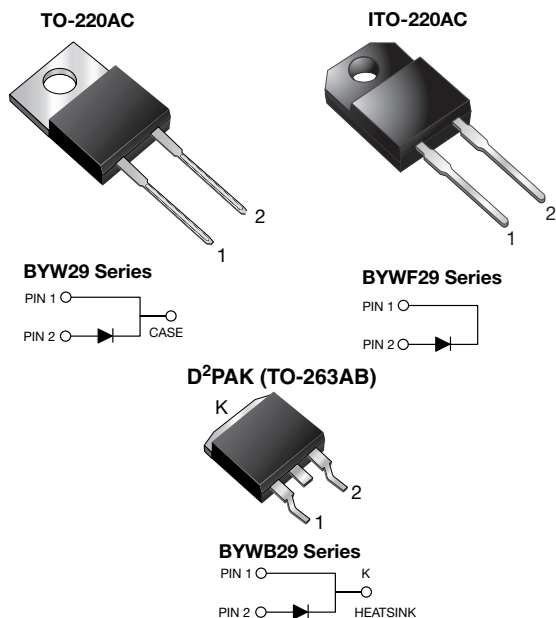


## Ultrafast Rectifier



### DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
$V_{RRM}$	50 V to 200 V
$I_{FSM}$	100 A
$t_{rr}$	25 ns
$V_F$	0.8 V
$T_J$ max.	150 °C
Package	TO-220AC, ITO-220AC, D <sup>2</sup> PAK (TO-263AB)
Circuit configurations	Single

### 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 (D<sup>2</sup>PAK (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)
  - base P/NHM3 (for 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  
HALOGEN  
**FREE**  
Available

### 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-220AC, ITO-220AC, 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,...)

Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Base P/NHM3 - RoHS-compliant, halogen-free and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs max.

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

PARAMETER	SYMBOL	BYW29-50 BYWF29-50	BYW29-100 BYWF29-100	BYW29-150 BYWF29-150	BYW29-200 BYWF29-200 BYWB29-200	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	50	100	150	200	V
Maximum RMS voltage	$V_{RMS}$	35	70	105	140	V
Maximum DC blocking voltage	$V_{DC}$	50	100	150	200	V
Maximum average forward rectified current at $T_C = 105\text{ }^{\circ}\text{C}$	$I_{F(AV)}$	8.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	100				A
Operating and storage temperature range	$T_J, T_{STG}$	-65 to +150				$^{\circ}\text{C}$
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1\text{ min}$	$V_{AC}$	1500				V

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

PARAMETER	TEST CONDITIONS		SYMBOL	BYW29-50 BYWF29-50	BYW29-100 BYWF29-100	BYW29-150 BYWF29-150	BYW29-200 BYWF29-200 BYWB29-200	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 20 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.3				V
	I <sub>F</sub> = 8.0 A	T <sub>J</sub> = 150 °C		0.8				
Maximum DC reverse current at rated DC blocking voltage		T <sub>C</sub> = 25 °C	I <sub>R</sub>	10				μA
		T <sub>C</sub> = 100 °C		500				
Maximum reverse recovery time	I <sub>F</sub> = 1 A, V <sub>R</sub> = 30 V, dI/dt = 100 A/μs, I <sub>rr</sub> = 10 % I <sub>RM</sub>		t <sub>rr</sub>	25				ns
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	45				pF

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle**THERMAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	BYW	BYWF	BYWB	UNIT
Typical thermal resistance from junction to case per leg	$R_{\theta JC}$	2.5	5.5	2.5	$^{\circ}\text{C}/\text{W}$

**ORDERING INFORMATION** (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	BYW29-200-E3/45	1.80	45	50/tube	Tube
ITO-220AC	BYWF29-200-E3/45	1.95	45	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	BYWB29-200-M3/I	1.77	I	800/reel	Tape and reel
ITO-220AC	BYWF29-200HE3_A/P <sup>(1)</sup>	1.95	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	BYWB29-200HM3/I <sup>(1)</sup>	1.77	I	800/reel	Tape and reel

**Note**(1) AEC-Q101 qualified, available in ITO-220AC and D<sup>2</sup>PAK (TO-263AB) package



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

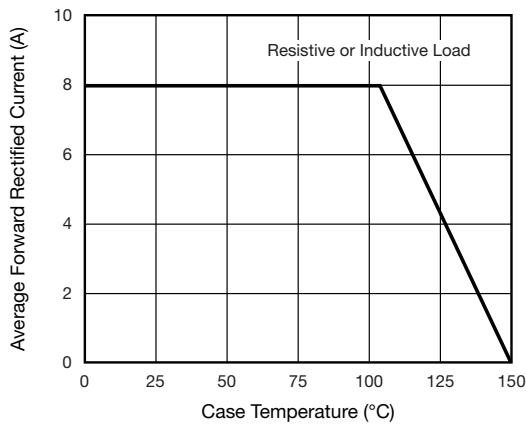


Fig. 1 - Maximum Forward Current Derating Curve

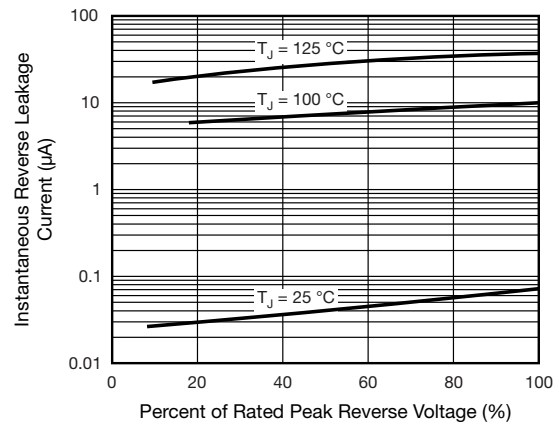


Fig. 4 - Typical Reverse Leakage Characteristics

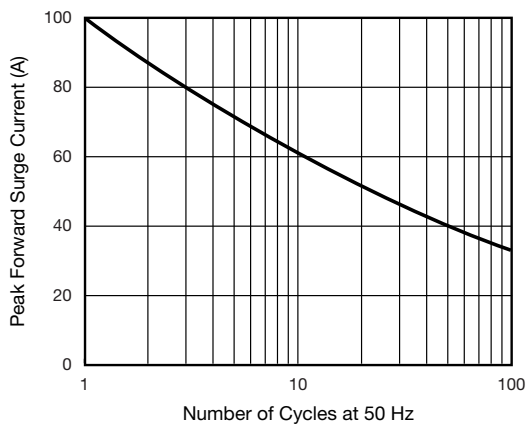


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

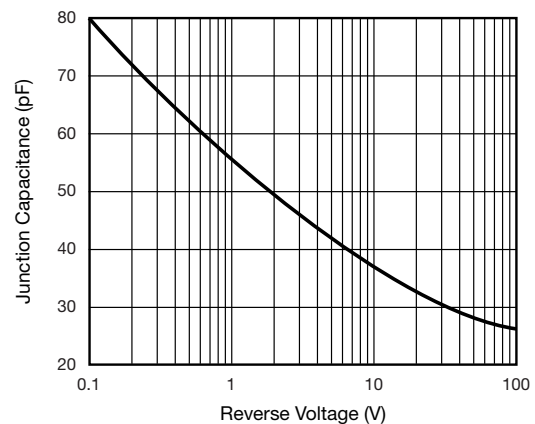


Fig. 5 - Typical Junction Capacitance

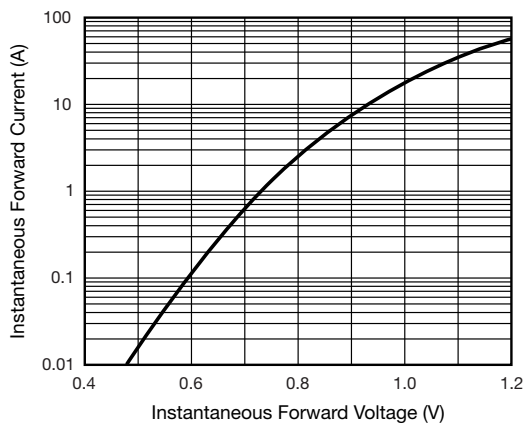
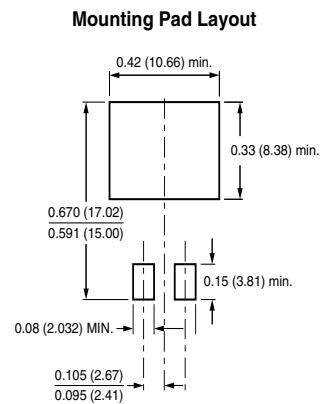
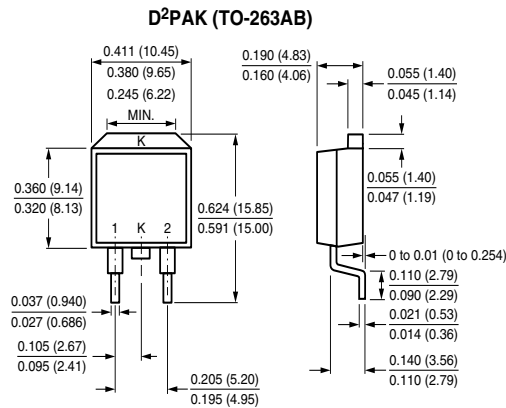
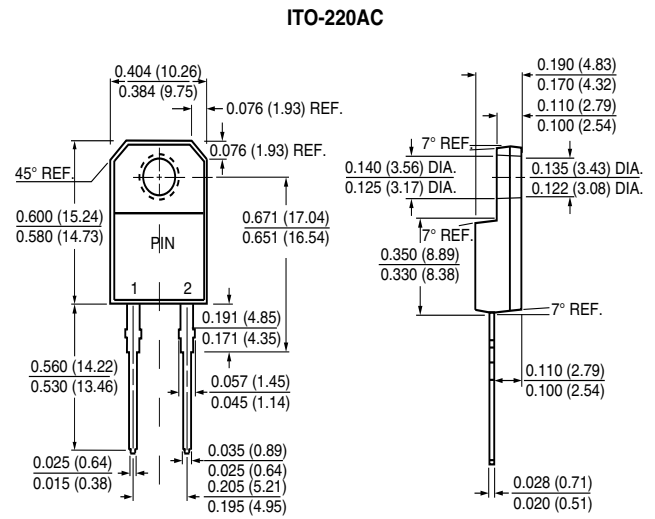
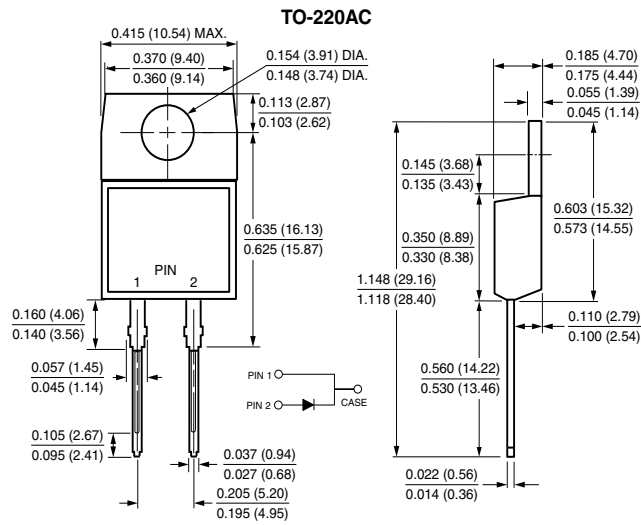


Fig. 3 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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