

### PRESSFIT RECTIFIER DIODES

#### Features and Descriptions

- Convenient pressfit package
- Available with and without leads
- High surge capabilities

50 A

#### Application

- Welders, Battery charges, Alternators

#### Major Ratings and Characteristics

Parameters	8AF	Units
$I_{F(AV)}$	50	A
@ $T_C$	150	°C
$I_{F(RMS)}$	79	A
$I_{FSM}$ @50Hz	714	A
@60Hz	747	A
$I^2t$ @50Hz	2546	A <sup>2</sup> s
@60Hz	2324	A <sup>2</sup> s
$I^2\sqrt{t}$	25455	A <sup>2</sup> √s
$V_{RRM}$ range	100 to 800	V
$T_J$	-65 to 195	°C



**IR Case Style B-47**

## 8AF Series

Bulletin I20262 Rev.A 06/03

International  
IR Rectifier

### ELECTRICAL SPECIFICATIONS

#### Voltage Ratings

Type number	Voltage Code	$V_{RRM}$ , maximum repetitive peak reverse voltage V	$V_{RSM}$ , maximum non-repetitive peak rev. voltage V	$I_{RRM}$ max. @ $T_J = 150^\circ\text{C}$ mA
8AF	1	100	150	5
	2	200	300	5
	4	400	500	5
	8	800	900	5

#### Forward Conduction

Parameter	8AF	Units	Conditions
$I_{F(AV)}$ Maximum average forward current @ Case temperature	50 150	A $^\circ\text{C}$	180° conduction, half sine wave
$I_{F(RMS)}$ Maximum RMS forward current	79	A	
$I_{FSM}$ Maximum peak, one-cycle forward, non-repetitive surge current	714	A	t = 10ms No voltage
	747		t = 8.3ms reapplied
	600		t = 10ms 100% $V_{RRM}$
	628		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	2546	$\text{A}^2\text{s}$	t = 10ms No voltage
	2324		t = 8.3ms reapplied
	1800		t = 10ms 100% $V_{RRM}$
	1643		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	25455	$\text{A}^2\sqrt{\text{s}}$	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.60	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{F(TO)2}$ High level value of threshold voltage	0.68		$(\pi \times I_{F(AV)} < I < 20 \times \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f1}$ Low level value of forward slope resistance	6.66	$\text{m}\Omega$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f2}$ High level value of forward slope resistance	6.25		$(\pi \times I_{F(AV)} < I < 20 \times \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{FM}$ Maximum forward voltage drop	1.45	V	$T_J = 25^\circ\text{C}$ , $I_{FM} = \pi \times \text{rated } I_{F(AV)}$

#### Thermal and Mechanical Specifications

Parameter	8AF	Units	Conditions
$T_J$ Max. junction operating temperature range	- 65 to 195	$^\circ\text{C}$	
$T_{stg}$ Storage temperature range	- 65 to 195		
$R_{thJC}$ Max. thermal resistance, junction to case	0.60	KW	DC operation
$R_{thCS}$ Typical thermal resistance, case to heatsink	0.50		As per mounting details
wt Approximate weight	10 (0.36)	g (oz)	
Case style	B-47		See outline table

MOUNTING: A  $12.6 \pm 0.02\text{mm}$  (0.496 to 0.497 inch) diameter hole should be drilled in heatsink, the leading edge chamfered to 0.038mm (0.015 inch) x 45°. The diode should then be press fitted, ensuring that the sides of the diode are kept parallel to the sides of the hole.

### $\Delta R_{thJC}$ Conduction

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

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.042	0.026	K/W	$T_J = T_{J \text{ max.}}$
120°	0.045	0.043		
90°	0.06	0.06		
60°	0.10	0.10		
30°	0.15	0.15		

### Ordering Information Table

Device Code			
8AF	8	N	LV
1	2	3	4
1	- Essential part number		
2	- Voltage code: 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 Available as special product - Contact Factory		

### Outline Table

<p>Technical drawing of the 8AF Series diode showing top, front, and side views with dimensions in millimeters and inches.</p> <p>Top view dimensions: 15.8 (0.62) mm, 12.5 (0.49) mm.</p> <p>Front view dimensions: 7 (0.28) mm, 22.5 (0.89) mm, 0.5 (0.02) mm, 2.4 (0.09) mm, 6 (0.24) mm, 16.5 (0.65) mm, DIA. 12.77 / 13.27 (0.50) / (0.52) mm.</p> <p>Side view dimensions: 0.9 (0.03) mm, R 0.4 (0.02) mm, 5 (0.20) mm.</p> <p>All dimensions in millimeters (inches)</p>
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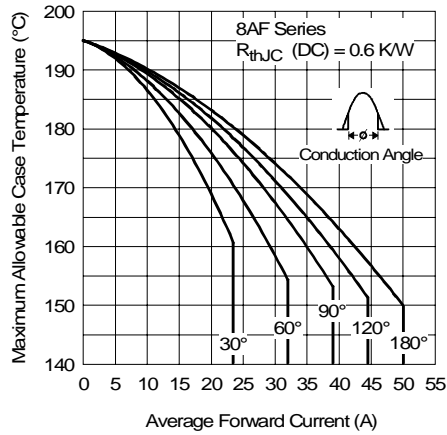


Fig. 1 - Current Ratings Characteristics

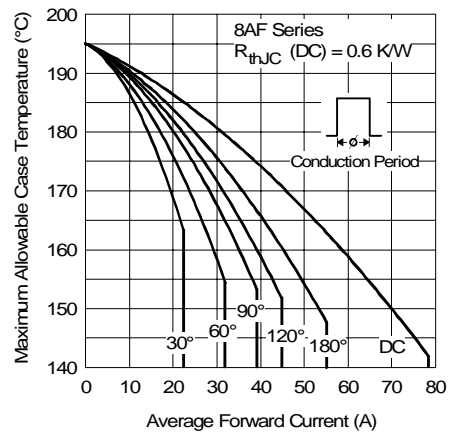


Fig. 2 - Current Ratings Characteristics

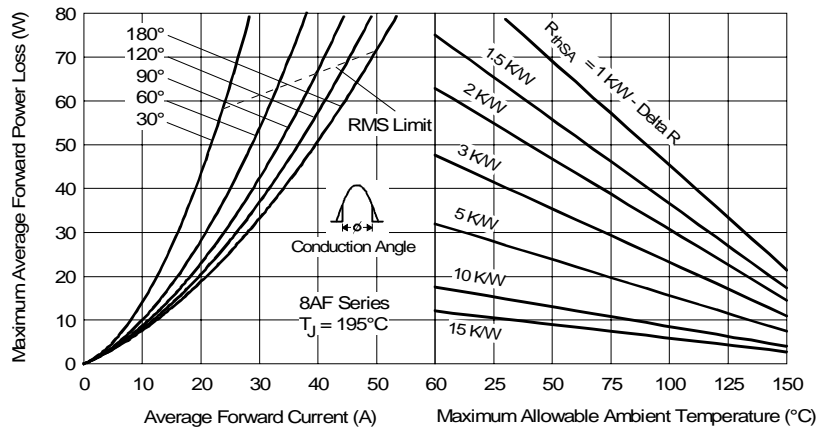


Fig. 3 - Forward Power Loss Characteristics

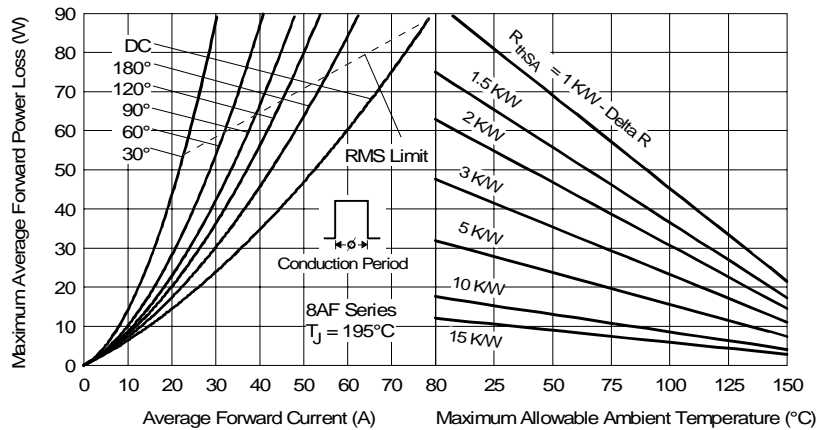


Fig. 4 - Forward Power Loss Characteristics

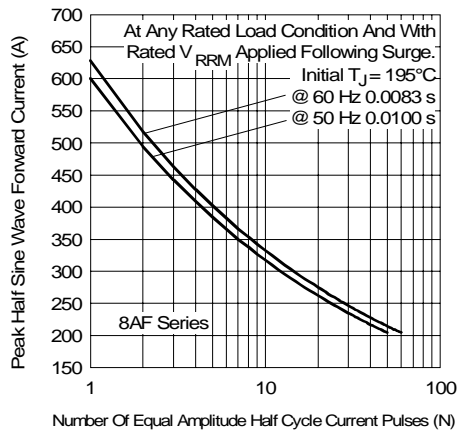


Fig. 5 - Maximum Non-Repetitive Surge Current

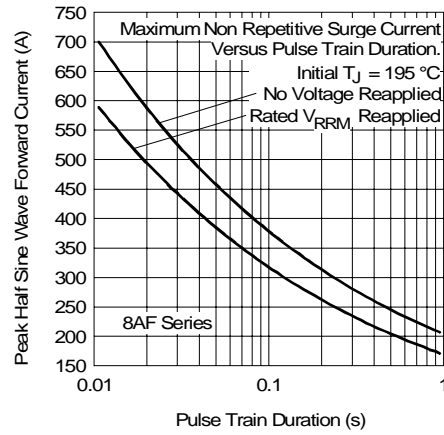


Fig. 6 - Maximum Non-Repetitive Surge Current

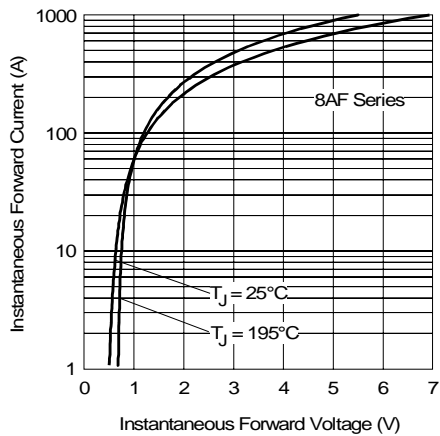


Fig. 7 - Forward Voltage Drop Characteristics

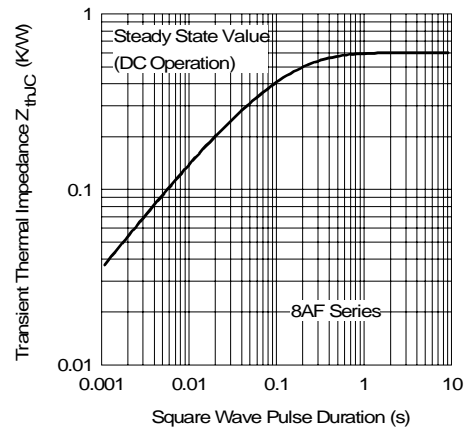


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic