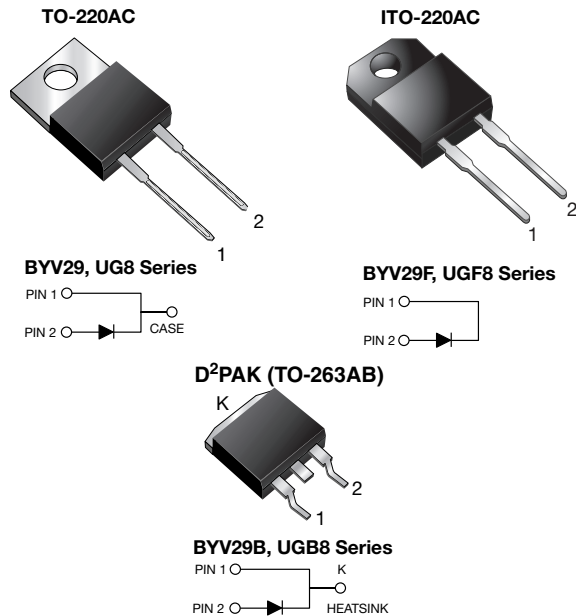




## Ultrafast Rectifier



### 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 (D²PAK (TO-263AB package))
- Solder dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3 (for ITO-220AC and D²PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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.

### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
$V_{RRM}$	300 V to 400 V
$I_{FSM}$	110 A
$t_{rr}$	35 ns
$V_F$	1.03 V
$T_J$ max.	150 °C
Package	TO-220AC, ITO-220AC, D²PAK (TO-263AB)
Circuit configurations	Single

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, 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 max.

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	BYV29-300	BYV29-400	UNIT
		UG8FT	UG8GT	
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	$I_{F(AV)}$	8.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	110		A
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150		°C
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1$ min	$V_{AC}$	1500		V



ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	BYV29-300, UG8FT	BYV29-400, UG8GT	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 8 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.25		V
		T <sub>J</sub> = 150 °C		1.03		
	I <sub>F</sub> = 20 A	T <sub>J</sub> = 25 °C		1.40		
Maximum DC reverse current at V <sub>RRM</sub>			I <sub>R</sub>	10		μA
				350		
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	35		ns
Maximum reverse recovery time	I <sub>F</sub> = 1.0 A, dI/dt = 100 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		t <sub>rr</sub>	50		ns
Maximum reverse recovery current	I <sub>F</sub> = 10 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, T <sub>C</sub> = 100 °C		I <sub>RM</sub>	5.5		A
Maximum recovered stored charged	I <sub>F</sub> = 2 A, dI/dt = 20 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		Q <sub>rr</sub>	55		nC

**Note**

<sup>(1)</sup> Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	BYV29 UG8	BYV29F UGF8	BYV29B UGB8	UNIT
Typical thermal resistance from junction to case	R <sub>θJC</sub>	2.5	5.5	2.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	BYV29-400-E3/45	1.80	45	50/tube	Tube
ITO-220AC	BYV29F-400-E3/45	1.95	45	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	BYV29B-400-E3/45	1.77	45	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	BYV29B-400-E3/81	1.77	81	800/reel	Tape and reel
ITO-220AC	BYV29F-400HE3_A/P <sup>(1)</sup>	1.95	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	BYV29B-400HE3_A/P <sup>(1)</sup>	1.77	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	BYV29B-400HE3_A/I <sup>(1)</sup>	1.77	I	800/reel	Tape and reel

**Note**

<sup>(1)</sup> AEC-Q101 qualified, available in ITO-220AC and TO-263AB package



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

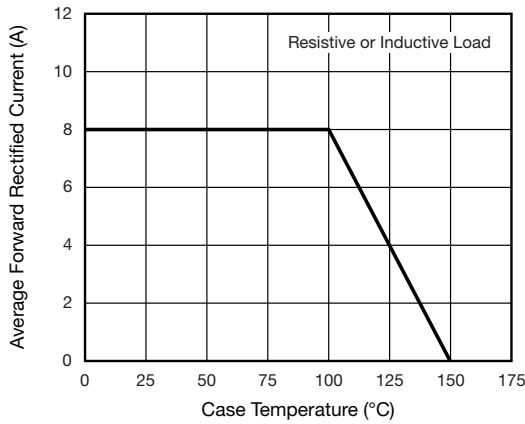


Fig. 1 - Maximum Forward Current Derating Curve

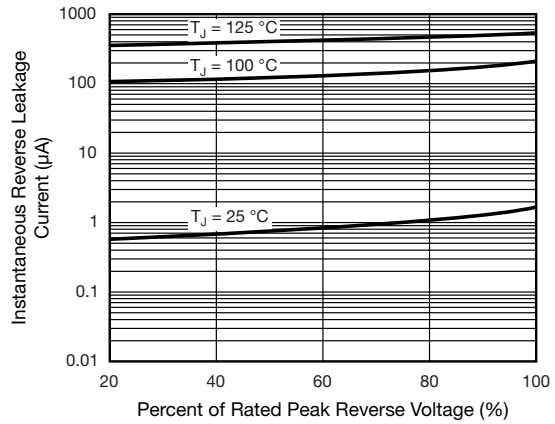


Fig. 4 - Typical Reverse Leakage Characteristics

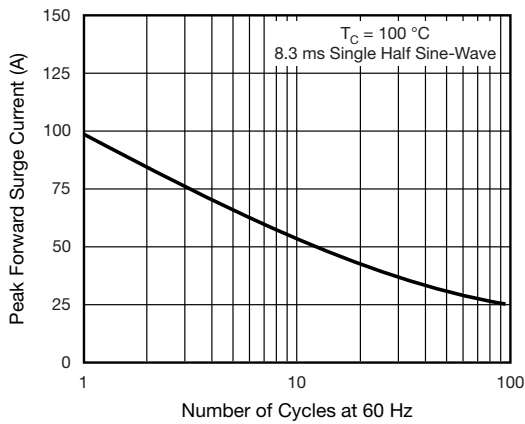


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

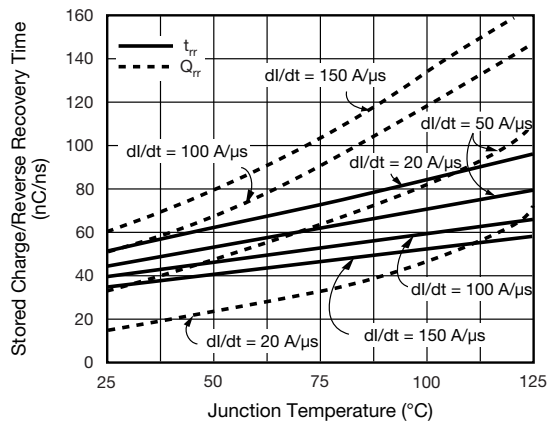


Fig. 5 - Reverse Switching Characteristics Per Leg

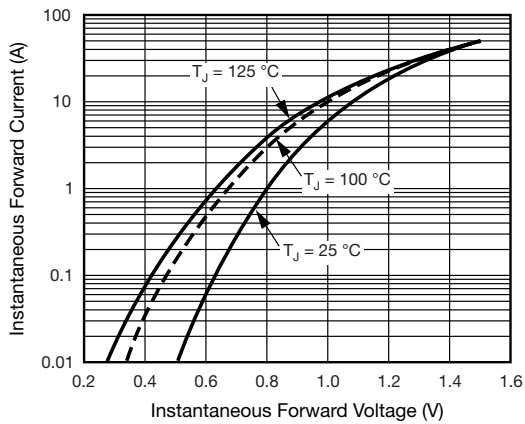


Fig. 3 - Typical Instantaneous Forward Characteristics

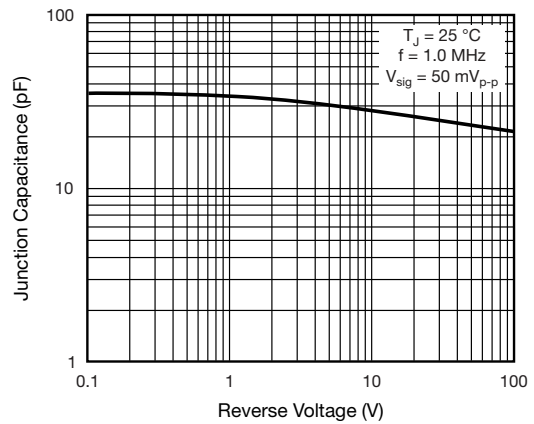
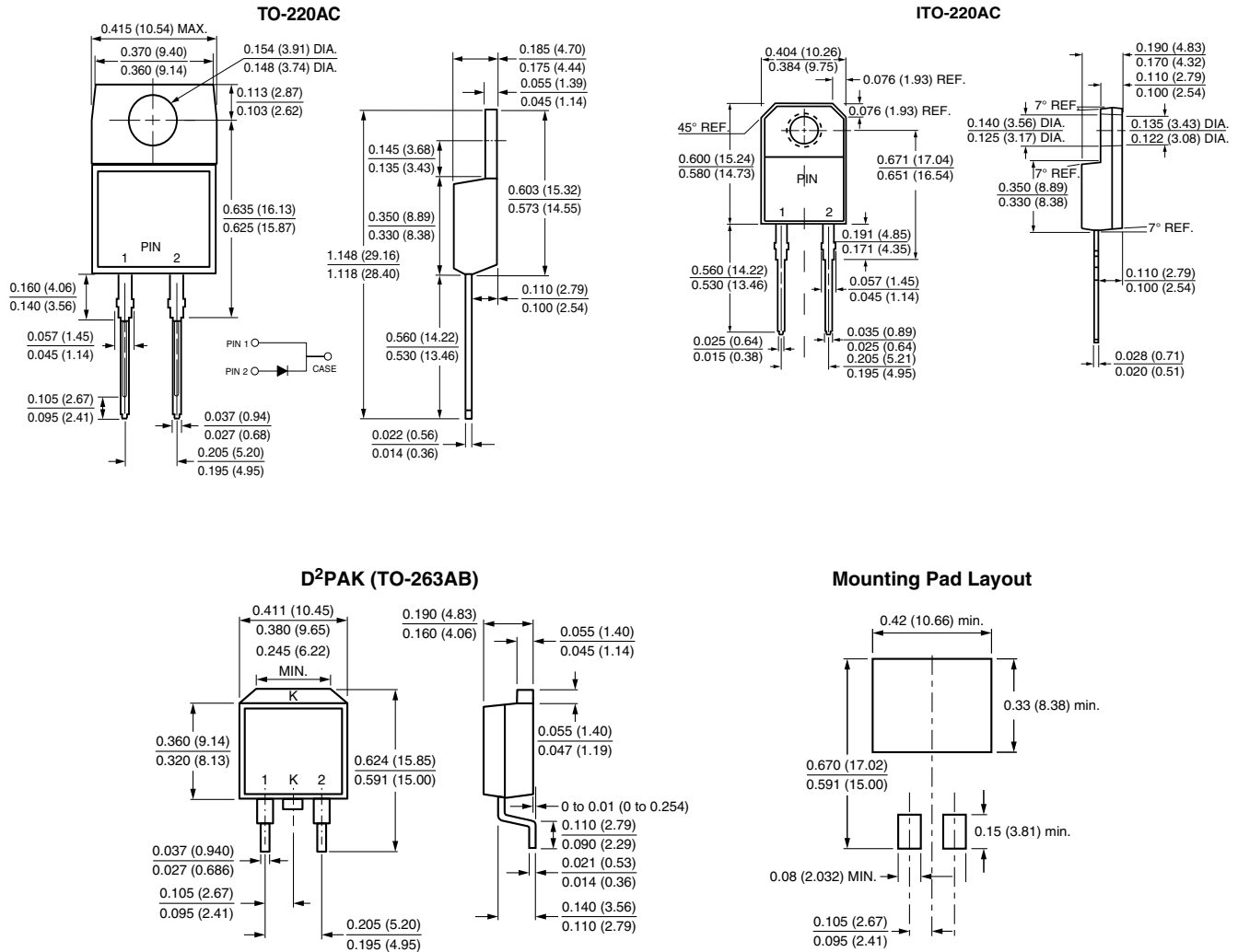


Fig. 6 - Typical Junction Capacitance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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