

### 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

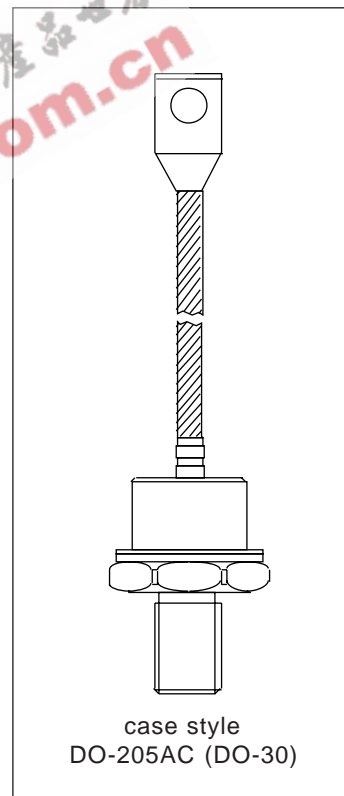
200 A

#### 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



## 200HF(R) Series

Bulletin I2020 rev. A 07/94

International  
 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
$I_{F(AV)}$ Max. average forward current @ Case temperature	200	A	180° conduction, half sine wave
	125	°C	
$I_{F(RMS)}$ Max. RMS forward current	314	A	DC @ 120°C case temperature
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	4400	A	t = 10ms No voltage
	4610		t = 8.3ms reapplied
	3700		t = 10ms 100% $V_{RRM}$
	3870		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	97	KA <sup>2</sup> s	t = 10ms No voltage
	88		t = 8.3ms reapplied
	63		t = 10ms 100% $V_{RRM}$
	62		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	968	KA <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.85	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{F(TO)2}$ High level value of threshold voltage	1.04		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f1}$ Low level value of forward slope resistance	0.85	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f2}$ High level value of forward slope resistance	0.59		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{FM}$ Max. forward voltage drop	1.45	V	$I_{pk} = 6.28A$ , $T_J = 25^\circ\text{C}$

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		

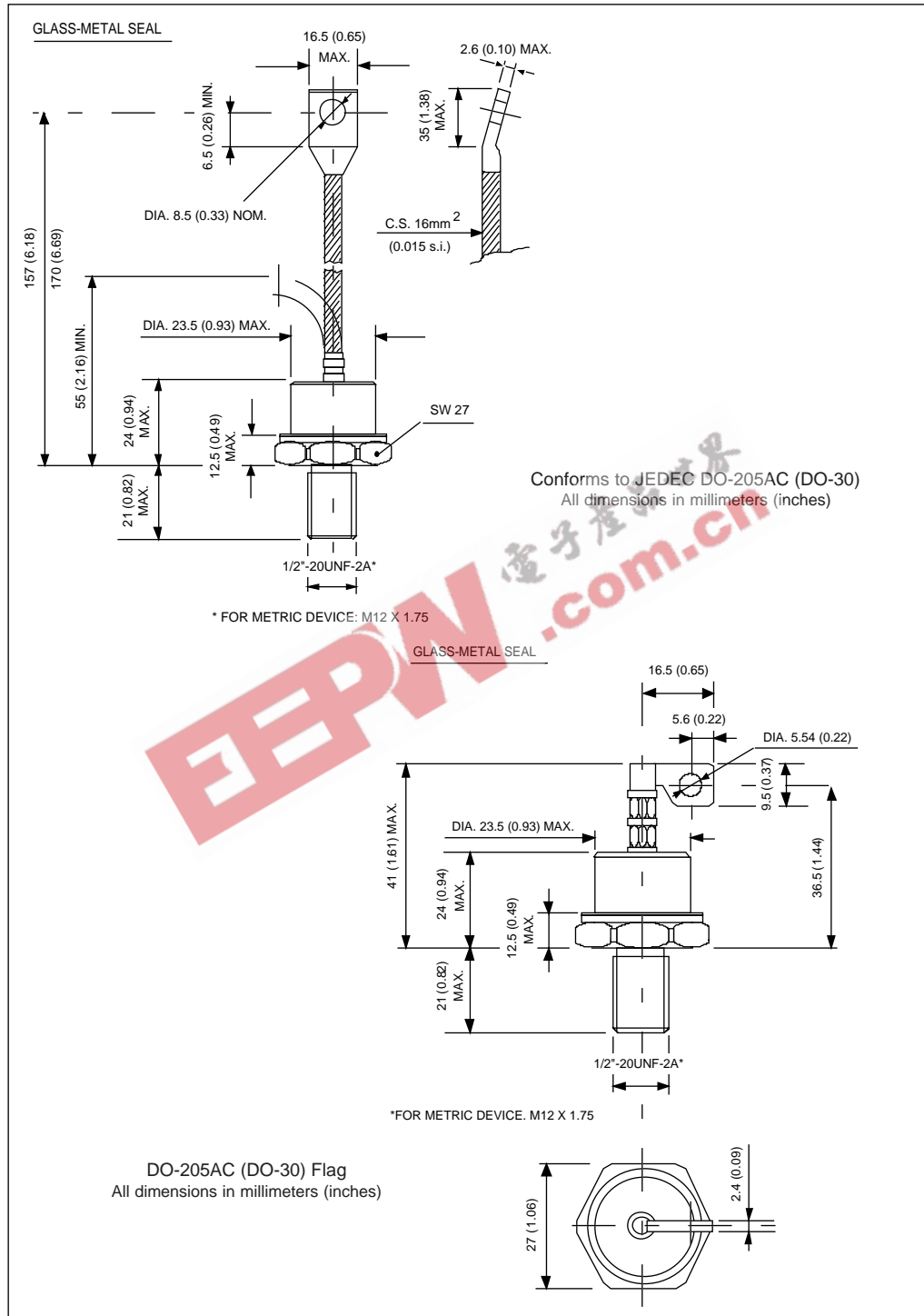
Ordering Information Table

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						

# 200HF(R) Series

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## Outline Table



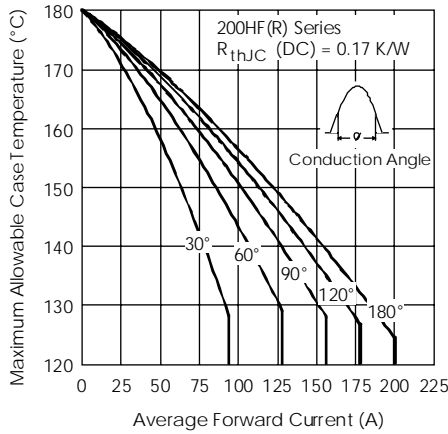


Fig. 1 - Current Ratings Characteristics

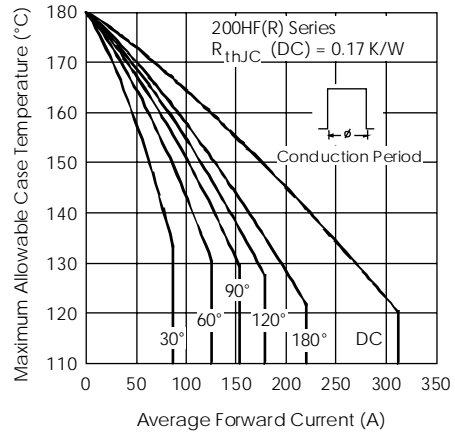


Fig. 2 - Current Ratings Characteristics

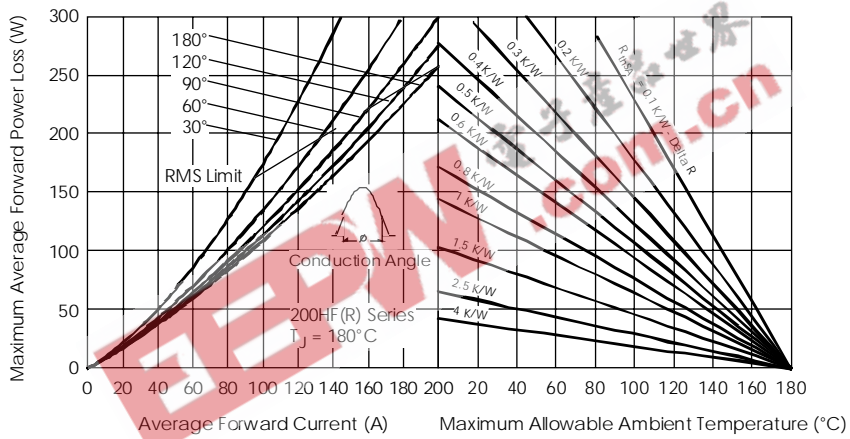


Fig. 3 - Forward Power Loss Characteristics

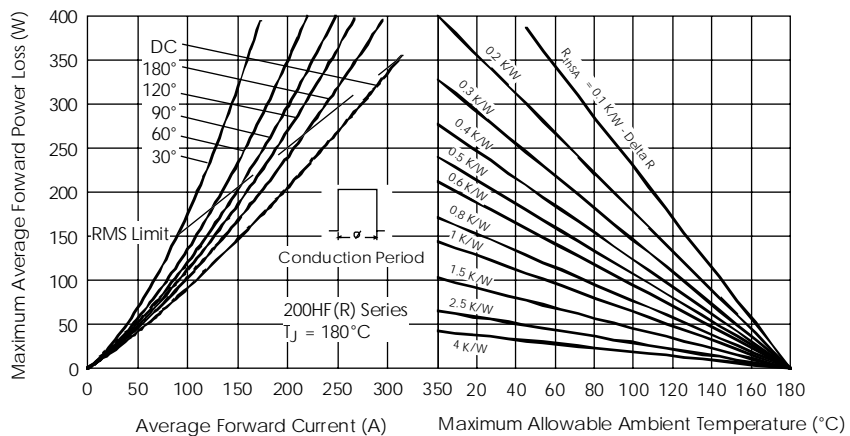


Fig. 4 - Forward Power Loss Characteristics

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International  
IRF Rectifier

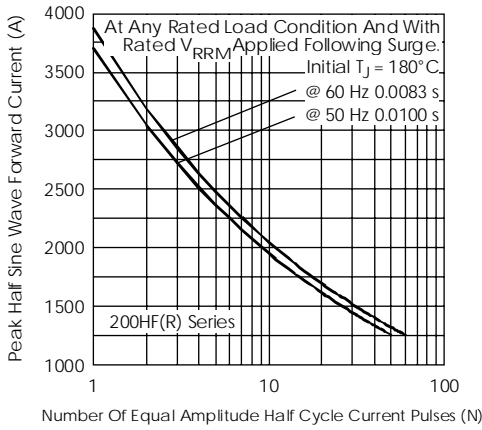


Fig. 5 - Maximum Non-Repetitive Surge Current

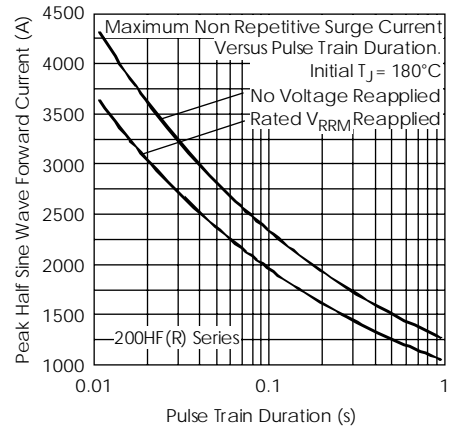


Fig. 6 - Maximum Non-Repetitive Surge Current

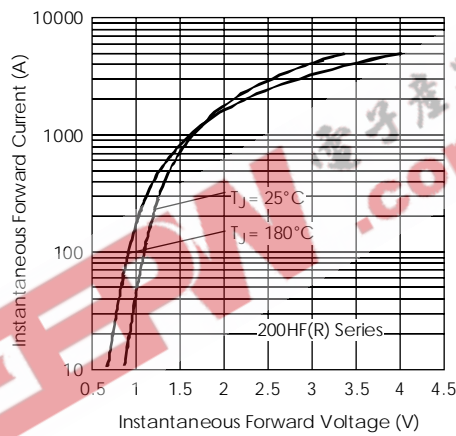


Fig. 7 - Forward Voltage Drop Characteristics

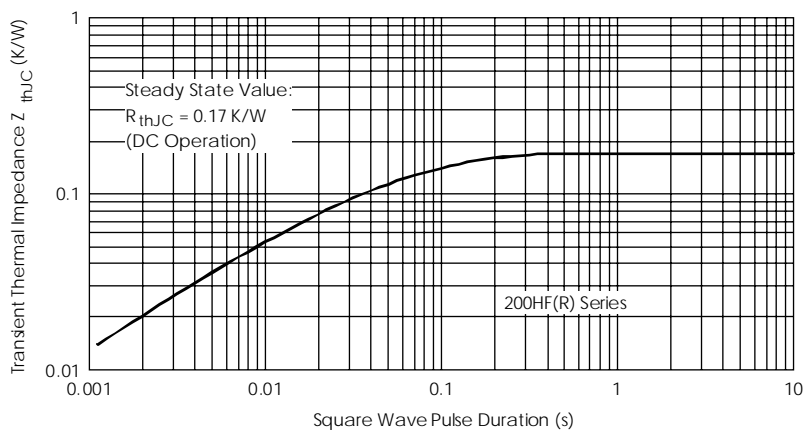


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics