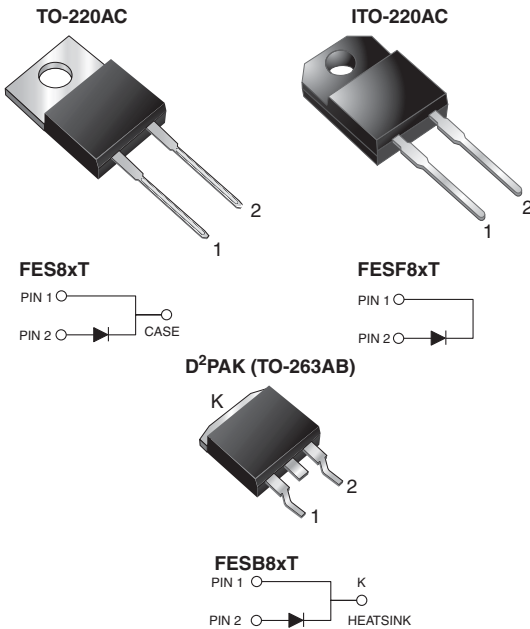


## Ultrafast Plastic Rectifier


**RoHS**  
COMPLIANT

### 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 and 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)

### 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 and AEC-Q101 qualified (“\_X” denotes revision code e.g. A, B,...)

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD22-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.

### DESIGN SUPPORT TOOLS AVAILABLE



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

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)										
PARAMETER	SYMBOL	FES 8AT	FES 8BT	FES 8CT	FES 8DT	FES 8FT	FES 8GT	FES 8HT	FES 8JT	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



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)												
PARAMETER	TEST CONDITIONS		SYMBOL	FES8AT	FES8BT	FES8CT	FES8DT	FES8FT	FES8GT	FES8HT	FES8JT	UNIT
Max. instantaneous forward voltage <sup>(1)</sup>	8.0 A		$V_F$	0.95				1.3		1.5		V
Max. DC reverse current at rated DC blocking voltage		$T_C = 25\text{ }^\circ\text{C}$	$I_R$	10								$\mu\text{A}$
		$T_C = 100\text{ }^\circ\text{C}$		500								
Max. reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0$ $I_{rr} = 0.25\text{ A}$		$t_{rr}$	35				50			ns	
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	85						50		pF

**Note**

<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ 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	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (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-E3/45	1.33	45	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	FESB8JT-E3/81	1.33	81	800/reel	Tape and reel
ITO-220AC	FESF8JT <sub>HE3</sub> _A/P <sup>(1)</sup>	1.85	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	FESB8JT <sub>HE3</sub> _A/P <sup>(1)</sup>	1.33	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	FESB8JT <sub>HE3</sub> _A/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)

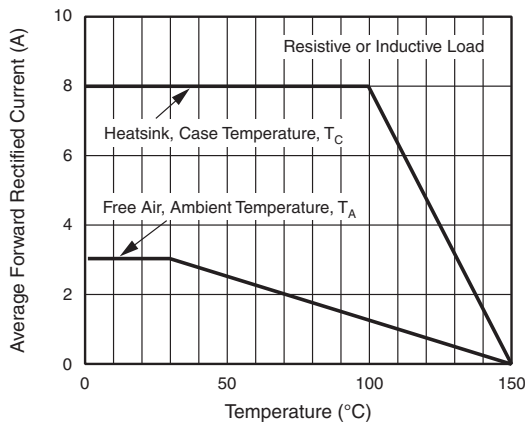


Fig. 1 - Max. Forward Current Derating Curve

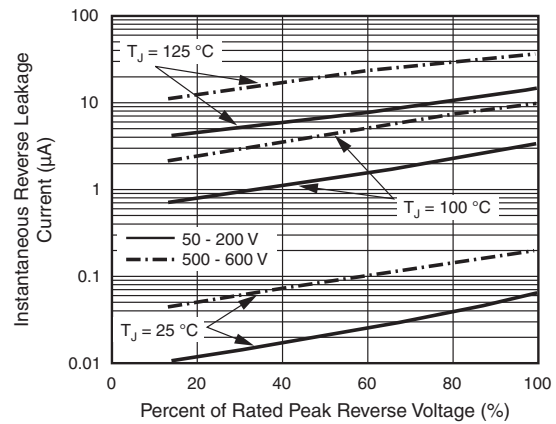


Fig. 4 - Typical Reverse Leakage Characteristics

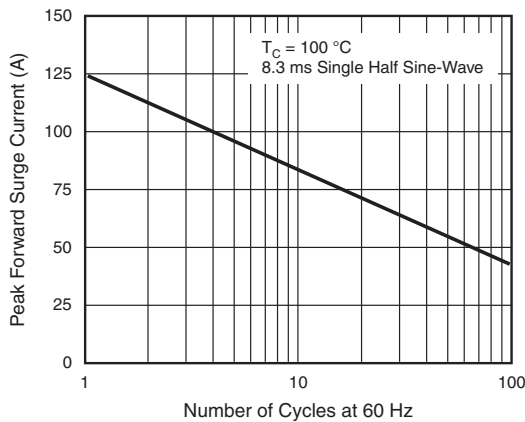


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

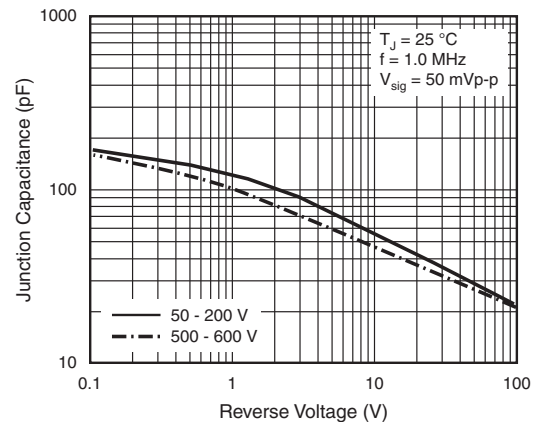


Fig. 5 - Typical Junction Capacitance

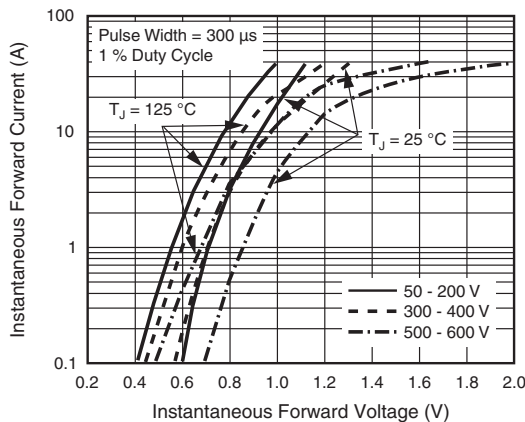
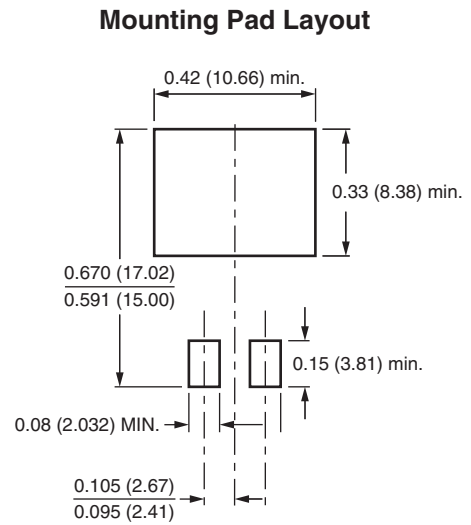
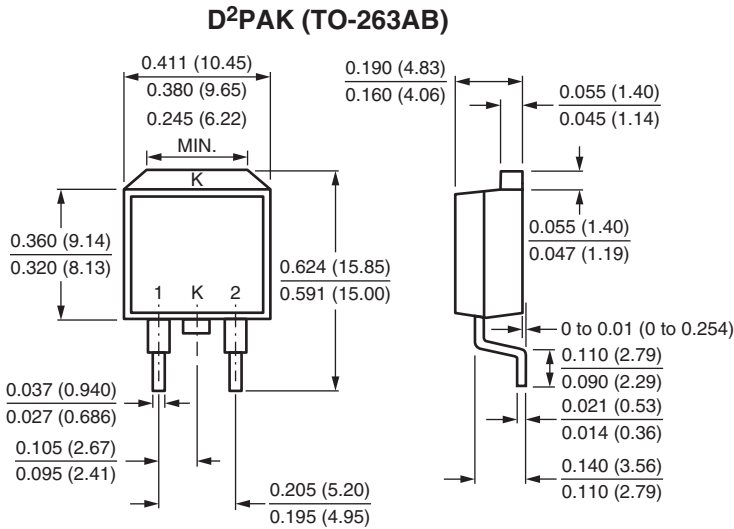
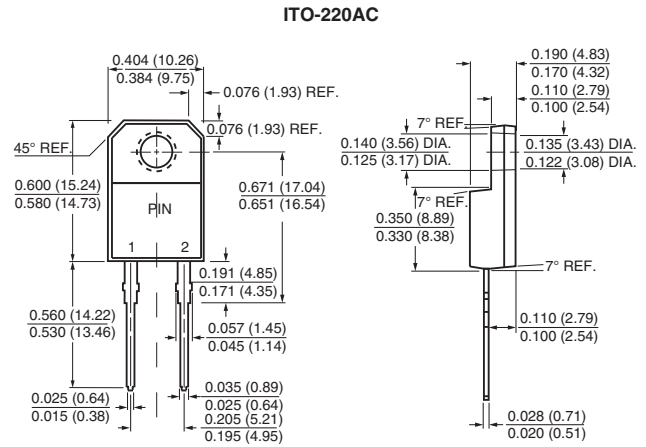
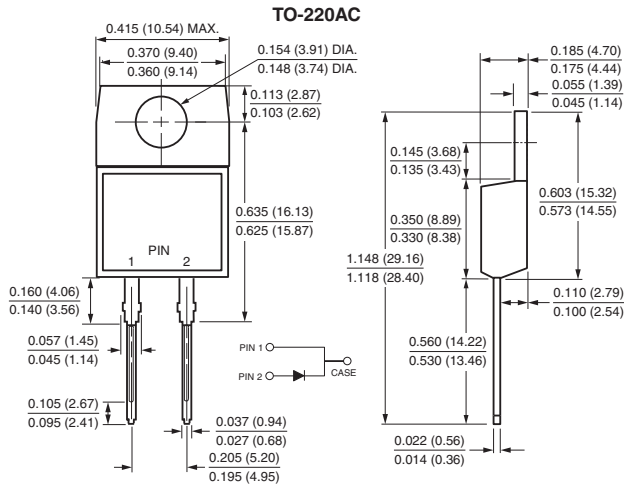


Fig. 3 - Typical Instantaneous Forward Characteristics



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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