

4855452 INTERNATIONAL RECTIFIER

55C 04906 D

Data Sheet No. PD-2.004C

T-01-15

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} | | | | | |
| @ 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 |
| VRRM Range | 50 - 1000* | | | | V |

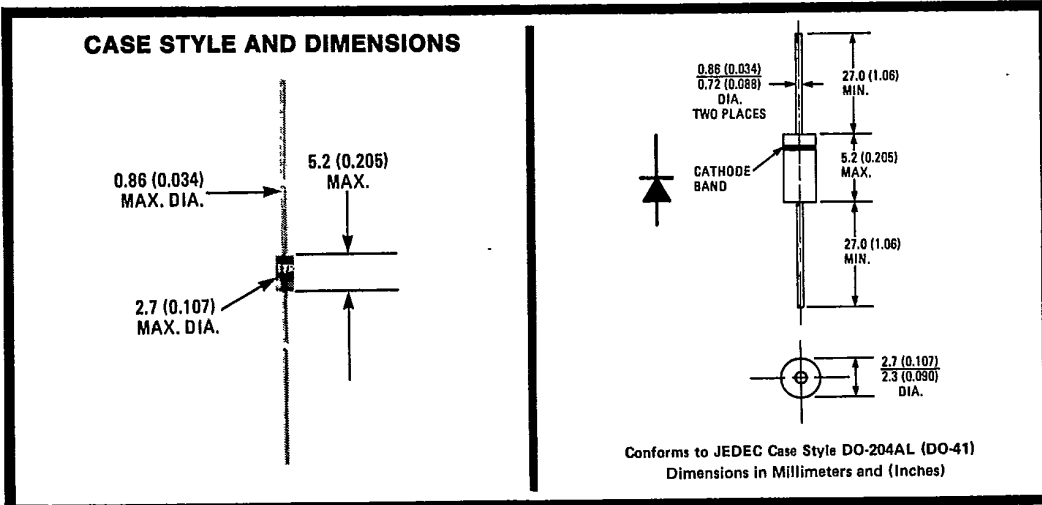
†Maximum lead temperature, T_L .

*JEDEC registered value.

Description/Features

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

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VOLTAGE RATINGS

| Part Numbers | VRRM - Max. Repetitive Peak Reverse Voltage (V) | V _{RSM} - Max. Non-Repetitive Peak Reverse Voltage (V) | V _R (RMS) - Max. RMS Reverse Voltage (V) | V _R - Max. DC Blocking Voltage (V) | Surge Resistor ^① (Ohms) | |
|----------------------|---|---|---|---|------------------------------------|------|
| | T = -65 to 175°C ^① | T = -65 to 175°C ^① | T = -65 to 175°C ^① | T = -65 to 165°C ^① | 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 @ Max. T ^① | 1.5 | 2.0 | 1.5* | 1.5* | A | 180° sinusoidal conduction |
| | 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 VRRM reapplied. |
| | 50 | 50 | 50* | 50* | A | Half cycle 60 Hz sine wave or 5 ms rectangular pulse. |
| I ² √t Max. I ² √t for fusing ^④ | 161.4 | 161.4 | 161.4 | 161.4 | A ² √s | t = 0.1 to 10 ms with VRRM following surge = rated VRRM. |
| 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 | 5 ^③ | 5 ^③ | 5 | 5 | μA | T = 25°C |
| | — | — | 500* | 500* | μA | T _A = 170°C V _R = Rated V _R |
| I _{R(AV)} Max. average reverse current | 250 | 250 | 250* | 250* | μA | VRRM = Rated VRRM 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 _{slid} 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 I²t for time t_x = I²√t · √t_x.

* JEDEC registered value.

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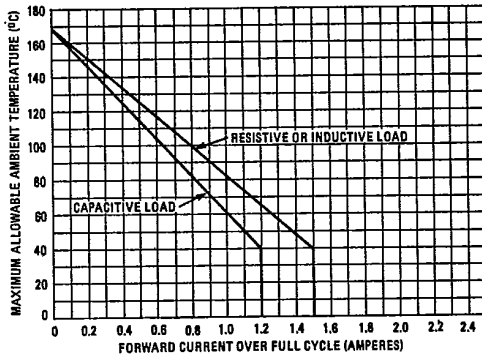


Fig. 1 - Average Forward Current Vs. Maximum Allowable Ambient Temperature, 1N4816-22, 1N5052-54 & 10D Series

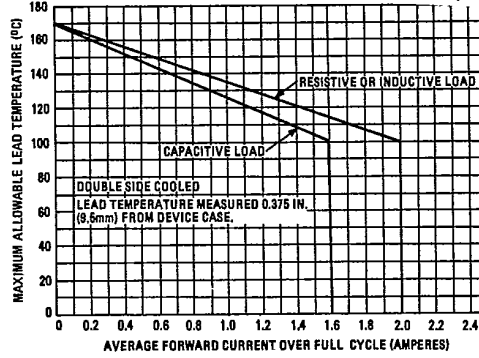


Fig. 2 - Average Forward Current Vs. Maximum Allowable Lead Temperature, 20D Series

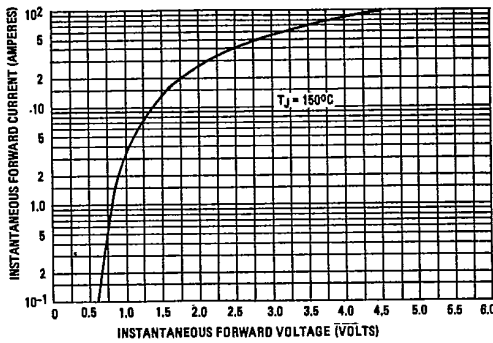


Fig. 3 - Maximum Forward Voltage Vs. Forward Current, 1N4816-22, 1N5052-54, 10D Series

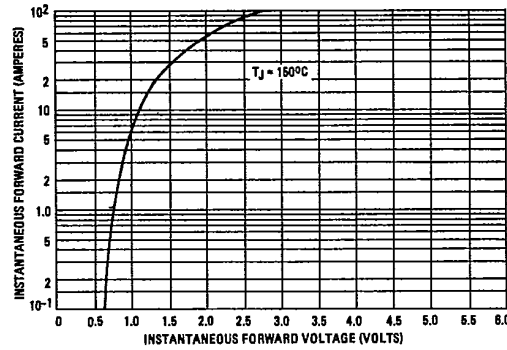


Fig. 4 - Maximum Forward Voltage Vs. Forward Current, 20D Series

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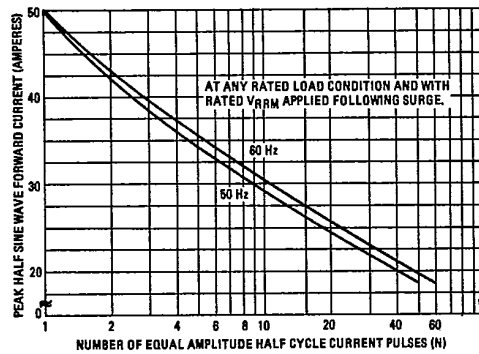


Fig. 5 - Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, All Series