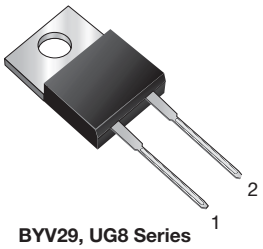
THE DATASHEET OF

BYV29-300-E3/45

BYV29-xxx, BYV29F-xxx, BYV29B-xxx, UG8xT, UGF8xT, UGB8xT

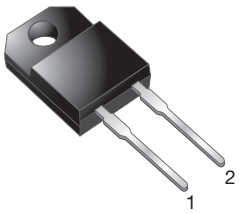
Ultrafast Rectifier

TO-220AC

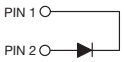


BYV29, UG8 Series

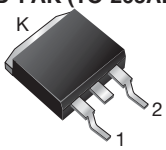
ITO-220AC



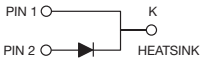
BYV29F, UGF8 Series



D²PAK (TO-263AB)



BYV29B, UGB8 Series



DESIGN SUPPORT TOOLS AVAILABLE

3D Models

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

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

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.

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, commerical 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 UG8FT	BYV29-400 UG8GT	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	$I_{F(AV)}$	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_C = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**BYV29-300, UG8FT**	**BYV29-400, UG8GT**	**UNIT**
Maximum instantaneous forward voltage	I_F = 8 A	T_J = 25 °C	V_F (1)	1.25		V
		T_J = 150 °C		1.03		
	I_F = 20 A	T_J = 25 °C		1.40		
Maximum DC reverse current at V_{RRM}		T_C = 25 °C	I_R	10		µA
		T_C = 100 °C		350		
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	35		ns
Maximum reverse recovery time	I_F = 1.0 A, dI/dt = 100 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	50		ns
Maximum reverse recovery current	I_F = 10 A, dI/dt = 50 A/µs, V_R = 30 V, T_C = 100 °C		I_{RM}	5.5		A
Maximum recovered stored charged	I_F = 2 A, dI/dt = 20 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		Q_{rr}	55		nC

Note

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

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**BYV29 UG8**	**BYV29F UGF8**	**BYV29B UGB8**	**UNIT**
Typical thermal resistance from junction to case	$R_{\theta JC}$	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	BYV29-400-E3/45	1.80	45	50/tube	Tube
ITO-220AC	BYV29F-400-E3/45	1.95	45	50/tube	Tube
D^2PAK (TO-263AB)	BYV29B-400-E3/45	1.77	45	50/tube	Tube
D^2PAK (TO-263AB)	BYV29B-400-E3/81	1.77	81	800/reel	Tape and reel
ITO-220AC	BYV29F-400HE3_A/P (1)	1.95	P	50/tube	Tube
D^2PAK (TO-263AB)	BYV29B-400HE3_A/P (1)	1.77	P	50/tube	Tube
D^2PAK (TO-263AB)	BYV29B-400HE3_A/I (1)	1.77	I	800/reel	Tape and reel

Note

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

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

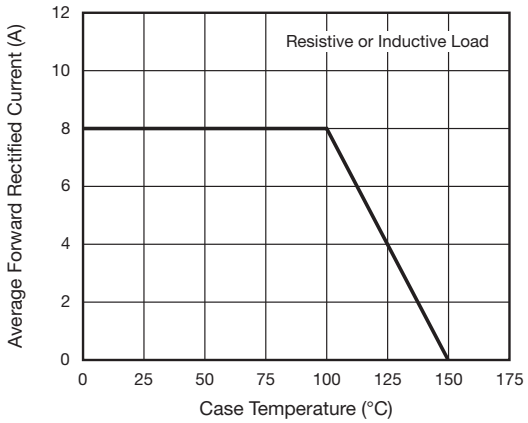


Fig. 1 - Maximum Forward Current Derating Curve

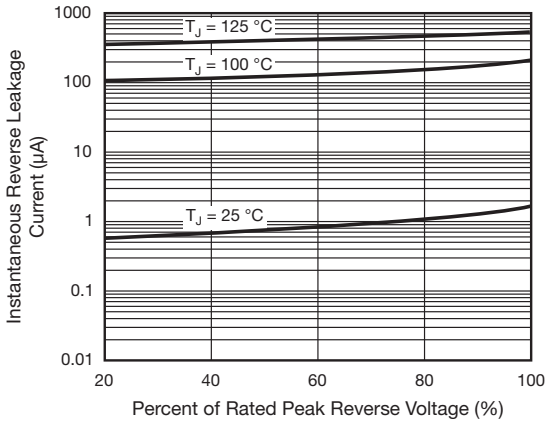


Fig. 4 - Typical Reverse Leakage Charateristics

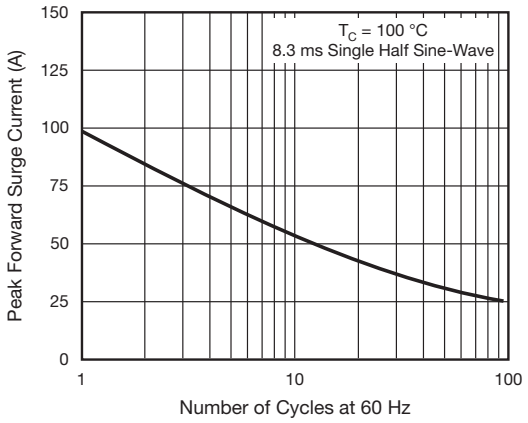


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

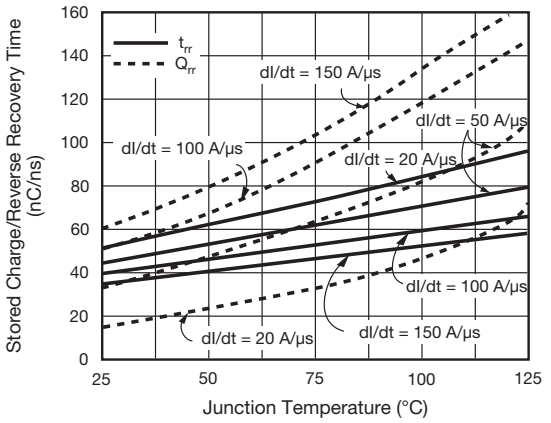


Fig. 5 - Reverse Switching Characteristics Per Leg

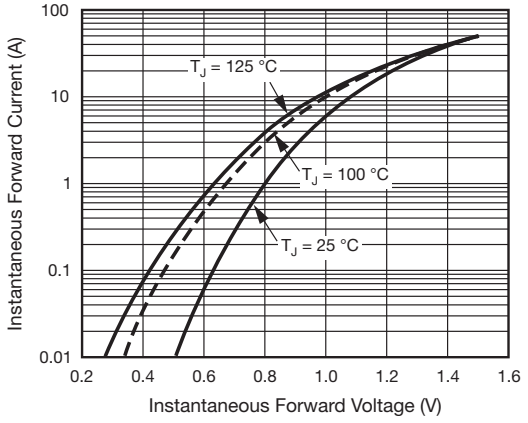


Fig. 3 - Typical Instantaneous Forward Characteristics

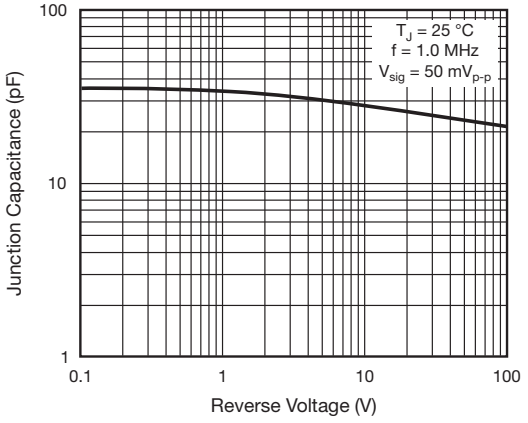
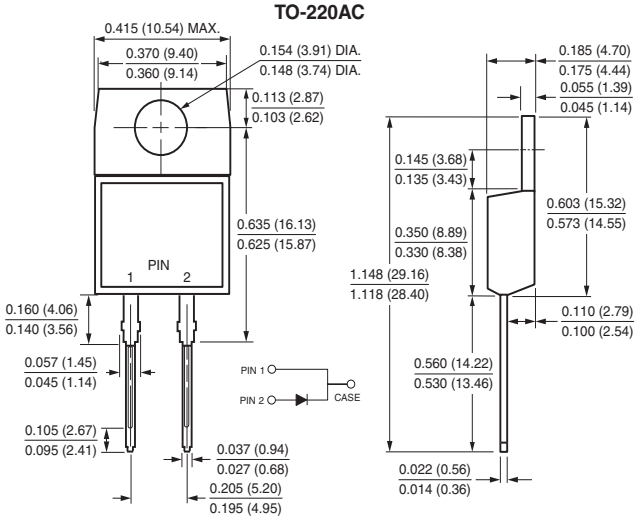


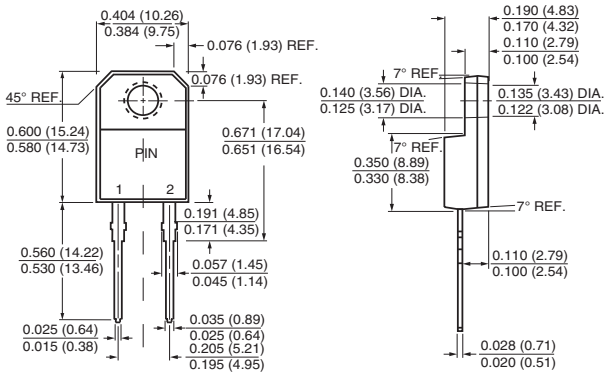
Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

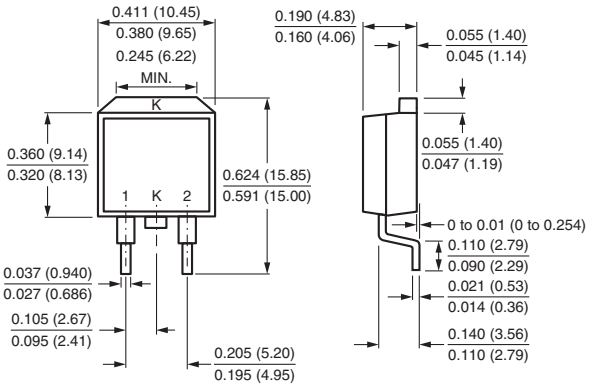
TO-220AC



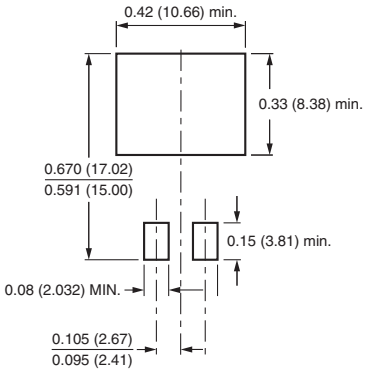
ITO-220AC



D²PAK (TO-263AB)



Mounting Pad Layout



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