

# 1N91x, 1N4x48, FDLL914, FDLL4x48

## Small Signal Diode



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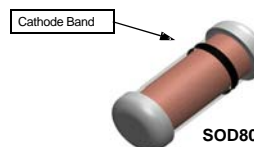
### ORDERING INFORMATION

| Part Number   | Marking | Package          | Packing Method |
|---------------|---------|------------------|----------------|
| 1N914         | 914     | DO-204AH (DO-35) | Bulk           |
| 1N914-T50A    | 914     | DO-204AH (DO-35) | Ammo           |
| 1N914TR       | 914     | DO-204AH (DO-35) | Tape and Reel  |
| 1N914ATR      | 914A    | DO-204AH (DO-35) | Tape and Reel  |
| 1N914B        | 914B    | DO-204AH (DO-35) | Bulk           |
| 1N914BTR      | 914B    | DO-204AH (DO-35) | Tape and Reel  |
| 1N916         | 916     | DO-204AH (DO-35) | Bulk           |
| 1N916A        | 916A    | DO-204AH (DO-35) | Bulk           |
| 1N916B        | 916B    | DO-204AH (DO-35) | Bulk           |
| 1N4148        | 4148    | DO-204AH (DO-35) | Bulk           |
| 1N4148TA      | 4148    | DO-204AH (DO-35) | Ammo           |
| 1N4148-T26A   | 4148    | DO-204AH (DO-35) | Ammo           |
| 1N4148-T50A   | 4148    | DO-204AH (DO-35) | Ammo           |
| 1N4148TR      | 4148    | DO-204AH (DO-35) | Tape and Reel  |
| 1N4148-T50R   | 4148    | DO-204AH (DO-35) | Tape and Reel  |
| 1N4448        | 4448    | DO-204AH (DO-35) | Bulk           |
| 1N4448TR      | 4448    | DO-204AH (DO-35) | Tape and Reel  |
| FDLL914       | Black   | SOD-80           | Tape and Reel  |
| FDLL914A      | Black   | SOD-80           | Tape and Reel  |
| FDLL914B      | Black   | SOD-80           | Tape and Reel  |
| FDLL4148      | Black   | SOD-80           | Tape and Reel  |
| FDLL4148-D87Z | Black   | SOD-80           | Tape and Reel  |
| FDLL4448      | Black   | SOD-80           | Tape and Reel  |
| FDLL4448-D87Z | Black   | SOD-80           | Tape and Reel  |



DO-35

Cathode is denoted with a black band



SOD80

LL-34  
THE PLACEMENT OF THE EXPANSION GAP HAS NO RELATIONSHIP TO THE LOCATION OF THE CATHODE TERMINAL

#### SOD-80 COLOR BAND MARKING

| DEVICE   | 1ST BAND |
|----------|----------|
| FDLL914  | BLACK    |
| FDLL914A | BLACK    |
| FDLL914B | BLACK    |
| FDLL4148 | BLACK    |
| FDLL4448 | BLACK    |

-1st band denotes cathode terminal and has wider width

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## ABSOLUTE MAXIMUM RATINGS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 1)

| Rating                                    | Symbol    | Value                           | Unit             |   |
|-------------------------------------------|-----------|---------------------------------|------------------|---|
| Maximum Repetitive Reverse Voltage        | $V_{RRM}$ | 100                             | V                |   |
| Average Rectified Forward Current         | $I_O$     | 200                             | mA               |   |
| DC Forward Current                        | $I_F$     | 300                             | mA               |   |
| Recurrent Peak Forward Current            | $I_f$     | 400                             | mA               |   |
| Non-repetitive Peak Forward Surge Current |           | Pulse Width = 1.0 s             | 1.0              | A |
|                                           |           | Pulse Width = 1.0 $\mu\text{s}$ | 4.0              | A |
| Storage Temperature Range                 | $T_{STG}$ | -65 to +200                     | $^\circ\text{C}$ |   |
| Operating Junction Temperature Range      | $T_J$     | -55 to +175                     | $^\circ\text{C}$ |   |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. These ratings are limiting values above which the serviceability of the diode may be impaired.

## THERMAL CHARACTERISTICS

| Parameter                               | Symbol          | Max | Unit             |
|-----------------------------------------|-----------------|-----|------------------|
| Power Dissipation                       | $P_D$           | 500 | mW               |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 300 | $^\circ\text{C}$ |

## ELECTRICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 2)

| Symbol   | Parameter             | Conditions                                                                                                 | Min                            | Max   | Unit          |    |
|----------|-----------------------|------------------------------------------------------------------------------------------------------------|--------------------------------|-------|---------------|----|
| $V_R$    | Breakdown Voltage     | $I_R = 100 \mu\text{A}$                                                                                    | 100                            |       | V             |    |
|          |                       | $I_R = 5.0 \mu\text{A}$                                                                                    | 75                             |       | V             |    |
| $V_F$    | Forward Voltage       | 914B / 4448                                                                                                | $I_F = 5.0 \text{ mA}$         | 0.62  | 0.72          | V  |
|          |                       | 916B                                                                                                       | $I_F = 5.0 \text{ mA}$         | 0.63  | 0.73          | V  |
|          |                       | 914 / 916 / 4148                                                                                           | $I_F = 10 \text{ mA}$          |       | 1.0           | V  |
|          |                       | 914A / 916A                                                                                                | $I_F = 20 \text{ mA}$          |       | 1.0           | V  |
|          |                       | 916B                                                                                                       | $I_F = 20 \text{ mA}$          |       | 1.0           | V  |
|          |                       | 914B / 4448                                                                                                | $I_F = 100 \text{ mA}$         |       | 1.0           | V  |
| $I_R$    | Reverse Leakage       | $V_R = 20 \text{ V}$                                                                                       |                                | 0.025 | $\mu\text{A}$ |    |
|          |                       | $V_R = 20 \text{ V}, T_A = 150^\circ\text{C}$                                                              |                                | 50    | $\mu\text{A}$ |    |
|          |                       | $V_R = 75 \text{ V}$                                                                                       |                                | 5.0   | $\mu\text{A}$ |    |
| $C_T$    | Total Capacitance     | 916/916A/916B/4448                                                                                         | $V_R = 0, f = 1.0 \text{ MHz}$ |       | 2.0           | pF |
|          |                       | 914/914A/914B/4148                                                                                         | $V_R = 0, f = 1.0 \text{ MHz}$ |       | 4.0           | pF |
| $t_{rr}$ | Reverse Recovery Time | $I_F = 10 \text{ mA}, V_R = 6.0 \text{ V} (600 \text{ mA})$<br>$I_{rr} = 1.0 \text{ mA}, R_L = 100 \Omega$ |                                | 4.0   | ns            |    |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Non-recurrent square wave  $P_W = 8.3 \text{ ms}$ .

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## TYPICAL PERFORMANCE CHARACTERISTICS

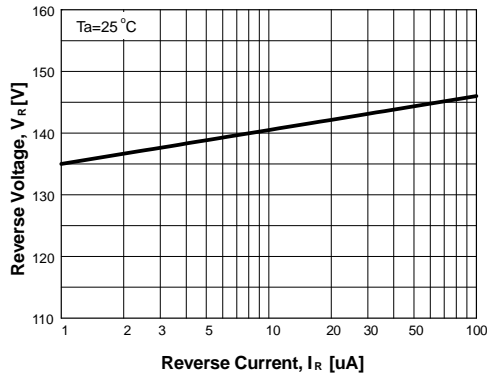


Figure 1. Reverse Voltage vs. Reverse Current  
 $B_V - 1.0$  to  $100 \mu A$

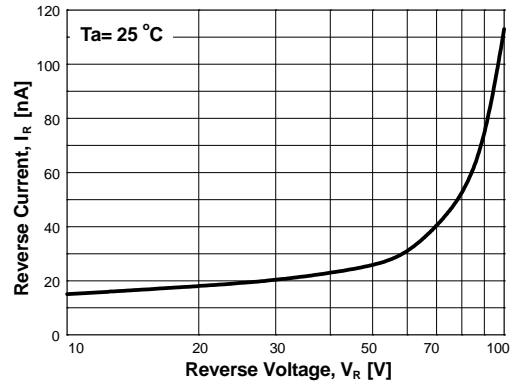


Figure 2. Reverse Current vs. Reverse Voltage  
 $I_R - 10$  to  $100 V$

GENERAL RULE: The Reverse Current of a diode will approximately double for every ten (10) Degree C increase in Temperature

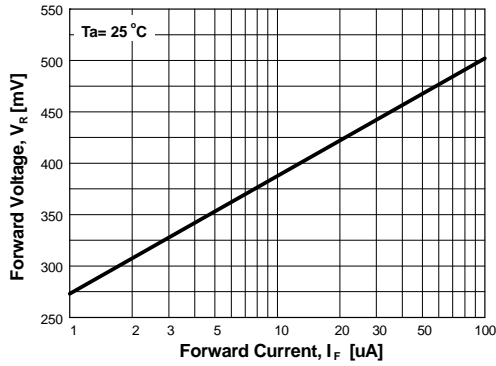


Figure 3. Forward Voltage vs. Forward Current  
 $V_F - 1$  to  $100 \mu A$

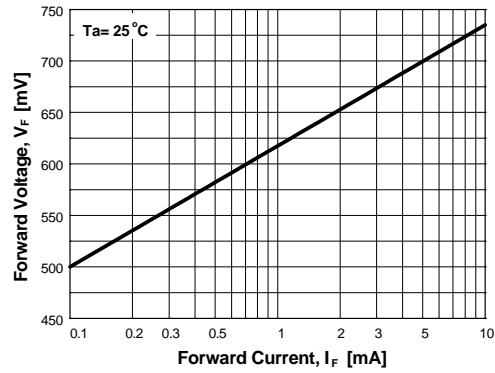


Figure 4. Forward Voltage vs. Forward Current  
 $V_F - 0.1$  to  $10 mA$

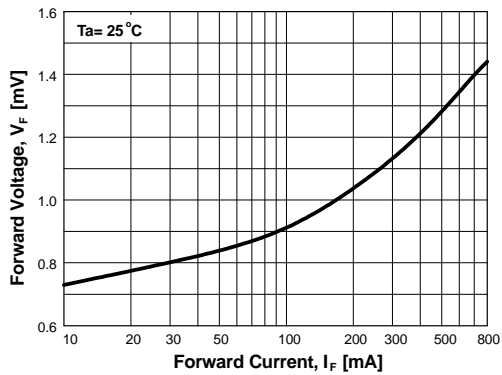


Figure 5. Forward Voltage vs. Forward Current  
 $V_F - 10$  to  $800 mA$

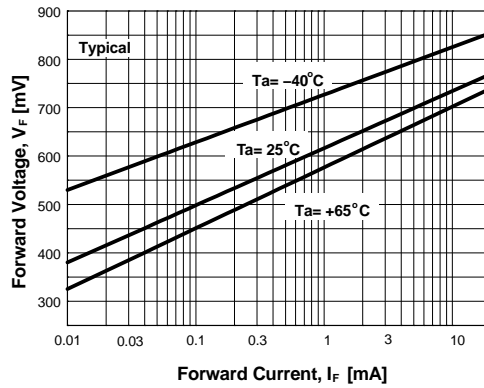


Figure 6. Forward Voltage vs. Ambient Temperature  
 $V_F - 0.01 - 20 mA (-40$  to  $+65^\circ C)$

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## TYPICAL PERFORMANCE CHARACTERISTICS

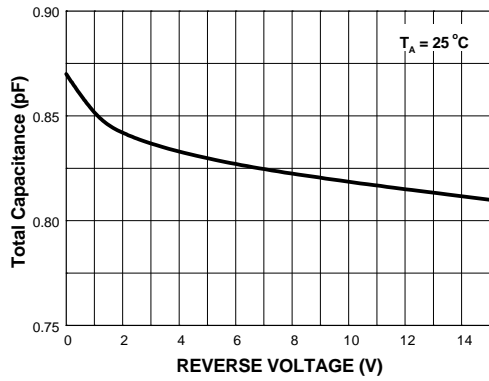


Figure 7. Total Capacitance

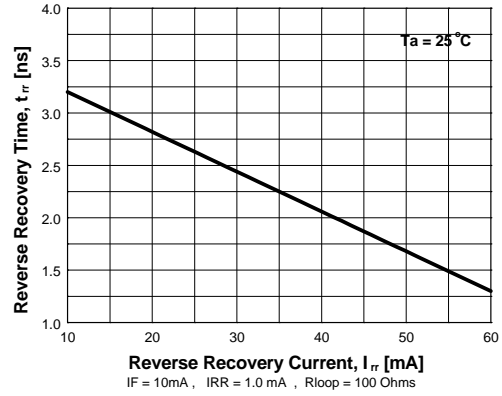


Figure 8. Reverse Recovery Time vs. Reverse Recovery Current

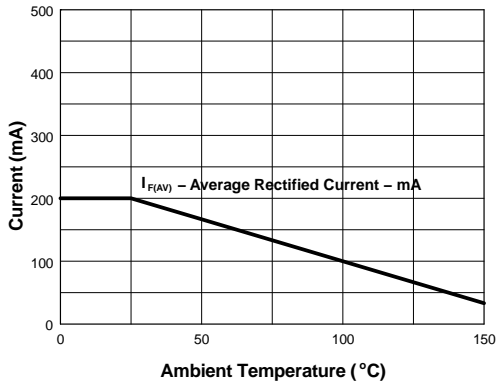


Figure 9. Average Rectified Current ( $I_{F(AV)}$ ) vs. Ambient Temperature ( $T_A$ )

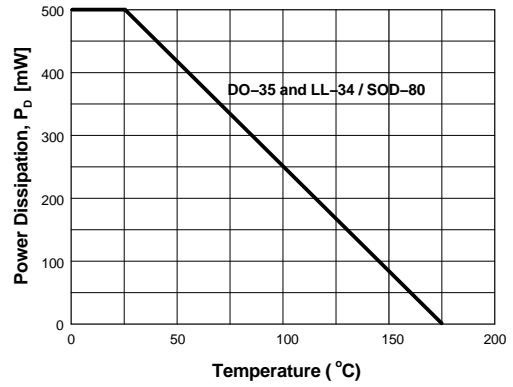


Figure 10. Power Derating Curve

**AXIAL LEAD**  
**CASE 017AG**  
**ISSUE 0**

DATE 31 AUG 2016



- NOTES: UNLESS OTHERWISE SPECIFIED
- A) PACKAGE STANDARD REFERENCE: JEDEC DO-204, VARIATION AH.
  - B) HERMETICALLY SEALED GLASS PACKAGE.
  - C) PACKAGE WEIGHT IS 0.137 GRAM.
  - D) ALL DIMENSIONS ARE IN MILLIMETERS.

|                         |                    |                                                                                                                                                                                     |
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**MiniMELF / SOD-80**  
**CASE 100AD**  
**ISSUE O**

DATE 30 APR 2012



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