Bulletin I2019 rev. A 07/94

International
IOR Rectifier

130HF(R) SERIES

STANDARD RECOVERY DIODES **Stud Version**

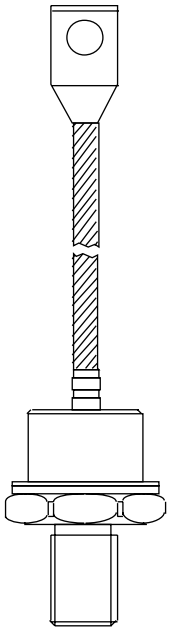
130 A

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

Typical Applications

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



case style
DO-205AC (DO-30)

Major Ratings and Characteristics

Parameters		130HF(R)	Units
$I_{F(AV)}$		130	A
	@ T_C	125	°C
$I_{F(RMS)}$		200	A
I_{FSM}	@ 50Hz	2000	A
	@ 60Hz	2100	A
I^2t	@ 50Hz	20	KA^2s
	@ 60Hz	18	KA^2s
V_{RRM} range		400 to 1200	V
T_J		-40 to 180	°C

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
130HF(R)	40	400	500	15
	80	800	900	
	120	1200	1300	

Forward Conduction

Parameter		130HF(R)	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	130	A	180° conduction, half sine wave		
	@ Case temperature	125	°C			
$I_{F(RMS)}$	Max. RMS forward current	200	A	DC @ 115°C case temperature		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	2000	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max
		2100		t = 8.3ms		
		1680		t = 10ms	100% V_{RRM} reapplied	
		1760		t = 8.3ms		
I^2t	Maximum I^2t for fusing	20	KA^2s	t = 10ms	No voltage reapplied	
		18		t = 8.3ms		
		14		t = 10ms	100% V_{RRM} reapplied	
		13		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	200	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.76	V	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ max.		
$V_{F(TO)2}$	High level value of threshold voltage	0.95		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	1.41	mΩ	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f2}	High level value of forward slope resistance	1.02		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.5	V	I_{pk}= 500A, T_J = 25 °C		

Thermal and Mechanical Specification

	Parameter	130HF(R)	Units	Conditions
T_J	Max. operating temperature range	-40 to 180	°C	
T_{stg}	Max. storage temperature range	-55 to 180		
R_{thJC}	Max. thermal resistance, junction to case	0.3	K/W	DC operation
R_{thCS}	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

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°	0.052	0.042	K/W	$T_J = T_J$ max.
120°	0.064	0.070		
90°	0.083	0.090		
60°	0.117	0.120		
30°	0.177	0.180		

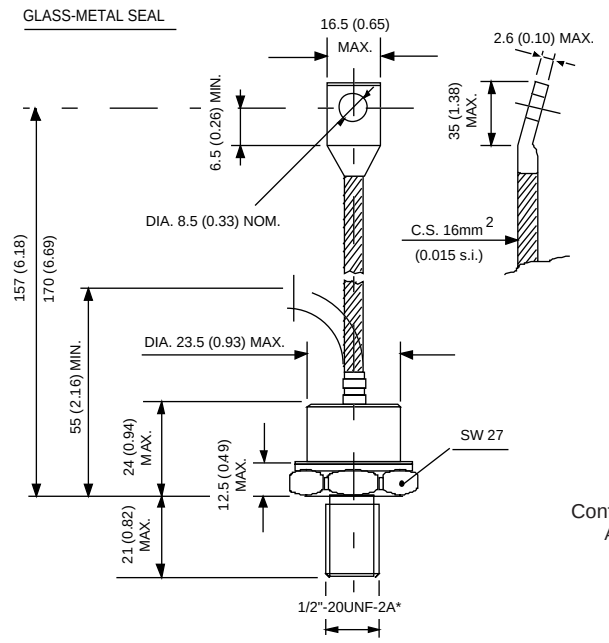
Ordering Information Table

Device Code

130	HF	R	120	P	B	V
①	②	③	④	⑤	⑥	⑦

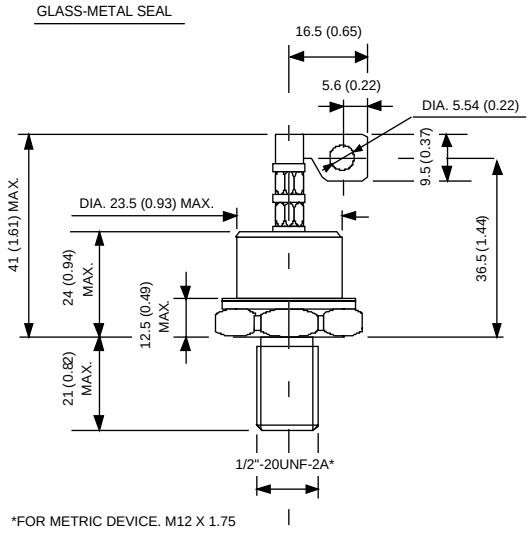
- **1** - Essential Part Number
- **2** - Diode
- **3** - None = Stud Normal Polarity (Cathode to Stud)
  R = Stud Reverse Polarity (Anode to Stud)
- **4** - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)
- **5** - P = Stud base DO-205AC(DO-30) 1/2" 20UNF-2A
  M= Stud base DO-205AC(DO-30)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

Outline Table



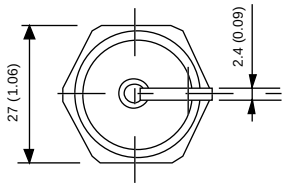
Conforms to JEDEC DO-205AC (DO-30)
All dimensions in millimeters (inches)

* FOR METRIC DEVICE: M12 X 1.75



*FOR METRIC DEVICE. M12 X 1.75

DO-205AC (DO-30) Flag
All dimensions in millimeters (inches)



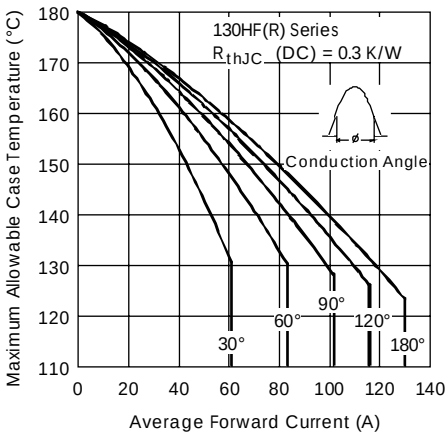


Fig. 1 - Current Ratings Characteristics

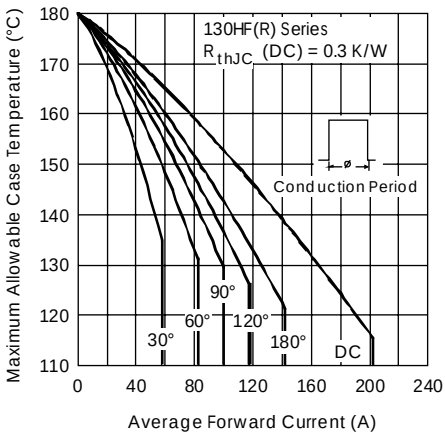


Fig. 2 - Current Ratings Characteristics

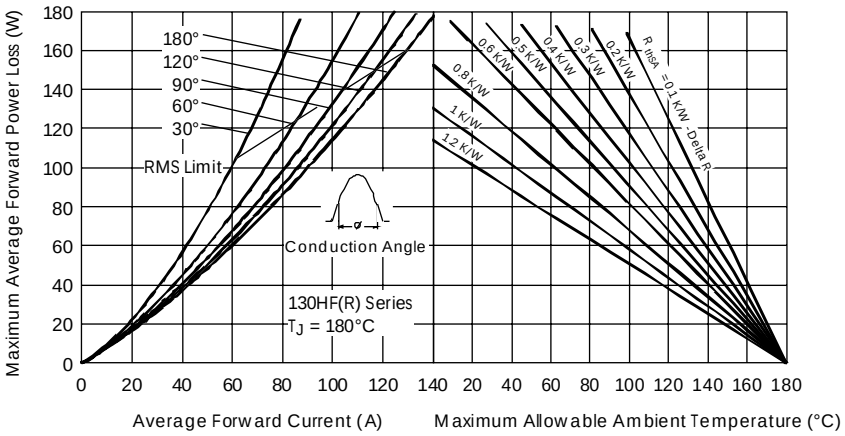


Fig. 3 - Forward Power Loss Characteristics

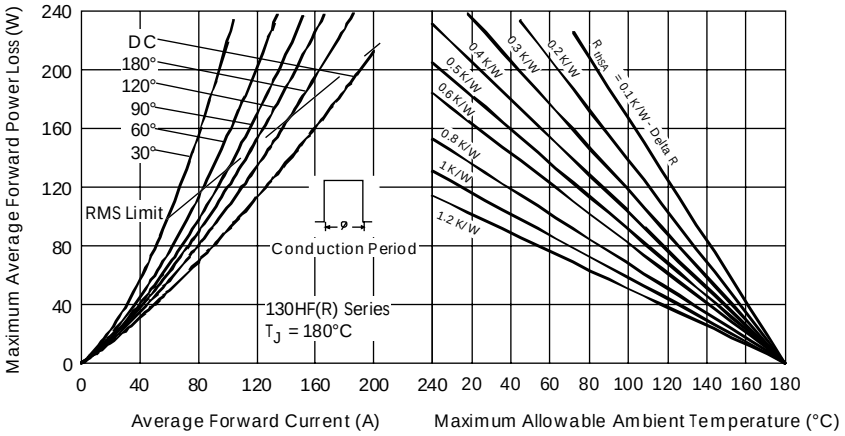


Fig. 4 - Forward Power Loss Characteristics

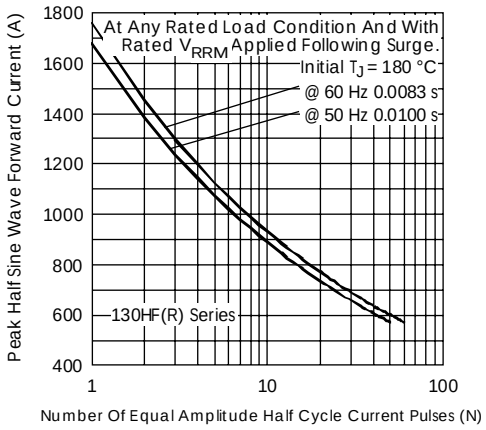


Fig. 5 - Maximum Non-Repetitive Surge Current

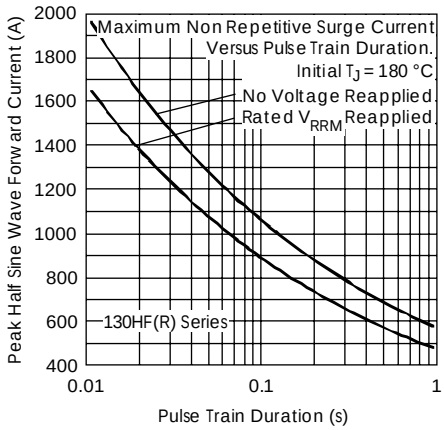


Fig. 6 - Maximum Non-Repetitive Surge Current

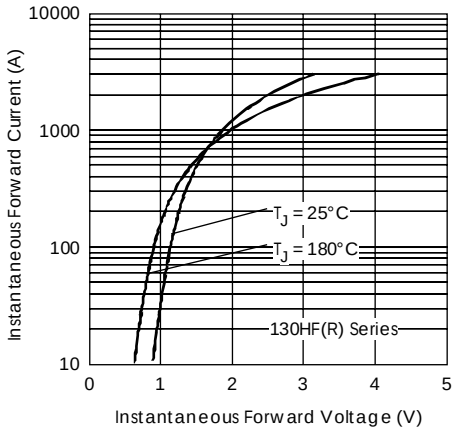


Fig. 7 - Forward Voltage Drop Characteristics

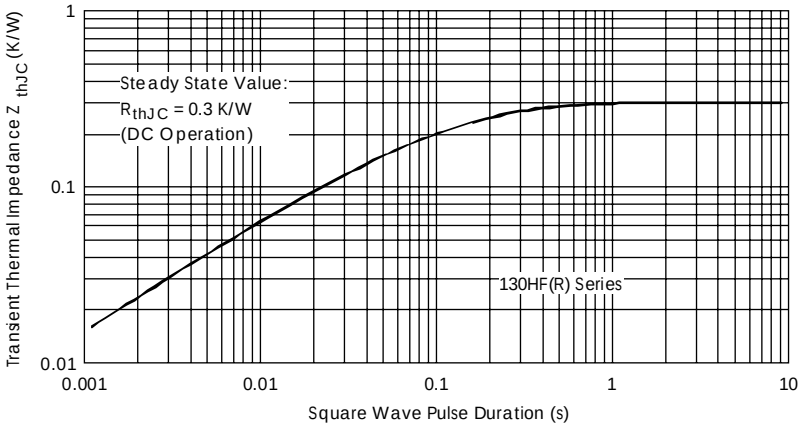


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics