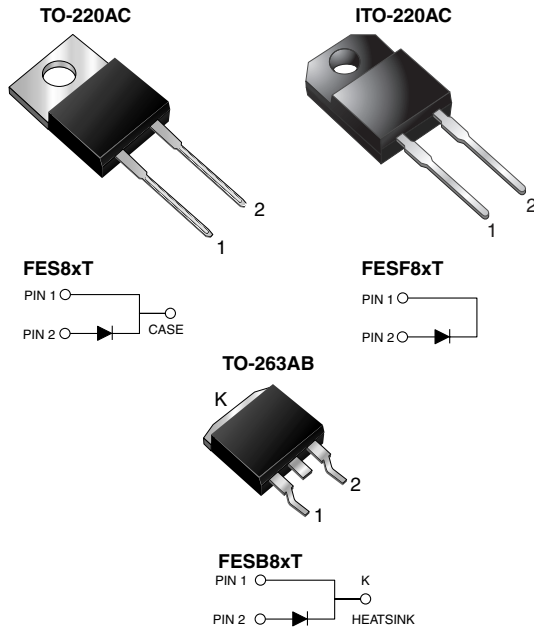


## Ultrafast Plastic Rectifier



### FEATURES

- Glass passivated 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 (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching application.

### MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	8.0 A
$V_{RRM}$	50 V to 600 V
$I_{FSM}$	125 A
$t_{tr}$	35 ns, 50 ns
$V_F$	0.95 V, 1.30 V, 1.50 V
$T_J$ max.	150 °C

### 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
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	$I_{F(AV)}$	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

# FES(F,B)8AT thru FES(F,B)8JT

Vishay General Semiconductor



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)												
PARAMETER	TEST CONDITIONS		SYMBOL	FES 8AT	FES 8BT	FES 8CT	FES 8DT	FES 8FT	FES 8GT	FES 8HT	FES 8JT	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	8.0 A		$V_F$	0.95			1.3		1.5			V
Maximum DC reverse current at rated DC blocking voltage		$T_C = 25\text{ }^\circ\text{C}$ $T_C = 100\text{ }^\circ\text{C}$	$I_R$	10			500					$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$		$t_{rr}$	35			50					ns
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	85					50			pF

**Note:**

(1) 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
TO-263AB	FESB8JT-E3/45	1.33	45	50/tube	Tube
TO-263AB	FESB8JT-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	FES8JT-E3/45 <sup>(1)</sup>	1.80	45	50/tube	Tube
ITO-220AC	FESF8JT-E3/45 <sup>(1)</sup>	1.85	45	50/tube	Tube
TO-263AB	FESB8JT-E3/45 <sup>(1)</sup>	1.33	45	50/tube	Tube
TO-263AB	FESB8JT-E3/81 <sup>(1)</sup>	1.33	81	800/reel	Tape and reel

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

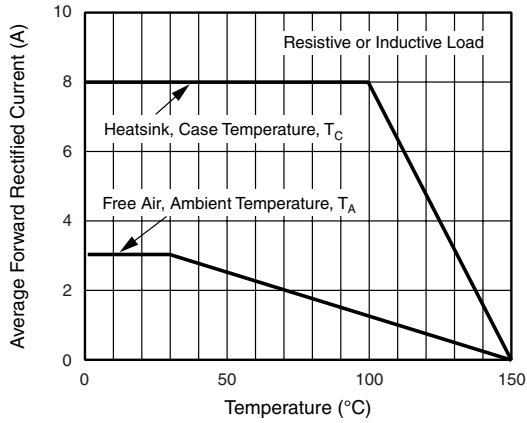


Figure 1. Maximum Forward Current Derating Curve

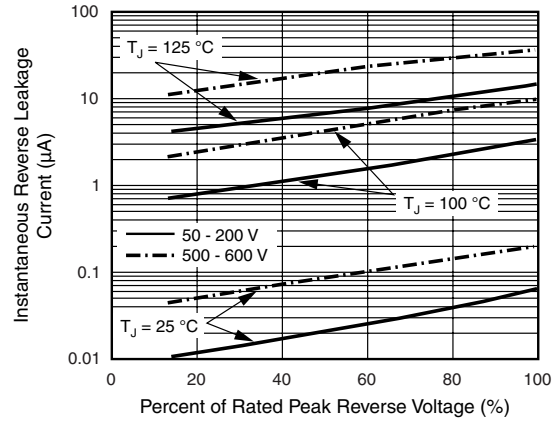


Figure 4. Typical Reverse Leakage Characteristics

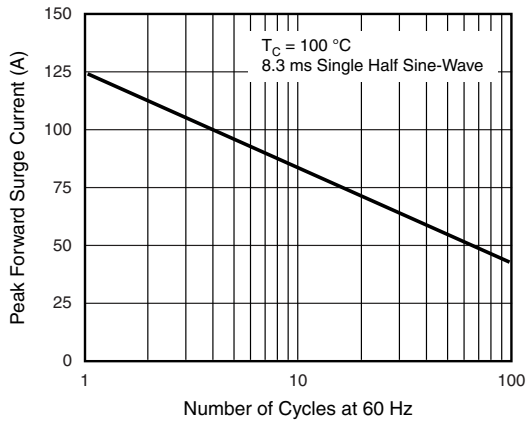


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

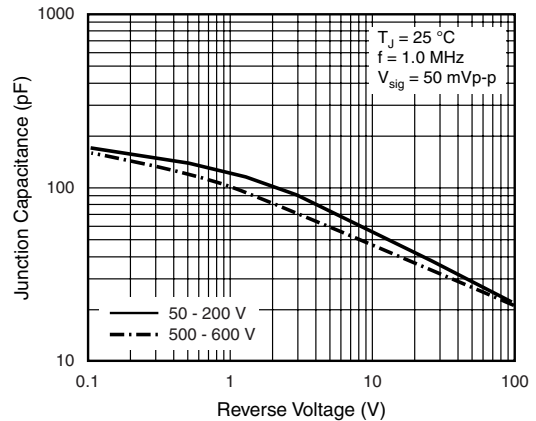


Figure 5. Typical Junction Capacitance

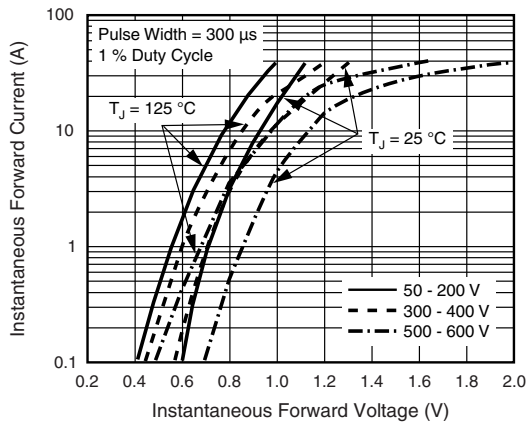
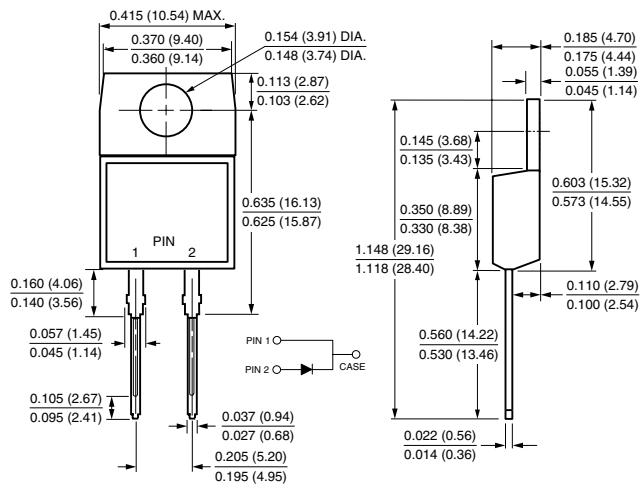


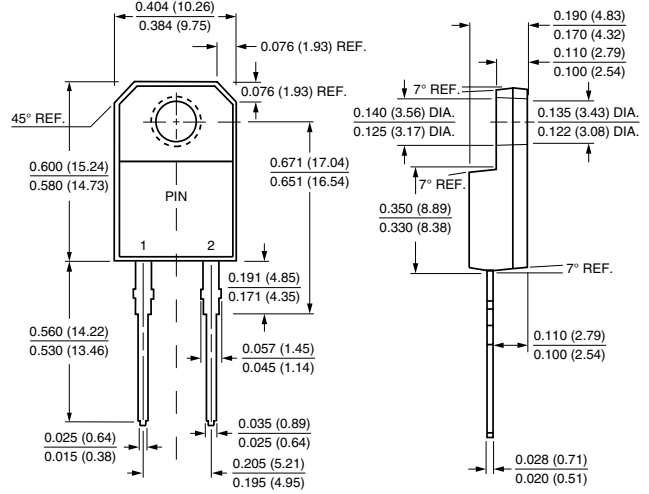
Figure 3. Typical Instantaneous Forward Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

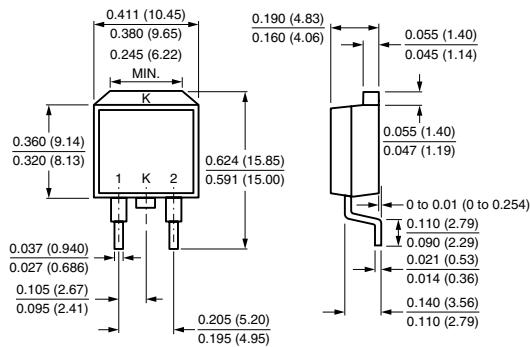
**TO-220AC**



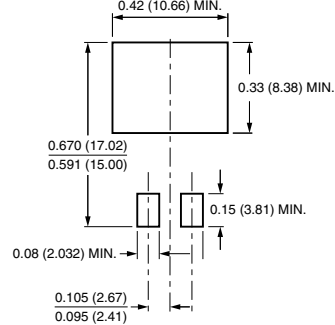
**ITO-220AC**



**TO-263AB**



**Mounting Pad Layout**





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