FAIRCHILD
SEMICONDUCTOR™

FPN330
FPN330A

TO-226

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_{CEO}	Collector-Emitter Voltage	30	V
V_{CBO}	Collector-Base Voltage	50	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	3.0	A
T_J, T_{stg}	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_D	Total Device Dissipation	1.0	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	50	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	125	°C/W

NPN Low Saturation Transistor
(continued)

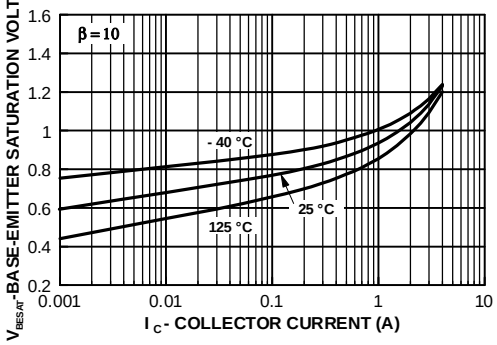
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min	Max	Units
OFF CHARACTERISTICS						
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 10 mA, I_B = 0		30		V
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 100 µA, I_E = 0		50		V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 100 µA, I_C = 0		5.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 30 V, I_E = 0 V_{CB} = 30 V, I_E = 0, T_A = 100°C			100 10	nA µA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 4.0 V, I_C = 0			100	nA
ON CHARACTERISTICS*						
h_{FE}	DC Current Gain	I_C = 100 mA, V_{CE} = 2.0 V	**330** **330A**	100 250		
		I_C = 1.0 A, V_{CE} = 2.0 V		120		
		I_C = 2.0 A, V_{CE} = 2.0 V		50		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 1.0 A, I_B = 100 mA	**330** **330A**		500 450	mV mV
		I_C = 2.0 A, I_B = 200 mA			1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 1.0 A, I_B = 100 mA			1.25	V
$V_{BE(on)}$	Base-Emitter Saturation Voltage	I_C = 1.0 A, V_{CE} = 2.0 V			1.0	V
SMALL SIGNAL CHARACTERISTICS						
C_{obo}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz			30	pF
F_T	Transition Frequency	I_C = 100 mA, V_{CE} = 5.0 V, f = 100 MHz		100		MHz

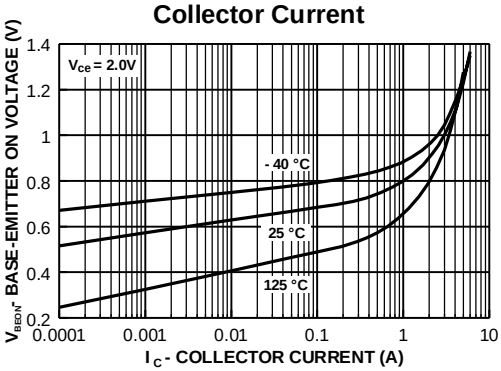
*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%

Typical Characteristics

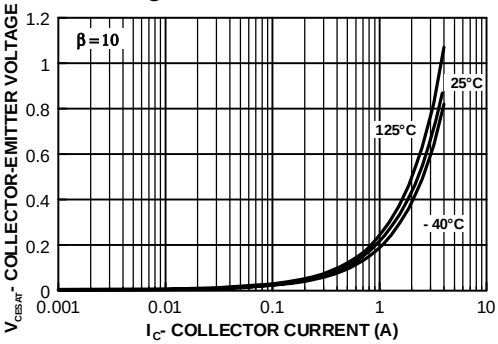
Base-Emitter Saturation Voltage vs Collector Current



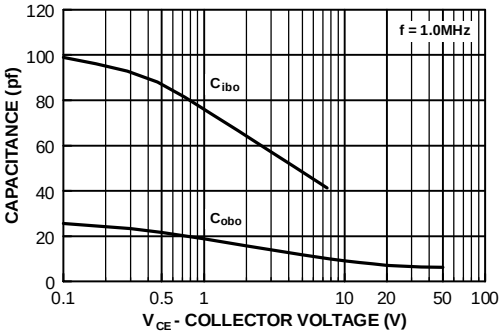
Base-Emitter On Voltage vs Collector Current



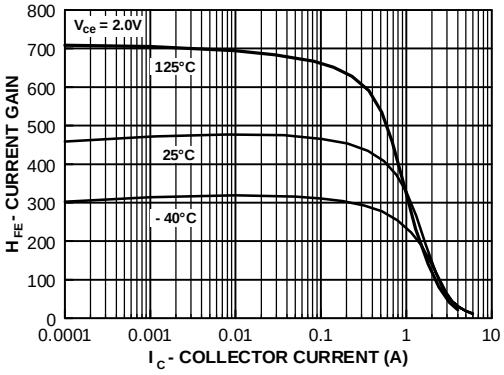
Collector-Emitter Saturation Voltage vs Collector Current



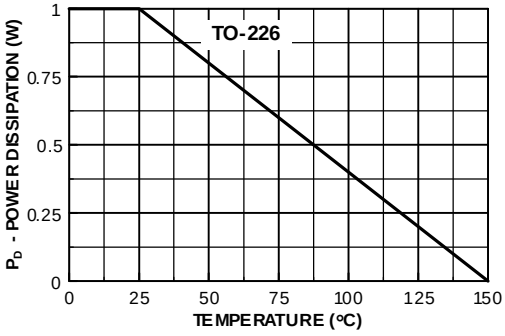
Input/Output Capacitance vs Reverse Bias Voltage



Current Gain vs Collector Current



Power Dissipation vs Ambient Temperature



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