Data Sheet No. PD-2.196

INTERNATIONAL RECTIFIER IOR

11DF AND 31DF SERIES

1 Amp and 3 Amp Fast Recovery Rectifiers

Major Ratings and Characteristics

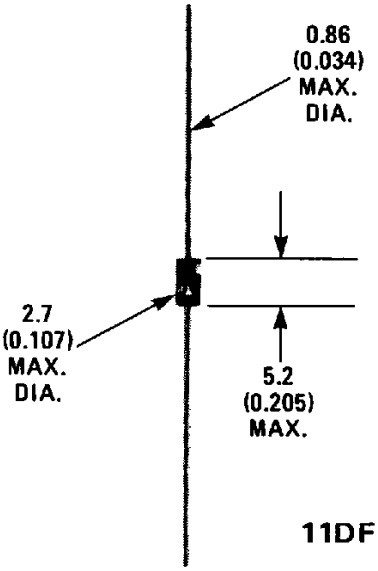
	11DF1 11DF2	11DF3 11DF4	31DF1 31DF2	31DF3 31DF4	Units
I_O	1.0		3.0		A
I_{FSM} @ 50 Hz	30		60		A
I_{FSM} @ 60 Hz	31.4		62.8		A
I^2t @ 50 Hz	4.5		18		A^2s
I^2t @ 60 Hz	4.1		16.4		A^2s
t_{rr}	35	30	35	30	nS
T_J Range	-40 ~ +150		-40 ~ +150		°C
V_{RRM} Range	100 & 200	300 & 400	100 & 200	300 & 400	V

Description/Features

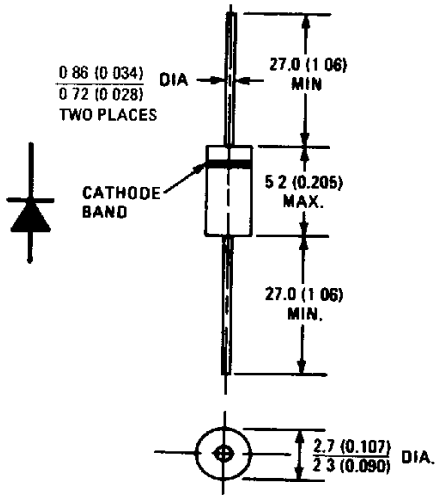
The 11DF and 31DF series of fast recovery rectifiers are rated at 1 amp and 3 amps, respectively. They are designed for use in switching power supplies, inverters and as free wheeling diodes.

- Ultrafast 30 and 35 nanosecond recovery times at rated I_{FM}
- Glass passivated junction
- Low forward voltage
- High voltage capability, to 400 volts
- Available taped and reeled

CASE STYLE AND DIMENSIONS



11DF Series



Case Style DO-204AL (DO-41), 11DF Series
Dimensions in Millimeters and (Inches)

Refer to the Last Page For 31DF Case Style.

11DF & 31DF Series

VOLTAGE RATINGS

Part Numbers		V_{RRM} – Max. Repetitive Peak Reverse Voltage (V)	V_{RSM} – Max. Non-Repetitive Peak Reverse Voltage (V)
11DF1	31DF1	100	110
11DF2	31DF2	200	220
11DF3	31DF3	300	330
11DF4	31DF4	400	440

ELECTRICAL SPECIFICATIONS

		11DF1 11DF2	11DF3 11DF4	31DF1 31DF2	31DF3 31DF4	Units	Conditions
I_O	Max. average output current, 180° conduction sinusoidal waveform	1.0 T_a = 27°C		1.0 T_a = 18°C		A	Without Fin or P.C. Board
		1.0 T_a = 63°C		1.0 T_a = 57°C			With P.C. Board
I_{FSM}	Max. peak one cycle, non-repetitive surge current,	30		60		A	50 Hz half cycle sine wave or 6 ms rectangular pulse
		31.4		62.8			60 Hz half cycle sine wave or 5 ms rectangular pulse
I^2t	Max. I^2t for fusing,	4.5		18		A^2S	t = 10 ms
		4.1		16.4			t = 8.3 ms
V_{FM}	Max. peak forward voltage	0.98	1.25	0.98	1.25	V	T_a = 25°C I_F = 1A for 11DF / I_F = 3A for 31DF
I_{RM}	Max. peak reverse current	10	20	10	20	μA	$V_R = V_{RRM}$ T_a = 25°C
t_{rr}	Max. reverse recovery time	35	30	35	30	ns	T_a = 25°C; di/dt = 50 A/μs; For 11DF Series: I_{FM} = 1A / For 31DF Series: I_{FM} = 3A

THERMAL-MECHANICAL SPECIFICATIONS

T_J	Max. operating junction temperature range	–40 ~ +150		°C	
T_{stg}	Storage temperature range	–40 ~ +150		°C	
R_{thJA}	Max. thermal resistance, dc	115	80	deg. C/W	Without Fin or P.C. Board
		81	34		With Fin.
wt	Approximate weight	0.33 (0.012)	1.2 (0.042)	g/oz.	
	Case Style	DO-204AL (DO-41)	C-16		

11DF1 and 11DF2

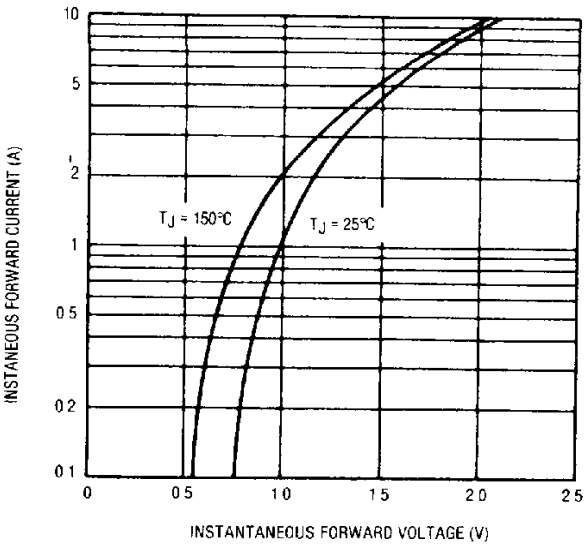


Fig. 1 — Forward Voltage Vs. Forward Current

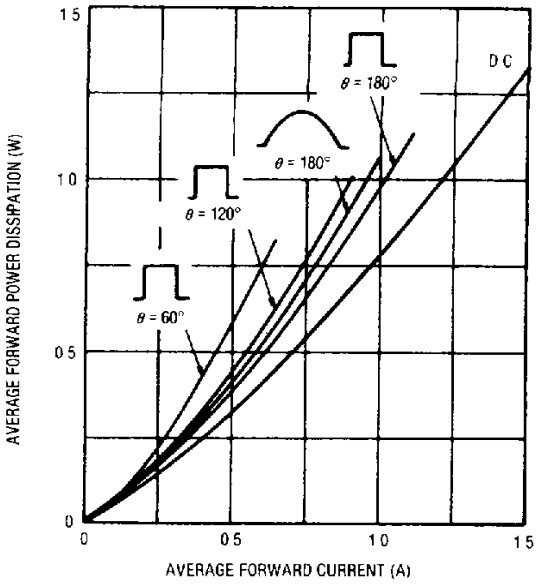


Fig. 2 — Average Forward Power Dissipation Vs. Average Forward Current

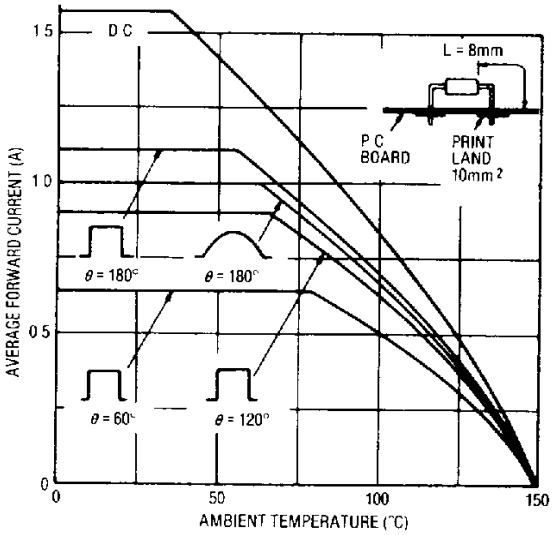


Fig. 3 — Average Forward Current Vs. Ambient Temperature

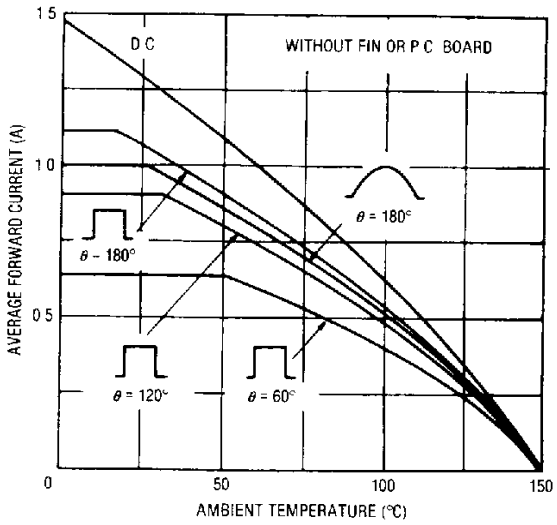


Fig. 4 — Average Forward Current Vs. Ambient Temperature

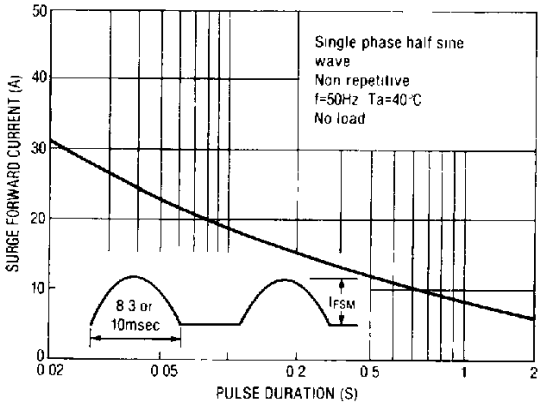


Fig. 5 — Surge Current Ratings

11DF3 and 11DF4

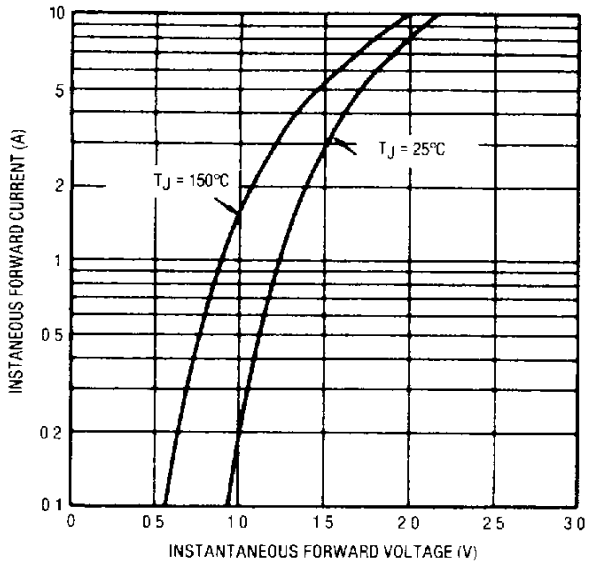


Fig. 6 — Forward Voltage Vs. Forward Current

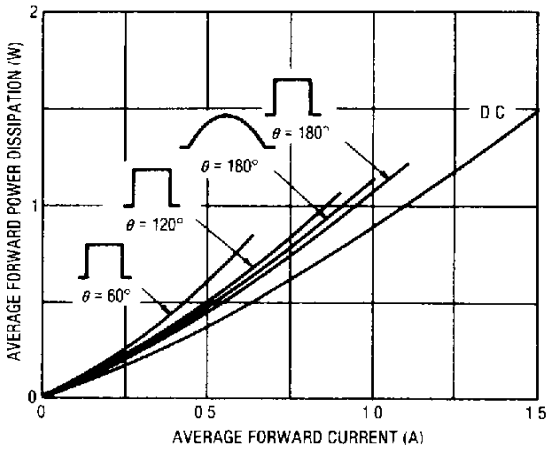


Fig. 7 — Average Forward Power Dissipation Vs. Average Forward Current

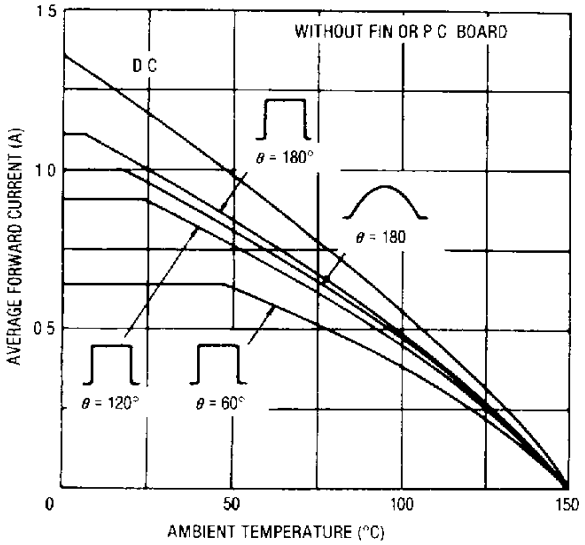


Fig. 8 — Average Forward Current Vs. Ambient Temperature

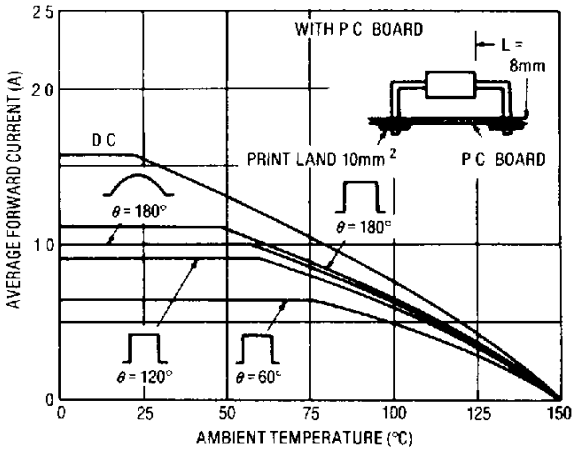


Fig. 9 — Average Forward Current Vs. Ambient Temperature

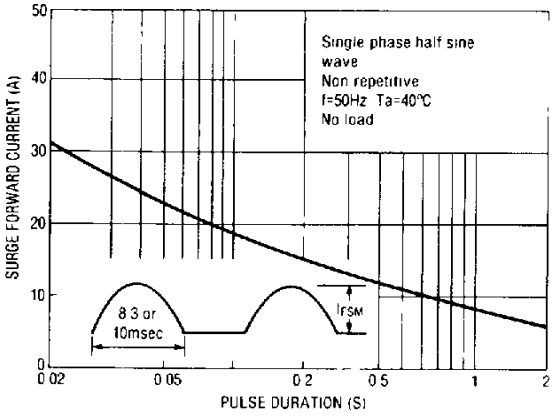


Fig. 10 — Surge Current Ratings

31DF1 and 31DF2

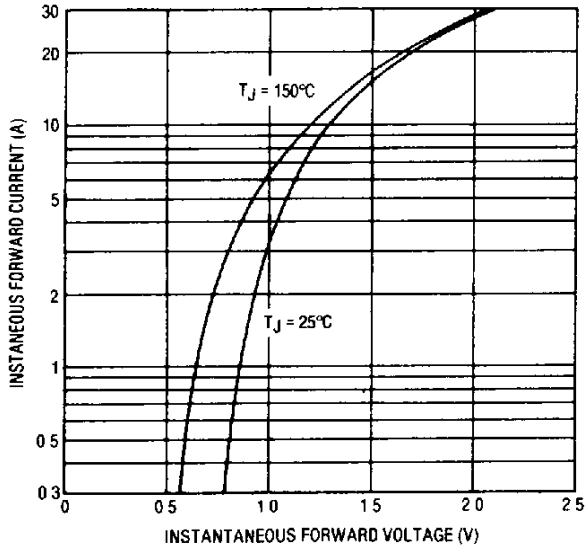


Fig. 11 — Forward Voltage Vs. Forward Current

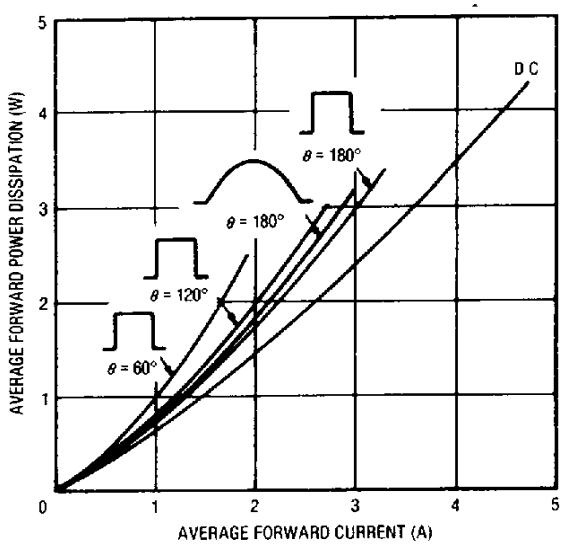


Fig. 12 — Average Forward Power Dissipation Vs. Average Forward Current

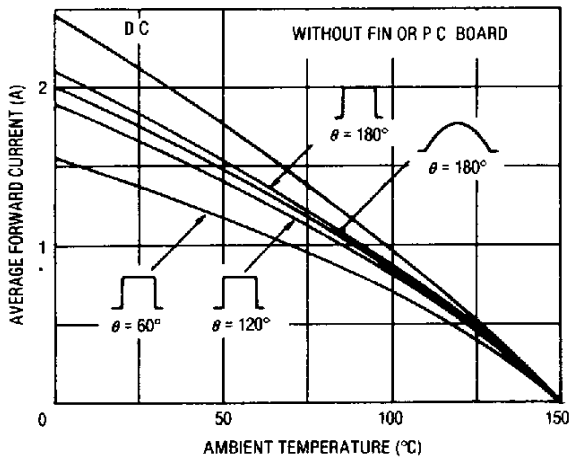


Fig. 13 — Average Forward Current Vs. Ambient Temperature

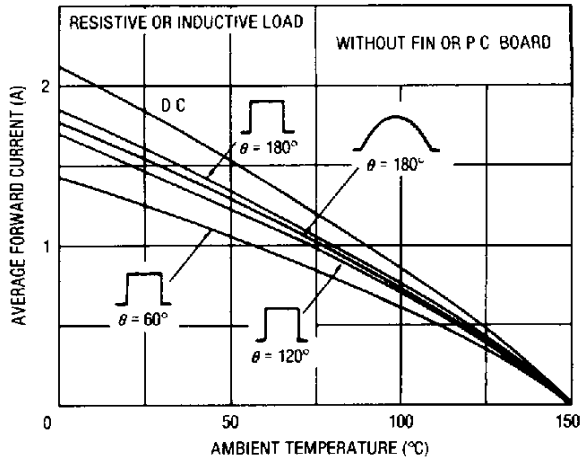


Fig. 14 — Average Forward Current Vs. Ambient Temperature

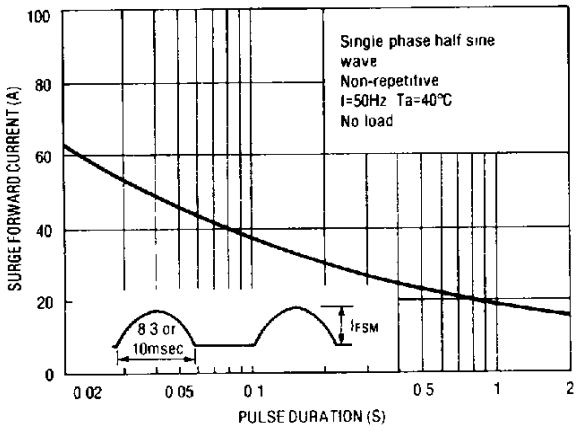


Fig. 15 — Surge Current Ratings

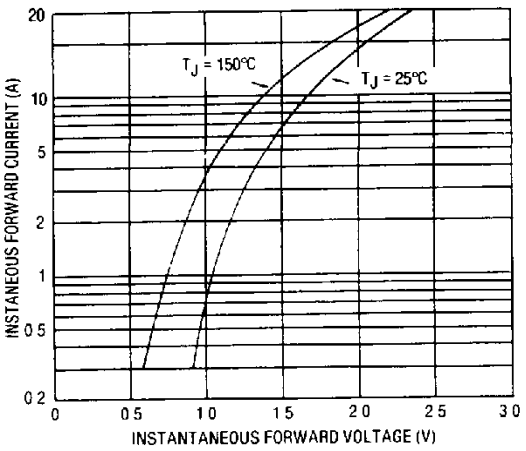


Fig. 16 — Forward Voltage Vs. Forward Current

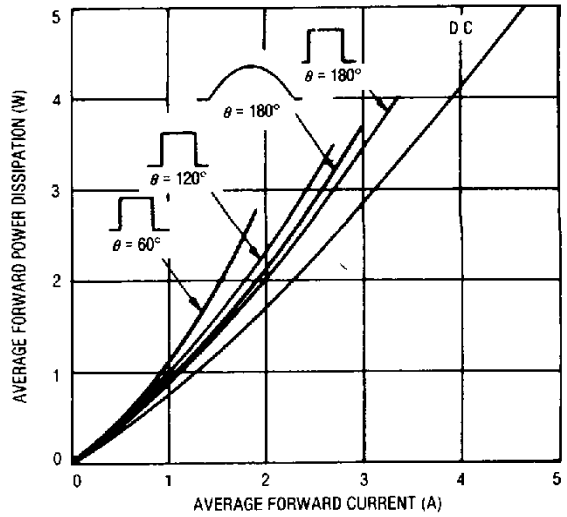


Fig. 17 — Average Forward Power Dissipation Vs. Average Forward Current

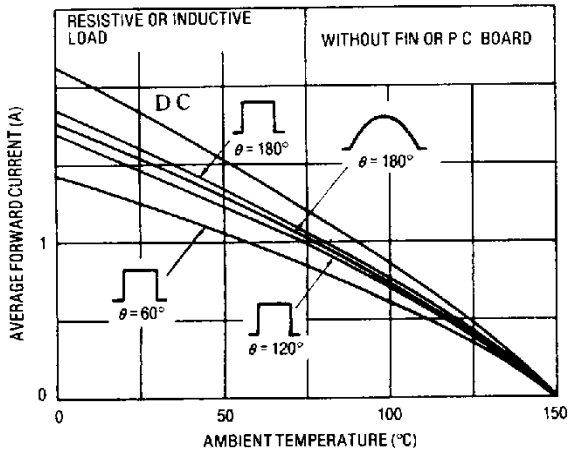


Fig. 18 — Average Forward Current Vs. Ambient Temperature

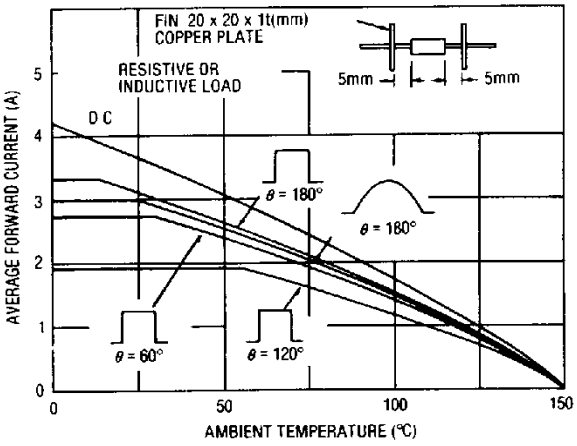


Fig. 19 — Average Forward Current Vs. Ambient Temperature

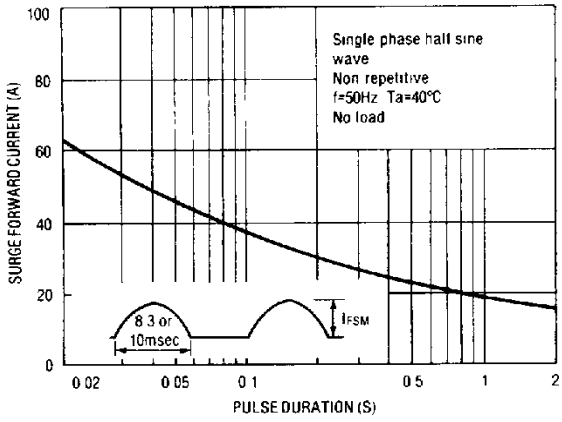
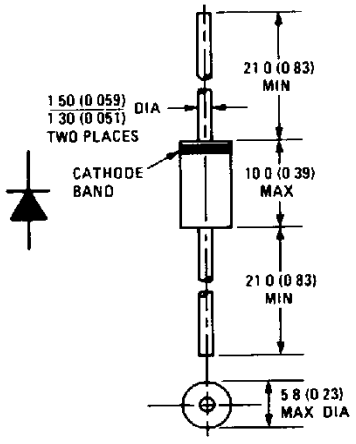


Fig. 20 — Surge Current Ratings



IR Case Style C-16, 31DF Series

International IOR **Rectifier**

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