Data Sheet No. PD-2.004C

T-01-15

INTERNATIONAL RECTIFIER IOR

1N4816, 1N5052, 10D, 20D SERIES

1.5 and 2.0 Amp Molded Silicon Rectifier Diodes

Major Ratings and Characteristics

	10D	20D	1N4816	1N5052	Units
$I_{F(AV)}$	1.5	2.0	1.5*	1.5	A
@ Max. T_A	40	100†	40*	40*	°C
I_{FSM}					
@ 50 Hz	48	48	48	48	A
@ 60 Hz	50	50	50*	50*	
$I^2\sqrt{t}$	161.4	161.4	161.4	161.4	$A^2\sqrt{s}$
T_J	–65 to 170*				°C
V_{RRM} Range	50 – 1000*				V

†Maximum lead temperature, T_L.
*JEDEC registered value.

Description/Features

- Economical miniature case
- High surge ratings
- Molded epoxy DO-204AL case style.

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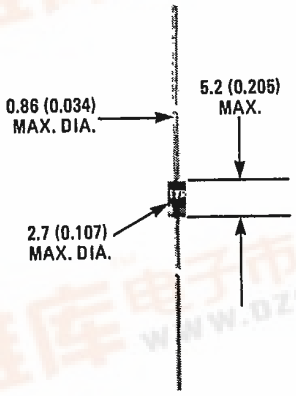
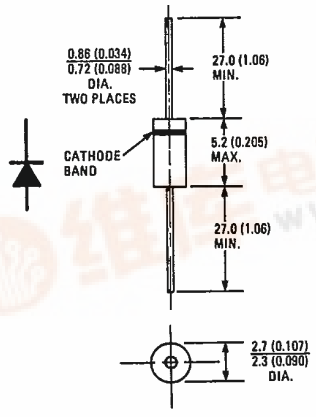
CASE STYLE AND DIMENSIONS





Conforms to JEDEC Case Style DO-204AL (DO-41)
Dimensions in Millimeters and (Inches)

1N4816, 1N5052, 10D, 20D Series

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T-01-15

VOLTAGE RATINGS

Part Numbers	V_{RRM} – Max. Repetitive Peak Reverse Voltage (V) T = -65 to 175°C①	V_{RSM} – Max. Non-Repetitive Peak Reverse Voltage (V) T = -65 to 175°C①	$V_{R(RMS)}$ – Max. RMS Reverse Voltage (V) T = -65 to 175°C①	V_R – Max. DC Blocking Voltage (V) T = -65 to 165°C①	Surge Resistor① (Ohms) Min.	Typ.
10D05, 20D05, 1N4816	50*	100*	35	50*	4.7	7.5
10D1, 20D1, 1N4817	100*	200*	70	100*	4.7	7.5
10D2, 20D2, 1N4818	200*	300*	140	200*	4.7	7.5
— — 1N4819	300	400	210	300	4.7	7.5
10D4, 20D4, 1N4820	400*	525*	280	400*	4.7	7.5
— — 1N4821	500	650	350	500	6.2	10
10D6, 20D6, 1N4822	600*	800*	420	600*	7.5	12
— — 1N5052	700*	900*	490	700*	—	—
10D8, 20D8, 1N5053	800*	1000*	560	800*	10	15
10D10, 20D10, 1N5054	1000*	1200*	700	1000*	12	20

ELECTRICAL SPECIFICATIONS

		10D	20D	1N4816	1N5052	Units	Conditions
$I_{F(AV)}$	Max. average forward current	1.5	2.0	1.5*	1.5*	A	180° sinusoidal conduction
	@ Max. T①	40	100	40*	40*	°C	20D: Double side cooled.
I_{FSM}	Max. peak one cycle, non-repetitive surge current	48	48	48	48	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse. Following any rated load condition and with rated V_{RRM} reapplied.
		50	50	50*	50*	A	Half cycle 60 Hz sine wave or 5 ms rectangular pulse.
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for fusing ④	161.4	161.4	161.4	161.4	$A^2\sqrt{s}$	t = 0.1 to 10 ms with V_{RRM} following surge = rated V_{RRM}.
V_{FM}	Max. peak forward voltage	0.95	—	—	—	V	T_A = 25°C, I_{FM} = 1A
		1.30	—	1.30*	1.30*	V	T_A = 40°C, $I_{F(AV)}$ = 1.5A (4.71A pk)
		—	1.30	—	—	V	T_A = 25°C, $I_{F(AV)}$ = 2.0A (6.28A pk)
I_R	Max. dc reverse current	5①	5①	5	5	μA	T = 25°C, V_R = Rated V_R
		—	—	500*	500*	μA	T_A = 170°C
$I_{R(AV)}$	Max. average reverse current	250	250	250*	250*	μA	V_{RRM} = Rated V_{RRM} 20D: T_L = 100°C, $I_{F(AV)}$ = 2.0A Others: T_A = 40°C, $I_{F(AV)}$ = 1.5A

THERMAL-MECHANICAL SPECIFICATIONS

T_J	Max. operating junction temperature range	–65 to 170*	°C	
T_{stg}	Max. storage temperature range	–65 to 175*	°C	
T_{sld}	Max. lead temperature during soldering	240*	°C	Duration, 10s max., measured 9.5 mm (0.375 in.) from device case.
wt	Approximate weight	0.33 (0.012)	g (oz)	
	Case Style	DO-204AL (DO-41)		JEDEC

① T = T_A for 10D series, 1N4816 through 1N4822 and 1N5052 through 1N5054. T = T_L for 20D series. (T_L is measured 9.5 mm (0.375 in.) from device case.)

② Value of series resistance required for capacitive loads, 10D, 1N4816, and 1N5052 series.

③ I_R = 10 μA for devices rated 200V or less.

④ I^2t for time $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$.

* JEDEC registered value.

T-01-15

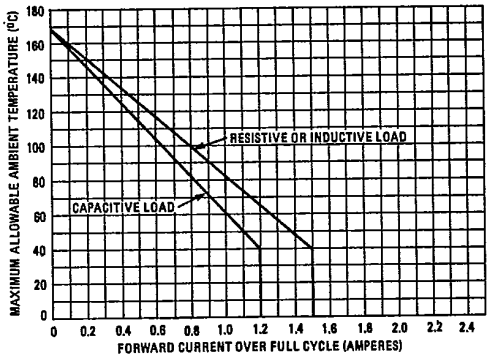

Fig. 1 – Average Forward Current Vs. Maximum Allowable Ambient Temperature, 1N4816-22, 1N5052-54 & 10D Series

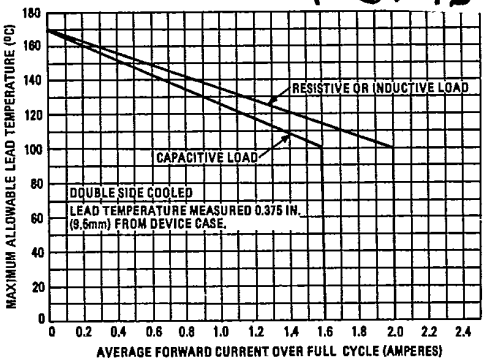

Fig. 2 – Average Forward Current Vs. Maximum Allowable Lead Temperature, 20D Series

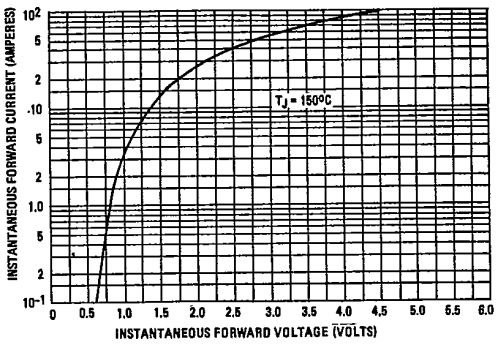

Fig. 3 – Maximum Forward Voltage Vs. Forward Current, 1N4816-22, 1N5052-54, 10D Series

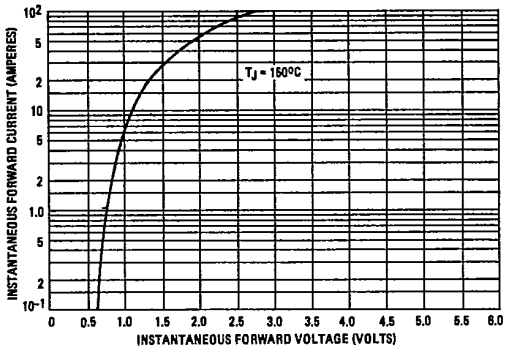

Fig. 4 – Maximum Forward Voltage Vs. Forward Current, 20D Series

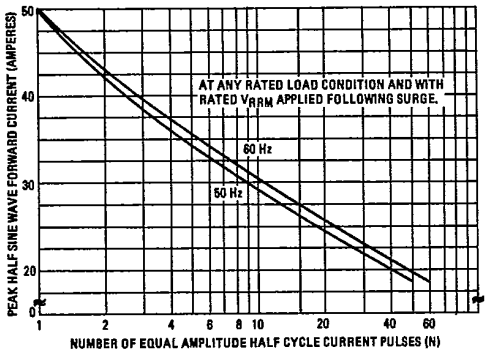

Fig. 5 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, All Series

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