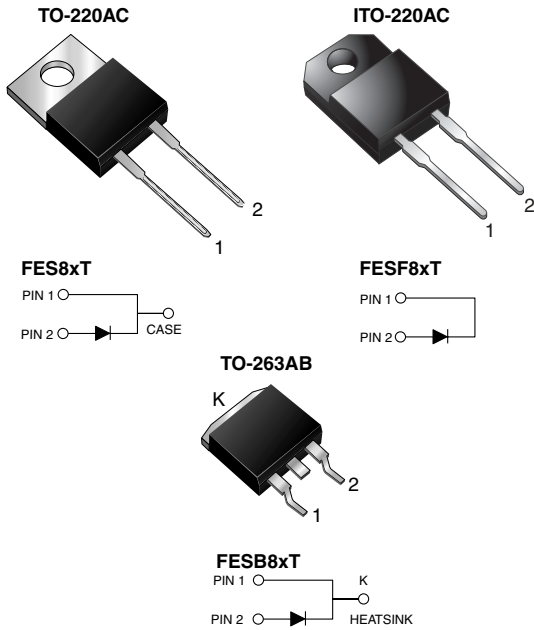




**THE DATASHEET OF
FES8BT-E3/45**



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
$T_J \text{ max.}$	150 °C

MAXIMUM RATINGS ($T_C = 25 \text{ °C}$ 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 $T_C = 100 \text{ °C}$	$I_{F(AV)}$	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 $t = 1 \text{ min}$	V_{AC}	1500								V

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

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ 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 ⁽¹⁾	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					μA
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 μs 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 from junction to case	$R_{\theta JC}$	2.2	5.0	2.2	$^\circ\text{C/W}$

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
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 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	FESF8JT-E3/45 ⁽¹⁾	1.85	45	50/tube	Tube
TO-263AB	FESB8JT-E3/45 ⁽¹⁾	1.33	45	50/tube	Tube
TO-263AB	FESB8JT-E3/81 ⁽¹⁾	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)

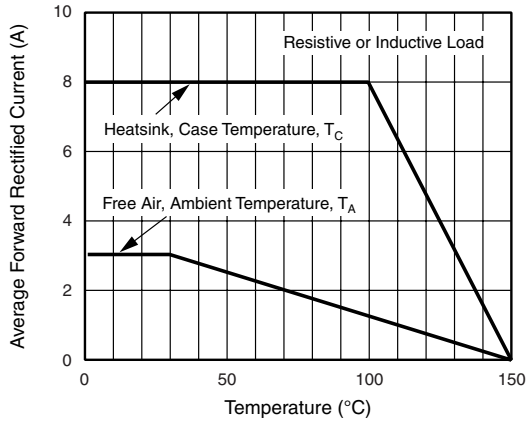


Figure 1. Maximum Forward Current Derating Curve

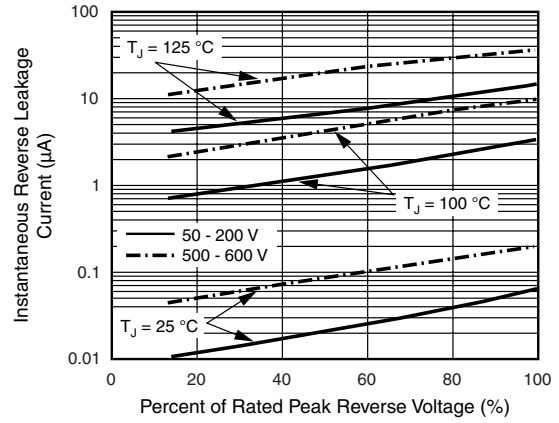


Figure 4. Typical Reverse Leakage Characteristics

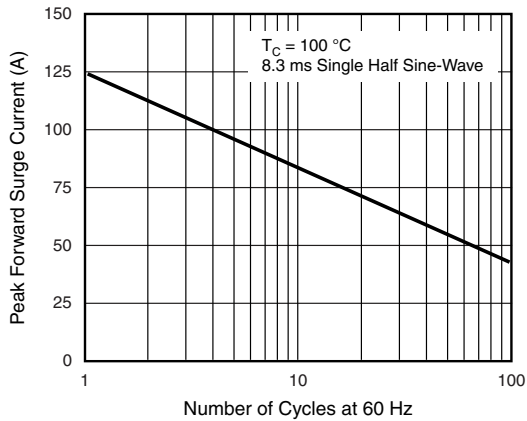


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

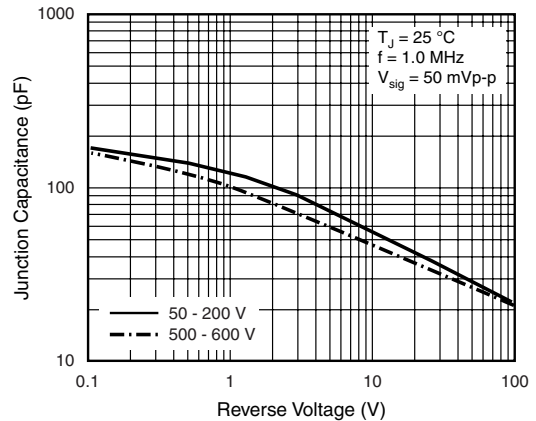


Figure 5. Typical Junction Capacitance

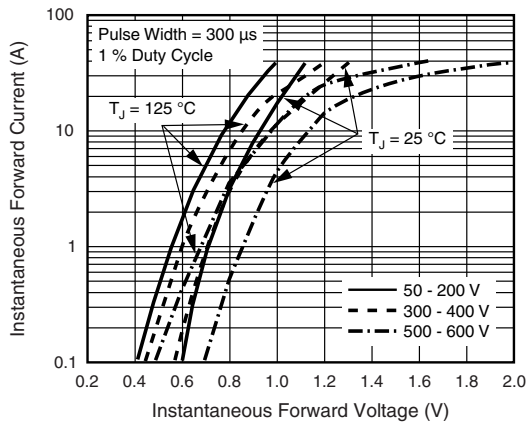
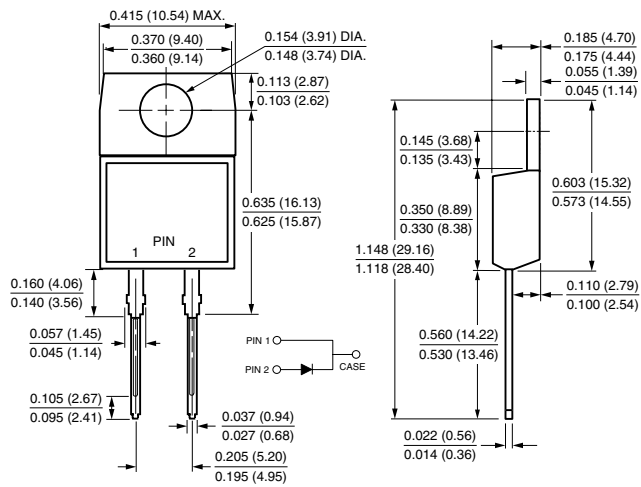


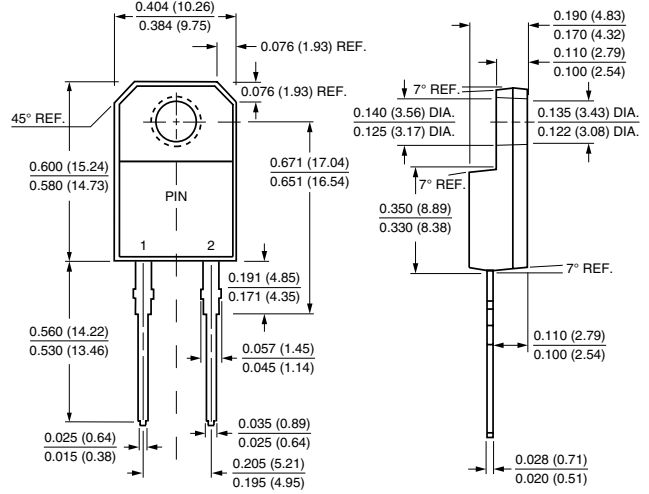
Figure 3. Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

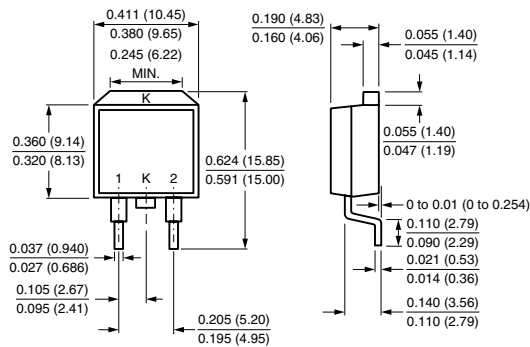
TO-220AC



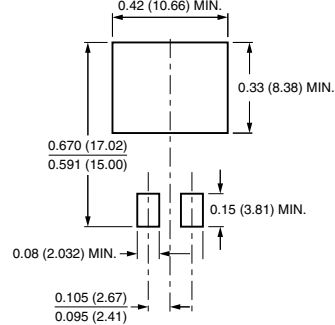
ITO-220AC



TO-263AB



Mounting Pad Layout





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