

3469674 FAIRCHILD SEMICONDUCTOR

84D 27459 D



A Schlumberger Company

**PN5135/FTSO5135** T-29-23  
**PN5136/FTSO5136**  
**PN5137/FTSO5137**  
 NPN Small Signal General Purpose Amplifiers

- $P_D$  ... 625 mW @  $T_A = 25^\circ\text{C}$
- $V_{CE0}$  ... 25 V (Min) (PN/FTSO5135)
- $h_{FE}$  ... 50-600 @ 10 mA (PN/FTSO5135), 20-400 @ 150 mA (PN/FTSO5136/7)
- $f_T$  ... 40 MHz (Min)
- Complements ... PN5142, PN5143

**PACKAGE**

PN5135	TO-92
PN5136	TO-92
PN5137	TO-92
FTSO5135	TO-236AA/AB
FTSO5136	TO-236AA/AB
FTSO5137	TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

**Temperatures**

Storage Temperature	-55° C to 150° C
Operating Junction Temperature	150° C

**Power Dissipation** (Notes 2 & 3)

Total Dissipation at	PN	FTSO
25° C Ambient Temperature	0.625 W	0.350 W*
25° C Case Temperature	1.0 W	

**Voltages & Currents**

	5135	5136/7
$V_{CE0}$ Collector to Emitter Voltage (Note 4)	25 V	20 V
$V_{CBO}$ Collector to Base Voltage	30 V	30 V
$V_{CES}$ Collector to Emitter Voltage	30 V	30 V
$V_{EBO}$ Emitter to Base Voltage	4.0 V	3.0 V
$I_C$ Collector Current	200 mA	200 mA

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	5135		5136		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
$BV_{CES}$	Collector to Emitter Breakdown Voltage	30		30		V	$I_C = 100 \mu\text{A}, V_{BE} = 0$
$BV_{CBO}$	Collector to Base Breakdown Voltage	30		30		V	$I_C = 100 \mu\text{A}, I_E = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	4.0		3.0		V	$I_E = 10 \mu\text{A}, I_C = 0$
$I_{EBO}$	Emitter Cutoff Current		10		100	nA μA	$V_{EB} = 2.0 \text{ V}, I_C = 0$ $V_{EB} = 4.0 \text{ V}, I_C = 0$

**NOTES:**

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
  2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
  3. These ratings give a maximum junction temperature of 150° C and (TO-92) junction-to-case thermal resistance of 125° C/W (derating factor of 8.0 mW/°C); junction-to-ambient thermal resistance of 200° C/W (derating factor of 5.0 mW/°C); (TO-236) junction-to-ambient thermal resistance of 357° C/W (derating factor of 2.8 mW/°C).
  4. Rating refers to a high current point where collector to emitter voltage is lowest.
  5. Pulse conditions: length = 300 μs; duty cycle = 1%.
  6. For product family characteristic curves, refer to Curve Set T145.
- \* Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.

PN5135/FTSO5135

PN5136/FTSO5136

PN5137/FTSO5137

T-29-23

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	5135		5136		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
$I_{CBO}$	Collector Cutoff Current	300	10		100	nA	$V_{CB} = 15\text{ V}, I_E = 0$ $V_{CB} = 20\text{ V}, I_E = 0$ $V_{CB} = 15\text{ V}, I_E = 0$ $T_A = 65^\circ\text{ C}$ $V_{CB} = 20\text{ V}, I_E = 0,$ $T_A = 65^\circ\text{ C}$
					10	nA	
						$\mu\text{A}$	
						$\mu\text{A}$	
$h_{FE}$	DC Pulse Current Gain (Note 5)	50	600	20	400		$I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 2.0\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 150\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 30\text{ mA}, V_{CE} = 1.0\text{ V}$
		15			20		
$V_{CE(sus)}$	Collector to Emitter Sustaining Voltage (Notes 4 & 5)	25		20		V	$I_C = 1.0\text{ mA (pulsed)}, I_B = 0$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		1.0		0.25	V	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$ $I_C = 150\text{ mA}, I_B = 15\text{ mA}$
$V_{BE(on)}$	Base to Emitter "On" Voltage (Note 5)		1.0		1.1	V	$I_C = 100\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}, V_{CE} = 1.0\text{ V}$
$V_{BE(sat)}$	Base to Emitter Saturation Voltage (Note 5)		1.0		1.1	V	$I_C = 100\text{ mA}, I_B = 10\text{ V}$ $I_C = 150\text{ mA}, I_B = 15\text{ V}$
$C_{cb}$	Collector to Base Capacitance		25		35	pF	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$
$C_{eb}$	Emitter to Base Capacitance				85	pF	$V_{EB} = 0.5\text{ V}, I_C = 0, f = 1.0\text{ MHz}$
$ h_{fe} $	Magnitude of Common Emitter Small Signal Current Gain	2.0	15	2.0	20		$I_C = 30\text{ mA}, V_{CE} = 10\text{ V},$ $f = 20\text{ MHz}$ $I_C = 50\text{ mA}, V_{CE} = 5.0\text{ V},$ $f = 20\text{ MHz}$

SYMBOL	CHARACTERISTIC	5137		UNITS	TEST CONDITIONS
		MIN	MAX		
$BV_{CES}$	Collector to Emitter Breakdown Voltage	30		V	$I_C = 100\text{ }\mu\text{A}, V_{BE} = 0$
$BV_{CBO}$	Collector to Base Breakdown Voltage	30		V	$I_C = 100\text{ }\mu\text{A}, I_E = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	3.0		V	$I_E = 10\text{ }\mu\text{A}, I_C = 0$
$I_{EBO}$	Emitter Cutoff Current		100	nA	$V_{EB} = 2.0\text{ V}, I_C = 0$
$I_{CBO}$	Collector Cutoff Current		100	$\mu\text{A}$	$V_{CB} = 20\text{ V}, I_E = 0$ $V_{CB} = 20\text{ V}, I_E = 0,$ $T_A = 65^\circ\text{ C}$
			10		
$h_{FE}$	DC Pulse Current Gain (Note 5)	20	400		$I_C = 150\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 30\text{ mA}, V_{CE} = 1.0\text{ V}$
		20			

FAIRCHILD SEMICONDUCTOR

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PN5135/FTSO5135  
 PN5136/FTSO5136  
 PN5137/FTSO5137

T-29-23

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	5137		UNITS	TEST CONDITIONS
		MIN	MAX		
$V_{CE(sus)}$	Collector to Emitter Sustaining Voltage (Notes 4 & 5)	20		V	$I_C = 1.0 \text{ mA (pulsed)}, I_B = 0$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		0.25	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$
$V_{BE(on)}$	Base to Emitter "On" Voltage (Note 5)		1.1	V	$I_C = 150 \text{ mA}, V_{CE} = 1.0 \text{ V}$
$V_{BE(sat)}$	Base to Emitter Saturation Voltage (Note 5)		1.1	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ V}$
$C_{cb}$	Collector to Base Capacitance		35	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$
$C_{eb}$	Emitter to Base Capacitance		85	pF	$V_{BE} = 0.5 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$
$ h_{re} $	Magnitude of Common Emitter Small Signal Current Gain	2.0	20		$I_C = 50 \text{ mA}, V_{CE} = 5.0 \text{ V}, f = 20 \text{ MHz}$



## PN5138/FTSO5138

### PNP Low Level Amplifier

T-29-23

- $h_{FE} \dots 50$  (Min) @  $100 \mu A$  &  $10$  mA
- $V_{CEO} \dots -30$  V (Min)

**PACKAGE**

PN5138  
FTSO5138

TO-92  
TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS** (Note 1)**Temperatures**

Storage Temperature  $-55^{\circ}C$  to  $150^{\circ}C$   
Operating Junction Temperature  $150^{\circ}C$

**Power Dissipation** (Notes 2 & 3)

	PN	FTSO
Total Dissipation at		
25° C Ambient Temperature	0.625 W	0.350 W*
25° C Case Temperature	1.0 W	

**Voltages & Currents**

$V_{CEO}$ Collector to Emitter Voltage	-30 V
$V_{CBO}$ Collector to Base Voltage	-30 V
$V_{EBO}$ Emitter to Base Voltage	-5.0 V

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$BV_{CBO}$	Collector to Base Breakdown Voltage	-30		V	$I_C = 100 \mu A, I_E = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	-5.0		V	$I_E = 100 \mu A, I_C = 0$
$I_{CBO}$	Collector Cutoff Current		50 3.0	nA $\mu A$	$V_{CB} = -20$ V, $I_E = 0$ $V_{CB} = -20$ V, $I_E = 0, T_A = 65^{\circ}C$
$h_{FE}$	DC Current Gain	50 50	800		$I_C = 100 \mu A, V_{CE} = -10$ V $I_C = 1.0$ mA, $V_{CE} = -10$ V
$h_{FE}$	DC Pulse Current Gain (Note 5)	50			$I_C = 10$ mA, $V_{CE} = -10$ V
$V_{CEO(sust)}$	Collector to Emitter Sustaining Voltage (Notes 4 & 5)	-30		V	$I_C = 10$ mA (pulsed), $I_B = 0$

**NOTES:**

- These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
  - These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
  - These ratings give a maximum junction temperature of  $150^{\circ}C$  and (TO-92) junction-to-case thermal resistance of  $125^{\circ}C/W$  (derating factor of  $8.0$  mW/ $^{\circ}C$ ); junction-to-ambient thermal resistance of  $200^{\circ}C/W$  (derating factor of  $5.0$  mW/ $^{\circ}C$ ); (TO-236) junction-to-ambient thermal resistance of  $357^{\circ}C/W$  (derating factor of  $2.8$  mW/ $^{\circ}C$ ).
  - Rating refers to a high current point where collector to emitter voltage is lowest.
  - Pulse conditions: length =  $300 \mu s$ ; duty cycle = 1%.
  - For product family characteristic curves, refer to Curve Set T219.
- \* Package mounted on 99.5% alumina  $8$  mm x  $8$  mm x  $0.6$  mm.

## PN5138/FTSO5138

T-29-23

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		-0.3	V	$I_C = 10 \text{ mA}$ , $I_B = 0.5 \text{ mA}$
$V_{BE(ON)}$	Base to Emitter "On" Voltage (Note 5)		-1.0	V	$I_C = 10 \text{ mA}$ , $V_{CE} = -10 \text{ V}$
$V_{BE(sat)}$	Base to Emitter Saturation Voltage (Note 5)		-1.0	V	$I_C = 10 \text{ mA}$ , $I_B = 0.5 \text{ mA}$
$C_{cb}$	Collector to Base Capacitance		7.0	pF	$V_{CB} = -5.0 \text{ V}$ , $I_E = 0$ , $f = 1.0 \text{ MHz}$
$C_{eb}$	Emitter to Base Capacitance		30	pF	$V_{EB} = -5.0 \text{ V}$ , $I_C = 0$ , $f = 1.0 \text{ MHz}$
$h_{fe}$	High Frequency Current Gain	1.5			$I_C = 0.5 \text{ mA}$ , $V_{CE} = -5.0 \text{ V}$ , $f = 20 \text{ MHz}$
$h_{fe}$	Small Signal Current Gain	40	1000		$I_C = 1.0 \text{ mA}$ , $V_{CE} = -10 \text{ V}$ , $f = 1.0 \text{ kHz}$

**FAIRCHILD**

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**PN5139/FTSO5139**PNP Small Signal General Purpose  
Amplifier & Switch

T-29-23

- $V_{CE0}$  ... -20 V (Min)
- $h_{FE}$  ... 40 (Min) @ 10 mA
- $f_T$  ... 300 MHz (Min)
- $C_{cb}$  ... 5.0 pF (Max) @ -10 V

**PACKAGE**

PN5139	TO-92
FTSO5139	TO-236AA/AB

**ABSOLUTE MAXIMUM RATINGS** (Note 1)**Temperatures**

Storage Temperature	-55°C to 150°C
Operating Junction Temperature	150°C

**Power Dissipation** (Notes 2 & 3)

Total Dissipation at	<b>PN</b>	<b>FTSO</b>
25°C Ambient Temperature	0.625 W	0.350 W*
25°C Case Temperature	1.0 W	

**Voltages & Currents**

$V_{CE0}$ Collector to Emitter Voltage	-20 V
(Note 4)	
$V_{CBO}$ Collector to Base Voltage	-20 V
$V_{EBO}$ Emitter to Base Voltage	-5.0 V
$I_C$ Collector Current	100 mA

**ELECTRICAL CHARACTERISTICS** (25°C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$BV_{CBO}$	Collector to Base Breakdown Voltage	-20		V	$I_C = 100 \mu A, I_E = 0$
$BV_{CES}$	Collector to Emitter Breakdown Voltage	-20		V	$I_C = 100 \mu A, V_{EB} = 0$
$BV_{EBO}$	Emitter to Base Breakdown Voltage	-5.0		V	$I_E = 100 \mu A, I_C = 0$
$I_{CES}$	Collector Reverse Current		50 25	nA $\mu A$	$V_{CE} = -15 V, V_{EB} = 0$ $V_{CE} = -15 V, V_{EB} = 0, T_A = 65^\circ C$
$h_{FE}$	DC Current Gain	30 40			$I_C = 100 \mu A, V_{CE} = -10 V$ $I_C = 1.0 mA, V_{CE} = -10 V$
$h_{FE}$	DC Pulse Current Gain (Note 5)	40 15			$I_C = 10 mA, V_{CE} = -1.0 V$ $I_C = 50 mA, V_{CE} = -10 V$

**NOTES:**

- These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
  - These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
  - These ratings give a maximum junction temperature of 150°C and (TO-92) junction-to-case thermal resistance of 125°C/W (derating factor of 8.0 mW/°C); junction-to-ambient thermal resistance of 200°C/W (derating factor of 5.0 mW/°C); (TO-236) junction-to-ambient thermal resistance of 357°C/W (derating factor of 2.8 mW/°C).
  - Rating refers to a high current point where collector to emitter voltage is lowest.
  - Pulse conditions: length = 300  $\mu s$ ; duty cycle = 1%.
  - For product family characteristic curves, refer to Curve Set T215.
- \* Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.

PN5139/FTSO5139

T-29-23

**ELECTRICAL CHARACTERISTICS** (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage		-0.15	V	$I_C = 1.0 \text{ mA}$ , $I_B = 0.1 \text{ mA}$
$V_{CE(sat)}$	Pulsed Collector to Emitter Saturation Voltage (Note 5)		-0.20 -0.5	V V	$I_C = 10 \text{ mA}$ , $I_B = 1.0 \text{ mA}$ $I_C = 50 \text{ mA}$ , $I_B = 5.0 \text{ mA}$
$V_{BE(sat)}$	Pulsed Base to Emitter Saturation Voltage (Note 5)	-0.7 -0.75	-1.0 -1.25	V V	$I_C = 10 \text{ mA}$ , $I_B = 1.0 \text{ mA}$ $I_C = 50 \text{ mA}$ , $I_B = 5.0 \text{ mA}$
$V_{CE(sus)}$	Collector to Emitter Sustaining Voltage (Note 5)	-20		V	$I_C = 10 \text{ mA}$ (pulsed), $I_B = 0$
$C_{cb}$	Collector to Base Capacitance		5.0	pF	$V_{CB} = -10 \text{ V}$ , $I_E = 0$ , $f = 1.0 \text{ MHz}$
$C_{eb}$	Emitter to Base Capacitance		8.0	pF	$V_{EB} = -0.5 \text{ V}$ , $I_C = 0$ , $f = 1.0 \text{ MHz}$
$ h_{fe} $	Magnitude of Small Signal Current Gain	3.0			$I_C = 10 \text{ mA}$ , $V_{CE} = -20 \text{ V}$ , $f = 100 \text{ MHz}$
$t_{on}$	Turn On Time (test circuit no. 407)		50	ns	$I_C \approx 50 \text{ mA}$ , $I_{B1} \approx 5.0 \text{ mA}$
$t_{off}$	Turn Off Time (test circuit no. 407)		200	ns	$I_C \approx 50 \text{ mA}$ , $I_{B1} \approx 5.0 \text{ mA}$ , $I_{B2} \approx -5.0 \text{ mA}$



**1N456/457/458/459** T-01-09  
**FDLL456/457/458/459**  
**1N456A/457A/458A/459A**  
**FDLL456A/457A/458A/459A**  
 Low Leakage Diodes

- $I_R \dots 25 \text{ nA (MAX) @ WIV}$
- $C \dots 6.0 \text{ pf (MAX)}$

**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

**Maximum Voltage and Currents**

	1N456/A	1N457/A	1N458/A	1N459/A
WIV Working Inverse Voltage	25 V	60 V	125 V	175 V
$I_O$ Average Rectified Current				200 mA
$I_F$ Continuous Forward Current				500 mA
$i_f$ Peak Repetitive Forward Current				600 mA
$i_f(\text{surge})$ Peak Forward Surge Current				4.0 A
				1.0 A
				Pulse Width = 1 $\mu$ s
				Pulse Width = 1 s

**PACKAGES**

1N456	DO-35
1N457	DO-35
1N458	DO-35
1N459	DO-35
1N456A	DO-35
1N457A	DO-35
1N458A	DO-35
1N459A	DO-35
FDLL456	LL-34
FDLL457	LL-34
FDLL458	LL-34
FDLL459	LL-34
FDLL456A	LL-34
FDLL457A	LL-34
FDLL458A	LL-34
FDLL459A	LL-34

If you need this device in the SOT package, an electrical equivalent is available. See FDS01500 family.

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

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$V_F$	Forward Voltage 1N456A/7A/8A/9A		1.0	V	$I_F = 100 \text{ mA}$ $I_F = 40 \text{ mA}$ $I_F = 20 \text{ mA}$ $I_F = 7 \text{ mA}$ $I_F = 3 \text{ mA}$
		1N456	1.0	V	
		1N457	1.0	V	
		1N458	1.0	V	
		1N459	1.0	V	
$I_R$	Reverse Current		25	nA	$V_R = \text{Rated WIV}$ $V_R = \text{Rated WIV}, T_A = 150^\circ\text{C}$
			5.0	$\mu\text{A}$	
BV	Breakdown Voltage	1N456/A	30	V	$I_R = 100 \mu\text{A}$ $I_R = 100 \mu\text{A}$ $I_R = 100 \mu\text{A}$ $I_R = 100 \mu\text{A}$
		1N457/A	70	V	
		1N458/A	150	V	
		1N459/A	200	V	
C	Capacitance		6.0	pF	$V_R = 0, f = 1 \text{ MHz}$

**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. For product family characteristic curves, refer to Chapter 4, D2.





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**1N461A/462A/463A**  
**FDLL461A/462A/463A**

General Purpose High  
Conductance Diodes

T-01-09

- $V_F \dots 1.0 \text{ V (MAX) @ } 100 \text{ mA}$
- $I_R \dots 500 \text{ nA (MAX) @ WIV}$

**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

**Maximum Voltage and Currents**

	IN461A	IN462A	IN463A	IN464A
WIV Working Inverse Voltage	25 V	60 V	175 V	125 V
$I_O$ Average Rectified Current	200 mA	200 mA	200 mA	200 mA
$I_F$ Continuous Forward Current	500 mA	500 mA	500 mA	500 mA
$i_f$ Peak Repetitive Forward Current	600 mA	600 mA	600 mA	600 mA
$i_f(\text{surge})$ Peak Forward Surge Current				
Pulse Width = 1 s	1.0 A	1.0 A	1.0 A	1.0 A
Pulse Width = 1 $\mu$ s	4.0 A	4.0 A	4.0 A	4.0 A

**PACKAGES**

1N461A	DO-35
1N462A	DO-35
1N463A	DO-35
FDLL461A	LL-34
FDLL462A	LL-34
FDLL463A	LL-34

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
$V_F$	Forward Voltage		1.0	V	$I_f = 100 \text{ mA}$
$I_R$	Reverse Current		500 30	nA $\mu$ A	$V_R = \text{Rated WIV}$ $V_R = \text{Rated WIV}, T_A = 150^\circ\text{C}$
BV	Breakdown Voltage	IN461A IN462A IN463A IN464A	30 70 200 150	V	$I_R = 100 \mu\text{A}$ $I_R = 100 \mu\text{A}$ $I_R = 100 \mu\text{A}$ $I_R = 100 \mu\text{A}$

**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. For product family characteristic curves, refer to Chapter 4, D2.



**1N482B/483B/484B/485B**  
**FDLL482B/483B/484B/485B**

General Purpose Low  
 Leakage Diodes

T-01-09

- $V_F$  ... 1.0 V (MAX) @ 100 mA
- $I_R$  ... 25 nA (MAX) @ WIV

**ABSOLUTE MAXIMUM RATINGS (Note 1)**

**Temperatures**

Storage Temperature Range	-65°C to +200°C
Maximum Junction Operating Temperature	+175°C
Lead Temperature (from 25°C)	+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

**Maximum Voltage and Currents**

	1N482B	1N483B	1N484B	1N485B	1N486B
WIV Working Inverse Voltage	36 V	70 V	130 V	180 V	225 V
$I_O$ Average Rectified Current					200 mA
$I_F$ Continuous Forward Current					500 mA
$I_f$ Peak Repetitive Forward Current					600 mA
$I_f(\text{surge})$ Peak Forward Surge Current					
Pulse Width = 1 s					1.0
Pulse Width = 1 $\mu$ s					4.0

**PACKAGES**

1N482B	DO-35
1N483B	DO-35
1N484B	DO-35
1N485B	DO-35
FDLL482B	LL-34
FDLL483B	LL-34
FDLL484B	LL-34
FDLL485B	LL-34

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		
$V_F$	Forward Voltage		1.0	V	$I_F = 100$ mA		
$I_R$	Reverse Current	1N482B - 1N485B		25	nA	$V_R = \text{Rated WIV}$ $V_R = \text{Rated WIV}, T_A = 150^\circ\text{C}$ $V_R = 225$ V $V_R = 225$ V, $T_A = 150^\circ\text{C}$	
		1N486B		5.0	$\mu$ A		
BV	Breakdown Voltage	1N482B	40		V		$I_R = 100$ $\mu$ A
		1N483B	80		V		$I_R = 100$ $\mu$ A
		1N484B	150		V	$I_R = 100$ $\mu$ A	
		1N485B	200		V	$I_R = 100$ $\mu$ A	
		1N486B	250		V	$I_R = 100$ $\mu$ A	

**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. For product family characteristic curves, refer to Chapter 4, D2.