

International IR Rectifier

85HF(R) SERIES

STANDARD RECOVERY DIODES

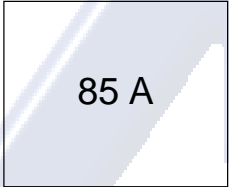
Stud Version

Features

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600V V_{RRM}

Typical Applications

- Battery charges
- Converters
- Power supplies
- Machine tool controls



Major Ratings and Characteristics

Parameters	85HF(R)		Units	
	10 to 120	140 to 160		
$I_{F(AV)}$	85	85	A	
@ T_C	140	110	°C	
$I_{F(RMS)}$	133		A	
I_{FSM}	@ 50Hz	1700	A	
	@ 60Hz	1800	A	
I^2t	@ 50Hz	14500	A ² s	
	@ 60Hz	13500	A ² s	
V_{RRM}	range	100 to 1200	1400 to 1600	V
T_J	range	- 65 to 180	- 65 to 150	°C



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IR Rectifier**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} max. @ $T_J = T_J$ max. mA
85HF(R)	10	100	200	15
	20	200	300	
	40	400	500	
	60	600	720	9
	80	800	960	
	100	1000	1200	
	120	1200	1440	4.5
	140	1400	1650	
	160	1600	1900	

Forward Conduction

Parameter	85HF(R)		Units	Conditions			
	10 to 120	140 to 160					
$I_{F(AV)}$ Max. average forward current @ Case temperature	85	85	A	180° conduction, half sine wave			
	140	110	°C				
$I_{F(RMS)}$ Max. RMS forward current	133		A	Sinusoidal half wave, Initial $T_J = T_J$ max.			
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	1700		A			t = 10ms	No voltage
	1800					t = 8.3ms	reapplied
	1450					t = 10ms	100% V_{RRM}
	1500					t = 8.3ms	reapplied
I^2t Maximum I^2t for fusing	14500		A ² s	t = 10ms	No voltage		
	13500			t = 8.3ms	reapplied		
	10500			t = 10ms	100% V_{RRM}		
	9400			t = 8.3ms	reapplied		
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	16000		A ² √s	t = 0.1 to 10ms, no voltage reapplied			
$V_{F(TO)1}$ Low level value of threshold voltage	0.68		V	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$, $T_J = T_J$ max.			
$V_{F(TO)2}$ High level value of threshold voltage	0.80			(I > $\pi \times I_{F(AV)}$, $T_J = T_J$ max.			
r_{f1} Low level value of forward slope resistance	1.62		mΩ	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$, $T_J = T_J$ max.			
r_{f2} High level value of forward slope resistance	1.25			(I > $\pi \times I_{F(AV)}$, $T_J = T_J$ max.			
V_{FM} Max. forward voltage drop	1.20		V	$I_{pk} = 267A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ rectangular wave			

Thermal and Mechanical Specifications

Parameter	85HF(R)		Units	Conditions
	10 to 120	140 to 160		
T _J Max. junction operating temperature range	-65 to 180	-65 to 150	°C	
T _{stg} Max. storage temperature range	-65 to 180	-65 to 150		
R _{thJC} Max. thermal resistance, junction to case	0.35		K/W	DC operation
R _{thCS} Max. thermal resistance, case to heatsink	0.25			Mounting surface, smooth, flat and greased
Maximum shock	1500g			see note (1)
Maximum constant vibration	20g			50Hz see note (1)
Maximum constant acceleration	5000g			Stud outwards see note (1)
T Max. allowed mounting torque ±10%	2.3 - 3.4		Nm	Not lubricated threads
	20 - 30		lbf·in	
wt Approximate weight	17 (0.6)		g (oz)	
Case style	DO-203AB (DO5)			See Outline Table

(1) Available only for 88HF

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°	0.10	0.08	K/W	T _J = T _J max.
120°	0.11	0.11		
90°	0.13	0.13		
60°	0.17	0.17		
30°	0.26	0.26		

Ordering Information Table

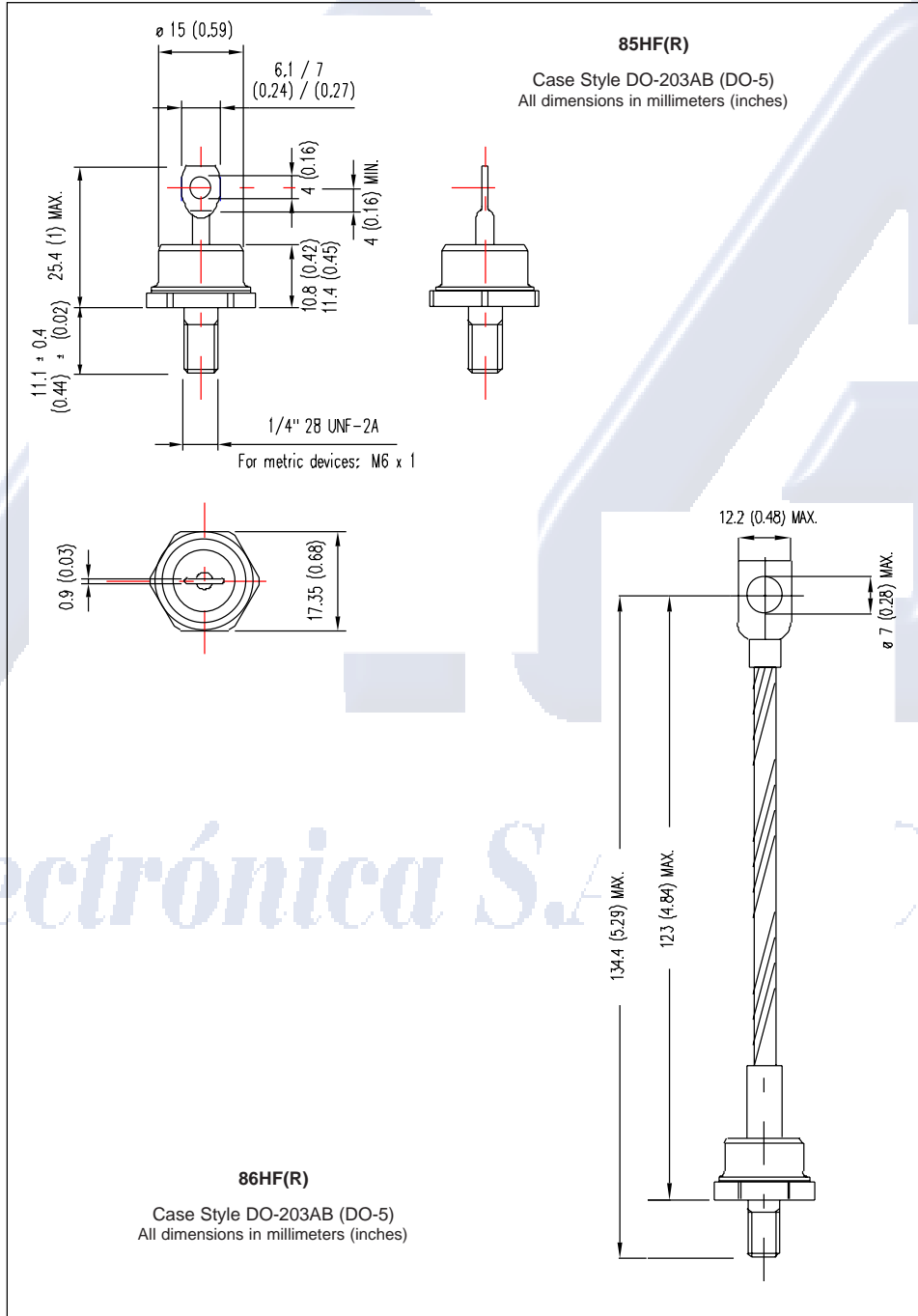
Device Code	
85	HF R 160 M
①	② ③ ④ ⑤
1	85 = Standard device 86 = Not isolated lead 87 = Isolated lead with silicone sleeve (Red = Reverse polarity) (Blue = Normal polarity) 88 = Type for rotating application
2	Standard diode
3	None = Stud Normal Polarity (Cathode to Stud) R = Stud Reverse Polarity (Anode to Stud)
4	Voltage code: Code x 10 = V _{RRM} (See Voltage Ratings table)
5	None = Stud base DO-203AB (DO-5) 1/4" 28UNF-2A M = Stud base DO-203AB (DO-5) M6 X 1 - (Not available for 88HF)

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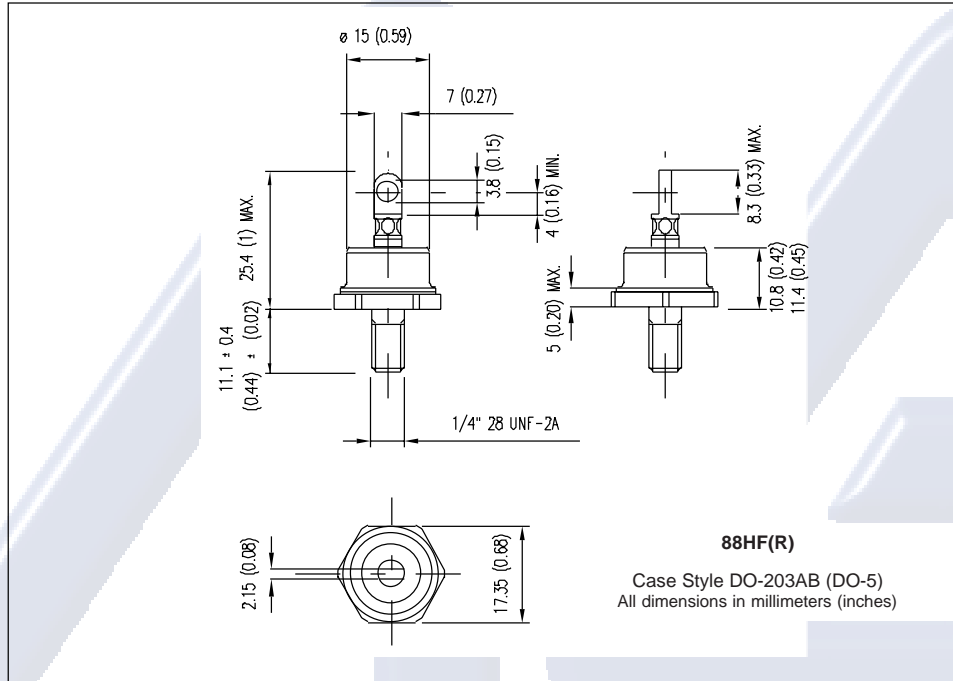
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Outlines Table



Outlines Table



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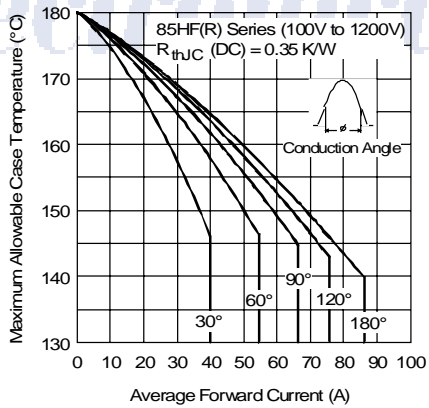


Fig. 1 - Current Ratings Characteristics

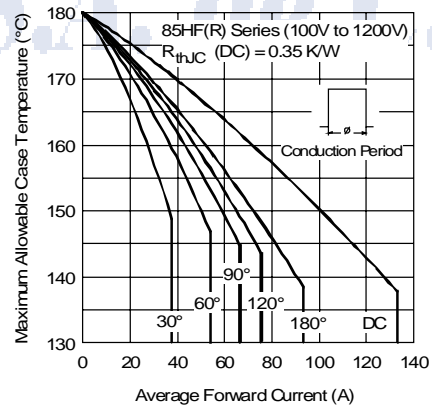


Fig. 2 - Current Ratings Characteristics

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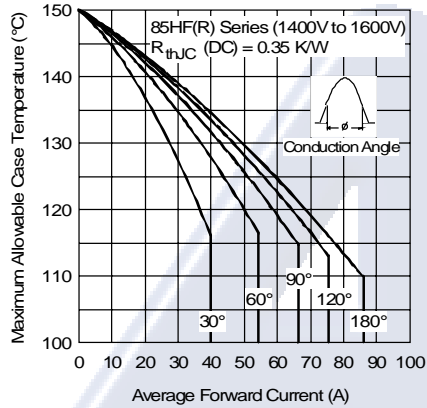


Fig. 3 - Current Ratings Characteristics

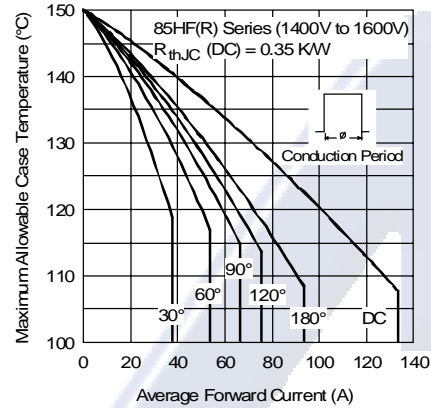


Fig. 4 - Current Ratings Characteristics

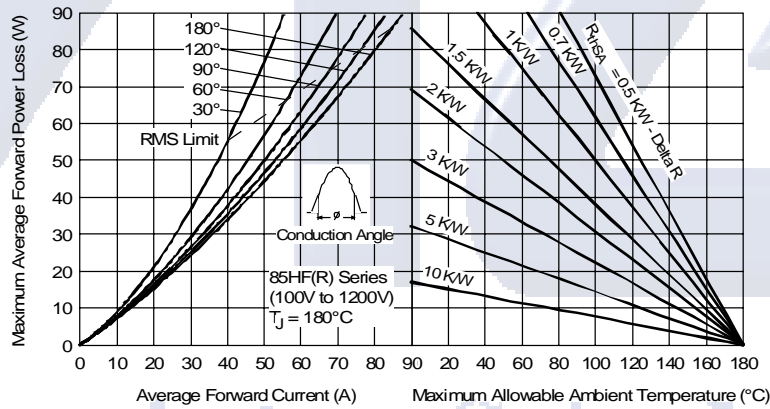


Fig. 5 - Forward Power Loss Characteristics

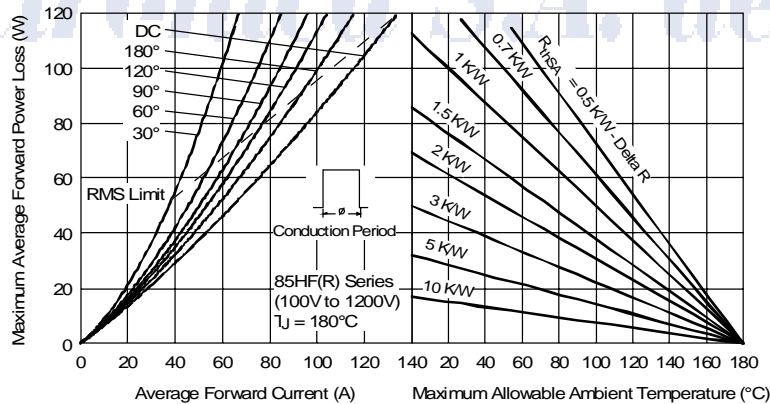


Fig. 6 - Forward Power Loss Characteristics

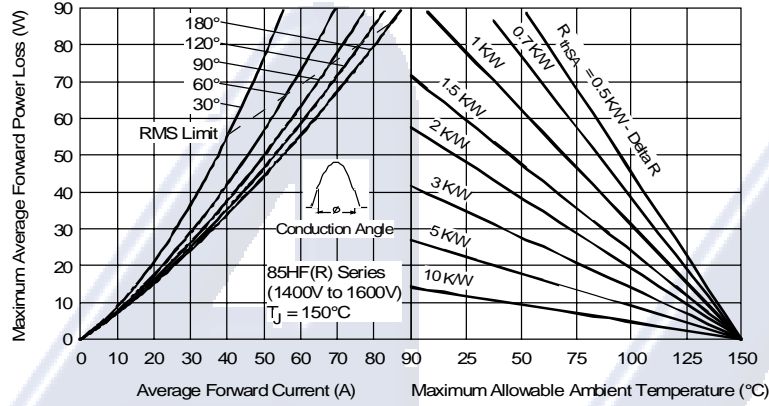


Fig. 7 - Forward Power Loss Characteristics

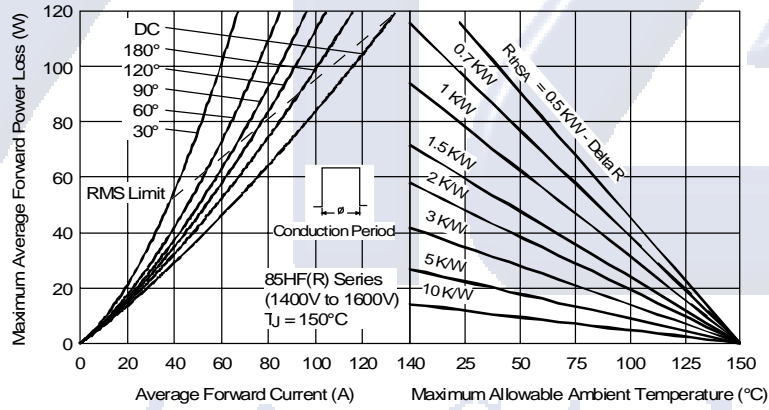


Fig. 8 - Forward Power Loss Characteristics

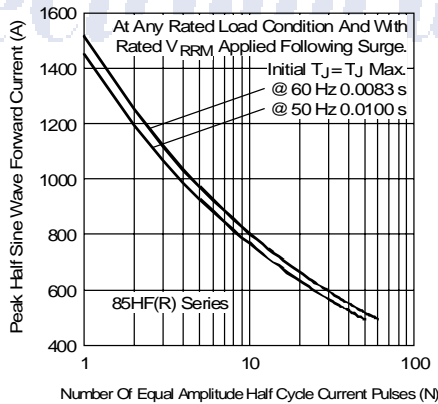


Fig. 9 - Maximum Non-Repetitive Surge Current

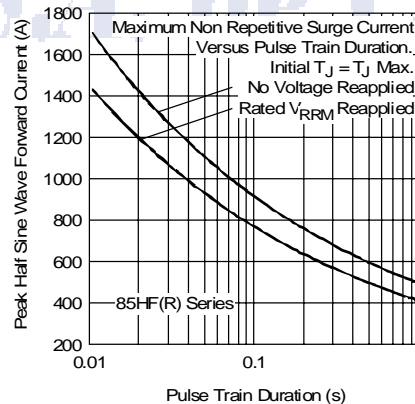


Fig. 10 - Maximum Non-Repetitive Surge Current

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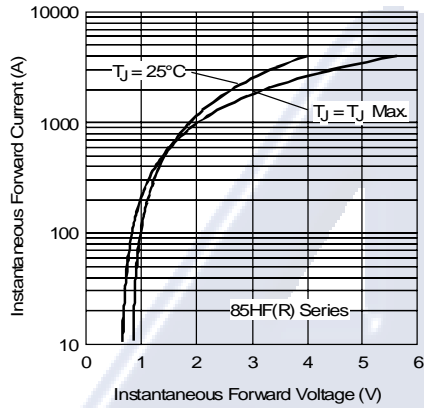


Fig. 11 - Forward Voltage Drop Characteristics

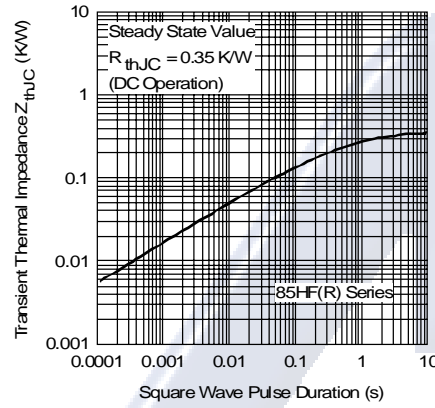


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

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Data and specifications subject to change without notice.