

85HF(R) SERIES

STANDARD RECOVERY DIODES

Stud Version

Features

High surge current capability
 Stud cathode and stud anode version
 Leaded version available
 Types up to 1600V V_{RRM}

85 A

Typical Applications

Battery charges
 Converters
 Power supplies
 Machine tool controls
 Welding

Major Ratings and Characteristics

Parameters	85HF(R)		Units
	10 to 120	140, 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, 1600	V
T_J range	- 65 to 180	- 65 to 150	°C



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Quality Semi-Conductors

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	9
	20	200	300	
	40	400	500	
	60	600	700	
	80	800	900	
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	4.5
160	1600	1700		

Forward Conduction

Parameter	85HF(R)		Units	Conditions			
	10 to 120	140, 160					
$I_{F(AV)}$ Max. average forward current @ Case temperature	85	85	A	180° conduction, half sine wave			
$I_{F(RMS)}$ Max. RMS forward current	140	110	°C				
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	133		A	Sinusoidal half wave, Initial $T_J = T_J$ max.			
	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^2vt Maximum I^2vt for fusing	16000		A ² Vs	t = 0.1 to 10ms, no voltage reapplied			
$V_{F(TO)}$ Value of threshold voltage (up to 1200V)	0.68		V	$T_J = T_J$ max.			
$V_{E(TO)}$ Value of threshold voltage (for 1400V, 1600V)	0.69			$T_J = T_J$ max.			
r_f Value of forward slope resistance (up to 1200V)	1.62		mΩ	$T_J = T_J$ max.			
r_f Value of forward slope resistance (up to 1200V)	1.75			$T_J = T_J$ max.			
V_{FM} Max. forward voltage drop	1.2	1.4	V	$I_{pk} = 267A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ rectangular wave			

85HF(R) Series

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 $\pm 10\%$	2.3 - 3.4		Nm	Not lubricated threads
	20 - 30		lbf·in	
wt Approximate weight	17 (0.6)		g (oz)	unleaded device
Case style	DO-203AB (DO5)			See Outline Table

(1) Available only for 88HF

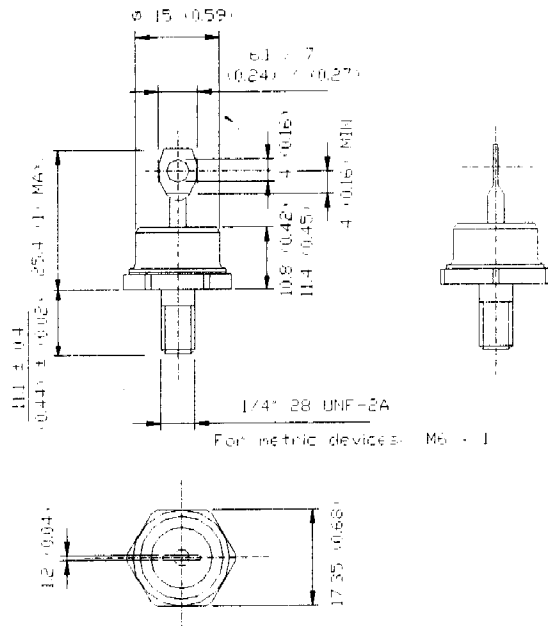
ΔR_{thJC} Conduction

(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	$T_j = T_j \text{ max.}$
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	
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">85</div> <div style="border: 1px solid black; padding: 2px 5px;">HF</div> <div style="border: 1px solid black; padding: 2px 5px;">R</div> <div style="border: 1px solid black; padding: 2px 5px;">160</div> <div style="border: 1px solid black; padding: 2px 5px;">M</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> ① ② ③ ④ ⑤ </div>
1	<ul style="list-style-type: none"> - 85 = Standard device - 86 = Not isolated lead - 87 = Isolated lead with silicone sleeve <ul style="list-style-type: none"> (Red = Reverse polarity) (Blue = Normal polarity) - 88 = Type for rotating application
2	- Standard diode
3	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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)



85HF(R)
Case Style DO-203AB (DO-5)
 All dimensions in millimeters (inches)

86HF(R)
Case Style DO-203AB (DO-5)
 All dimensions in millimeters (inches)

