

INTERNATIONAL RECTIFIER



11DF AND 31DF SERIES

1 Amp and 3 Amp Fast Recovery Rectifiers

Major Ratings and Characteristics

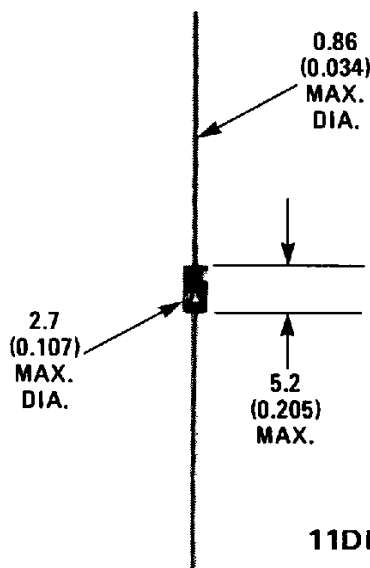
	11DF1 11DF2	11DF3 11DF4	31DF1 31DF2	31DF3 31DF4	Units
I _O	1.0		3.0		A
I _{FSM} @ 50 Hz @ 60 Hz	30		60		A
	31.4		62.8		
I ² _t @ 50 Hz @ 60 Hz	4.5		18		A ² s
	4.1		16.4		
t _{rr}	35	30	35	30	nS
T _J Range	-40 ~ +150		-40 ~ +150		°C
V _{RRM} Range	100 & 200	300 & 400	100 & 200	300 & 400	V

Description/Features

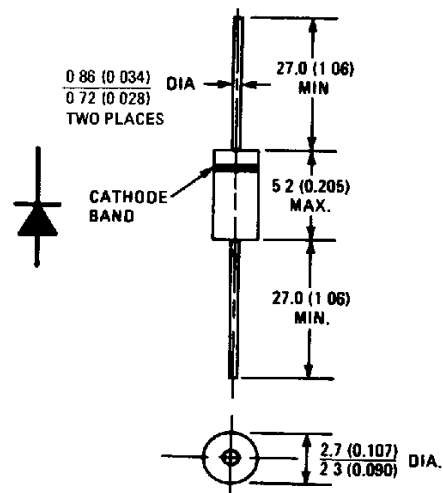
The 11DF and 31DF series of fast recovery rectifiers are rated at 1 amp and 3 amps, respectively. They are designed for use in switching power supplies, inverters and as free wheeling diodes.

- 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	$T_a = 27^\circ\text{C}$	1.0	$T_a = 18^\circ\text{C}$	A	Without Fin or P.C. Board
		1.0	$T_a = 63^\circ\text{C}$	1.0	$T_a = 57^\circ\text{C}$		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^2_t	Max. I^2_t for fusing,	4.5		18		A^2s	$t = 10 \text{ ms}$
		4.1		16.4			$t = 8.3 \text{ ms}$
V_{FM}	Max. peak forward voltage	0.98	1.25	0.98	1.25	V	$T_a = 25^\circ\text{C}$ $\frac{I_F = 1\text{A for 11DF}}{I_F = 3\text{A for 31DF}}$
I_{RM}	Max. peak reverse current	10	20	10	20	μA	$V_R = V_{RRM}$ $T_a = 25^\circ\text{C}$
t_{rr}	Max. reverse recovery time	35	30	35	30	ns	$T_a = 25^\circ\text{C}$ For 11DF Series: $I_{FM} = 1\text{A}$ $di/dt = 50 \text{ A}/\mu\text{s}$ For 31DF Series: $I_{FM} = 3\text{A}$

THERMAL-MECHANICAL SPECIFICATIONS

T_J	Max. operating junction temperature range	$-40 \sim +150$		$^\circ\text{C}$	
T_{stg}	Storage temperature range	$-40 \sim +150$		$^\circ\text{C}$	
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

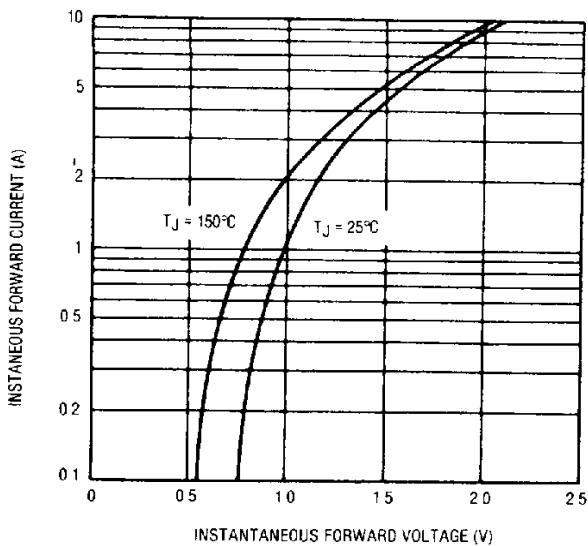


Fig. 1 — Forward Voltage Vs. Forward Current

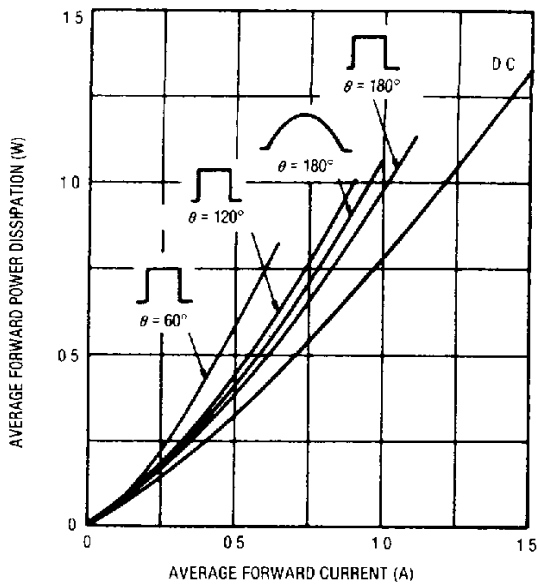


Fig. 2 — Average Forward Power Dissipation Vs. Average Forward Current

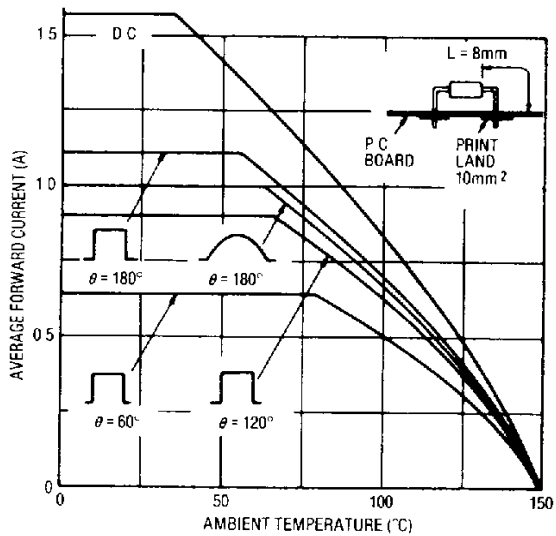


Fig. 3 — Average Forward Current Vs. Ambient Temperature

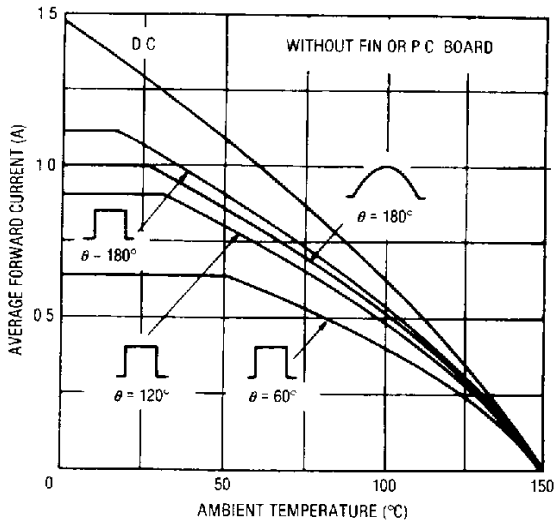


Fig. 4 — Average Forward Current Vs. Ambient Temperature

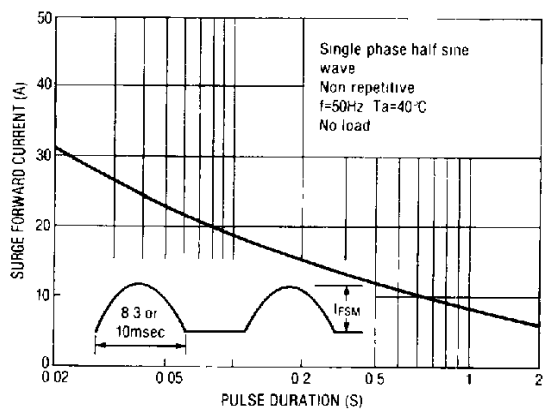


Fig. 5 — Surge Current Ratings

11DF3 and 11DF4

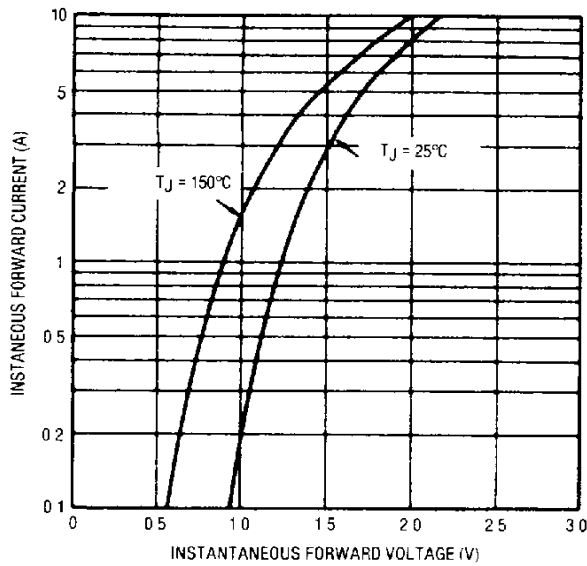


Fig. 6 — Forward Voltage Vs. Forward Current

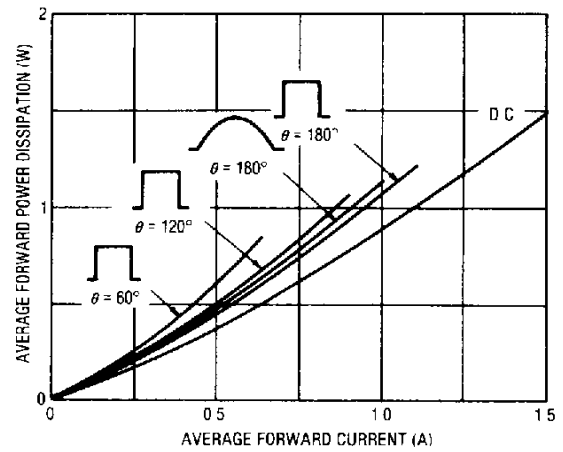


Fig. 7 — Average Forward Power Dissipation Vs. Average Forward Current

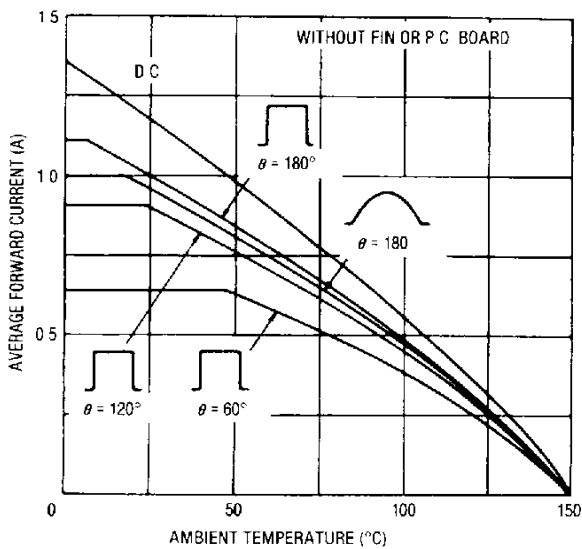


Fig. 8 — Average Forward Current Vs. Ambient Temperature

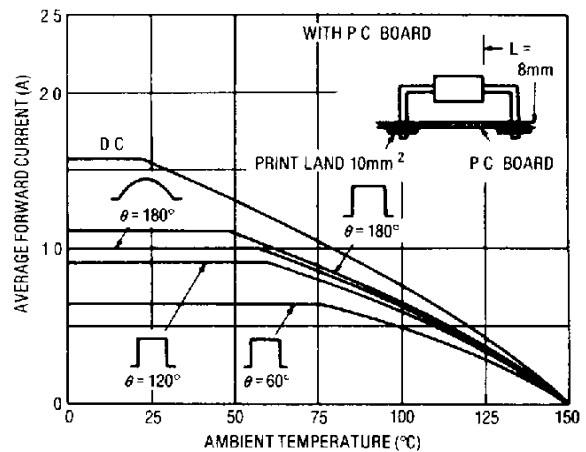


Fig. 9 — Average Forward Current Vs. Ambient Temperature

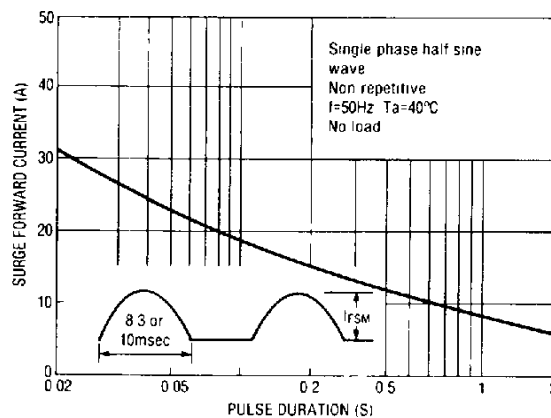


Fig. 10 — Surge Current Ratings

31DF1 and 31DF2

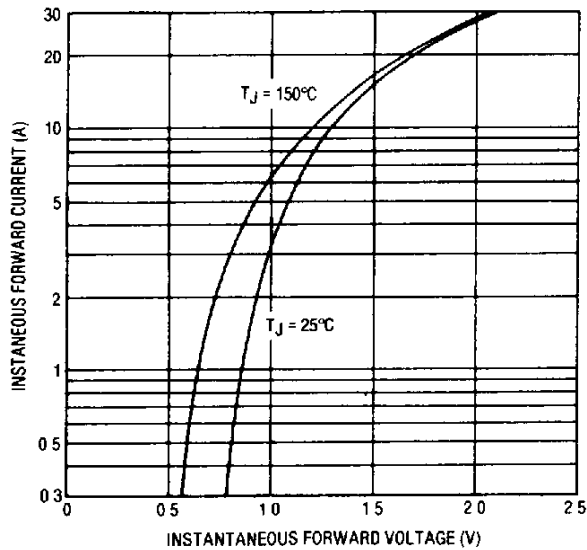


Fig. 11 — Forward Voltage Vs. Forward Current

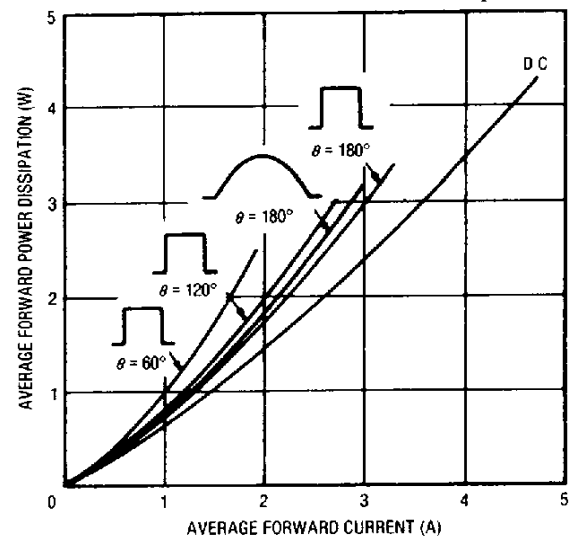


Fig. 12 — Average Forward Power Dissipation Vs. Average Forward Current

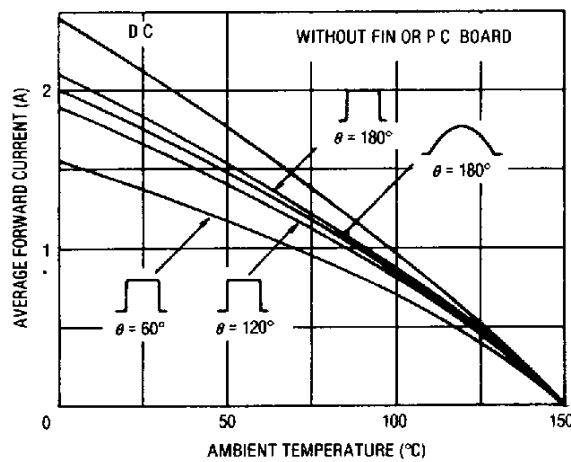


Fig. 13 — Average Forward Current Vs. Ambient Temperature

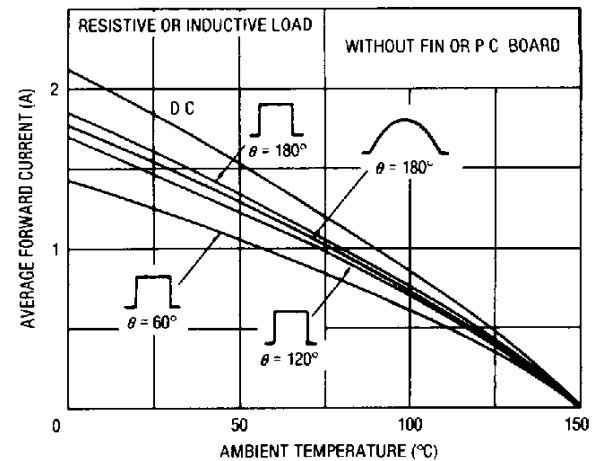


Fig. 14 — Average Forward Current Vs. Ambient Temperature

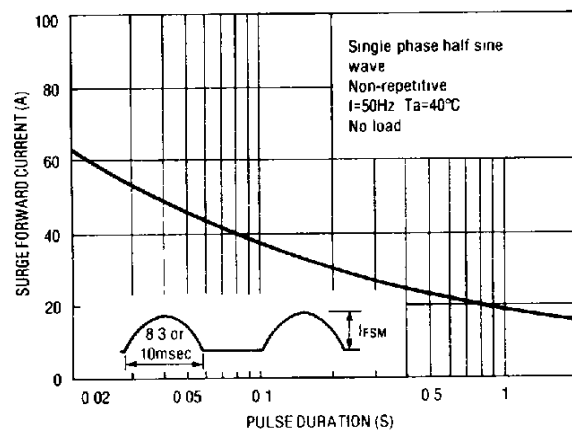


Fig. 15 — Surge Current Ratings

3

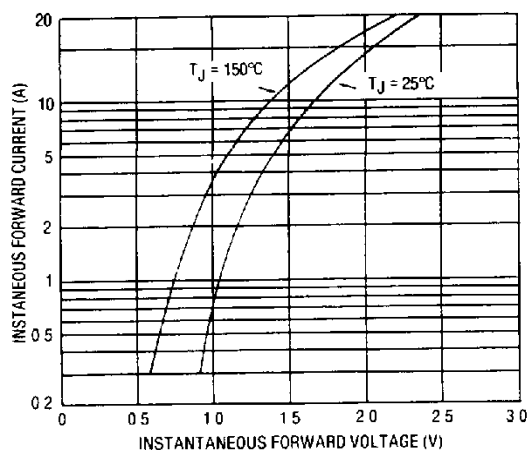


Fig. 16 — Forward Voltage Vs. Forward Current

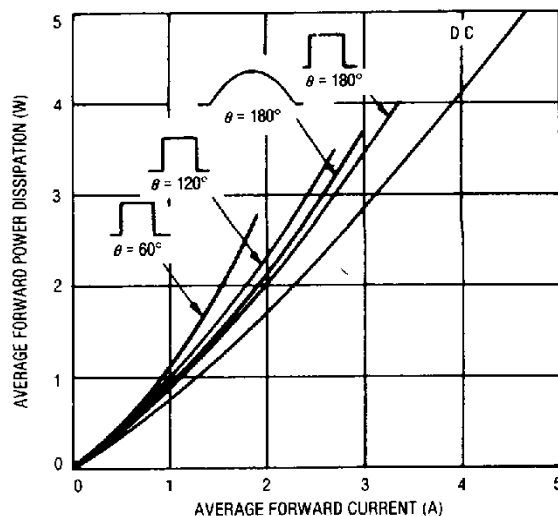


Fig. 17 — Average Forward Power Dissipation Vs. Average Forward Current

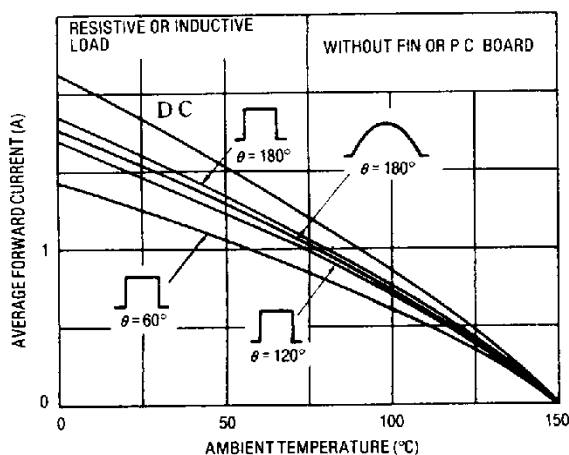


Fig. 18 — Average Forward Current Vs. Ambient Temperature

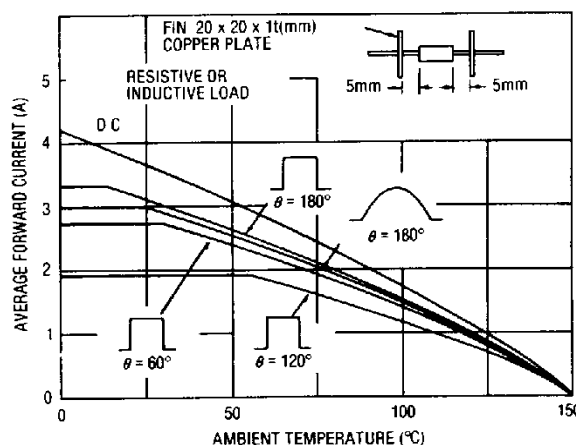


Fig. 19 — Average Forward Current Vs. Ambient Temperature

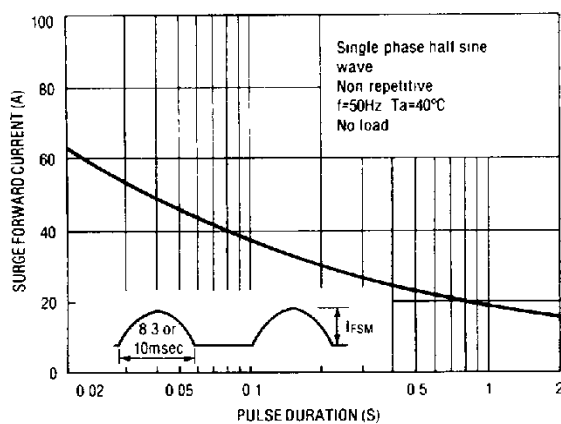
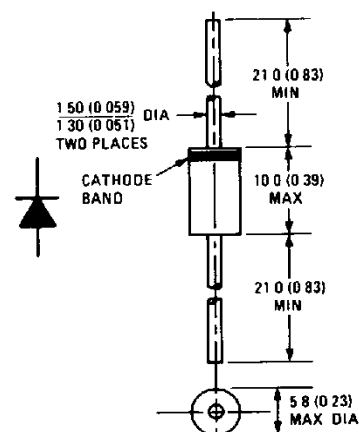


Fig. 20 — Surge Current Ratings



IR Case Style C-16, 31DF Series

International
IOR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245 Tel. (213) 772-2000 Tlx 4720403
EUROPEAN HEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB Tel (088 33) 3215/4231 Tlx 95219

IR CANADA: 101 Bentley St. Markham Ontario L3R 3L1 Tel (416) 475-1897 280 Dorval Ave Suite 201A, Dorval Quebec H9S 3H4 Tel (514) 631-4696 **IR FRANCE:** 123, rue de Petit Vaux, 91360 Epinay Sur Orge Tel 33 1 64 54 83 29 **IR GERMANY:** Savignystrasse 55 D-6000 Frankfurt/Main 1, Tel (0511) 74 26 74 **IR ITALY:** Via Ligutia 49, 10071 Bogaro, Torino, Tel (011) 470 1484 **IR INDIA:** International House, L B S Marg, Vikhroli Bombay 400-083, Tel (022) 58 15 84 **IR FAR EAST:** 3-30-4 Nishi-Ikebukuro Toshima-ku, K&H Building 2F, Tokyo 171, Tel (03) 983 0641 **U.S. Central Zone Office:** 2100 Manchester Rd., Suite 501, Wheaton, IL 60187, Tel (312) 690-7700 **U.S. Eastern Zone Office:** 71 Grand Ave Palisades Park, NJ 07650 Tel (201) 943-4554

Printed in U S A 9/86

Sales Offices, Agents and Distributors in Major Cities Throughout the World.

Date and specifications subject to change without notice