



# THE DATASHEET OF VS-8AF1NPP



## Pressfit Rectifier Diodes, 50 A



B-47

### FEATURES

- Convenient pressfit package
- Available with and without leads
- High surge capabilities
- Fully characterized bulletin
- RoHS compliant
- Designed and qualified for industrial level


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

$I_{F(AV)}$	50 A
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### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		50	A
	$T_C$	150	°C
$I_{F(RMS)}$		79	A
$I_{FSM}$	50 Hz	714	A
	60 Hz	747	
$I^2t$	50 Hz	2546	A <sup>2</sup> s
	60 Hz	2324	
$I^2\sqrt{t}$		25 455	A <sup>2</sup> √s
$V_{RRM}$	Range	50 to 400	V
$T_J$		- 65 to 195	°C

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	$V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ MAXIMUM AT $T_J = T_J$ MAXIMUM mA
8AF	05	50	75	7
	1	100	150	7
	2	200	300	5
	4	400	500	5

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		50	A	
				150	°C	
Maximum RMS forward current	$I_{F(RMS)}$			79	A	
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reappplied	714	A	
		t = 8.3 ms		Sinusoidal half wave, initial $T_J = T_J$ maximum		747
		t = 10 ms	100 % $V_{RRM}$ reappplied			600
		t = 8.3 ms				628
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reappplied		2546	A <sup>2</sup> s
		t = 8.3 ms		100 % $V_{RRM}$ reappplied	2324	
		t = 10 ms	1800			
		t = 8.3 ms	1643			
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied			25 455	A <sup>2</sup> /s
Low level value of threshold voltage	$V_{F(TO)1}$	$(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		0.60	V	
High level value of threshold voltage	$V_{F(TO)2}$	$(\pi \times I_{F(AV)} < I < 20 \times \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		0.68		
Low level value of forward slope resistance	$r_{f1}$	$(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		6.66	mΩ	
High level value of forward slope resistance	$r_{f2}$	$(\pi \times I_{F(AV)} < I < 20 \times \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		6.25		
Maximum forward voltage drop	$V_{FM}$	$T_J = 25\text{ °C}$ , $I_{FM} = \pi \times \text{rated } I_{F(AV)}$		1.45	V	

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	$T_J, T_{Stg}$		- 65 to 195	°C
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation	0.60	K/W
Typical thermal resistance, case to heatsink	$R_{thCS}$	As per mounting details, see note <sup>(1)</sup>	0.50	
Approximate weight			10	g
			0.36	oz.
Case style		See dimensions - link at the end of datasheet	B-47	

**Note**

<sup>(1)</sup> Mounting: A 12.6 ± 0.02 mm (0.496 to 0.497") diameter hole should be drilled in heatsink, the leading edge chamfered to 0.038 mm (0.015") x 45°. The autodiode should then be press fitted, ensuring that the sides of the autodiode are kept parallel to the sides of the hole.

$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.042	0.026	$T_J = T_{J \text{ maximum}}$	K/W
120°	0.045	0.043		
90°	0.06	0.06		
60°	0.10	0.10		
30°	0.15	0.15		

**Note**

- The table above shows the increment of thermal resistance  $R_{thJC}$  when devices operate at different conduction angles than DC

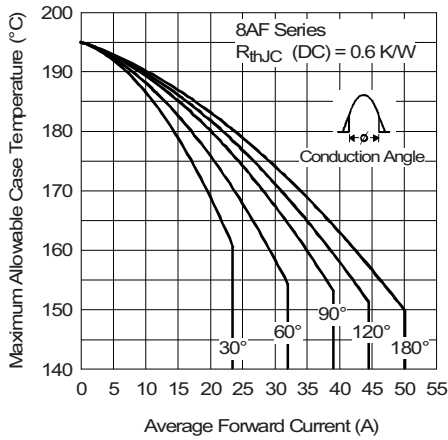


Fig. 1 - Current Ratings Characteristics

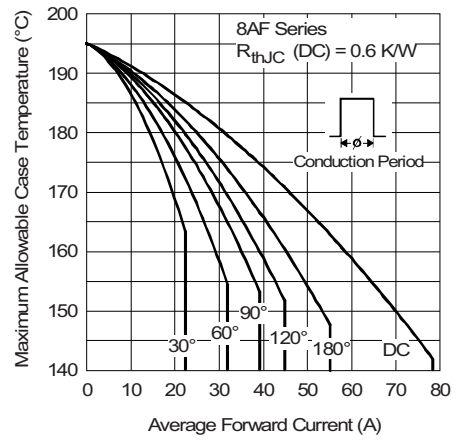


Fig. 2 - Current Ratings Characteristics

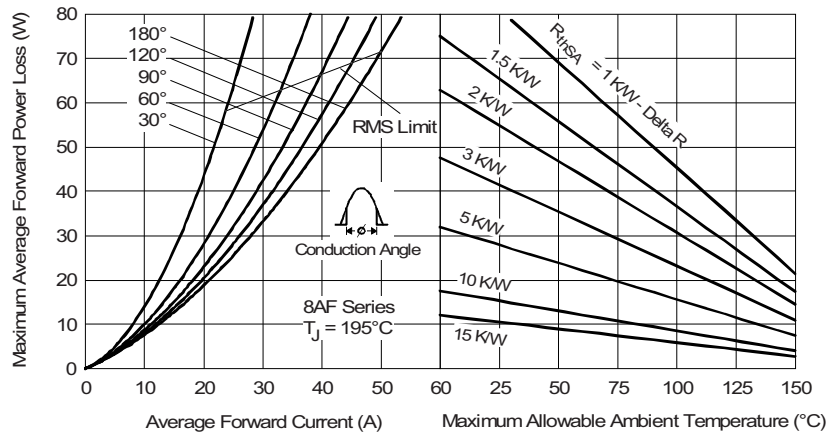


Fig. 3 - Forward Power Loss Characteristics

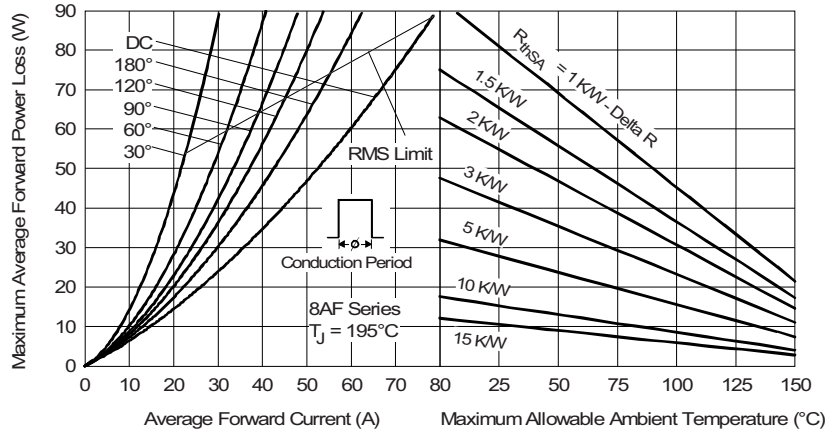


Fig. 4 - Forward Power Loss Characteristics

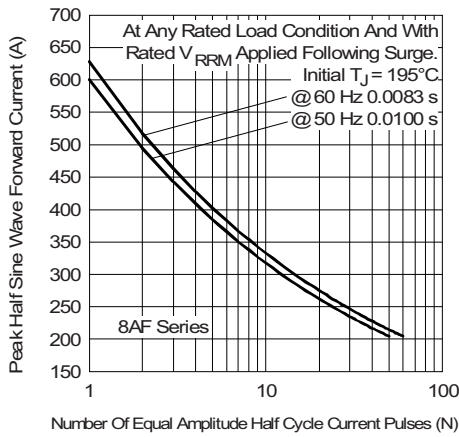


Fig. 5 - Maximum Non-Repetitive Surge Current

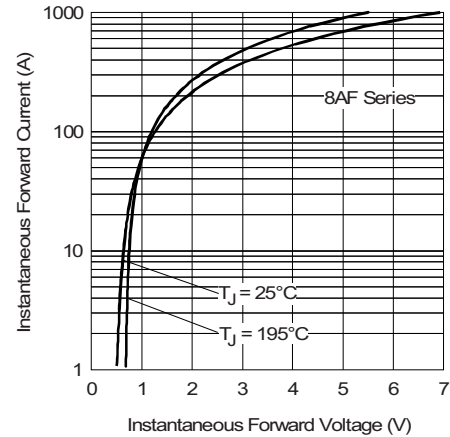


Fig. 7 - Forward Voltage Drop Characteristics

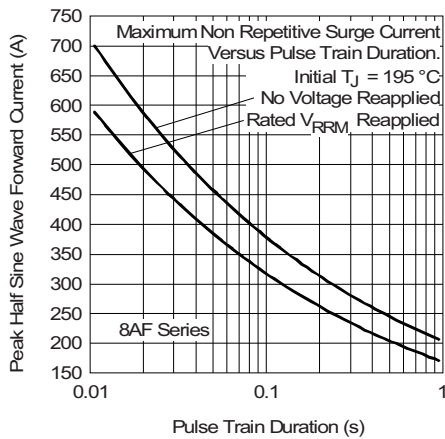


Fig. 6 - Maximum Non-Repetitive Surge Current

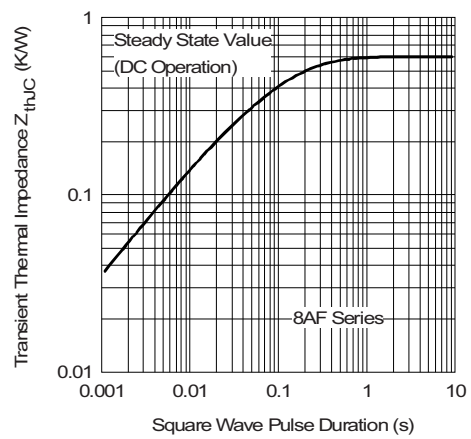
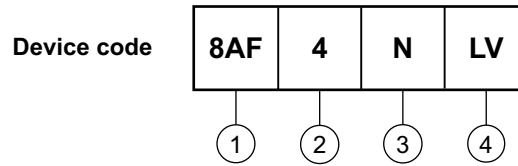


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics



**ORDERING INFORMATION TABLE**

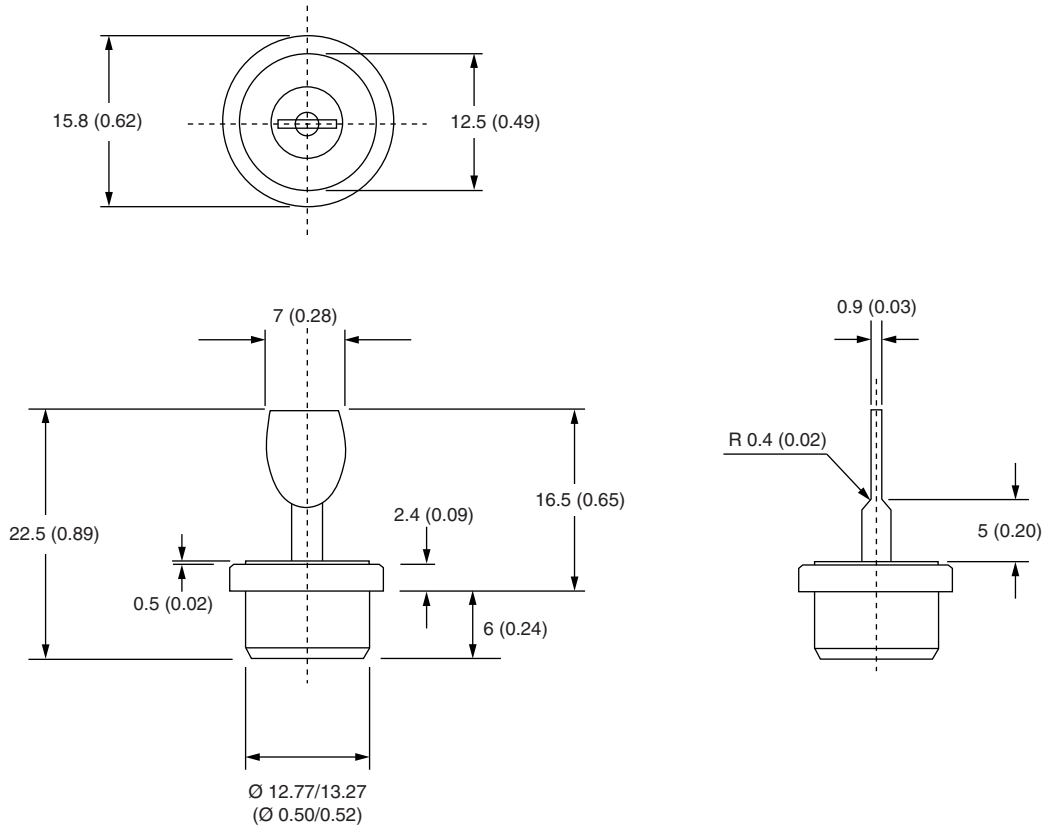


- 1** - Essential part number
- 2** - Voltage code x 100 =  $V_{RRM}$  (see Voltage Ratings table)
- 3** -
  - N = Normal polarity (cathode to case)
  - R = Reverse polarity (anode to case)
- 4** -
  - PP = Without lead
  - LH = Horizontal lead
  - LV = Vertical lead

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95330">http://www.vishay.com/doc?95330</a>

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**DIMENSIONS** in millimeters (inches)





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