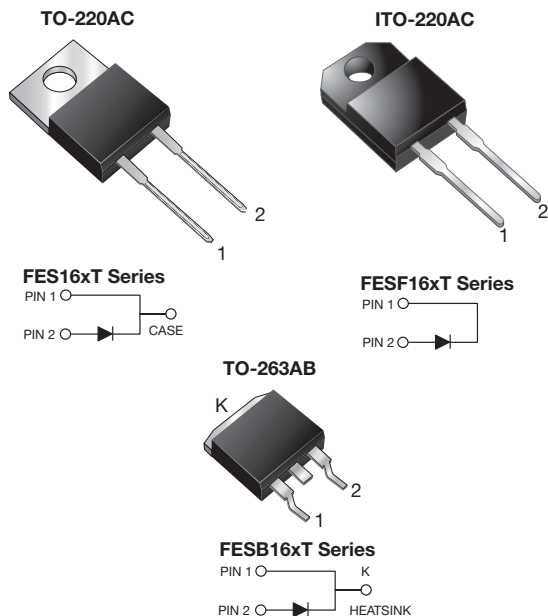


## Ultrafast Plastic Rectifier



### FEATURES

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified (for ITO-220AC and 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.

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	16 A
$V_{RRM}$	50 V to 600 V
$I_{FSM}$	250 A
$t_{rr}$	35 ns, 50 ns
$V_F$	0.975 V, 1.30 V, 1.50 V
$T_J$ max.	150 °C
Package	TO-220AC, ITO-220AC, TO-263AB
Diode variations	Single

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

**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	FES 16AT	FES 16BT	FES 16CT	FES 16DT	FES 16FT	FES 16GT	FES 16HT	FES 16JT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	50	100	150	200	300	400	500	600	V
Maximum RMS voltage	$V_{RMS}$	35	70	105	140	210	280	350	420	V
Maximum DC blocking voltage	$V_{DC}$	50	100	150	200	300	400	500	600	V
Maximum average forward rectified current at $T_C = 100$ °C	$I_{F(AV)}$	16								A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	250								A
Operating storage and 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 <sub>C</sub> = 25 °C unless otherwise noted)												
PARAMETER	TEST CONDITIONS	SYMBOL	FES 16AT	FES 16BT	FES 16CT	FES 16DT	FES 16FT	FES 16GT	FES 16HT	FES 16JT	UNIT	
Maximum instantaneous forward voltage	16 A	V <sub>F</sub> <sup>(1)</sup>	0.975				1.30		1.50		V	
Maximum 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									
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, 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>	175						145		pF	

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	FES	FESF	FESB	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	1.2	1.7	1.2	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	FES16JT-E3/45	1.78	45	50/tube	Tube
ITO-220AC	FESF16JT-E3/45	1.80	45	50/tube	Tube
TO-263AB	FESB16JT-E3/45	1.33	45	50/tube	Tube
TO-263AB	FESB16JT-E3/81	1.33	81	800/reel	Tape and reel
ITO-220AC	FESF16JT-E3/45 <sup>(1)</sup>	1.80	45	50/tube	Tube
TO-263AB	FESB16JT-E3/45 <sup>(1)</sup>	1.33	45	50/tube	Tube
TO-263AB	FESB16JT-E3/81 <sup>(1)</sup>	1.33	81	800/reel	Tape and reel

**Note**

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



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

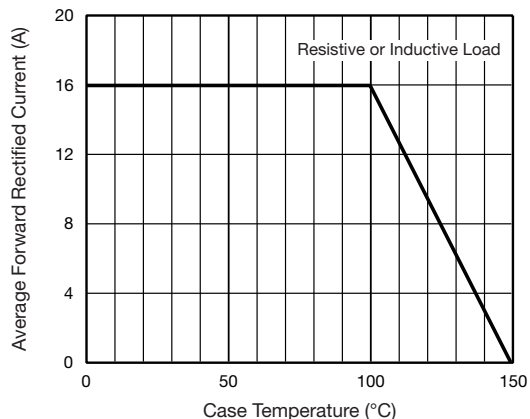


Fig. 1 - Maximum Forward Current Derating Curve

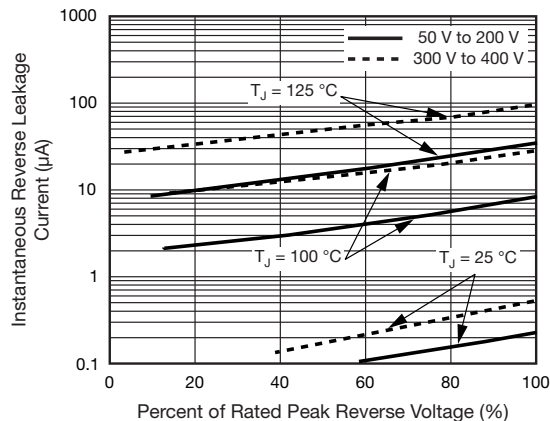


Fig. 4 - Typical Reverse Leakage Characteristics

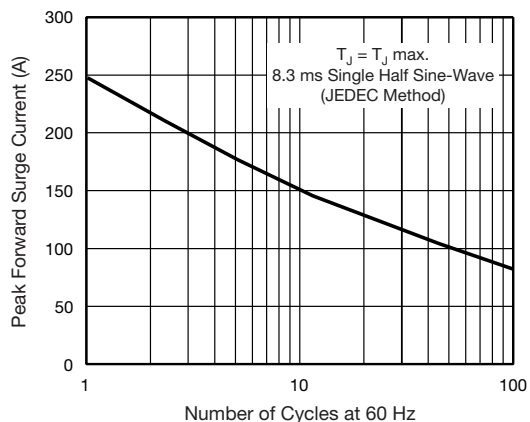


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

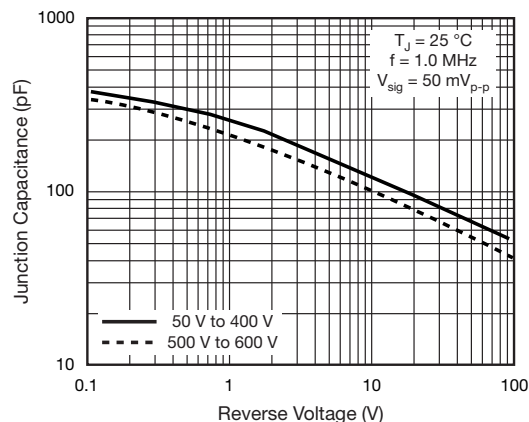


Fig. 5 - Typical Junction Capacitance

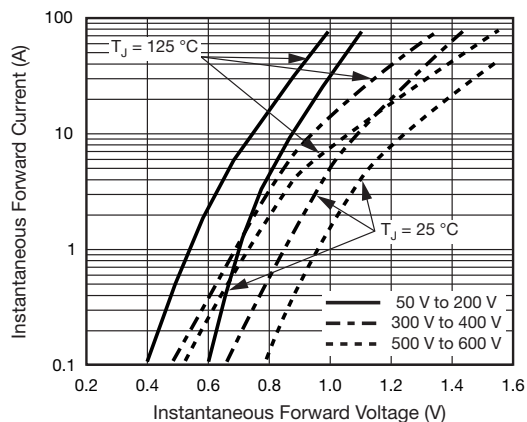
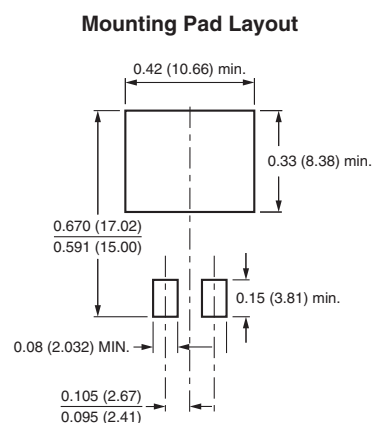
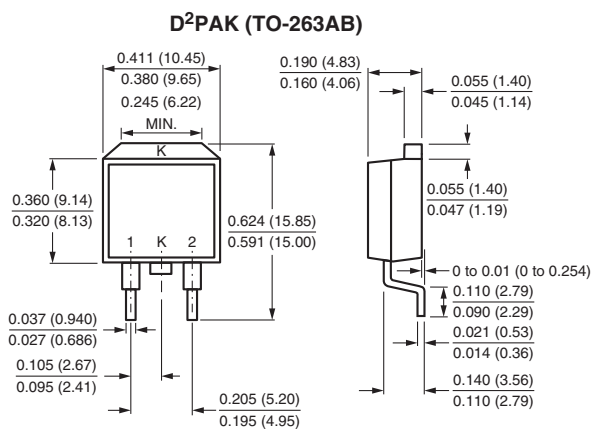
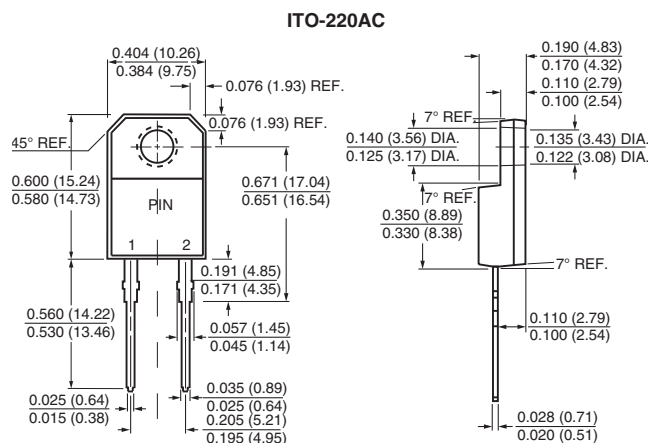
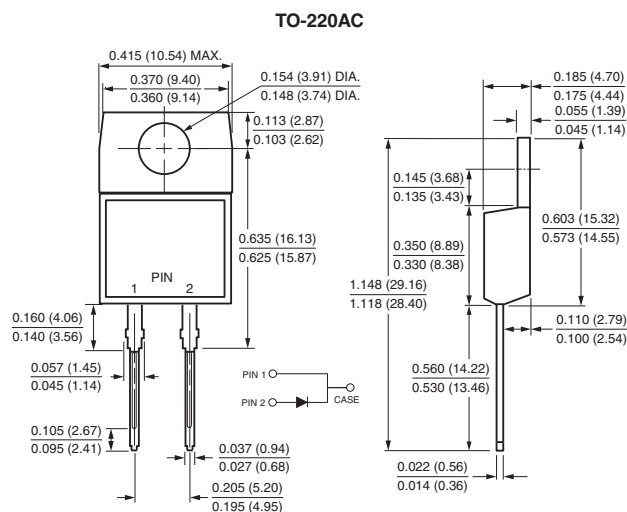


Fig. 3 - Typical Instantaneous Forward Characteristics

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



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