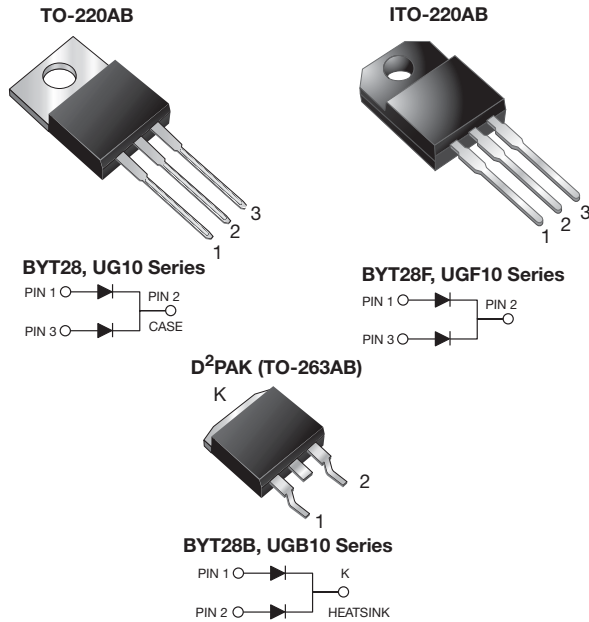




## Dual Common Cathode Ultrafast Soft Recovery Rectifier



### 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 D<sup>2</sup>PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### DESIGN SUPPORT TOOLS AVAILABLE



3D Models

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 <sup>2</sup> PAK (TO-263AB)
Circuit configurations	Common cathode

### 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, D<sup>2</sup>PAK (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

MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ 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 $T_C = 100\text{ °C}$	$I_{F(AV)}$	total device		A
		per diode		
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 $t = 1\text{ min}$	$V_{AC}$	1500		V



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	1.30	V
	$I_F = 10\text{ A}$			1.40	
	$I_F = 5\text{ A}$	$T_J = 150\text{ }^\circ\text{C}$		1.05	
Maximum reverse current per diode at $V_{RRM}$			$I_R$	10	$\mu\text{A}$
				$T_J = 100\text{ }^\circ\text{C}$	
Maximum reverse recovery time per diode	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$		$t_{rr}$	35	ns
	$I_F = 1.0\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$			50	
Maximum reverse recovery current per diode	$I_F = 5\text{ A}, di/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}, T_C = 100\text{ }^\circ\text{C}$		$I_{RM}$	3.0	A
Maximum stored charge per diode	$I_F = 2\text{ A}, di/dt = 20\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$		$Q_{rr}$	50	nC

**Note**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ 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	$^\circ\text{C}/\text{W}$

<b>ORDERING INFORMATION</b> (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<sub>A</sub> = 25 °C unless otherwise noted)

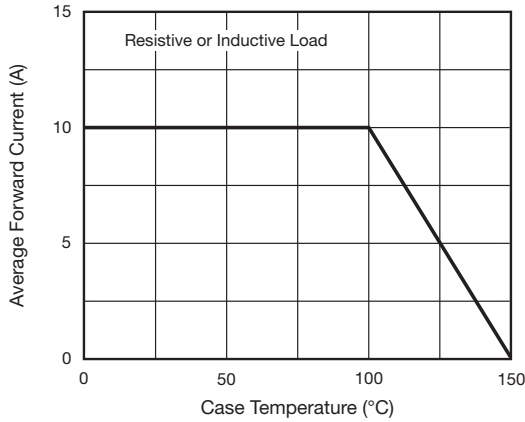


Fig. 1 - Forward Current Derating Curve

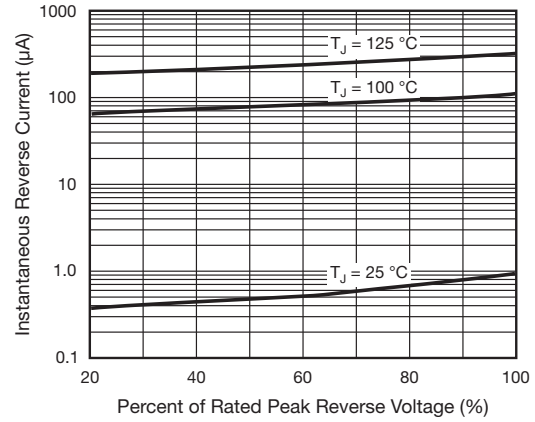


Fig. 4 - Typical Reverse Characteristics Per Diode

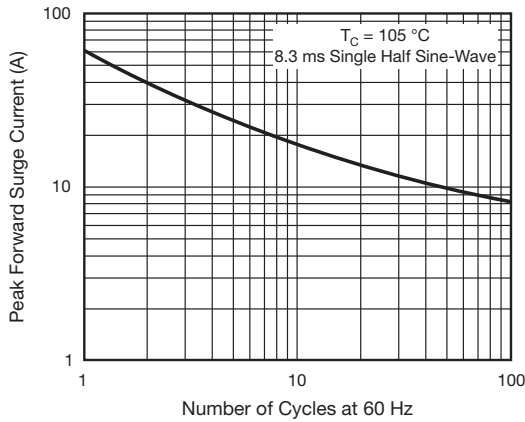


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

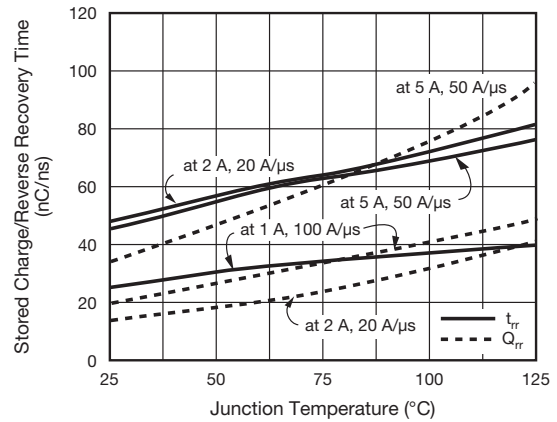


Fig. 5 - Reverse Switching Characteristics Per Diode

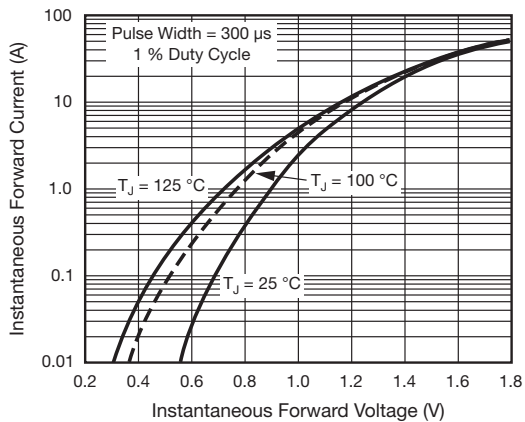


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

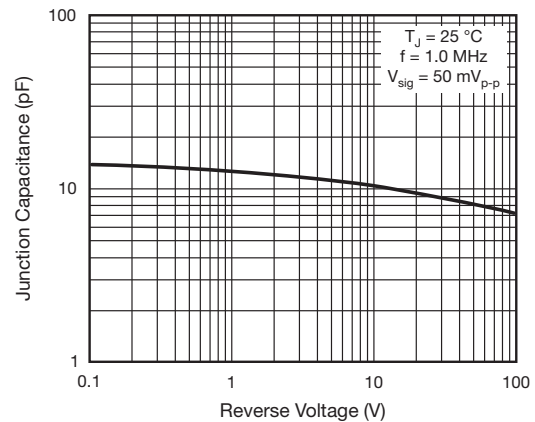
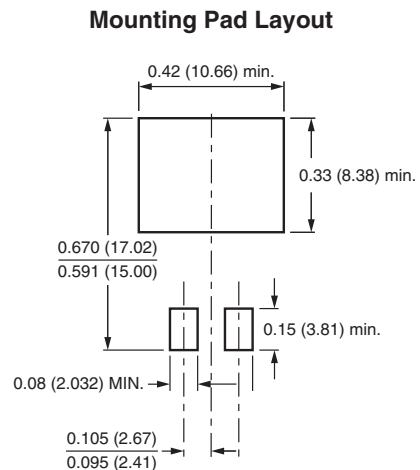
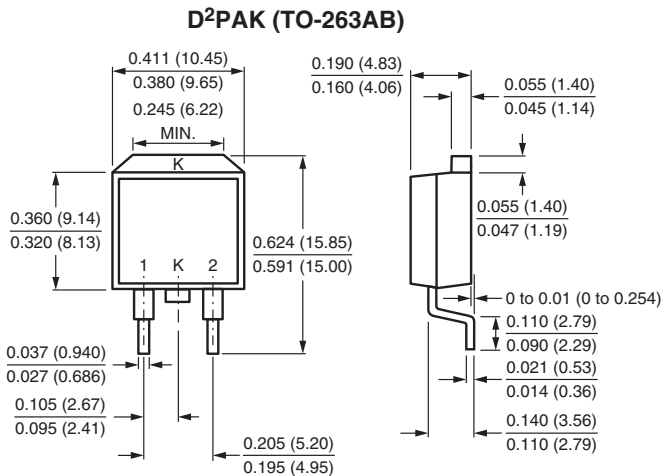
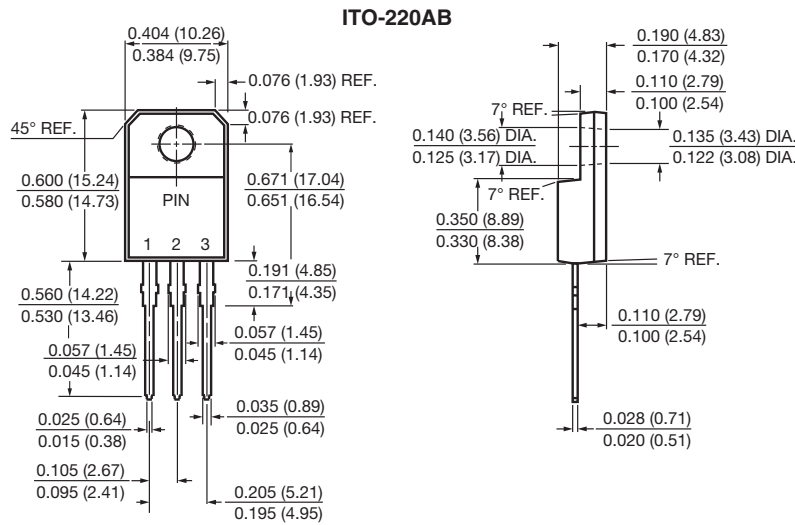
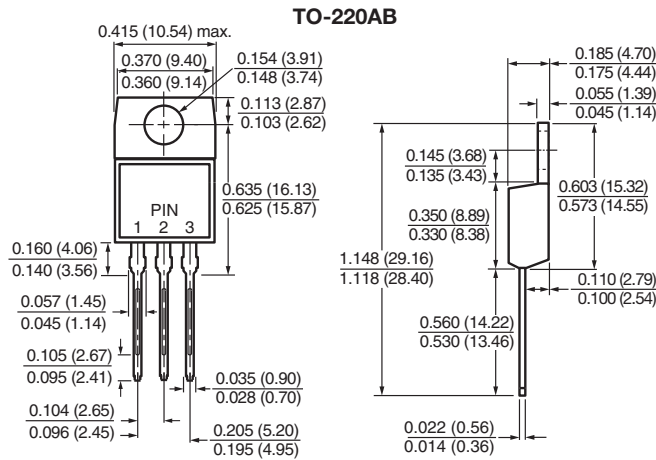


Fig. 6 - Typical Junction Capacitance Per Diode



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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