FAIRCHILD SEMICONDUCTOR®

March 2013

# 1N/FDLL 914A/B / 916/A/B / 4148 / 4448
# Small Signal Diode



**DO-35**
**Cathode is denoted with a black band**



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

**LL-34 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**

## Absolute Maximum Ratings(1)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A$ = 25°C unless otherwise noted.

| Symbol | Parameter | | Value | Units |
|---|---|---|---|---|
| $V_{RRM}$ | Maximum Repetitive Reverse Voltage | | 100 | V |
| $I_O$ | Average Rectified Forward Current | | 200 | mA |
| $I_F$ | DC Forward Current | | 300 | mA |
| $I_f$ | Recurrent Peak Forward Current | | 400 | mA |
| $I_{FSM}$ | Non-repetitive Peak Forward Surge Current | Pulse Width = 1.0 s | 1.0 | A |
| | | Pulse Width = 1.0 µs | 4.0 | A |
| $T_{STG}$ | Storage Temperature Range | | -65 to +200 | °C |
| $T_J$ | Operating Junction Temperature | | 175 | °C |

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

## Thermal Characteristics

| Symbol | Parameter | Max. | Units |
|---|---|---|---|
| | | 1N/FDLL 914/A/B / 4148 / 4448 | |
| $P_D$ | Power Dissipation | 500 | mW |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 300 | °C/W |

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## Electrical Characteristics(2)

Values are at $T_A$=25°C unless otherwise noted.

| Symbol | Parameter | | Test Conditions | Min. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_R$ | Breakdown Voltage | | $I_R$= 100 µA | 100 | | V |
| | | | $I_R$= 5.0 µA | 75 | | V |
| $V_F$ | Forward Voltage | 1N914B/4448 | $I_F$= 5.0 mA | 0.62 | 0.72 | V |
| | | 1N916B | $I_F$= 5.0 mA | 0.63 | 0.73 | V |
| | | 1N914 / 916 / 4148 | $I_F$= 10 mA | | 1.0 | V |
| | | 1N914A/916A | $I_F$= 20 mA | | 1.0 | V |
| | | 1N916B | $I_F$= 20 mA | | 1.0 | V |
| | | 1N914B / 4448 | $I_F$= 100 mA | | 1.0 | V |
| $I_R$ | Reverse Leakage | | $V_R$= 20 V | | 0.025 | µA |
| | | | $V_R$= 20 V, $T_A$= 150°C | | 50 | µA |
| | | | $V_R$= 75 V | | 5.0 | µA |
| $C_T$ | Total Capacitance | 1N916A/B/4448 | $V_R$ = 0, f = 1.0 MHz | | 2.0 | pF |
| | | 1N914A/B/4148 | $V_R$ = 0, f = 1.0 MHz | | 4.0 | pF |
| $t_{rr}$ | Reverse Recovery Time | | $I_F$ = 10 mA, $V_R$ = 6.0 V (600 mA)<br>$I_{rr}$ = 1.0 mA, $R_L$ = 100 Ω | | 4.0 | ns |

**Note:**

2. Non-recurrent square wave $P_W$= 8.3 ms.

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## Typical Performance Characteristics

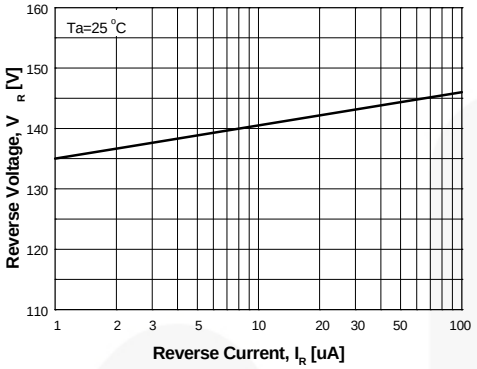
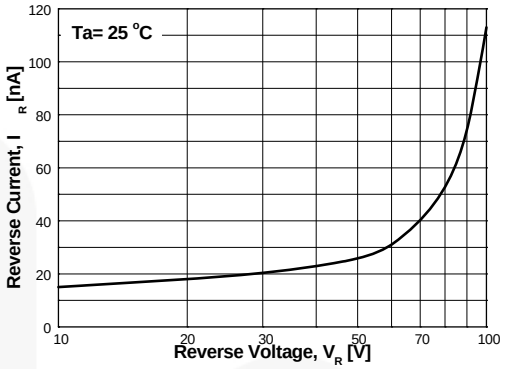



**Figure 1. Reverse Voltage vs. Reverse Current**
**$B_V$ - 1.0 to 100 μA**




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

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

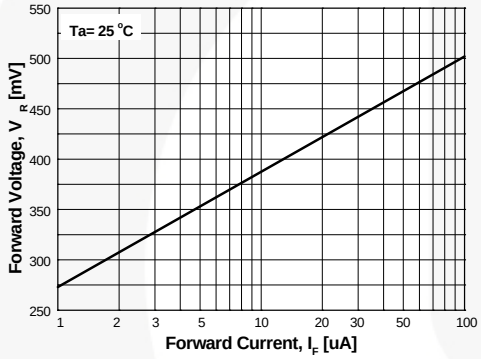



**Figure 3. Forward Voltage vs. Forward Current**
**$V_F$ - 1 to 100 μA**

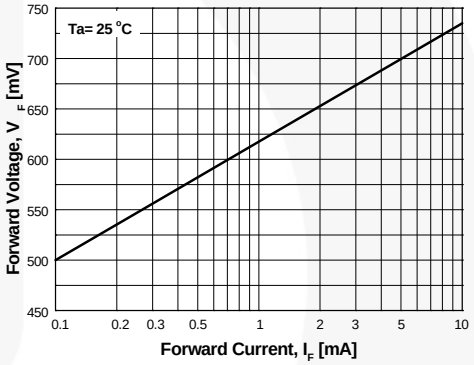



**Figure 4. Forward Voltage vs. Forward Current**
**$V_F$ - 0.1 to 10 mA**

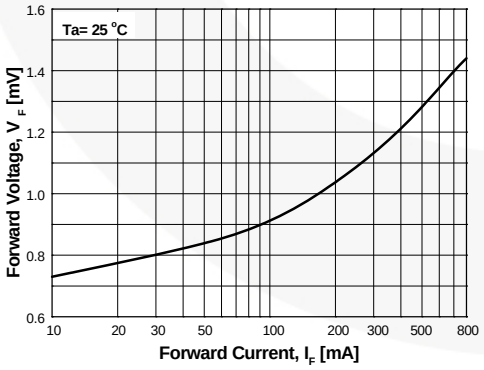



**Figure 5. Forward Voltage vs. Forward Current**
**$V_F$ - 10 to 800 mA**

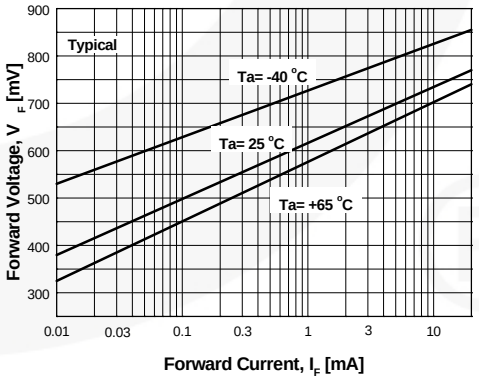



**Figure 6. Forward Voltage vs. Ambient Temperature**
**$V_F$ - 0.01 - 20 mA (- 40 to +65°C)**

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## Typical Performance Characteristics (Continued)

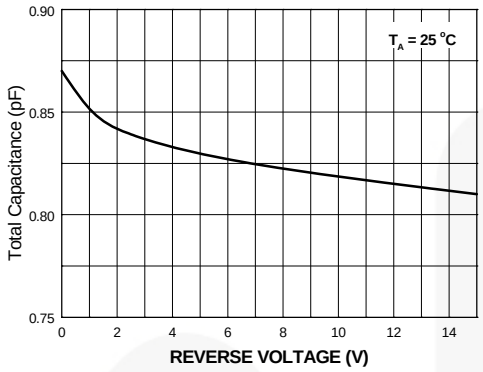
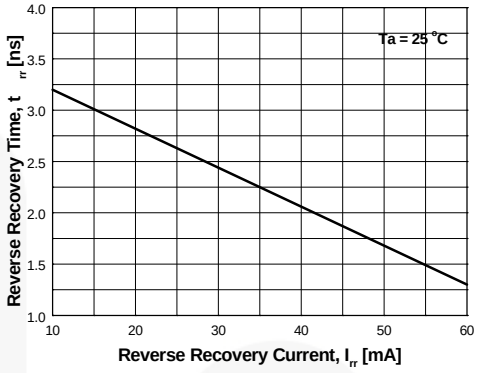



**Figure 7. Total Capacitance**




IF = 10mA , IRR = 1.0 mA , Rloop = 100 Ohms

**Figure 8. Reverse Recovery Time vs. Reverse Recovery Current**

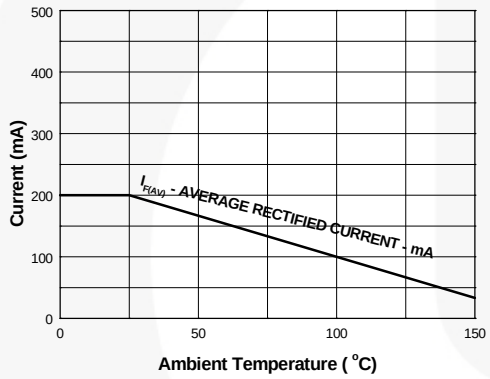



**Figure 9. Average Rectified Current ($I_{F(AV)}$) vs. Ambient Temperature ($T_A$)**

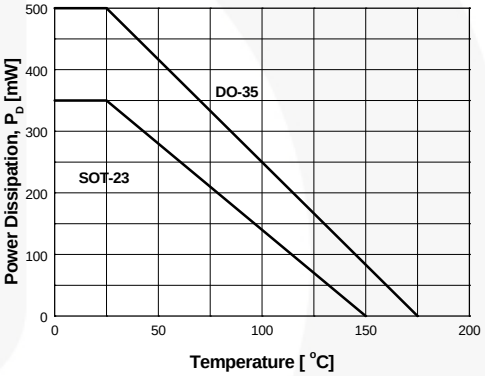



**Figure 10. Power Derating Curve**

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## Physical Dimensions

SOD-80

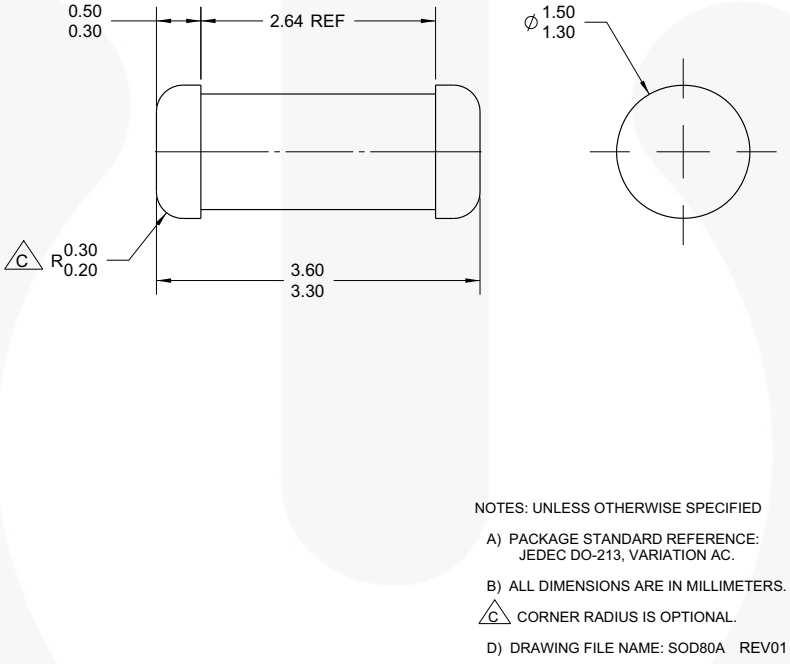



**Figure 11. 2-TERMINAL, SOD-80, JEDEC DO-213AC, MINI-MELF**

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**Телефон:** +7 812 627 14 35

**Электронная почта:** sales@st-electron.ru

**Адрес:** 198099, Санкт-Петербург, Промышленная ул, дом № 19, литера Н, помещение 100-Н Офис 331