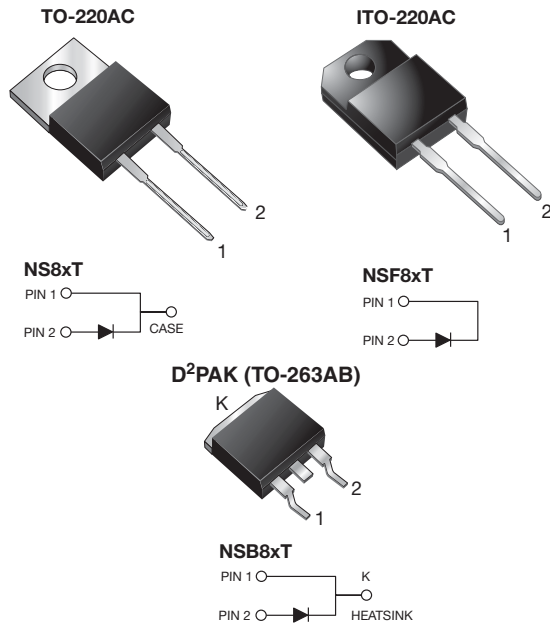




**THE DATASHEET OF  
NSB8DT-E3/45**



## Glass Passivated General Purpose Plastic Rectifier



### FEATURES

- Power pack
- Glass passivated pellet chip junction
- Low forward voltage drop
- 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 available  
- Automotive ordering code: base P/NHE3 (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)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application.

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, D<sup>2</sup>PAK (TO-263AB)  
 Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-E3 - RoHS-compliant  
 Base P/NHE3\_X - RoHS-compliant, AEC-Q101 qualified ("X" denotes revision code e.g. A, B,...)

**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 maximum

### DESIGN SUPPORT TOOLS

[click logo to get started](#)

**3D**  
Models  
Available

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
$V_{RRM}$	50 V to 1000 V
$I_{FSM}$	125 A
$V_F$	1.1 V
$T_J$ max.	150 °C
Package	TO-220AC, ITO-220AC, D <sup>2</sup> PAK (TO-263AB)
Circuit configuration	Single

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)									
PARAMETER	SYMBOL	NS8AT	NS8BT	NS8DT	NS8GT	NS8JT	NS8KT	NS8MT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	50	100	200	400	600	800	1000	V
Maximum RMS voltage	$V_{RMS}$	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	$V_{DC}$	50	100	200	400	600	800	1000	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 sine-wave superimposed on rated load	$I_{FSM}$	125							A
Operating junction and storage 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> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)											
PARAMETER	TEST CONDITIONS		SYMBOL	NS8AT	NS8BT	NS8DT	NS8GT	NS8JT	NS8KT	NS8MT	UNIT
Maximum instantaneous forward voltage	8.0 A	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$				1.1				V
Maximum DC reverse current at rated DC blocking voltage		$T_J = 25\text{ }^\circ\text{C}$	$I_R$				10				$\mu\text{A}$
		$T_J = 100\text{ }^\circ\text{C}$					100				
Typical junction capacitance	4.0 V, 1 MHz		$C_J$				55				pF

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	NSXT	NSFXT	NSBXT	UNIT	
Typical thermal resistance from junction to case	$R_{\theta JC}$	3.0	5.0	3.0	$^\circ\text{C/W}$	

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	NS8JT-E3/45	1.80	45	50/tube	Tube
ITO-220AC	NSF8JT-E3/45	1.95	45	50/tube	Tube
TO-263AB	NSB8JT-E3/45	1.77	45	50/tube	Tube
TO-263AB	NSB8JT-E3/81	1.77	81	800/reel	Tape and reel
ITO-220AC	NSF8JT <sub>THE3</sub> _B/P <sup>(1)</sup>	1.95	P	50/tube	Tube
TO-263AB	NSB8JT <sub>THE3</sub> _B/P <sup>(1)</sup>	1.77	P	50/tube	Tube
TO-263AB	NSB8JT <sub>THE3</sub> _B/I <sup>(1)</sup>	1.77	I	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)

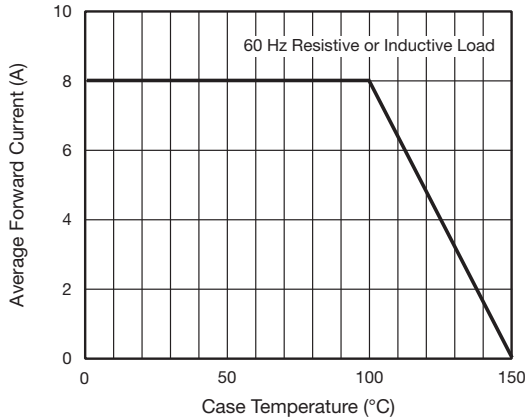


Fig. 1 - Forward Current Derating Curve

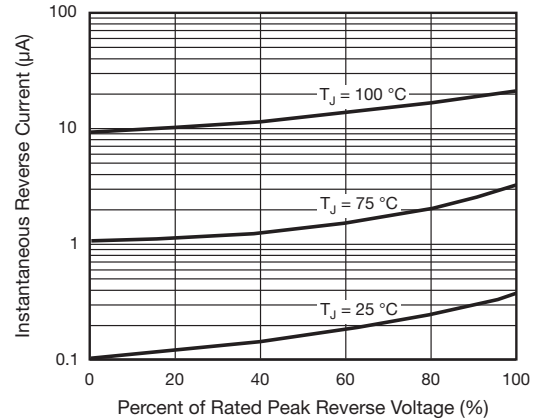


Fig. 4 - Typical Reverse Characteristics

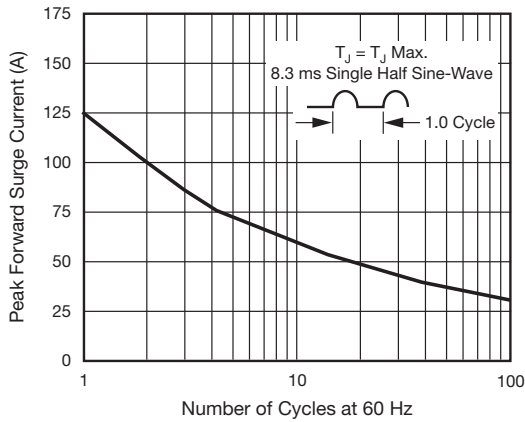


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

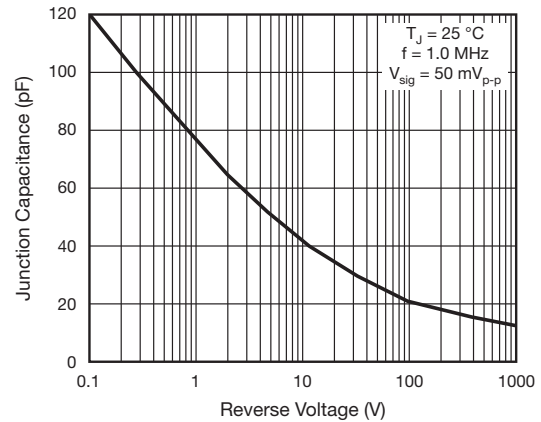


Fig. 5 - Typical Junction Capacitance Per Leg

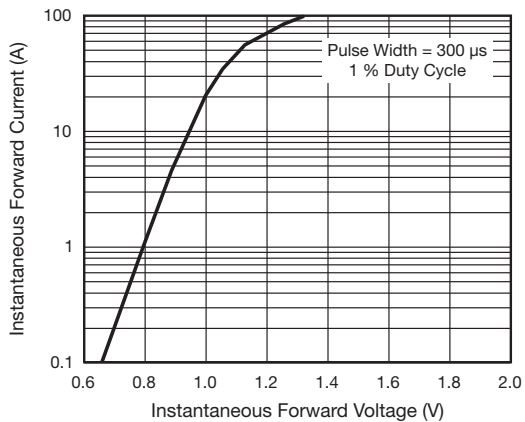
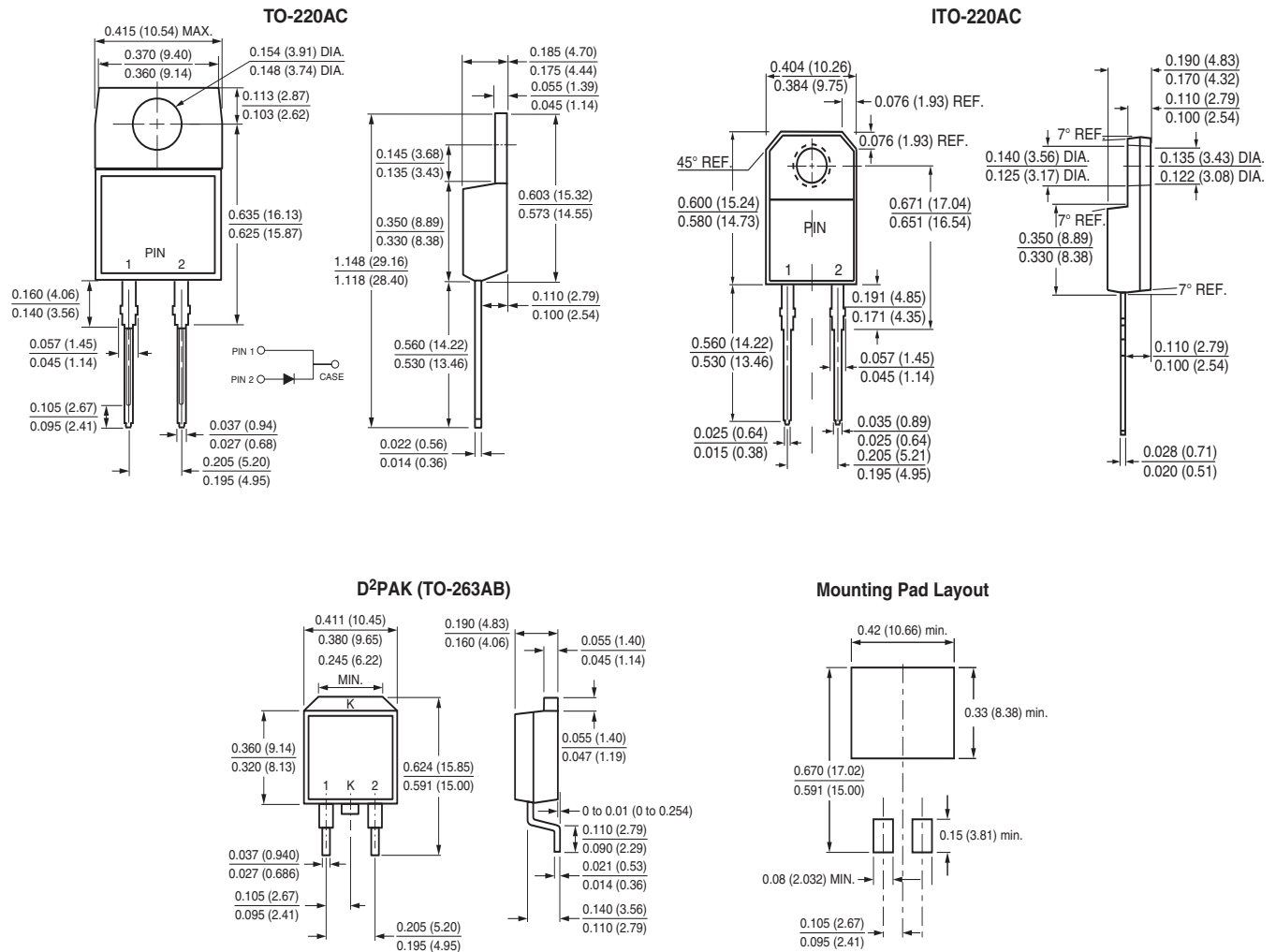


Fig. 3 - Typical Instantaneous Forward Characteristics



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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