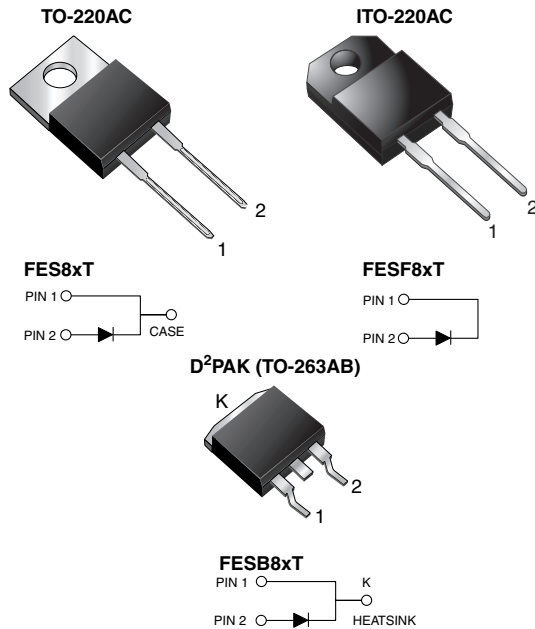


## Ultrafast Plastic Rectifier



### LINKS TO ADDITIONAL RESOURCES



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, 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 leakage current
- 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 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 <sub>C</sub> = 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 <sub>RRM</sub>	50	100	150	200	300	400	500	600	V
Max. RMS voltage	V <sub>RMS</sub>	35	70	105	140	210	280	350	420	V
Max. DC blocking voltage	V <sub>DC</sub>	50	100	150	200	300	400	500	600	V
Max. average forward rectified current at T <sub>C</sub> = 100 °C	I <sub>F(AV)</sub>	8.0								A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	125								A
Operating storage and temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150								°C
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V <sub>AC</sub>	1500								V

ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 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 <sup>(1)</sup>	8.0 A	V <sub>F</sub>	0.95				1.3		1.5		V
Max. 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								
Max. reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 I <sub>rr</sub> = 0.25 A	t <sub>rr</sub>	35				50				ns
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	85						50		pF

**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	FES	FESF	FESB	UNIT
Typical thermal resistance from junction to case	R <sub>θJC</sub>	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 <sup>2</sup> PAK (TO-263AB)	FESB8JT-M3/I	1.33	I	800/reel	Tape and reel
ITO-220AC	FESF8JTHE3_A/P <sup>(1)</sup>	1.85	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	FESB8JTHM3/I <sup>(1)</sup>	1.33	I	800/reel	Tape and reel

**Note**

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



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

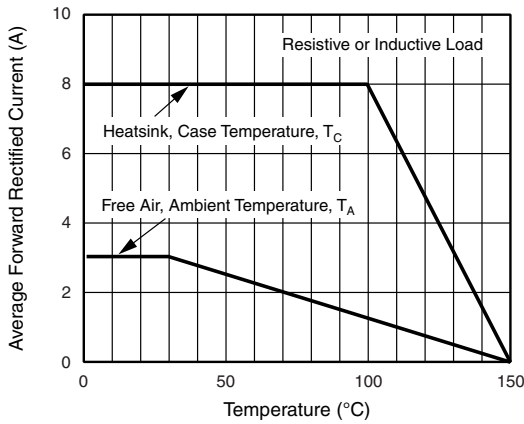


Fig. 1 - Max. Forward Current Derating Curve

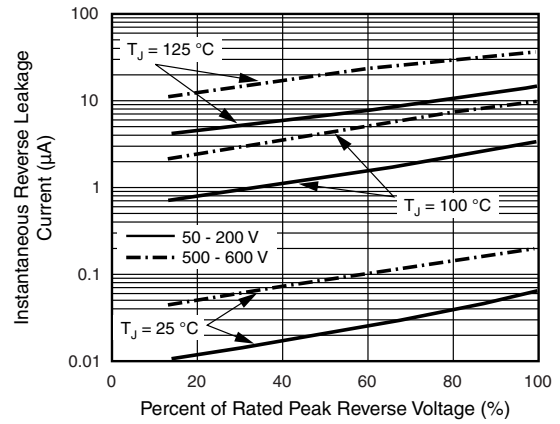


Fig. 4 - Typical Reverse Leakage Characteristics

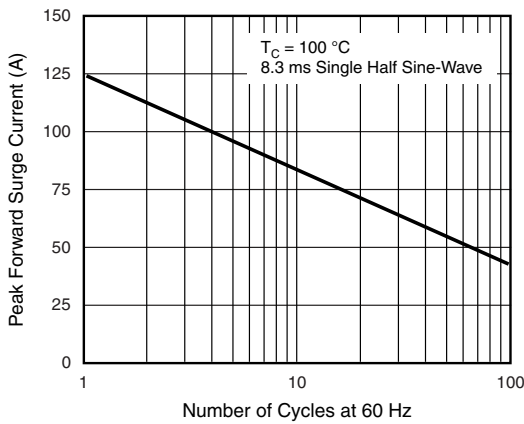


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

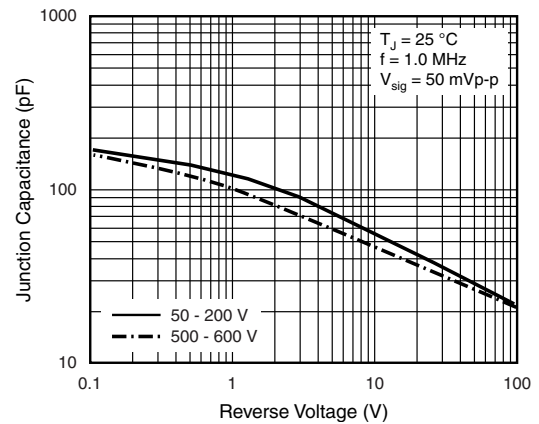


Fig. 5 - Typical Junction Capacitance

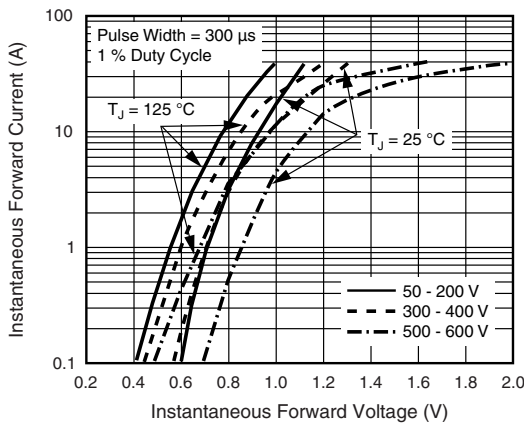
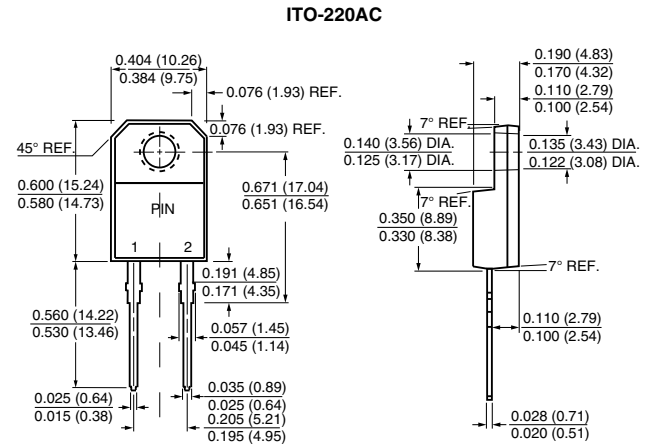
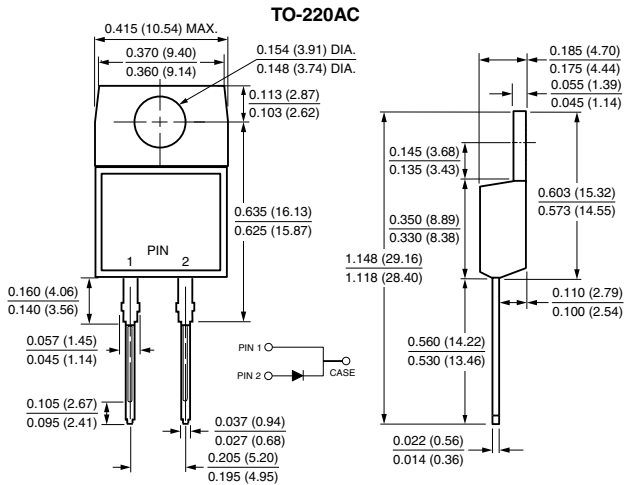


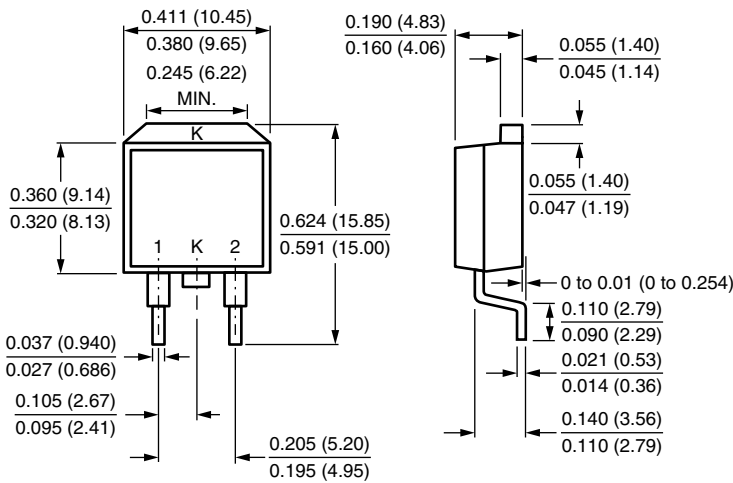
Fig. 3 - Typical Instantaneous Forward Characteristics



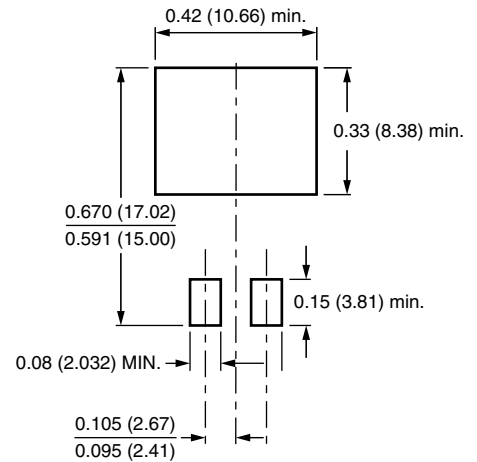
### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



### D<sup>2</sup>PAK (TO-263AB)



### Mounting Pad Layout





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