

3469674 FAIRCHILD SEMICONDUCTOR

84D 27478 D



A Schlumberger Company

**1N658/FDLL658**

General Purpose Diodes

T-01-09

- BV... 120 V (MIN) @ 100  $\mu$ A
- V<sub>F</sub>... 1.0 V (MAX) @ 100 mA

**PACKAGES**

1N658 DO-35  
FDLL658 LL-34

**ABSOLUTE MAXIMUM RATINGS (Note 1)**

**Temperatures**

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

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

**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 <sub>O</sub>	Average Rectified Current	200 mA
I <sub>F</sub>	Forward Current Steady State	500 mA
I <sub>F</sub> (surge)	Peak Forward Surge Current	
	Pulse Width = 1.0s	1.0 A
	Pulse Width = 1.0 $\mu$ s	4.0 A

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

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
V <sub>F</sub>	Forward Voltage		1.0	V	I <sub>F</sub> = 100 mA
I <sub>R</sub>	Reverse Current		50 25	nA $\mu$ A	V <sub>R</sub> = 50 V V <sub>R</sub> = 60 V, T <sub>A</sub> = 150°C
BV	Breakdown Voltage	120		V	I <sub>R</sub> = 100 $\mu$ A
t <sub>rr</sub>	Reverse Recovery Time		300	ns	V <sub>R</sub> = 40 V, I <sub>F</sub> = 5.0 mA, R <sub>L</sub> = 2.0 k $\Omega$ , C <sub>L</sub> = 10 pF, Recovery to 80 k $\Omega$

**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.



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

T-01-09

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

**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
$I_{f(\text{surge})}$	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

**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 electrical equivalent is available. See FDSO1200 family.



**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	$I_F = 6.0 \text{ mA}$
$I_R$	Reverse Current		5.0		5.0		10	μA	$V_R = 50 \text{ V}$ $V_R = 100 \text{ V}$ $V_R = 200 \text{ V}$ $V_R = 50 \text{ V, } T_A = 100^\circ\text{C}$ $V_R = 100 \text{ V, } T_A = 100^\circ\text{C}$ $V_R = 200 \text{ V, } T_A = 100^\circ\text{C}$
BV	Breakdown Voltage	60		120		240		V	$I_R = 100 \text{ μA}$
$t_{rr}$	Reverse Recovery Time		300		300		300	ns	$V_r = 35 \text{ V, } I_f = 30 \text{ mA, } R_L = 2.0 \text{ k}\Omega$ $C_L = 10 \text{ pF, Recovery to } 400 \text{ k}\Omega$

**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

**PACKAGES**

All Devices DO-35

**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

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

SYMBOL	Z <sub>Z</sub>	V <sub>Z</sub>	I <sub>R</sub>		TC		
			Maximum Zener Impedance (Note 4) (I <sub>Z</sub> = 20 mA)	Nominal Zener Voltage (Note 3) (I <sub>Z</sub> = 20 mA)		Maximum Reverse Current (V <sub>R</sub> = 1.0V)	
						@25°C	@150°C
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:**

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

**FAIRCHILD**

A Schlumberger Company

**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  
 Max Junction Operating Temperature  
 Lead Temperature

-65° to +200°C  
 +175°C  
 +260°C

**Power Dissipation (Note 2)**

Maximum Total Dissipation at 25°C  
 Linear Derating Factor (from 25°C)

500 mW  
 3.33 mW/°C

**Maximum Voltage and Currents**

WIV Working Inverse Voltage  
 $I_O$  Average Rectified Current  
 $I_f$  DC Forward Current  
 $i_f$  Recurrent Peak Forward Current  
 $i_f(\text{surge})$  Peak Forward Surge Current  
 Pulse Width = 1.0 s  
 Pulse Width = 1.0  $\mu$ s

75 V  
 200 mA  
 300 mA  
 400 mA  
 1.0 A  
 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 electrical 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 75		V V	$I_R = 100 \mu A$ $I_R = 5.0 \mu A$
$I_R$	Reverse Current		25 50 5.0	nA $\mu A$ $\mu A$	$V_R = 20 V$ $V_R = 20 V, T_A = 150^\circ C$ $V_R = 75 V$
$V_F$	Forward Voltage	0.62 0.63	0.72 0.73 1.0 1.0 1.0 1.0	V V V V V V	$I_F = 5.0 mA$ $I_F = 5.0 mA$ $I_F = 10 mA$ $I_F = 20 mA$ $I_F = 30 mA$ $I_F = 100 mA$
$t_{rr}$	Reverse Recovery Time		4.0	ns	$I_f = 10 mA, V_r = 6.0 V,$ $R_L = 100 \Omega \text{ Rec. to } 1.0 mA$

**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 1N914B, 1N4148 1N4446, 1N4447 1N916, 1N916A 1N916B, 1N4149 1N4448, 1N4449		4.0	pF	$V_R = 0, f = 1 \text{ MHz}$
				2.0	pF	$V_R = 0, f = 1 \text{ MHz}$
$V_{fr}$	Peak Forward Recovery Voltage		2.5	V	50 mA Peak Square Wave, 0.1 $\mu\text{s}$ pulse width, 5 kHz - 100 kHz rep. rate	
RE	Rectification Efficiency	45		%	2.0 V rms, $f = 100 \text{ MHz}$	



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**1N957 through 1N973**  
 500 mW Silicon Planar  
 Zener 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)

SYMBOL	V <sub>Z</sub>	Z <sub>Z</sub>	I <sub>ZT</sub>	Z <sub>ZK</sub>	I <sub>ZK</sub>	I <sub>R</sub>	V <sub>RT</sub>			TC	I <sub>ZM</sub>
	Nominal Zener Voltage (Note 3) @I <sub>ZT</sub>	Maximum Zener Impedance (Note 4) @I <sub>ZT</sub>	Test Current	Maximum Zener Knee Impedance (Note 4) @I <sub>ZK</sub>	Test Current	Maximum Reverse Current @V <sub>RT</sub>	Test Voltage			Typical Temperature Coefficient of V <sub>Z</sub>	Maximum Zener Current (Note 5)
							± 20% V <sub>Z</sub> Tolerance	± 10% V <sub>Z</sub> Tolerance	± 5% V <sub>Z</sub> Tolerance		
UNIT	V	Ω	mA	Ω	mA	μA	V	V	V	%/°C	mA
1N957	6.8	4.5	18.5	700	1.0	150	4.4	4.9	5.2	+0.050	47
1N958	7.5	5.5	16.5	700	0.5	75	4.8	5.4	5.7	+0.058	42
1N959	8.2	6.5	15.0	700	0.5	50	5.2	5.9	6.2	+0.062	38
1N960	9.1	7.5	14.0	700	0.5	25	5.8	6.6	6.9	+0.068	35
1N961	10.0	8.5	12.5	700	0.25	10	6.4	7.2	7.6	+0.072	32
1N962	11.0	9.5	11.5	700	0.25	5.0	7.0	8.0	8.4	+0.073	28
1N963	12.0	11.5	10.5	700	0.25	5.0	7.6	8.6	9.1	+0.076	26
1N964	13.0	13.0	9.5	700	0.25	5.0	8.3	9.4	9.9	+0.079	24
1N965	15.0	16.0	8.5	700	0.25	5.0	9.6	10.8	11.4	+0.082	21
1N966	16.0	17.0	7.8	700	0.25	5.0	10.2	11.5	12.2	+0.083	19
1N967	18.0	21.0	7.0	750	0.25	5.0	11.5	13.0	13.7	+0.085	17
1N968	20.0	25.0	6.2	750	0.25	5.0	12.8	14.4	15.2	+0.086	15
1N969	22.0	29.0	5.6	750	0.25	5.0	14.0	15.8	16.7	+0.087	14
1N970	24.0	33.0	5.2	750	0.25	5.0	15.4	17.3	18.2	+0.088	13
1N971	27.0	41.0	4.6	750	0.25	5.0	17.2	19.4	20.6	+0.090	11
1N972	30.0	49.0	4.2	1000	0.25	5.0	19.2	21.6	22.8	+0.091	10
1N973	33.0	58.0	3.8	1000	0.25	5.0	21.1	23.8	25.1	±0.092	9.2

**NOTES**

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

3469674 FAIRCHILD SEMICONDUCTOR

84D 27484 D1



A Schlumberger Company

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

Ultra Fast Low  
 Capacitance Diodes

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

**PACKAGES**

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

**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 $\mu$ s	4.0 A

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

**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	$I_F = 2.0 \text{ mA}$ $I_F = 1.0 \text{ mA}$ $I_F = 250 \mu\text{A}$ $I_F = 10 \text{ mA}$ $I_F = 10 \text{ mA}$
		0.550	0.650	V	
		0.505	0.575	V	
			1.0	V	
			0.70	0.85	
$I_R$	Reverse Current		0.1	$\mu\text{A}$	$V_R = 50 \text{ V}$ $V_R = 50 \text{ V}, T_A = 150^\circ\text{C}$
			100	$\mu\text{A}$	
BV	Breakdown Voltage	75		V	$I_R = 5.0 \mu\text{A}$
$t_{rr}$	Reverse Recovery Time (Note 3)	1N4305	2.0	ns	$I_f = 10 \text{ mA}, V_r = 6.0 \text{ V}, R_L = 100 \Omega$ $I_f = I_r = 10 \text{ mA}, R_L = 100 \Omega,$ $V_r = 1.0 \text{ V}$
		1N3064			
		1N4305	4.0	ns	
		1N4454			
C	Capacitance		2.0	pF	$V_R = 0, f = 1.0 \text{ MHz}$
RE	Rectification Efficiency (Note 4)	45		%	$f = 1.0 \text{ MHz}$
$\Delta V_F / ^\circ\text{C}$	Forward Voltage Temperature Coefficient (Note 5)		3.0	mV/°C	

**NOTES:**

- The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- Recovery to 1.0 mA.
- 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  $\Omega$ , load capacitance 20 pF.
- This value for  $\Delta V_F / ^\circ\text{C}$  is a typical value not a minimum or maximum.
- For product family characteristic curves, refer to Chapter 4, D4.

**FAIRCHILD**

A Schlumberger Company

**1N3070/4938**

**FDLL3070/4938**

T-03-09

High Speed High  
Conductance Diodes

- BV... 200 V (MIN)
- I<sub>R</sub>... 100 nA (MAX)

**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 <sub>O</sub>	Average Rectified Current	200 mA
I <sub>F</sub>	Forward Current Steady State DC	500 mA
i <sub>f</sub>	Recurrent Peak Forward Current	600 mA
i <sub>f</sub> (surge)	Peak Forward Surge Current	
	Pulse Width = 1.0 s	1.0 A
	Pulse Width = 1.0 μs	4.0 A

**PACKAGES**

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

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



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

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
I <sub>R</sub>	Reverse Current		100 100	nA μA	V <sub>R</sub> = 175 V V <sub>R</sub> = 175 V, T <sub>A</sub> = 150°C
BV	Breakdown Voltage	200		V	I <sub>R</sub> = 100 μA
V <sub>F</sub>	Forward Voltage		1.0	V	I <sub>F</sub> = 100 mA
C	Capacitance		5.0	pF	V <sub>R</sub> = 0, f = 1.0 MHz
t <sub>rr</sub>	Reverse Recovery Time (Note 3)		50	ns	I <sub>F</sub> = I <sub>r</sub> = 30 mA, R <sub>L</sub> = 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** T201-09

**FDLL3595/6099**  
High Conductance Low  
Leakage Diodes

- BV... 150 V (MIN) @ 100  $\mu$ A
- V<sub>F</sub>... 1.0 V @ 200 mA

**PACKAGES**

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

**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 <sub>O</sub>	Average Rectified Current	200 mA
I <sub>F</sub>	Forward Current Steady State	500 mA
I <sub>F</sub>	Peak Repetitive Forward Current	600 mA
i <sub>F</sub> (surge)	Peak Forward Surge Current	
	Pulse Width = 1.0 s	1.0 A
	Pulse Width = 1.0 $\mu$ s	4.0 A

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

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

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
V <sub>F</sub>	Forward Voltage	0.83	1.0	V	I <sub>F</sub> = 200 mA
		0.79	0.92	V	I <sub>F</sub> = 100 mA
		0.75	0.88	V	I <sub>F</sub> = 50 mA
		0.65	0.80	V	I <sub>F</sub> = 10 mA
		0.60	0.75	V	I <sub>F</sub> = 5.0 mA
		0.52	0.68	V	I <sub>F</sub> = 1.0 mA
I <sub>R</sub>	Reverse Current		1.0	nA	V <sub>R</sub> = 125 V
			300	nA	V <sub>R</sub> = 30 V, T <sub>A</sub> = 125°C
			500	nA	V <sub>R</sub> = 125 V, T <sub>A</sub> = 125°C
			3.0	$\mu$ A	V <sub>R</sub> = 125 V, T <sub>A</sub> = 150°C
t <sub>rr</sub>	Reverse Recovery Time		3.0	$\mu$ s	I <sub>F</sub> = 10 mA, V <sub>r</sub> = 3.5 V, R <sub>L</sub> = 1.0 k $\Omega$
C	Capacitance		8.0	pF	V <sub>R</sub> = 0, f = 1.0 MHz
BV	Breakdown Voltage	150		V	I <sub>R</sub> = 100 $\mu$ A

**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 1N6099 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

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

**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 $\mu$ s	4.0 A	4.0 A	4.0 A

**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 electrical equivalent is available. See FDSO1200 family.



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

SYMBOL	CHARACTERISTIC	1N3600 1N4150		1N4450		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
BV	Breakdown Voltage	75		40		V	$I_R = 5.0 \mu A$
$I_R$	Reverse Current		100		50	nA	$V_R = 50$ V $V_R = 30$ V $V_R = 50$ V, $T_A = 150^\circ C$ $V_R = 30$ V, $T_A = 150^\circ C$
			100		50	$\mu A$	
$V_F$	Forward Voltage	0.54	0.62	0.42	0.54	V	$I_F = 0.1$ mA $I_F = 1.0$ mA $I_F = 10$ mA $I_F = 50$ mA $I_F = 100$ mA $I_F = 200$ mA
		0.66	0.74	0.52	0.64	V	
		0.76	0.86	0.64	0.76	V	
		0.82	0.92	0.80	0.92	V	
		0.87	1.0		1.0	V	
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, $R_L = 100 \Omega$ $I_f = I_r = 10$ mA, $R_L = 100 \Omega$ $I_f = I_r = 200$ mA to 400 mA, $R_L = 100 \Omega$
			6.0		4.0	ns	
						ns	
$t_{fr}$	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.