

## 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 <sup>2</sup> s
@ 60Hz	13500		A <sup>2</sup> s
$V_{RRM}$ range	100 to 1200	1400 , 1600	V
$T_J$ range	- 65 to 180	- 65 to 150	°C

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## 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	A	°C		
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	133		A	t = 10ms	No voltage reappplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
	1700			t = 8.3ms	100% $V_{RRM}$ reappplied	
	1800			t = 10ms	100% $V_{RRM}$ reappplied	
	1450			t = 8.3ms	100% $V_{RRM}$ reappplied	
$I^2t$ Maximum $I^2t$ for fusing	1500		A <sup>2</sup> s	t = 10ms	No voltage reappplied	
	13500			t = 8.3ms	100% $V_{RRM}$ reappplied	
	10500			t = 10ms	100% $V_{RRM}$ reappplied	
	9400			t = 8.3ms	100% $V_{RRM}$ reappplied	
$I^2vt$ Maximum $I^2vt$ for fusing	16000		A <sup>2</sup> Vs	t = 0.1 to 10ms, no voltage reappplied		
$V_{F(TO)}$ 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

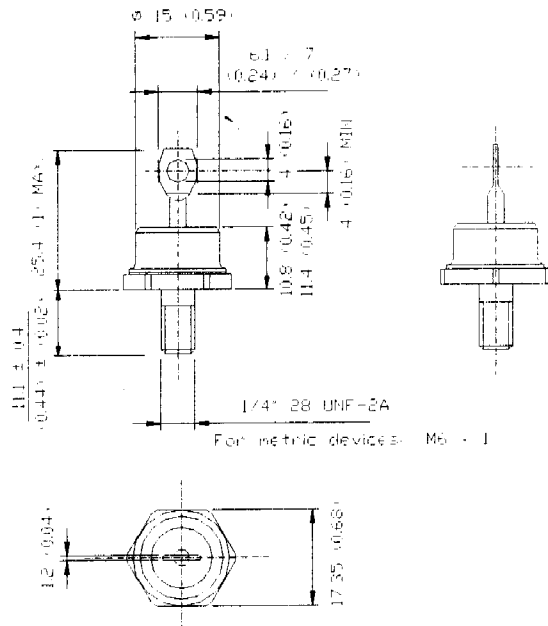
### $\Delta R_{thJC}$ Conduction

(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°	0.10	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;"> <span>①</span> <span>②</span> <span>③</span> <span>④</span> <span>⑤</span> </div>
<b>1</b>	<ul style="list-style-type: none"> <li>- 85 = Standard device</li> <li>86 = Not isolated lead</li> <li>87 = Isolated lead with silicone sleeve</li> <li style="padding-left: 20px;">(Red = Reverse polarity)</li> <li style="padding-left: 20px;">(Blue = Normal polarity)</li> <li>88 = Type for rotating application</li> </ul>
<b>2</b>	- Standard diode
<b>3</b>	<ul style="list-style-type: none"> <li>- None = Stud Normal Polarity (Cathode to Stud)</li> <li>R = Stud Reverse Polarity (Anode to Stud)</li> </ul>
<b>4</b>	- Voltage code: Code x 10 = $V_{RRM}$ (See Voltage Ratings table)
<b>5</b>	<ul style="list-style-type: none"> <li>- None = Stud base DO-203AB (DO-5) 1/4" 28UNF-2A</li> <li>M = Stud base DO-203AB (DO-5) M6 X 1 - (Not available for 88HF)</li> </ul>



**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)

