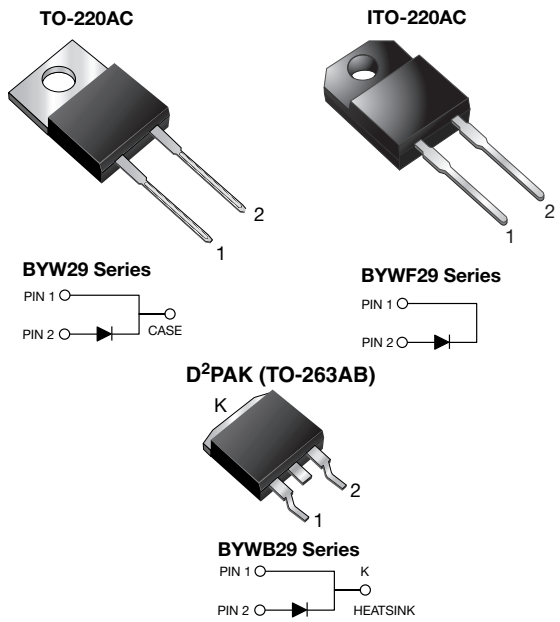
Ultrafast Rectifier



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 (D^2PAK (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 D2PAK TO-263AB package))
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE Available

DESIGN SUPPORT TOOLS AVAILABLE

3D Models

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^2PAK (TO-263AB)
Circuit configurations	Single

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^2PAK (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.

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MAXIMUM RATINGS (T_C = 25 °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 °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				°C
Isolation voltage (ITO-220AC 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**	**BYW29-50 BYWF29-50**	**BYW29-100 BYWF29-100**	**BYW29-150 BYWF29-150**	**BYW29-200 BYWF29-200 BYWB29-200**	**UNIT**
Maximum instantaneous forward voltage	I_F = 20 A	T_J = 25 °C	V_F (1)	1.3				V
	I_F = 8.0 A	T_J = 150 °C		0.8				
Maximum DC reverse current at rated DC blocking voltage		T_C = 25 °C	I_R	10				µA
		T_C = 100 °C		500				
Maximum reverse recovery time	I_F = 1 A, V_R = 30 V, dI/dt = 100 A/µs, I_{rr} = 10 % I_{RM}		t_{rr}	25				ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	45				pF

Note

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

THERMAL CHARACTERISTICS (T_C = 25 °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	°C/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^2PAK (TO-263AB)	BYWB29-200-M3/I	1.77	I	800/reel	Tape and reel
ITO-220AC	BYWF29-200HE3_A/P (1)	1.95	P	50/tube	Tube
D^2PAK (TO-263AB)	BYWB29-200HM3/I (1)	1.77	I	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified, available in ITO-220AC and D^2PAK (TO-263AB) package

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

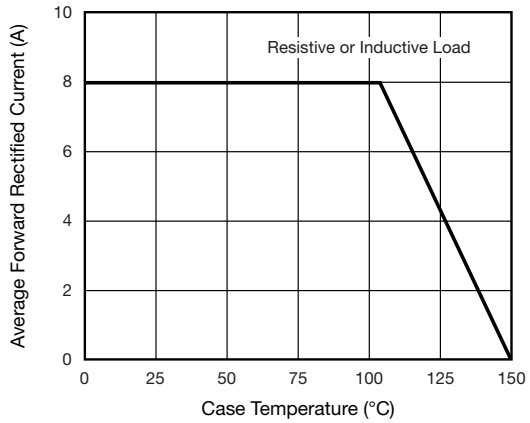

Fig. 1 - Maximum Forward Current Derating Curve

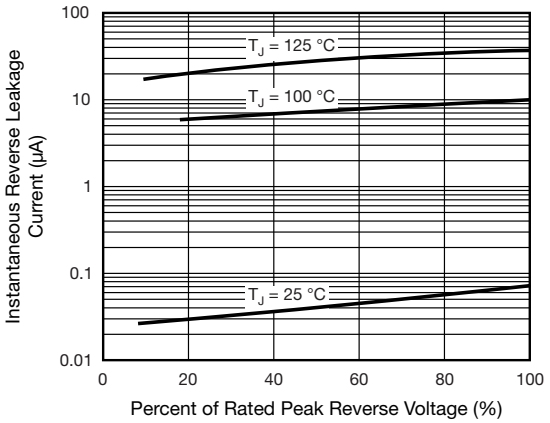

Fig. 4 - Typical Reverse Leakage Characteristics

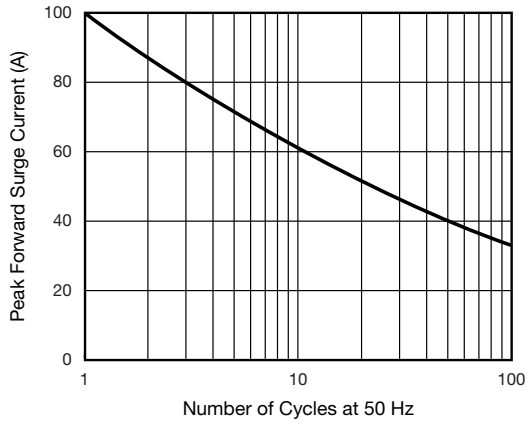

Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

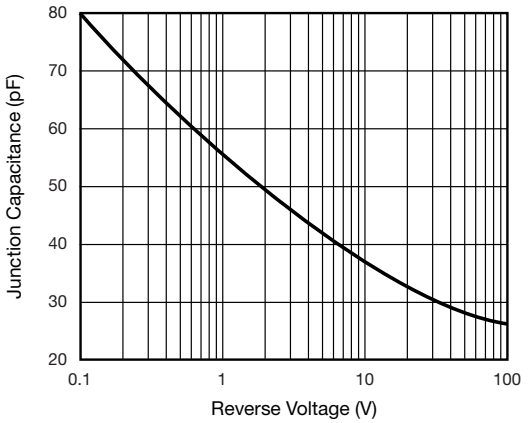

Fig. 5 - Typical Junction Capacitance

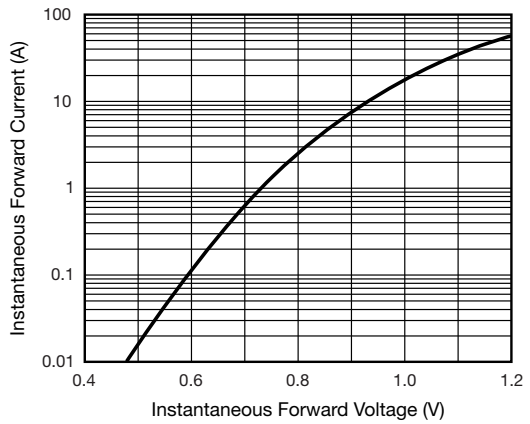

Fig. 3 - Typical Instantaneous Forward Characteristics

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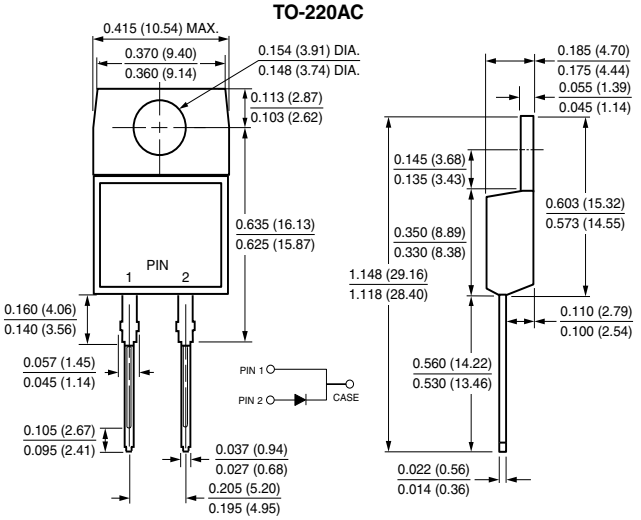
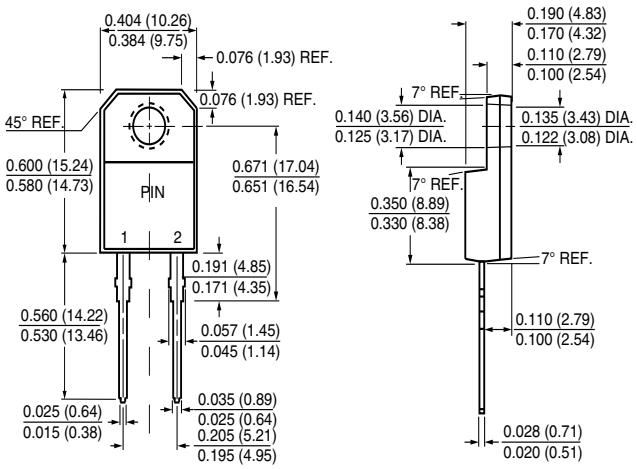
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

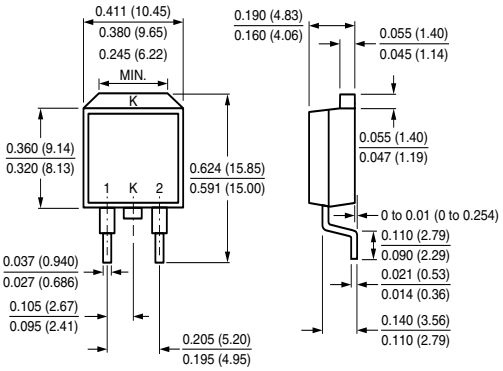
TO-220AC



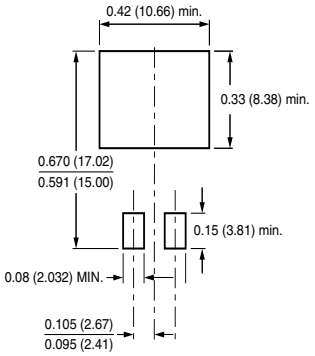
ITO-220AC



D²PAK (TO-263AB)



Mounting Pad Layout



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