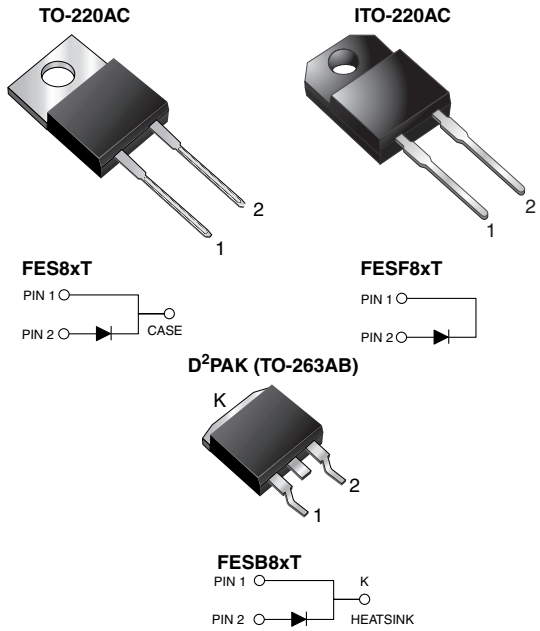
Ultrafast Plastic Rectifier



LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
V_{RRM}	50 V to 600 V
I_{FSM}	125 A
t_{rr}	35 ns, 50 ns
V_F	0.95 V, 1.30 V, 1.50 V
T_J max.	150 °C
Package	TO-220AC, ITO-220AC, D²PAK (TO-263AB)
Circuit configurations	Single

FEATURES

RoHS COMPLIANT
HALOGEN FREE Available

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low leakage current
- 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)
    base P/NHM3 (for D²PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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 94V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3_X - RoHS-compliant, 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, AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-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 °C unless otherwise noted)										
PARAMETER	**SYMBOL**	**FES8AT FESF8AT**	**FES8BT FESF8BT**	**FES8CT FESF8CT**	**FES8DT FESF8DT FESB8DT**	**FES8FT FESF8FT**	**FES8GT FESF8GT FESB8GT**	**FES8HT FESF8HT**	**FES8JT FESF8JT FESB8JT**	**UNIT**
Max. repetitive peak reverse voltage	V_{RRM}	50	100	150	200	300	400	500	600	V
Max. RMS voltage	V_{RMS}	35	70	105	140	210	280	350	420	V
Max. DC blocking voltage	V_{DC}	50	100	150	200	300	400	500	600	V
Max. 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}	125								A
Operating storage and temperature range	T_J, T_{STG}	-55 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**	**FES8AT FESF8AT**	**FES8BT FESF8BT**	**FES8CT FESF8CT**	**FES8DT FESF8DT FESB8DT**	**FES8FT FESF8FT**	**FES8GT FESF8GT FESB8GT**	**FES8HT FESF8HT**	**FES8JT FESF8JT FESB8JT**	**UNIT**
Max. instantaneous forward voltage (1)	8.0 A	V_F	0.95				1.3		1.5		V
Max. DC reverse current at rated DC blocking voltage	T_C = 25 °C	I_R	10								µA
	T_C = 100 °C		500								
Max. reverse recovery time	I_F = 0.5 A, I_R = 1.0 I_{rr} = 0.25 A	t_{rr}	35				50				ns
Typical junction capacitance	4.0 V, 1 MHz	C_J	85						50		pF

Note

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

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**FES**	**FESF**	**FESB**	**UNIT**
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.2	5.0	2.2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	FES8JT-E3/45	1.80	45	50/tube	Tube
ITO-220AC	FESF8JT-E3/45	1.85	45	50/tube	Tube
D^2PAK (TO-263AB)	FESB8JT-M3/I	1.33	I	800/reel	Tape and reel
ITO-220AC	FESF8JTHE3_A/P (1)	1.85	P	50/tube	Tube
D^2PAK (TO-263AB)	FESB8JTHM3/I (1)	1.33	I	800/reel	Tape and reel

Note

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

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

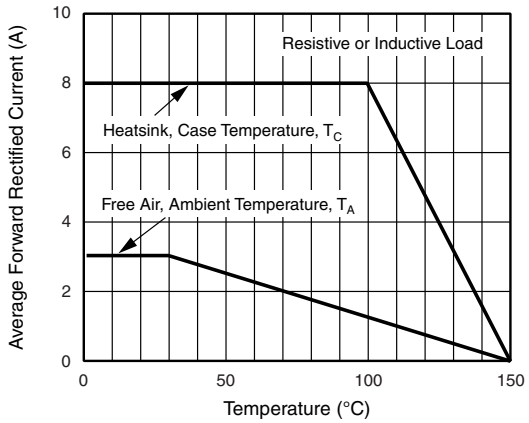


Fig. 1 - Max. Forward Current Derating Curve

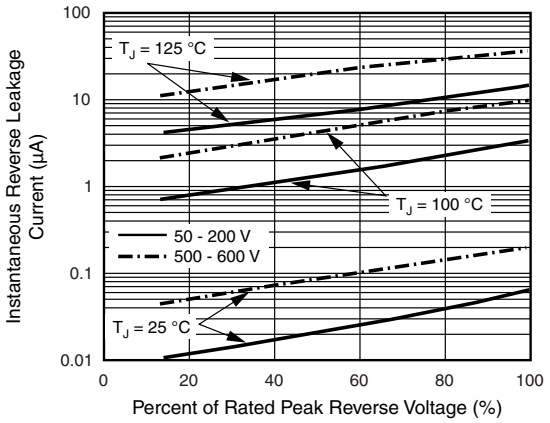


Fig. 4 - Typical Reverse Leakage Characteristics

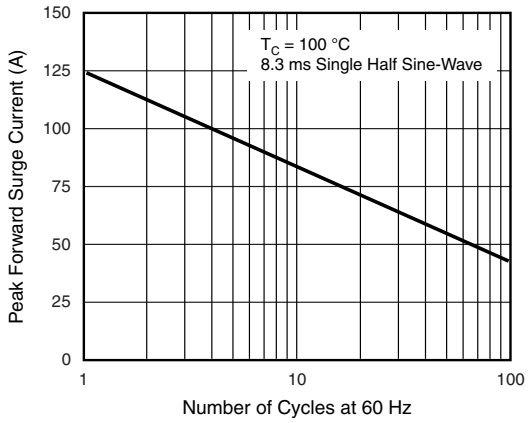


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

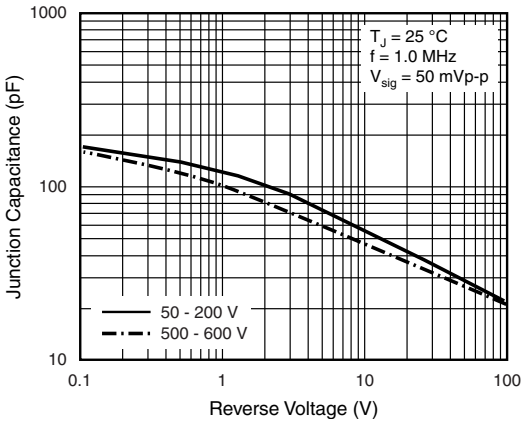


Fig. 5 - Typical Junction Capacitance

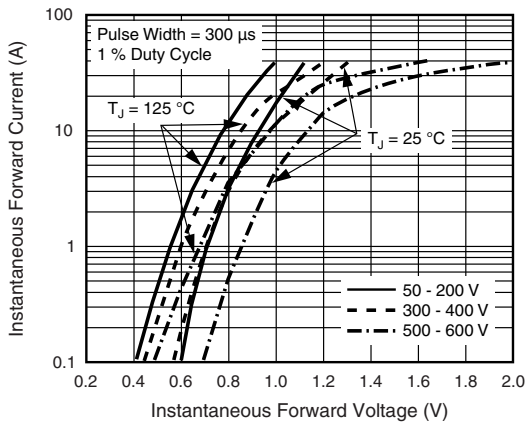
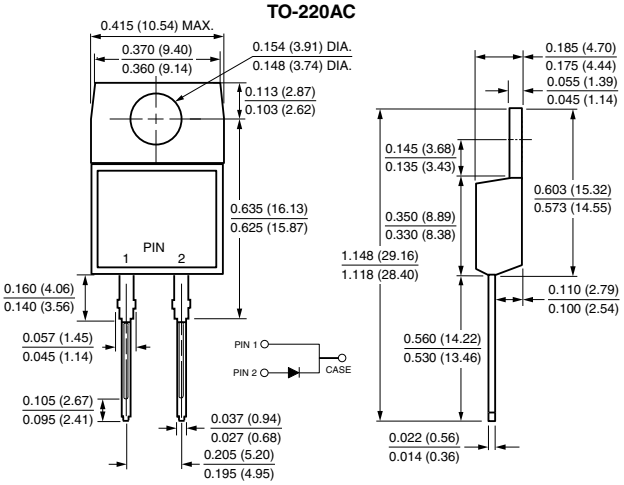


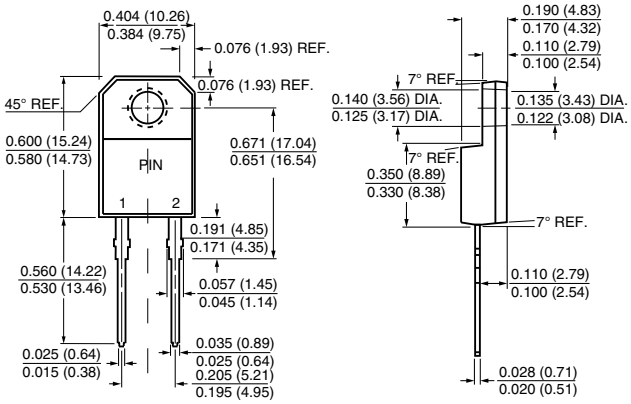
Fig. 3 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

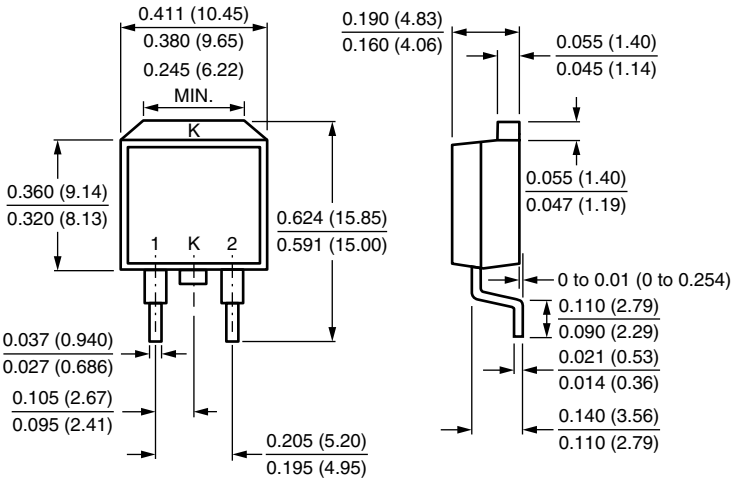
TO-220AC



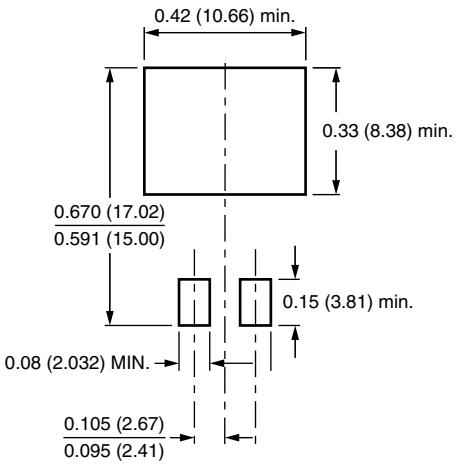
ITO-220AC



D²PAK (TO-263AB)



Mounting Pad Layout



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.