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# 1N658/FDLL658

## General Purpose Diodes

T-01-09

- **BV...120 V (MIN) @ 100 μA**
- **$V_F$...1.0 V (MAX) @ 100 mA**

**PACKAGES**

| | |
|---|---|
| 1N658 | DO-35 |
| FDLL658 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1400 family.

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

| | | |
|---|---|---|
| **Temperatures** | | |
| Storage Temperature Range | | −65°C to +200°C |
| Maximum Operating Junction Temperature | | +175°C |
| Lead Temperature | | +200°C |
| **Power Dissipation** (Note 2) | | |
| Maximum Total Dissipation at 25°C Ambient | | 500 mW |
| Linear Derating Factor (from 25°C) | | 3.33 mW/°C |
| **Maximum Voltage and Currents** | | |
| WIV | Working Inverse Voltage | 100 V |
| $I_O$ | Average Rectified Current | 200 mA |
| $I_F$ | Forward Current Steady State | 500 mA |
| $i_{f(surge)}$ | Peak Forward Surge Current | |
| | Pulse Width = 1.0s | 1.0 A |
| | Pulse Width = 1.0μs | 4.0 A |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | | 1.0 | V | $I_F$ = 100 mA |
| $I_R$ | Reverse Current | | 50<br>25 | nA<br>μA | $V_r$ = 50 V<br>$V_R$ = 50 V, $T_A$ = 150°C |
| BV | Breakdown Voltage | 120 | | V | $I_R$ = 100 μA |
| $t_{rr}$ | Reverse Recovery Time | | 300 | ns | $V_R$ = 40 V, $I_f$ = 5.0 mA, $R_L$ = 2.0 kΩ, $C_L$ = 10 pF, Recovery to 80 kΩ |

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3. For product family characteristic curves, refer to Chapter 4, D1.

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# 1N659/660/661
# FDLL659/660/661
## General Purpose Diodes

T-01-09

- $V_F$...1.0 V (MAX) @ 6.0 mA
- $t_{rr}$...300 ns (MAX)

**PACKAGES**

| | |
|---|---|
| 1N659 | DO-35 |
| 1N660 | DO-35 |
| 1N661 | DO-35 |
| FDLL659 | LL-34 |
| FDLL660 | LL-34 |
| FDLL661 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1200 family.

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**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

| | |
|---|---|
| Storage Temperature Range | −65°C to +200°C |
| Maximum Operating Junction Temperature | +175°C |
| Lead Temperature | +260°C |

**Power Dissipation** (Notes 2)

| | |
|---|---|
| Maximum Total Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

| **Maximum Voltage and Currents** | | **1N659** | **1N660** | **1N661** |
|---|---|---|---|---|
| WIV | Working Inverse Voltage | 50 V | 100 V | 200 V |
| $I_O$ | Average Rectified Current | 200 mA | 200 mA | 200 mA |
| $I_F$ | Forward Current Steady State | 500 mA | 500 mA | 500 mA |
| $i_{f(surge)}$ | Peak Forward Surge Current | | | |
| | Pulse Width = 1.0s | 1.0 A | 1.0 A | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A | 4.0 A | 4.0 A |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | 1N659 | | 1N660 | | 1N661 | | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|
| | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $V_F$ | Forward Voltage | | 1.0 | | 1.0 | | 1.0 | V | $I_F$ = 6.0 mA |
| $I_R$ | Reverse Current | | 5.0 | | | | | μA | $V_R$ = 50 V |
| | | | | | 5.0 | | | μA | $V_R$ = 100 V |
| | | | | | | | 10 | μA | $V_R$ = 200 V |
| | | | 25 | | | | | μA | $V_R$ = 50 V, $T_A$ = 100°C |
| | | | | | 50 | | | μA | $V_R$ = 100 V, $T_A$ = 100°C |
| | | | | | | | 100 | μA | $V_R$ = 200 V, $T_A$ = 100°C |
| BV | Breakdown Voltage | 60 | | 120 | | 240 | | V | $I_R$ = 100 μA |
| $t_{rr}$ | Reverse Recovery Time | | 300 | | 300 | | 300 | ns | $V_r$ = 35 V, $I_f$ = 30 mA, $R_L$ = 2.0 kΩ, $C_L$ = 10 pF, Recovery to 400 kΩ |

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3. For product family characteristic curves, refer to Chapter 4, D4 for 1N659, 4, D1 for 1N660 and 1N661.

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# 1N746 through 1N759 T-11-11

## 500 mW Silicon Linear Diodes

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

| | |
|---|---|
| Storage Temperature Range | −65°C to +200°C |
| Maximum Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

**Power Dissipation** (Note 2)

| | |
|---|---|
| Maximum Total Power Dissipation at 25°C Ambient | 500 mW |
| Linear Power Derating Factor (from 25°C) | 3.33 mW/°C |

**PACKAGES**

| | |
|---|---|
| All Devices | DO-35 |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient unless otherwise noted)

| SYMBOL | $Z_Z$ | $V_Z$ | $I_R$ | | TC |
|---|---|---|---|---|---|
| Characteristic | Maximum Zener Impedance (Note 4) ($I_Z$ = 20 mA) | Nominal Zener Voltage (Note 3) ($I_Z$ = 20 mA) | Maximum Reverse Current ($V_R$ = 1.0V) @25°C | @150°C | Typical Temperature Coefficient of $V_Z$ |
| UNIT | Ω | V | μA | μA | %/°C |
| IN746 | 28.0 | 3.3 | 10.0 | 30.0 | −0.070 |
| IN747 | 24.0 | 3.6 | 10.0 | 30.0 | −0.065 |
| IN748 | 23.0 | 3.9 | 10.0 | 30.0 | −0.060 |
| IN749 | 22.0 | 4.3 | 2.0 | 30.0 | −0.055 |
| IN750 | 19.0 | 4.7 | 2.0 | 30.0 | −0.043 |
| IN751 | 17.0 | 5.1 | 1.0 | 20.0 | ±0.030 |
| IN752 | 11.0 | 5.6 | 1.0 | 20.0 | ±0.028 |
| IN753 | 7.0 | 6.2 | 0.1 | 20.0 | +0.045 |
| IN754 | 5.0 | 6.8 | 0.1 | 20.0 | +0.050 |
| IN755 | 6.0 | 7.5 | 0.1 | 20.0 | +0.058 |
| IN756 | 8.0 | 8.2 | 0.1 | 20.0 | +0.062 |
| IN757 | 10.0 | 9.1 | 0.1 | 20.0 | +0.068 |
| IN758 | 17.0 | 10.0 | 0.1 | 20.0 | +0.075 |
| IN759 | 30.0 | 12.0 | 0.1 | 20.0 | +0.077 |

NOTES:
1. These ratings are limiting values above which the serviceability of the diode may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Type numbers without suffix have ±10% tolerance on nominal $V_Z$.
   Type numbers with suffix A have ±5% tolerance on nominal $V_Z$.
4. The Zener impedance $Z_Z$ is derived by superimposing a 60 Hz 2 mA (RMS) signal on the 20 mA $I_Z$ test current.
5. For product family characteristic curves, refer to Chapter 4, D13

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# 1N/FDLL914/A/B/916/A/B
# 1N/FDLL4148/4149/4446
# 1N/FDLL4447/4448/4449

## High Conductance Ultra Fast Switching Diodes T-03-09

- $t_{rr}$...4.0 ns (MAX)
- BV...100 V (MIN)

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

| | | |
|---|---|---|
| **Temperatures** | | |
| Storage Temperature Range | | −65° to +200°C |
| Max Junction Operating Temperature | | +175°C |
| Lead Temperature | | +260°C |
| **Power Dissipation** (Note 2) | | |
| Maximum Total Dissipation at 25°C | | 500 mW |
| Linear Derating Factor (from 25°C) | | 3.33 mW/°C |
| **Maximum Voltage and Currents** | | |
| WIV | Working Inverse Voltage | 75 V |
| $I_O$ | Average Rectified Current | 200 mA |
| $I_f$ | DC Forward Current | 300 mA |
| $i_f$ | Recurrent Peak Forward Current | 400 mA |
| $i_f$(surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A |

**PACKAGES**

| | |
|---|---|
| 1N914 | DO-35 |
| 1N916 | DO-35 |
| 1N914A | DO-35 |
| 1N914B | DO-35 |
| 1N916A | DO-35 |
| 1N916B | DO-35 |
| 1N4148 | DO-35 |
| 1N4149 | DO-35 |
| 1N4446 | DO-35 |
| 1N4447 | DO-35 |
| 1N4448 | DO-35 |
| 1N4449 | DO-35 |
| FDLL914 | LL-34 |
| FDLL916 | LL-34 |
| FDLL914A | LL-34 |
| FDLL914B | LL-34 |
| FDLL916A | LL-34 |
| FDLL916B | LL-34 |
| FDLL4148 | LL-34 |
| FDLL4149 | LL-34 |
| FDLL4446 | LL-34 |
| FDLL4447 | LL-34 |
| FDLL4448 | LL-34 |
| FDLL4449 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1200 family.

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | | MIN | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| BV | Breakdown Voltage | | 100 | | V | $I_R$ = 100 μA |
| | | | 75 | | V | $I_R$ = 5.0 μA |
| $I_R$ | Reverse Current | | | 25 | nA | $V_R$ = 20 V |
| | | | | 50 | μA | $V_R$ = 20 V, $T_A$ = 150°C |
| | | | | 5.0 | μA | $V_R$ = 75 V |
| $V_F$ | Forward Voltage | 1N914B, 1N4448 | 0.62 | 0.72 | V | $I_F$ = 5.0 mA |
| | | 1N916B, 1N4449 | 0.63 | 0.73 | V | $I_F$ = 5.0 mA |
| | | 1N914, 1N916, 1N4148, 1N4149 | | 1.0 | V | $I_F$ = 10 mA |
| | | 1N914A, 1N916A, 1N4446, 1N4447 | | 1.0 | V | $I_F$ = 20 mA |
| | | 1N916B, 1N4449 | | 1.0 | V | $I_F$ = 30 mA |
| | | 1N914B, 1N4448 | | 1.0 | V | $I_F$ = 100 mA |
| $t_{rr}$ | Reverse Recovery Time | | | 4.0 | ns | $I_f$ = 10 mA, $V_r$ = 6.0 V, $R_L$ = 100 Ω Rec. to 1.0 mA |

NOTES:
1. Maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. For family characteristic curves, refer to Chapter 4, D4.

# 1N/FDLL914/A/B/916/A/B
# 1N/FDLL4148/4149/4446
# 1N/FDLL4447/44448/4449

T-03-09

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | | MIN | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| C | Capacitance | 1N914, 1N914A<br>1N914B, 1N4148<br>1N4446, 1N4447 | | 4.0 | pF | $V_R$ = 0, f = 1 MHz |
| | | 1N916, 1N916A<br>1N916B, 1N4149<br>1N4448, 1N4449 | | 2.0 | pF | $V_R$ = 0, f = 1 MHz |
| $V_{fr}$ | Peak Forward Recovery Voltage | 1N914, 1N916<br>1N914B, 1N916B<br>1N4448, 1N4449 | | 2.5 | V | 50 mA Peak Square Wave,<br>0.1 μs pulse width,<br>5 kHz - 100 kHz rep. rate |
| RE | Rectification Efficiency | 1N914A, 1N914B<br>1N916A, 1N916B | 45 | | % | 2.0 V rms, f = 100 MHz |

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# 1N957 through 1N973

T-11-11

## 500 mW Silicon Planar Zener Diodes

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

| | |
|---|---|
| Storage Temperture Range | −65°C to +200°C |
| Maximum Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

**Power Dissipation** (Note 2)

| | |
|---|---|
| Maximum Total Power Dissipation at 25°C Ambient | 500 mW |
| Linear Power Derating Factor (from 25°C) | 3.33 mW/°C |

**PACKAGES**

| | |
|---|---|
| All Devices | DO-35 |

3

**ELECTRICAL CHARACTERISTICS** (25°C Ambient)

| SYMBOL | $V_Z$ | $Z_Z$ | $I_{ZT}$ | $Z_{ZK}$ | $I_{ZK}$ | $I_R$ | $V_{RT}$ | | | TC | $I_{ZM}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Characteristics | Nominal Zener Voltage (Note 3) @$I_{ZT}$ | Maximum Zener Impedance (Note 4) @$I_{ZT}$ | Test Current | Maximum Zener Knee Impedance (Note 4) @$I_{ZK}$ | Test Current | Maximum Reverse Current @$V_{RT}$ | . Test Voltage ±20% $V_Z$ Tolerance | ±10% $V_Z$ Tolerance | ±5% $V_Z$ Tolerance | Typical Temperature Coefficient of $V_Z$ | Maximum Zener Current (Note 5) |
| UNIT | V | Ω | mA | Ω | mA | μA | V | V | V | %/°C | mA |
| IN957 | 6.8 | 4.5 | 18.5 | 700 | 1.0 | 150 | 4.4 | 4.9 | 5.2 | +0.050 | 47 |
| IN958 | 7.5 | 5.5 | 16.5 | 700 | 0.5 | 75 | 4.8 | 5.4 | 5.7 | +0.058 | 42 |
| IN959 | 8.2 | 6.5 | 15.0 | 700 | 0.5 | 50 | 5.2 | 5.9 | 6.2 | +0.062 | 38 |
| IN960 | 9.1 | 7.5 | 14.0 | 700 | 0.5 | 25 | 5.8 | 6.6 | 6.9 | +0.068 | 35 |
| IN961 | 10.0 | 8.5 | 12.5 | 700 | 0.25 | 10 | 6.4 | 7.2 | 7.6 | +0.072 | 32 |
| IN962 | 11.0 | 9.5 | 11.5 | 700 | 0.25 | 5.0 | 7.0 | 8.0 | 8.4 | +0.073 | 28 |
| IN963 | 12.0 | 11.5 | 10.5 | 700 | 0.25 | 5.0 | 7.6 | 8.6 | 9.1 | +0.076 | 26 |
| IN964 | 13.0 | 13.0 | 9.5 | 700 | 0.25 | 5.0 | 8.3 | 9.4 | 9.9 | +0.079 | 24 |
| IN965 | 15.0 | 16.0 | 8.5 | 700 | 0.25 | 5.0 | 9.6 | 10.8 | 11.4 | +0.082 | 21 |
| IN966 | 16.0 | 17.0 | 7.8 | 700 | 0.25 | 5.0 | 10.2 | 11.5 | 12.2 | +0.083 | 19 |
| IN967 | 18.0 | 21.0 | 7.0 | 750 | 0.25 | 5.0 | 11.5 | 13.0 | 13.7 | +0.085 | 17 |
| IN968 | 20.0 | 25.0 | 6.2 | 750 | 0.25 | 5.0 | 12.8 | 14.4 | 15.2 | +0.086 | 15 |
| IN969 | 22.0 | 29.0 | 5.6 | 750 | 0.25 | 5.0 | 14.0 | 15.8 | 16.7 | +0.087 | 14 |
| IN970 | 24.0 | 33.0 | 5.2 | 750 | 0.25 | 5.0 | 15.4 | 17.3 | 18.2 | +0.088 | 13 |
| IN971 | 27.0 | 41.0 | 4.6 | 750 | 0.25 | 5.0 | 17.2 | 19.4 | 20.6 | +0.090 | 11 |
| IN972 | 30.0 | 49.0 | 4.2 | 1000 | 0.25 | 5.0 | 19.2 | 21.6 | 22.8 | +0.091 | 10 |
| IN973 | 33.0 | 58.0 | 3.8 | 1000 | 0.25 | 5.0 | 21.1 | 23.8 | 25.1 | ±0.092 | 9.2 |

NOTES
1. These ratings are limiting values above which the serviceability of the diode may be impaired
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation
3. Type numbers without suffix have ±20% tolerance on nominal $V_Z$.
   Type numbers with suffix A have ±10% tolerance on nominal $V_Z$.
   Type numbers with suffix B have ±5% tolerance on nominal $V_Z$.
4. The Zener impedances $Z_Z$ and $Z_{ZK}$ are derived by superimposing a 60 Hz signal on test currents $I_{ZT}$ and $I_{ZK}$, having an RMS value of 10% of the d.c. value of $I_{ZT}$ and $I_{ZK}$ respectively
5. Maximum Zener Curent ($I_{ZM}$) is based on the maximum Zener voltage of a 20% tolerance unit.
6. For product family characteristic curves, refer to Chapter 4, D13

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# 1N3064/4305/4454 T-03-09
# FDLL3064/4305/4454

## Ultra Fast Low Capacitance Diodes

- **C...2.0 pF @ $V_R$ = 0, f = 1.0 MHz**
- **$t_{rr}$...4.0 ns @ $I_f$ = 10 mA, $I_r$ = 10 mA, $V_r$ = 1.0 V**
- **BV...75 V (MIN)**

**PACKAGES**

| | |
|---|---|
| 1N3064 | DO-35 |
| 1N4305 | DO-35 |
| 1N4454 | DO-35 |
| FDLL3064 | LL-34 |
| FDLL4305 | LL-34 |
| FDLL4454 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1200 family.

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

| | |
|---|---|
| Storage Temperature Range | −65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

**Power Dissipation** (Note 2)

| | |
|---|---|
| Maximum Total Dissipation at 25°C | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

**Maximum Voltages and Currents**

| | | |
|---|---|---|
| WIV | Working Inverse Voltage | 50 V |
| $I_O$ | Average Rectified Current | 100 mA |
| $I_F$ | Forward Current Steady State | 300 mA |
| $i_f$ | Recurrent Peak Forward Current | 400 mA |
| $i_f$ (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | | MIN | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | | 0.610 | 0.710 | V | $I_F$ = 2.0 mA |
| | | | 0.550 | 0.650 | V | $I_F$ = 1.0 mA |
| | | | 0.505 | 0.575 | V | $I_F$ = 250 μA |
| | | 1N3064, 1N4454 | | 1.0 | V | $I_F$ = 10 mA |
| | | 1N4305 | 0.70 | 0.85 | V | $I_F$ = 10 mA |
| $I_R$ | Reverse Current | | | 0.1 | μA | $V_R$ = 50 V |
| | | | | 100 | μA | $V_R$ = 50 V, $T_A$ = 150°C |
| BV | Breakdown Voltage | | 75 | | V | $I_R$ = 5.0 μA |
| $t_{rr}$ | Reverse Recovery Time (Note 3) | 1N4305 | | 2.0 | ns | $I_f$ = 10 mA, $V_r$ = 6.0 V, $R_L$ = 100 Ω |
| | | 1N3064, 1N4305, 1N4454 | | 4.0 | ns | $I_f$ = $I_r$ = 10 mA, $R_L$ = 100 Ω, $V_r$ = 1.0 V |
| C | Capacitance | | | 2.0 | pF | $V_R$ = 0, f = 1.0 MHz |
| RE | Rectification Efficiency (Note 4) | | 45 | | % | f = 1.0 MHz |
| $\Delta V_F/°C$ | Forward Voltage Temperature Coefficient (Note 5) | | | 3.0 | mV/°C | |

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Recovery to 1.0 mA.
4. Rectification efficiency is defined as the ratio of dc load voltage to peak rf input voltage to the detector circuit, measured with 2.0 V rms input to the circuit. Load resistance 5.0 Ω, load capacitance 20 pF
5. This value for $\Delta V_F/°C$ is a typical value not a minimum or maximum.
6. For product family characteristic curves, refer to Chapter 4, D4.

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# 1N3070/4938
# FDLL3070/4938

T-03-09

## High Speed High Conductance Diodes

- **BV...200 V (MIN)**
- **$I_R$...100 nA (MAX)**

**PACKAGES**

| | |
|---|---|
| 1N3070 | DO-35 |
| 1N4938 | DO-35 |
| FDLL3070 | LL-34 |
| FDLL4938 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1400 family.

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

| | |
|---|---|
| Storage Temperature Range | −65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

**Power Dissipation** (Note 2)

| | |
|---|---|
| Maximum Total Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

**Maximum Voltage and Currents**

| | | |
|---|---|---|
| WIV | Working Inverse Voltage | 175 V |
| $I_O$ | Average Rectified Current | 200 mA |
| $I_F$ | Forward Current Steady State DC | 500 mA |
| $i_f$ | Recurrent Peak Forward Current | 600 mA |
| $i_f$ (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|
| $I_R$ | Reverse Current | | 100<br>100 | nA<br>μA | $V_R$ = 175 V<br>$V_R$ = 175 V, $T_A$ = 150°C |
| BV | Breakdown Voltage | 200 | | V | $I_R$ = 100 μA |
| $V_F$ | Forward Voltage | | 1.0 | V | $I_F$ = 100 mA |
| C | Capacitance | | 5.0 | pF | $V_R$ = 0, f = 1.0 MHz |
| $t_{rr}$ | Reverse Recovery Time (Note 3) | | 50 | ns | $I_f$ = $I_r$ = 30 mA, $R_L$ = 100Ω |
| RE | Rectification Efficiency (Note 4) | 35 | | % | f = 100 MHz |

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Recovery to 1.0 mA.
4. Rectification efficiency is defined as the ratio of dc load voltage to peak rf input voltage to the detector circuit, measured with 2.0 V rms input to the circuit. Load resistance: 5.0 kΩ, load capacitance 20 pF.
5. 1N3070 and 1N4938 are electrically and mechanically identical.
6. For product family characteristic curves, refer to Chapter 4, D1.

FAIRCHILD
A Schlumberger Company

# 1N3595/6099 T-01-09
# FDLL3595/6099
## High Conductance Low Leakage Diodes

- **BV...150 V (MIN) @ 100 μA**
- **$V_F$...1.0 V @ 200 mA**

**PACKAGES**

| | |
|---|---|
| 1N3595 | DO-35 |
| 1N6099 | DO-35 |
| FDLL3595 | LL-34 |
| FDLL6099 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1500 family.

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

| | | |
|---|---|---|
| **Temperatures** | | |
| Storage Temperature Range | | −65°C to +200°C |
| Max Junction Operating Temperature | | +175°C |
| Lead Temperature | | +260°C |
| **Power Dissipation** (Note 2) | | |
| Maximum Total Dissipation at 25°C Ambient | | 500 mW |
| Linear Derating Factor (From 25°C) | | 3.33 mW/°C |
| **Maximum Voltage and Currents** | | |
| WIV | Working Inverse Voltage | 125 V |
| $I_O$ | Average Rectified Current | 200 mA |
| $I_F$ | Forward Current Steady State | 500 mA |
| $i_f$ | Peak Repetitive Forward Current | 600 mA |
| $i_f$ (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | 0.83 | 1.0 | V | $I_F$ = 200 mA |
| | | 0.79 | 0.92 | V | $I_F$ = 100 mA |
| | | 0.75 | 0.88 | V | $I_F$ = 50 mA |
| | | 0.65 | 0.80 | V | $I_F$ = 10 mA |
| | | 0.60 | 0.75 | V | $I_F$ = 5.0 mA |
| | | 0.52 | 0.68 | V | $I_F$ = 1.0 mA |
| $I_R$ | Reverse Current | | 1.0 | nA | $V_R$ = 125 V |
| | | | 300 | nA | $V_R$ = 30 V, $T_A$ = 125°C |
| | | | 500 | nA | $V_R$ = 125 V, $T_A$ = 125°C |
| | | | 3.0 | μA | $V_R$ = 125 V, $T_A$ = 150°C |
| $t_{rr}$ | Reverse Recovery Time | | 3.0 | μs | $I_F$ = 10 mA, $V_r$ = 3.5 V, $R_L$ = 1.0 kΩ |
| C | Capacitance | | 8.0 | pF | $V_R$ = 0, f = 1.0 MHz |
| BV | Breakdown Voltage | 150 | | V | $I_R$ = 100 μA |

NOTES:
1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. 1N3595 and IN6099 are electrically and mechanically identical.
4. For product family characteristic curves, refer to Chapter 4, D2.

FAIRCHILD
A Schlumberger Company

# 1N3600/FDLL3600 T-03-09
# 1N4150/FDLL4150
# 1N4450/FDLL4450
## High Conductance Ultra Fast Diodes

- $t_{rr}$...4.0 ns (MAX)
- $V_F$...1.0 V (MAX) @ 200 mA

**PACKAGES**

| | |
|---|---|
| 1N3600 | DO-35 |
| 1N4150 | DO-35 |
| 1N4450 | DO-35 |
| FDLL3600 | LL-34 |
| FDLL4150 | LL-34 |
| FDLL4450 | LL-34 |

If you need this device in the SOT package, an electical equivalent is available. See FDSO1200 family.

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

| | |
|---|---|
| Storage Temperature Range | −65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

**Power Dissipation** (Note 2)

| | |
|---|---|
| Max Total Power Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

| **Maximum Voltages and Currents** | | **1N3600** | **1N4150** | **1N4450** |
|---|---|---|---|---|
| WIV | Working Inverse Voltage | 50 V | 50 V | 30 V |
| $I_O$ | Average Rectified Current | 200 mA | 200 mA | 200 mA |
| $I_F$ | DC Forward Current | 400 mA | 400 mA | 400 mA |
| $i_f$ | Recurrent Peak Forward Current | 600 mA | 600 mA | 600 mA |
| $i_{f(surge)}$ | Peak Forward Surge Current | | | |
| | Pulse Width = 1.0 s | 1.0 A | 1.0 A | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A | 4.0 A | 4.0 A |

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | 1N3600 1N4150 MIN | 1N3600 1N4150 MAX | 1N4450 MIN | 1N4450 MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|---|---|
| BV | Breakdown Voltage | 75 | | | | V | $I_R$ = 5.0 μA |
| | | | | 40 | | V | $I_R$ = 5.0 μA |
| $I_R$ | Reverse Current | | 100 | | | nA | $V_R$ = 50 V |
| | | | | | 50 | nA | $V_R$ = 30 V |
| | | | 100 | | | μA | $V_R$ = 50 V, $T_A$ = 150°C |
| | | | | | 50 | μA | $V_R$ = 30 V, $T_A$ = 150°C |
| $V_F$ | Forward Voltage | | | 0.42 | 0.54 | V | $I_F$ = 0.1 mA |
| | | 0.54 | 0.62 | 0.52 | 0.64 | V | $I_F$ = 1.0 mA |
| | | 0.66 | 0.74 | 0.64 | 0.76 | V | $I_F$ = 10 mA |
| | | 0.76 | 0.86 | | | V | $I_F$ = 50 mA |
| | | 0.82 | 0.92 | 0.80 | 0.92 | V | $I_F$ = 100 mA |
| | | 0.87 | 1.0 | | 1.0 | V | $I_F$ = 200 mA |
| C | Capacitance | | 2.5 | | 4.0 | pF | $V_R$ = 0, f = 1.0 MHz |
| $t_{rr}$ | Reverse Recovery Time (Note 3) | | 4.0 | | | ns | $I_f$ = $I_r$ = 10 mA to 200 mA, $R_L$ = 100 Ω |
| | | | | | 4.0 | ns | $I_f$ = $I_r$ = 10 mA, $R_L$ = 100 Ω |
| | | | 6.0 | | | ns | $I_f$ = $I_r$ = 200 mA to 400 mA, $R_L$ = 100 Ω |
| $t_{fr}$ | Forward Recovery Time | | 10 | | | ns | $I_f$ = 200 mA, $t_r$ = 0.4 ns, $V_{fr}$ = 1.0 V |

NOTES:
1. Maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Recovery to 0.1 $I_f$.
4. For family characteristic curves, refer to Chapter 4, D4.

# OCEAN CHIPS
## Океан Электроники
## Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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AVIC JONHON

**«JONHON»** (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

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(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

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Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А