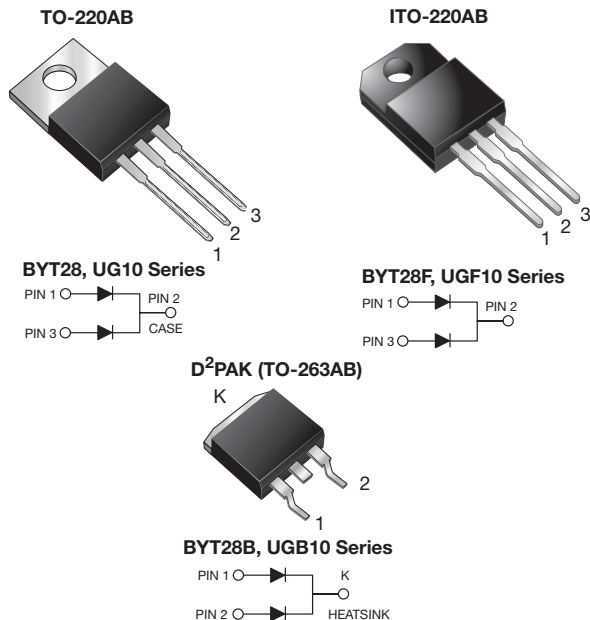




Dual Common Cathode Ultrafast Soft Recovery Rectifier



RoHS
COMPLIANT

FEATURES

- Power pack
- Glass passivated pellet 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 available
 - Automotive ordering code: base P/NHE3 (for ITO-220AB and D²PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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, D²PAK (TO-263AB)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified ("_X" denotes revision code e.g. A, B,...)

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

DESIGN SUPPORT TOOLS AVAILABLE



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	1.05 V
T_J max.	150 °C
Package	TO-220AB, ITO-220AB, D ² PAK (TO-263AB)
Circuit configurations	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 per diode	I _{F(AV)}	10		A
		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}			I _R	10	μA
				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 ($T_C = 25\text{ }^{\circ}\text{C}$ 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	$^{\circ}\text{C}/\text{W}$

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
ITO-220AB	BYT28F-400HE3_A/P ⁽¹⁾	1.95	P	50/tube	Tube
TO-263AB	BYT28B-400HE3_A/P ⁽¹⁾	1.77	P	50/tube	Tube
TO-263AB	BYT28B-400HE3_A/I ⁽¹⁾	1.77	I	800/reel	Tape and reel

Note

⁽¹⁾ AEC-Q101 qualified, available in ITO-220AB and TO-263AB package



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

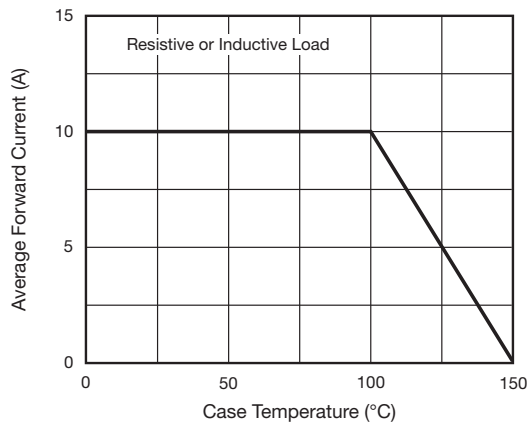


Fig. 1 - Forward Current Derating Curve

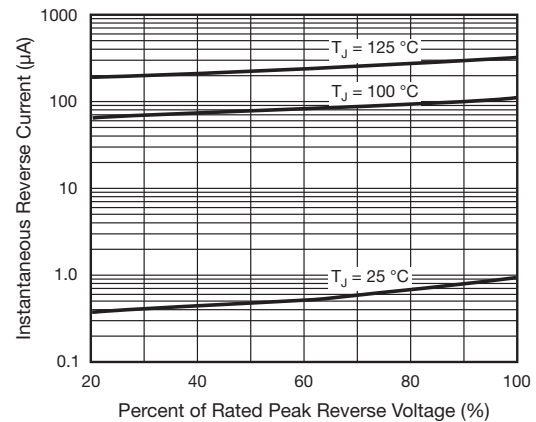


Fig. 4 - Typical Reverse Characteristics Per Diode

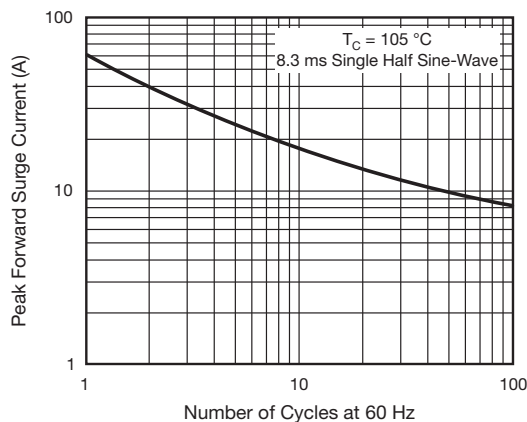


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

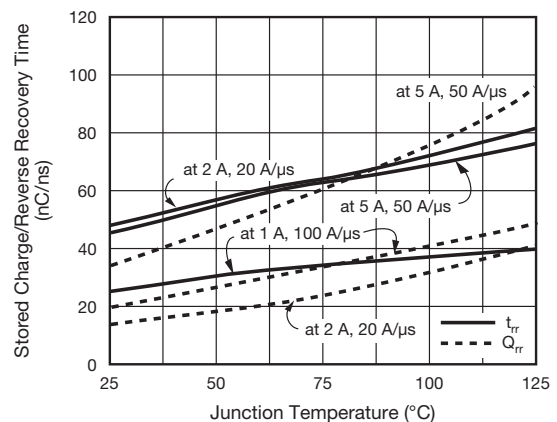


Fig. 5 - Reverse Switching Characteristics Per Diode

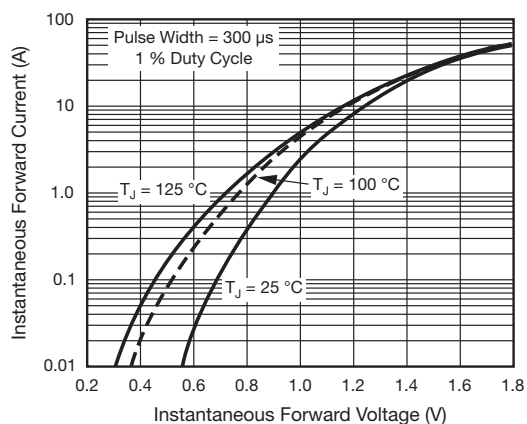


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

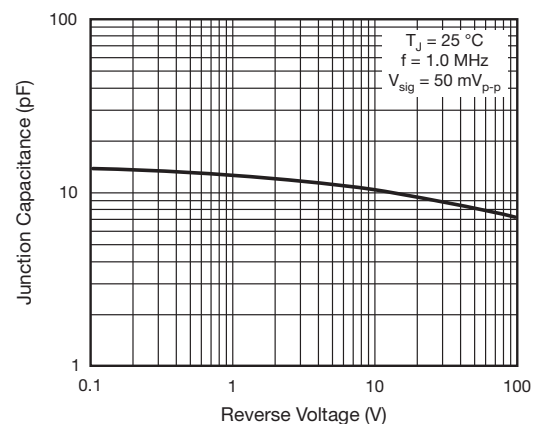
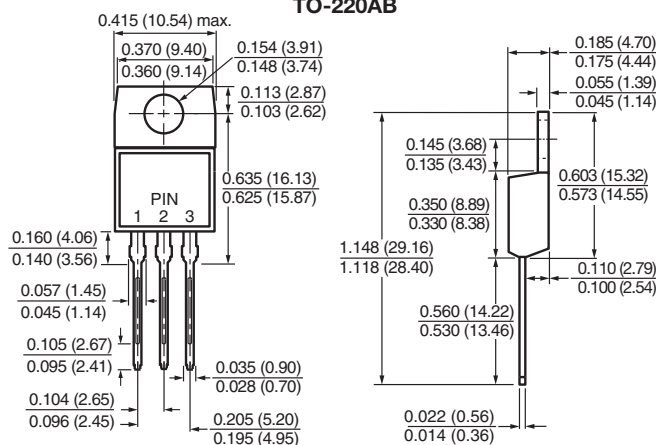


Fig. 6 - Typical Junction Capacitance Per Diode

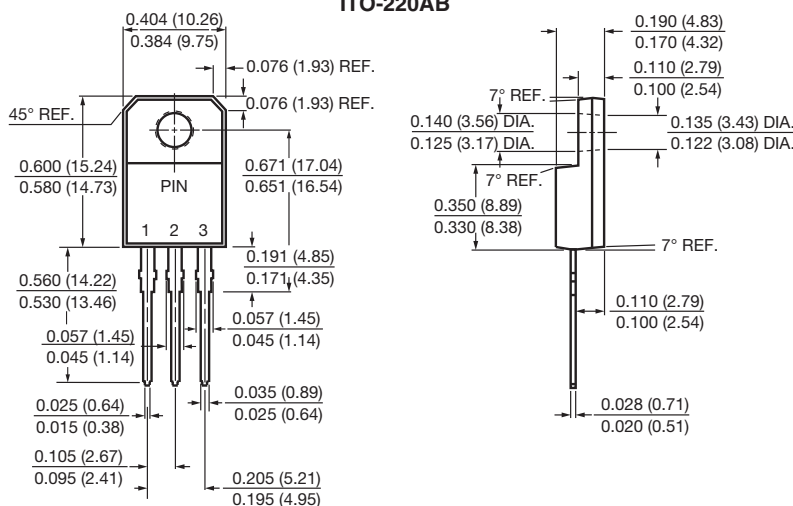


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

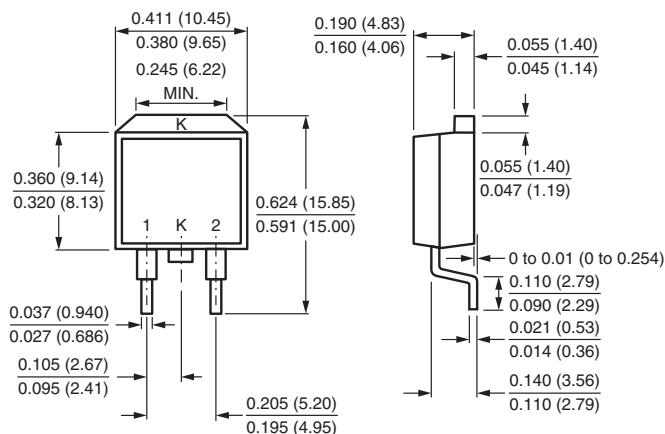
TO-220AB



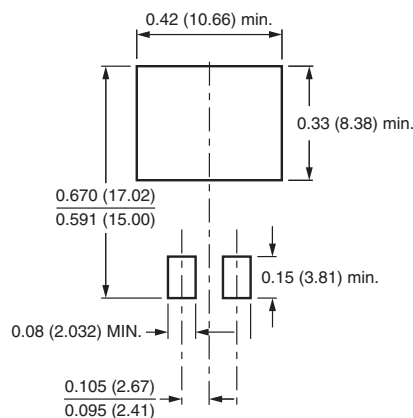
ITO-220AB



D²PAK (TO-263AB)



Mounting Pad Layout





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