

**FAIRCHILD**  
SEMICONDUCTOR™

## FPN330 FPN330A



### NPN Low Saturation Transistor

These devices are designed for high current gain and low saturation voltage with collector currents up to 3.0 A continuous. Sourced from Process NB.

#### Absolute Maximum Ratings\* TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	30	V
V <sub>CBO</sub>	Collector-Base Voltage	50	V
V <sub>EBO</sub>	Emitter-Base Voltage	5.0	V
I <sub>c</sub>	Collector Current - Continuous	3.0	A
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

#### Thermal Characteristics TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		FPN330 / FPN330A	
P <sub>D</sub>	Total Device Dissipation	1.0	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	50	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	125	°C/W

## NPN Low Saturation Transistor

(continued)

### Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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#### OFF CHARACTERISTICS

BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	30		V
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0	50		V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0	5.0		V
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0 V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C		100 10	nA μA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 4.0 V, I <sub>C</sub> = 0		100	nA

#### ON CHARACTERISTICS\*

h <sub>FE</sub>	DC Current Gain	I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 2.0 V I <sub>C</sub> = 1.0 A, V <sub>CE</sub> = 2.0 V I <sub>C</sub> = 2.0 A, V <sub>CE</sub> = 2.0 V	<b>330</b> <b>330A</b>	100 250 120 50	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA I <sub>C</sub> = 2.0 A, I <sub>B</sub> = 200 mA	<b>330</b> <b>330A</b>	500 450 1.0	mV mV V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA		1.25	V
V <sub>BE(on)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 1.0 A, V <sub>CE</sub> = 2.0 V		1.0	V

#### SMALL SIGNAL CHARACTERISTICS

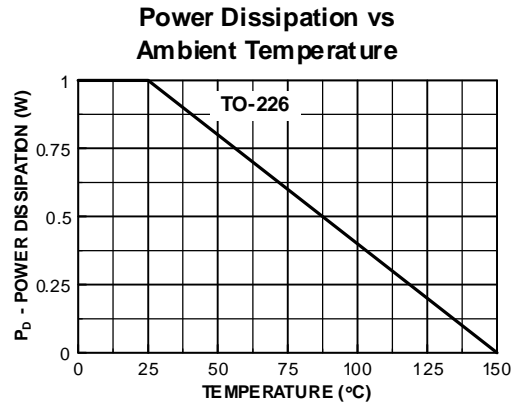
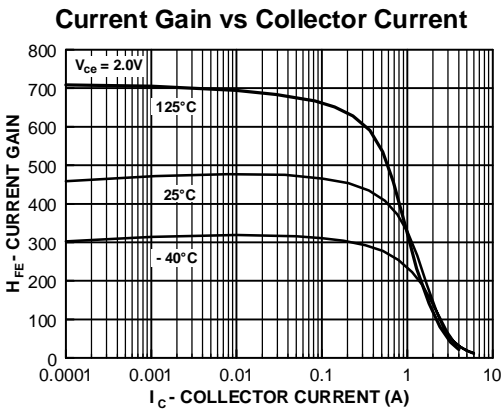
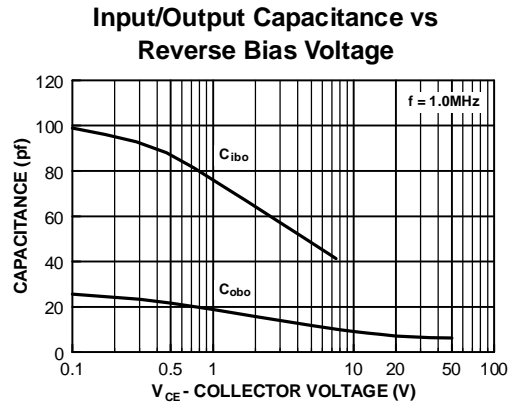
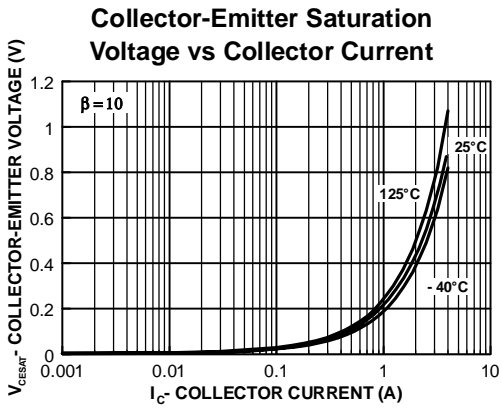
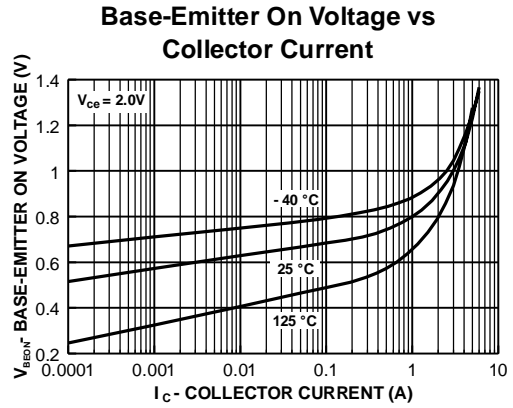
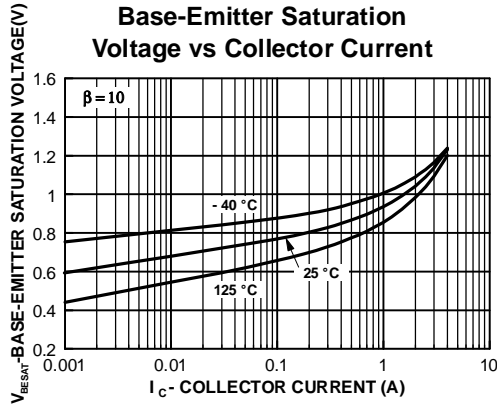
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1.0 MHz		30	pF
F <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 5.0 V, f = 100 MHz	100		MHz

\*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

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**NPN Low Saturation Transistor**  
(continued)

**Typical Characteristics**



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