

8AF SERIES

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 ² s
$@60Hz$	2324	A ² s
$I^2\sqrt{t}$	25455	A ² √s
V_{RRM} range	100to800	V
T_J	-65to195	°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 °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	A ² 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	A ² √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	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J \text{ max.}$
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	°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.

ΔR_{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, side, and detail views with dimensions in millimeters and inches.</p> <p>Top view dimensions: 15.8 (0.62) mm, 12.5 (0.49) mm.</p> <p>Side view dimensions: 7 (0.28) mm, 22.5 (0.89) mm, 0.5 (0.02) mm, 2.4 (0.09) mm, 16.5 (0.65) mm, 6 (0.24) mm, DIA. 12.77 / 13.27 (0.50) / (0.52) mm.</p> <p>Detail 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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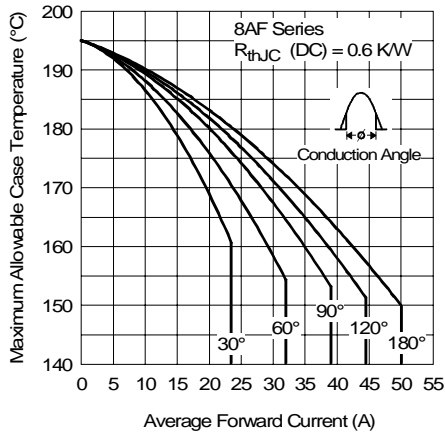


Fig. 1 - Current Ratings Characteristics

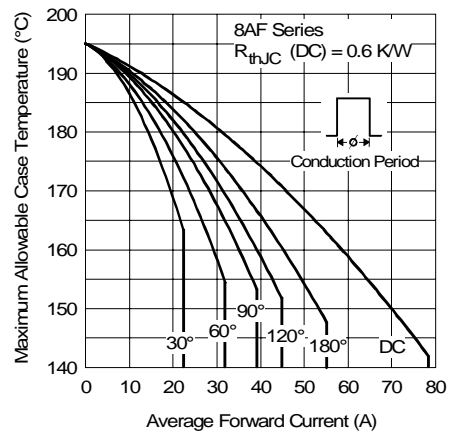


Fig. 2 - Current Ratings Characteristics

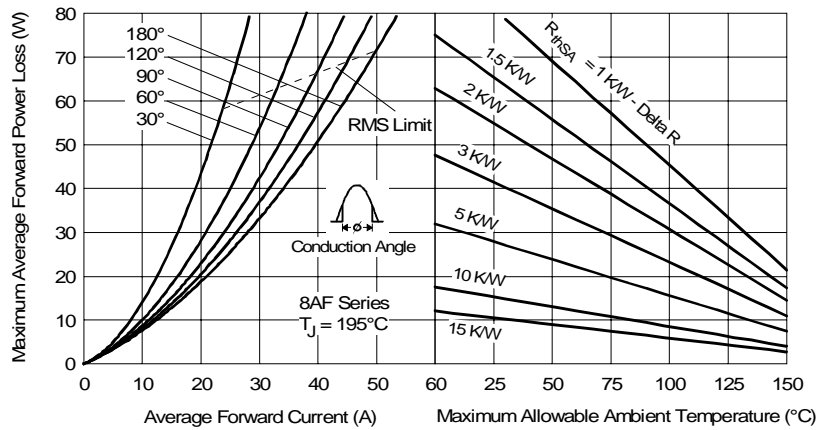


Fig. 3 - Forward Power Loss Characteristics

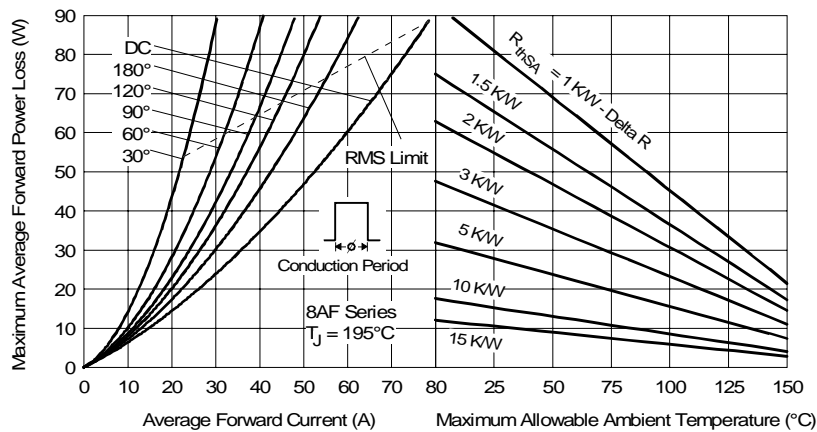


Fig. 4 - Forward Power Loss Characteristics

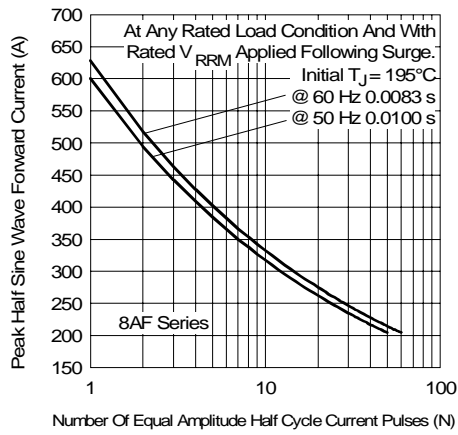


Fig. 5 - Maximum Non-Repetitive Surge Current

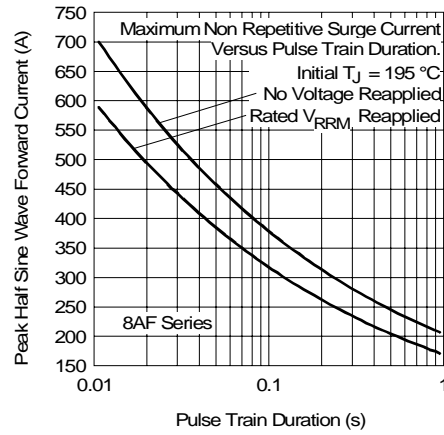


Fig. 6 - Maximum Non-Repetitive Surge Current

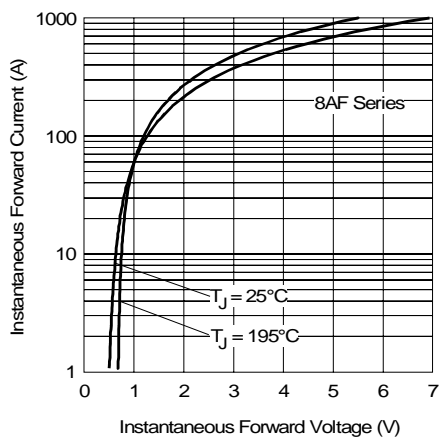


Fig. 7 - Forward Voltage Drop Characteristics

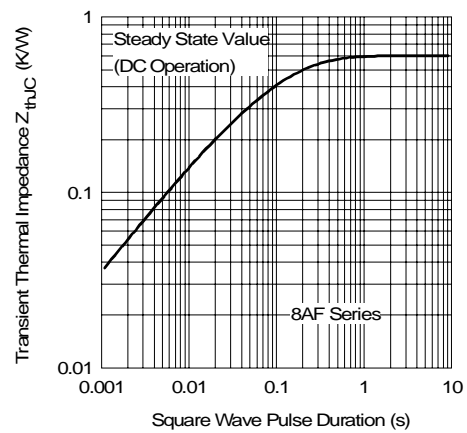


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic