

# INTERNATIONAL RECTIFIER

## 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
$I_{FSM}$					A
	@ 50 Hz	48	48	48	
	@ 60 Hz	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	
VRRM Range	50 - 1000*			V	

†Maximum lead temperature,  $T_L$ .

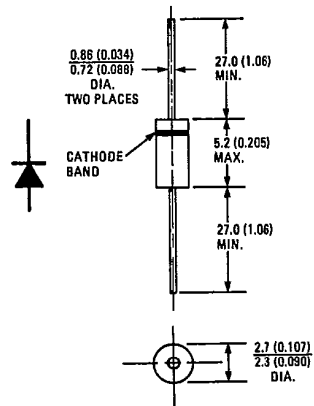
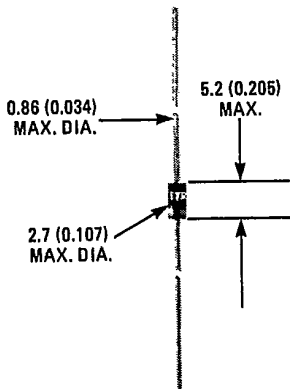
\*JEDEC registered value.

### 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)

**VOLTAGE RATINGS**

Part Numbers	V <sub>RRM</sub> – Max. Repetitive Peak Reverse Voltage (V)	V <sub>RSM</sub> – Max. Non-Repetitive Peak Reverse Voltage (V)	V <sub>R(RMS)</sub> – Max. RMS Reverse Voltage (V)	V <sub>R</sub> – Max. DC Blocking Voltage (V)	Surge Resistor <sup>①</sup> (Ohms)	
	T = -65 to 175°C <sup>①</sup>	T = -65 to 175°C <sup>①</sup>	T = -65 to 175°C <sup>①</sup>	T = -65 to 165°C <sup>①</sup>	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 <sub>F(AV)</sub> Max. average forward current @ Max. T <sub>J</sub> <sup>①</sup>	1.5	2.0	1.5*	1.5*	A	180° sinusoidal conduction
	40	100	40*	40*	°C	20D: Double side cooled.
I <sub>FSM</sub> 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 <sub>RRM</sub> reapplied.
	50	50	50*	50*	A	Half cycle 60 Hz sine wave or 5 ms rectangular pulse.
I <sup>2</sup> √t Max. I <sup>2</sup> √t for fusing <sup>①</sup>	161.4	161.4	161.4	161.4	A <sup>2</sup> √s	t = 0.1 to 10 ms with V <sub>RRM</sub> following surge = rated V <sub>RRM</sub> .
V <sub>FM</sub> Max. peak forward voltage	0.95	—	—	—	V	T <sub>A</sub> = 25°C, I <sub>FM</sub> = 1A
	1.30	—	1.30*	1.30*	V	T <sub>A</sub> = 40°C, I <sub>F(AV)</sub> = 1.5A (4.71A pk)
	—	1.30	—	—	V	T <sub>A</sub> = 25°C, I <sub>F(AV)</sub> = 2.0A (6.28A pk)
I <sub>R</sub> Max. dc reverse current	5 <sup>②</sup>	5 <sup>②</sup>	5	5	μA	T = 25°C
	—	—	500*	500*	μA	T <sub>A</sub> = 170°C V <sub>R</sub> = Rated V <sub>R</sub>
I <sub>R(AV)</sub> Max. average reverse current	250	250	250*	250*	μA	V <sub>RRM</sub> = Rated V <sub>RRM</sub> 20D: T <sub>L</sub> = 100°C, I <sub>F(AV)</sub> = 2.0A Others: T <sub>A</sub> = 40°C, I <sub>F(AV)</sub> = 1.5A

**THERMAL-MECHANICAL SPECIFICATIONS**

T <sub>J</sub> Max. operating junction temperature range	-65 to 170*	°C	
T <sub>stg</sub> Max. storage temperature range	-65 to 175*	°C	
T <sub>slid</sub> 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<sub>A</sub> for 10D series, 1N4816 through 1N4822 and 1N5052 through 1N5054. T = T<sub>L</sub> for 20D series. (T<sub>L</sub> 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<sub>R</sub> = 10 μA for devices rated 200V or less.

④ I<sup>2</sup>t for time t<sub>x</sub> = I<sup>2</sup>√t · √t<sub>x</sub>.

\* JEDEC registered value.

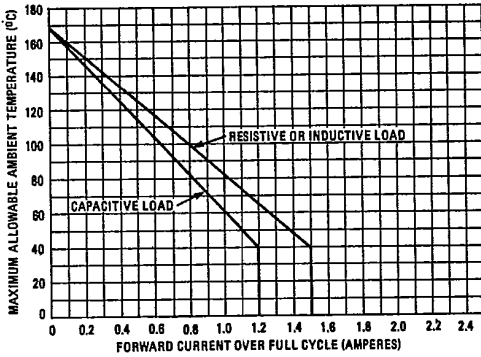


Fig. 1 – Average Forward Current Vs. Maximum Allowable Ambient Temperature, 1N4816-22, 1N5052-54 & 10D Series

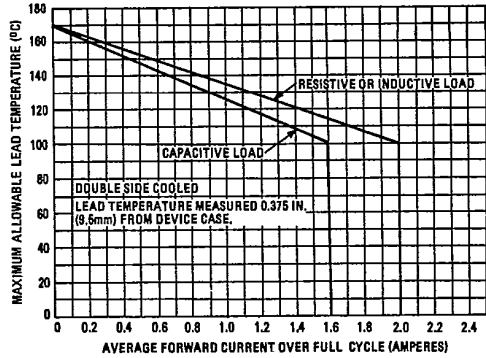


Fig. 2 – Average Forward Current Vs. Maximum Allowable Lead Temperature, 20D Series

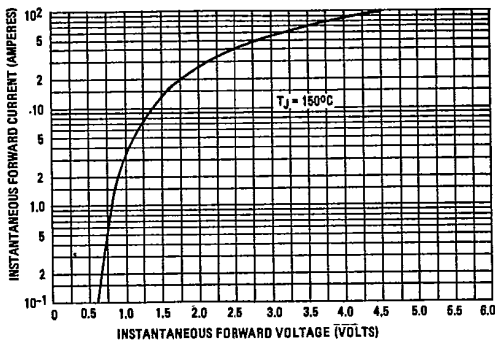


Fig. 3 – Maximum Forward Voltage Vs. Forward Current, 1N4816-22, 1N5052-54, 10D Series

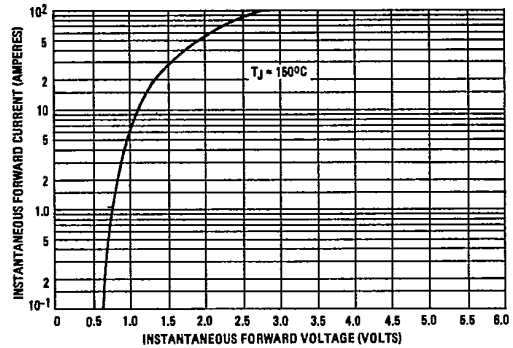


Fig. 4 – Maximum Forward Voltage Vs. Forward Current, 20D Series

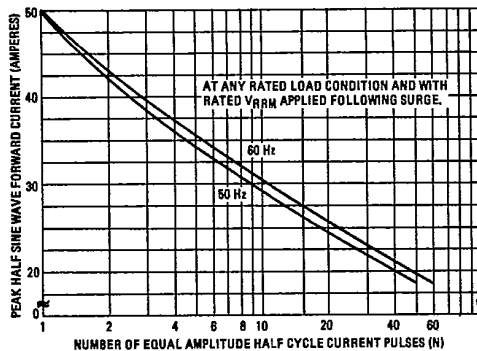


Fig. 5 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, All Series

