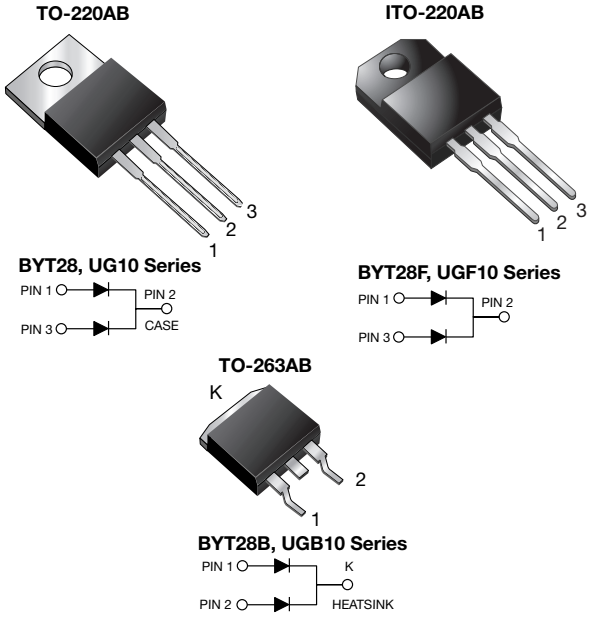
Dual Common Cathode Ultrafast Soft Recovery Rectifier



FEATURES

- Power pack
- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low forward voltage drop
- 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

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, DC/DC converters, and other power switching 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, commerical grade
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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 maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 5.0 A
V_{RRM}	300 V to 400 V
I_{FSM}	60 A
t_{rr}	35 ns
V_F at I_F	1.05 V
T_J max.	150 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variations	Dual Common Cathode

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	BYT28-300 UG10FCT	BYT28-400 UG10GCT	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	300	400	V
Maximum working reverse voltage		V_{RWM}	300	400	V
Maximum RMS voltage		V_{RMS}	210	280	V
Maximum DC blocking voltage		V_{DC}	300	400	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}	60		A
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 = 5 A	T_J = 25 °C	V_F (1)	1.30	V
	I_F = 10 A			1.40	
	I_F = 5 A	T_J = 150 °C		1.05	
Maximum reverse current per diode at V_{RRM}		T_J = 25 °C	I_R	10	µA
		T_J = 100 °C		200	
Maximum reverse recovery time per diode	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	35	ns
	I_F = 1.0 A, dI/dt = 100 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}			50	
Maximum reverse recovery current per diode	I_F = 5 A, dI/dt = 50 A/µs, V_R = 30 V, T_C = 100 °C		I_{RM}	3.0	A
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}	50	nC

Note

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

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**BYT28 UG10**	**BYT28F UGF10**	**BYT28B UGB10**	**UNIT**
Typical thermal resistance junction to case per diode	$R_{\theta JC}$	4.5	6.7	4.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	BYT28-400-E3/45	1.80	45	50/tube	Tube
ITO-220AB	BYT28F-400-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYT28B-400-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYT28B-400-E3/81	1.77	81	800/reel	Tape and reel
TO-220AB	BYT28-400HE3/45 (1)	1.80	45	50/tube	Tube
ITO-220AB	BYT28F-400HE3/45 (1)	1.95	45	50/tube	Tube
TO-263AB	BYT28B-400HE3/45 (1)	1.77	45	50/tube	Tube
TO-263AB	BYT28B-400HE3/81 (1)	1.77	81	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

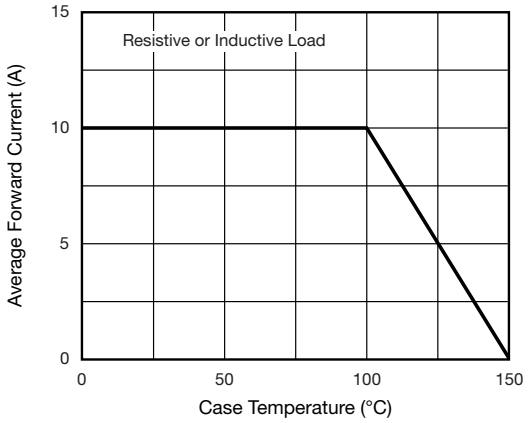


Fig. 1 - Forward Current Derating Curve

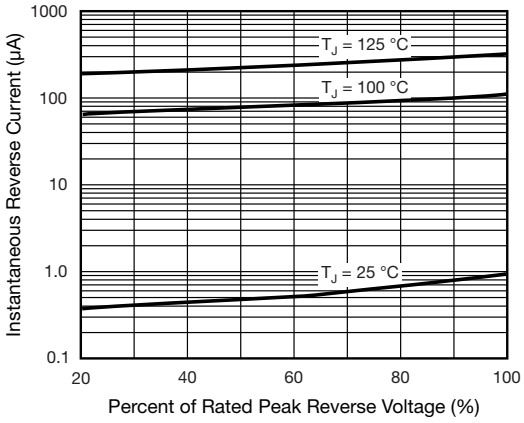


Fig. 4 - Typical Reverse Characteristics Per Diode

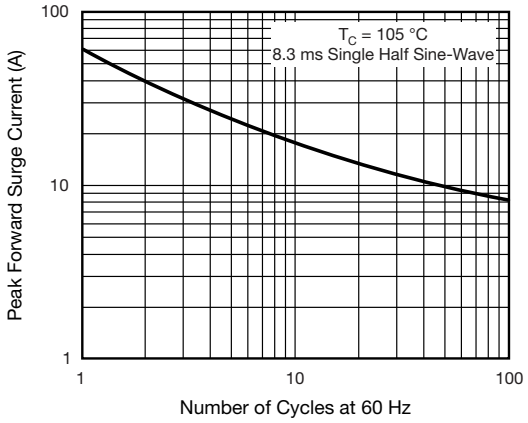


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

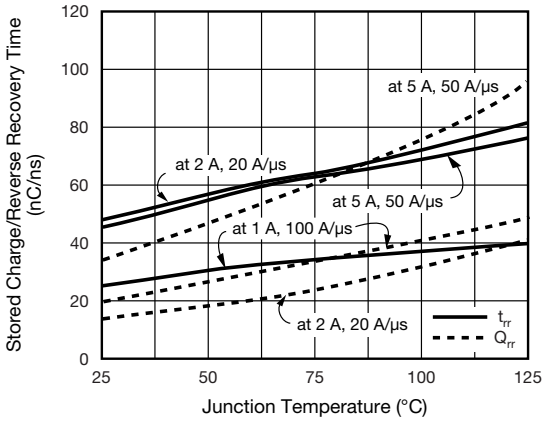


Fig. 5 - Reverse Switching Characteristics Per Diode

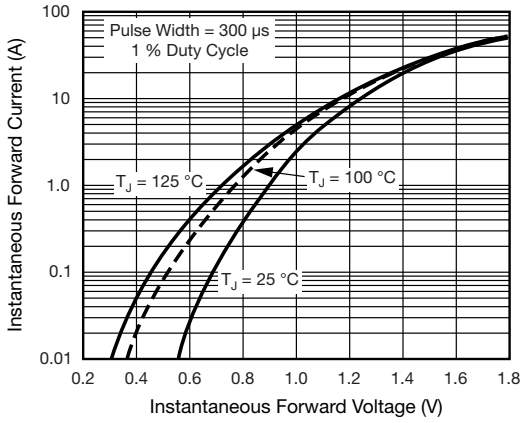


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

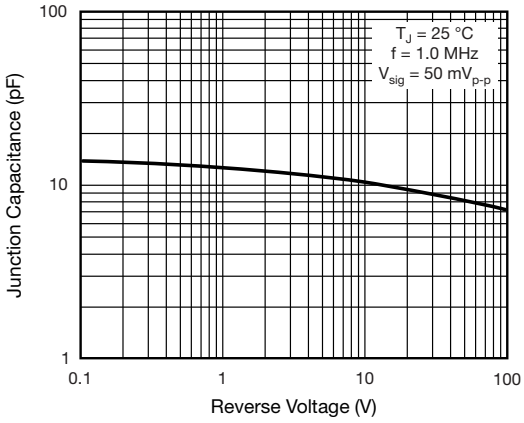
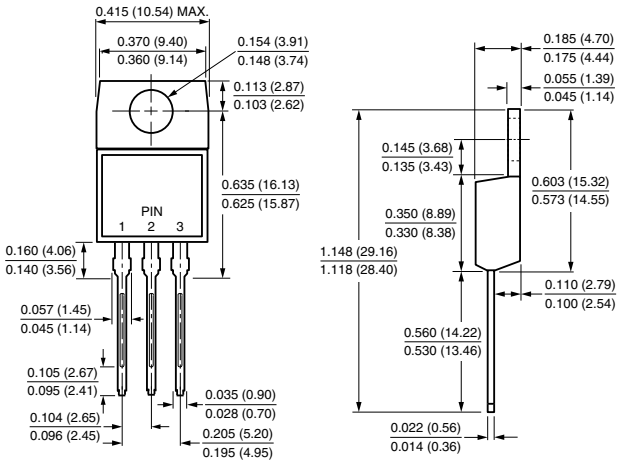


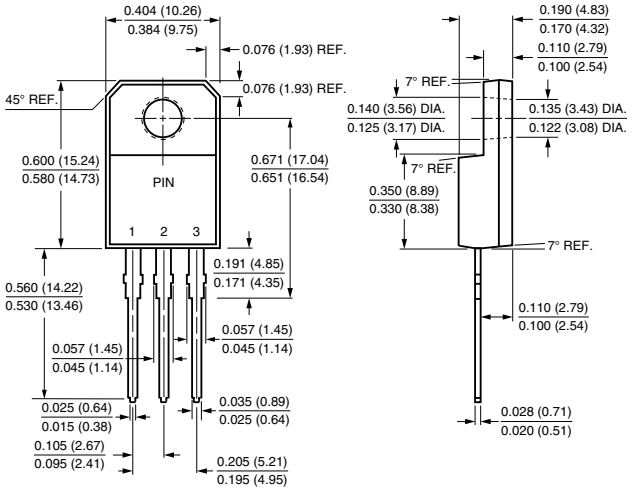
Fig. 6 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

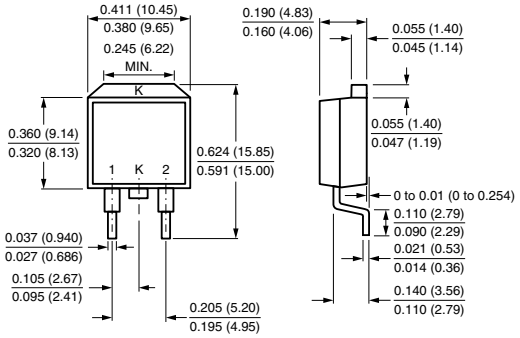
TO-220AB



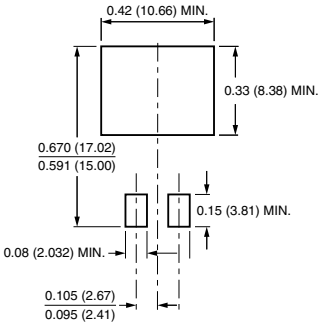
ITO-220AB



TO-263AB



Mounting Pad Layout



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