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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^2s
	@ 60Hz	13500		A^2s
V_{RRM}	range	100 to 1200	1400 , 1600	V
T_J	range	- 65 to 180	- 65 to 150	°C

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) 10 to 120	85HF(R) 140, 160	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	85	85	A	180° conduction, half sine wave		
	@ Case temperature	140	110	°C			
$I_{F(RMS)}$	Max. RMS forward current	133		A			
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	1700		A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
		1800			t = 8.3ms		
		1450			t = 10ms	100% V_{RRM} reapplied	
		1500			t = 8.3ms		
I^2t	Maximum I^2t for fusing	14500		A^2s	t = 10ms	No voltage reapplied	
		13500			t = 8.3ms		
		10500			t = 10ms	100% V_{RRM} reapplied	
		9400			t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	16000		$A^2\sqrt{s}$	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.		
$V_{F(TO)}$	Value of threshold voltage (for 1400V, 1600V)	0.69		V	$T_J = T_J$ 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		mΩ	$T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.2	1.4	V	I_{pk}= 267A, T_J = 25°C, t_p = 400µs rectangular wave		

Thermal and Mechanical Specifications

	Parameter	85HF(R) 10 to 120	85HF(R) 140 to 160	Units	Conditions
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)	unleaded device
	Case style	DO-203AB (DO5)			See Outline Table

(1) Available only for 88HF

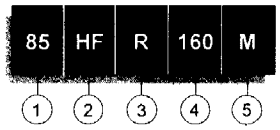
ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistence 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



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

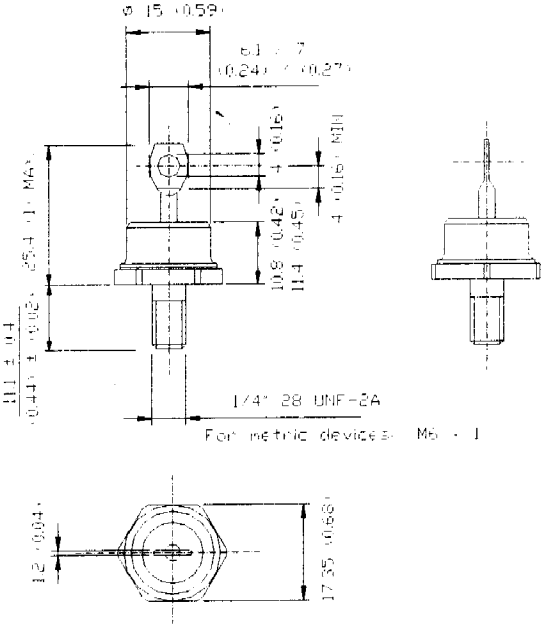
3 - None = Stud Normal Polarity (Cathode to Stud)
R = Stud Reverse Polarity (Anode to Stud)

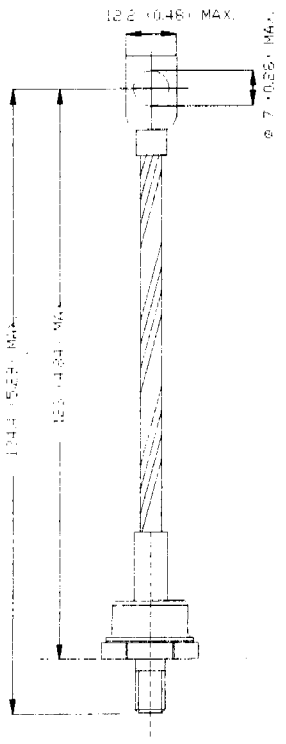
4 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)

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)

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)