

### STANDARD RECOVERY DIODES

### Stud Version

#### Features

- High current carrying capability
- High surge current capability
- Types up to 1200V  $V_{RRM}$
- Stud cathode and stud anode version
- Standard JEDEC types
- Diffused junction

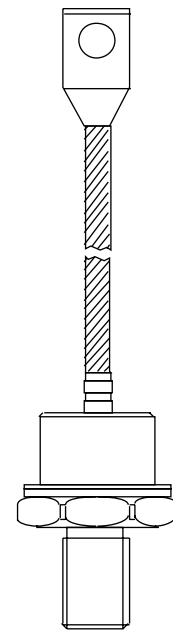
200 A

#### Typical Applications

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

#### Major Ratings and Characteristics

Parameters	200HF(R)	Units
$I_{F(AV)}$	200	A
@ $T_C$	125	°C
$I_{F(RMS)}$	314	A
$I_{FSM}$ @ 50Hz	4400	A
@ 60Hz	4610	A
$I^2t$ @ 50Hz	97	KA <sup>2</sup> s
@ 60Hz	88	KA <sup>2</sup> s
$V_{RRM}$ range	400 to 1200	V
$T_J$	-40 to 180	°C



case style  
DO-205AC (DO-30)

## 200HF(R) Series

Bulletin I2020 rev. A 07/94

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. @ 180°C mA
200HF(R)	40	400	500	15
	80	800	900	
	120	1200	1300	

#### Forward Conduction

Parameter		200HF(R)	Units	Conditions		
I <sub>F(AV)</sub>	Max. average forward current @ Case temperature	200	A	180° conduction, half sine wave		
		125	°C			
I <sub>F(RMS)</sub>	Max. RMS forward current	314	A	DC @ 120°C case temperature		
I <sub>FSM</sub>	Max. peak, one-cycle forward, non-repetitive surge current	4400	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T <sub>J</sub> = T <sub>J</sub> max
		t = 8.3ms		reapplied		
		t = 10ms		100% V <sub>RRM</sub>		
		t = 8.3ms		reapplied		
I <sup>2</sup> t	Maximum I <sup>2</sup> t for fusing	97	KA <sup>2</sup> s	t = 10ms	No voltage	
		88		t = 8.3ms	reapplied	
		68		t = 10ms	100% V <sub>RRM</sub>	
		62		t = 8.3ms	reapplied	
I <sup>2</sup> √t	Maximum I <sup>2</sup> √t for fusing	968	KA <sup>2</sup> /s	t = 0.1 to 10ms, no voltage reapplied		
V <sub>F(TO)1</sub>	Low level value of threshold voltage	0.85	V	(16.7% × π × I <sub>F(AV)</sub> < I < π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.		
V <sub>F(TO)2</sub>	High level value of threshold voltage	1.04		(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.		
r <sub>f1</sub>	Low level value of forward slope resistance	0.85	mΩ	(16.7% × π × I <sub>F(AV)</sub> < I < π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.		
r <sub>f2</sub>	High level value of forward slope resistance	0.59		(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> max.		
V <sub>FM</sub>	Max. forward voltage drop	1.45	V	I <sub>pk</sub> = 628A, T <sub>J</sub> = 25 °C		

### Thermal and Mechanical Specification

Parameter	200HF(R)	Units	Conditions
T <sub>J</sub> Max. operating temperature range	-40 to 180	°C	
T <sub>stg</sub> Max. storage temperature range	-55 to 180		
R <sub>thJC</sub> Max. thermal resistance, junction to case	0.17	K/W	DC operation
R <sub>thCS</sub> Max. thermal resistance, case to heatsink	0.08		Mounting surface, smooth, flat and greased
T Max. allowed mounting torque +0 -20%	11	Nm	Not lubricated threads
	10		Lubricated threads
wt Approximate weight	120	g	
Case style	DO-205AC(DO-30)		See Outline Table

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

(The following table shows the increment of thermal resistance R<sub>thJC</sub> when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.045	0.037	K/W	T <sub>J</sub> = T <sub>J</sub> max.
120°	0.056	0.061		
90°	0.073	0.079		
60°	0.102	0.105		
30°	0.154	0.156		

### Ordering Information Table

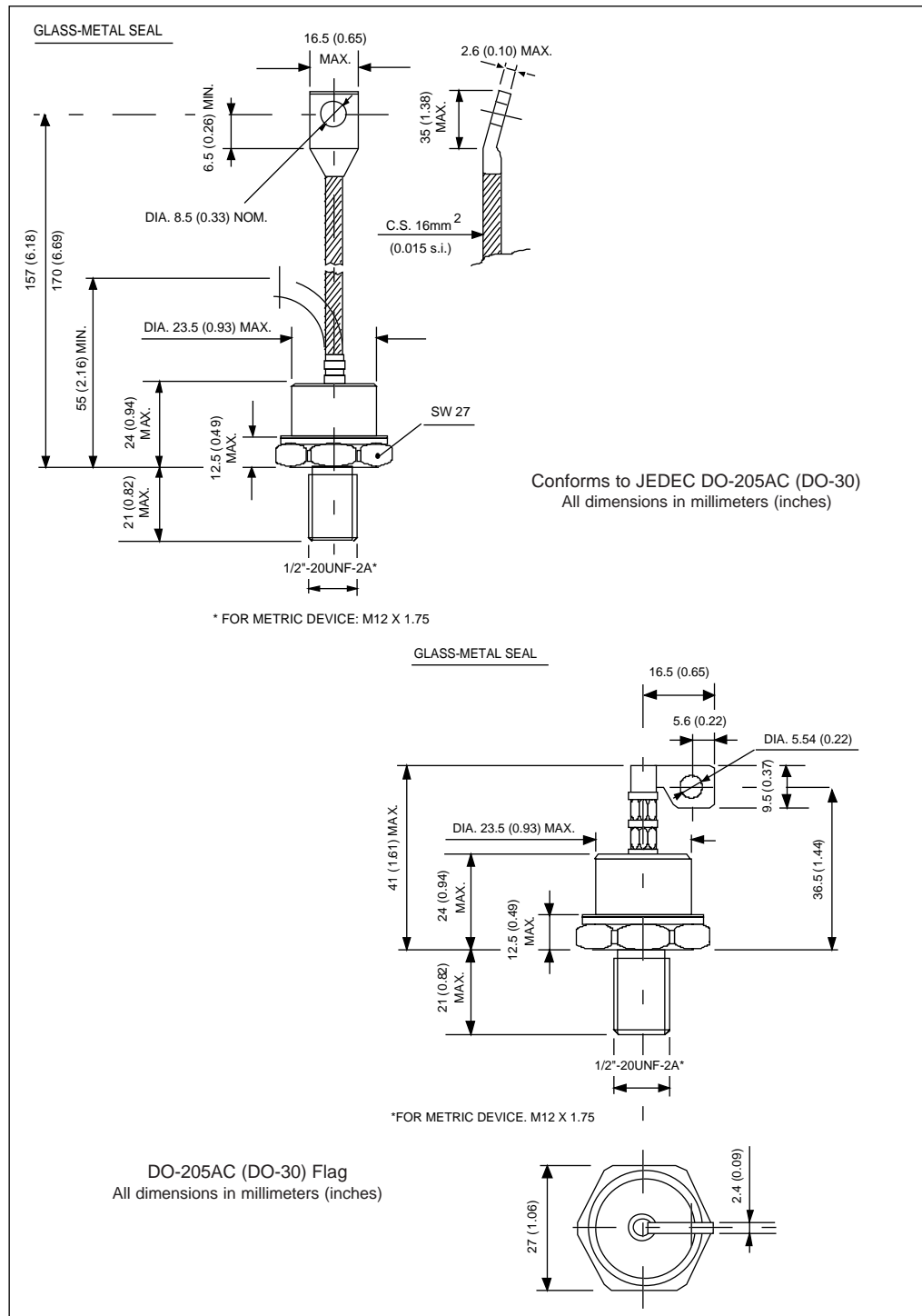
Device Code						
200	HF	R	120	P	B	V
①	②	③	④	⑤	⑥	⑦
<b>1</b>	- Essential Part Number					
<b>2</b>	- Diode					
<b>3</b>	- None = Stud Normal Polarity (Cathode to Stud) R = Stud Reverse Polarity (Anode to Stud)					
<b>4</b>	- Voltage code: Code x 10 = V <sub>RRM</sub> (See Voltage Ratings table)					
<b>5</b>	- P = Stud base DO-205AC(DO-30) 1/2" 20UNF-2A M = Stud base DO-205AC(DO-30) M12x1.75					
<b>6</b>	- B = Flag top terminals (for Cathode/ Anode Leads) S = Isolated lead with silicone sleeve (Red = Reverse Polarity; Blue = Normal Polarity) None = Not isolated lead					
<b>7</b>	- V = Glass-metal seal					

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### Outline Table



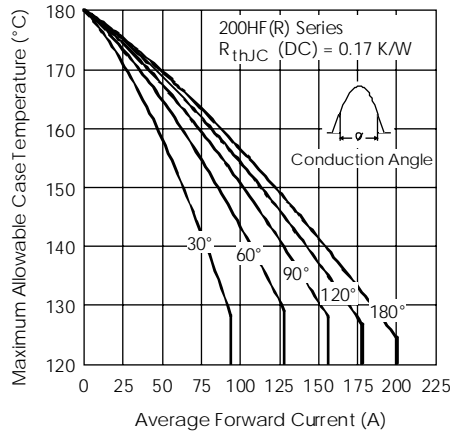


Fig. 1 - Current Ratings Characteristics

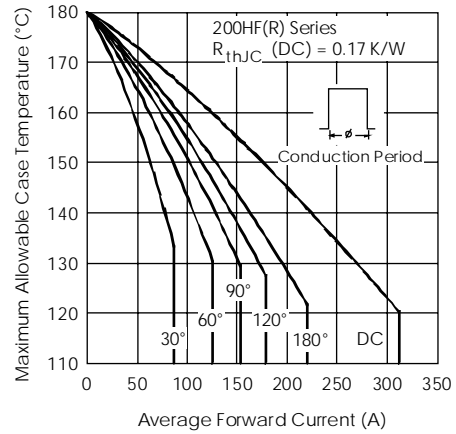


Fig. 2 - Current Ratings Characteristics

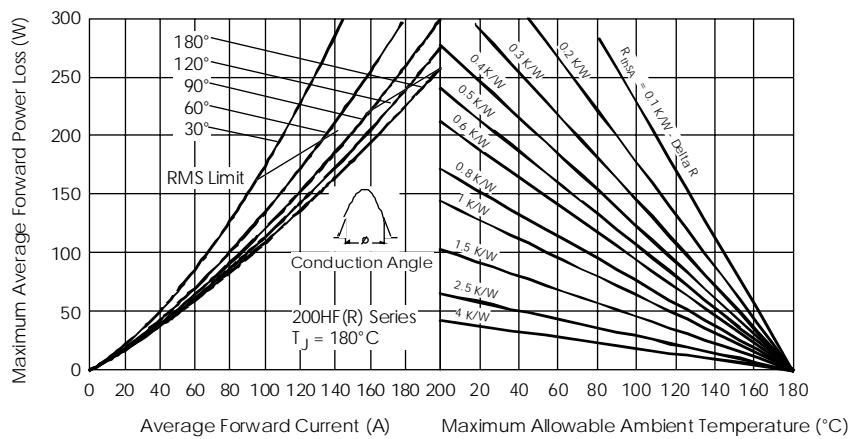


Fig. 3 - Forward Power Loss Characteristics

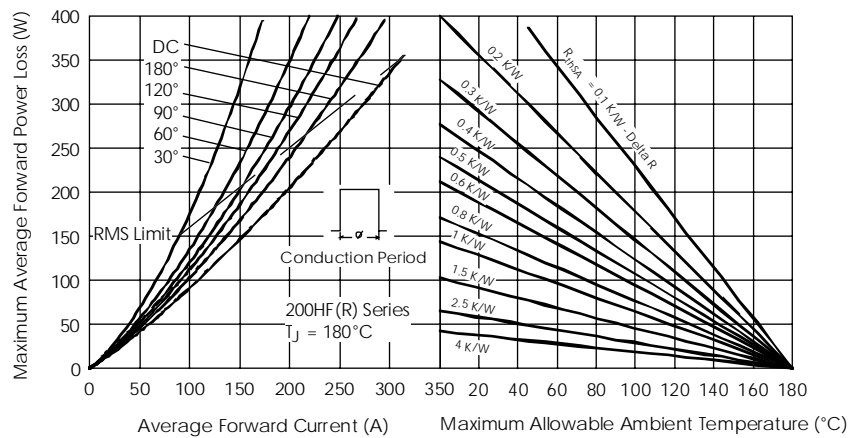


Fig. 4 - Forward Power Loss Characteristics

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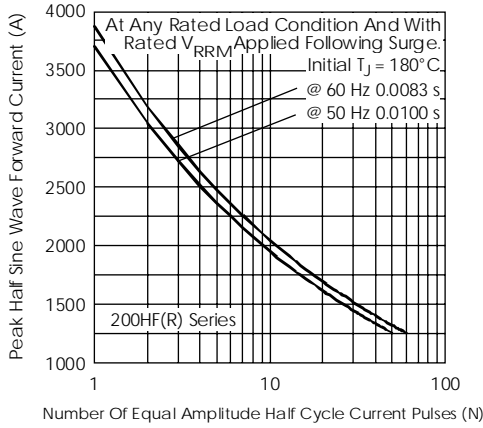


Fig. 5 - Maximum Non-Repetitive Surge Current

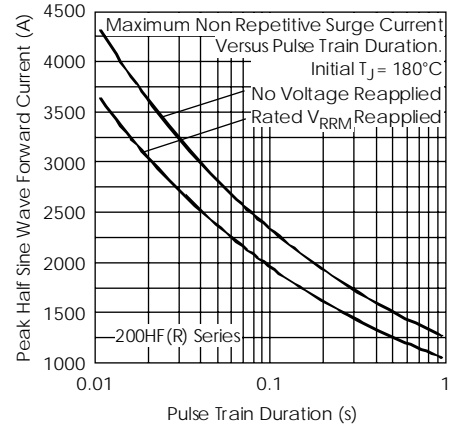


Fig. 6 - Maximum Non-Repetitive Surge Current

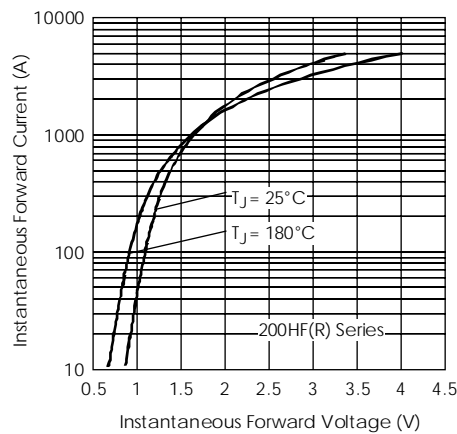


Fig. 7 - Forward Voltage Drop Characteristics

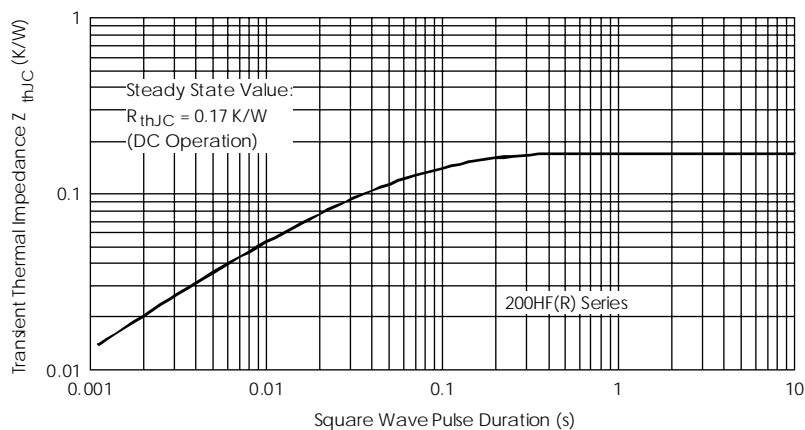


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics