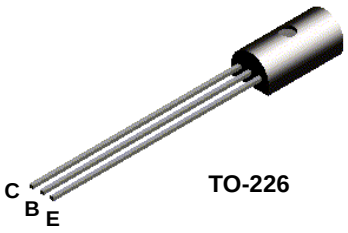
FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

TN3440A



TO-226

NPN General Purpose Amplifier

This device is designed for use in horizontal driver, class A off-line amplifier and off-line switching applications. Sourced from Process 36.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	250	V
V_{CBO}	Collector-Base Voltage	300	V
V_{EBO}	Emitter-Base Voltage	7.0	V
I_C	Collector Current - Continuous	100	mA
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
		TN3440A	
P_D	Total Device Dissipation Derate above 25°C	1.0 8.0	W mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	50	°C/W

NPN General Purpose Amplifier
(continued)

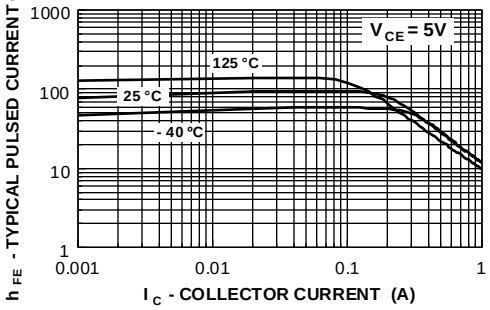
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage*	I_C = 50 mA, I_B = 0	250		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 µA, I_E = 0	300		V
I_{CEO}	Collector-Cutoff Current	V_{CE} = 200 V, I_B = 0		50	µA
I_{CEX}	Collector-Cutoff Current	V_{CE} = 300 V, V_{BE} = 1.5 V		500	µA
I_{CBO}	Collector-Cutoff Current	V_{CB} = 250 V, I_E = 0		20	µA
I_{EBO}	Emitter-Cutoff Current	V_{EB} = 5.0 V, I_C = 0		20	µA
ON CHARACTERISTICS					
h_{FE}	DC Current Gain	I_C = 2.0 mA, V_{CE} = 10 V I_C = 20 mA, V_{CE} = 10 V	30 40	 160	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 50 mA, I_B = 4.0 mA		0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 50 mA, I_B = 4.0 mA		1.3	V
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain - Bandwidth Product	I_C = 10 mA, V_{CE} = 10 V, f = 5.0 MHz	15		MHz
C_{obo}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		10	pF
C_{ibo}	Input Capacitance	V_{BE} = 5.0 V, I_C = 0, f = 1.0 MHz		95	pF
h_{fe}	Small-Signal Current Gain	I_C = 5.0 mA, V_{CE} = 10 V, f = 1.0 kHz	25		

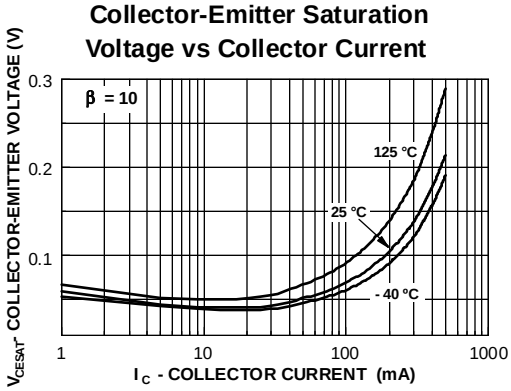
*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 1.0%

DC Typical Characteristics

Typical Pulsed Current Gain vs Collector Current

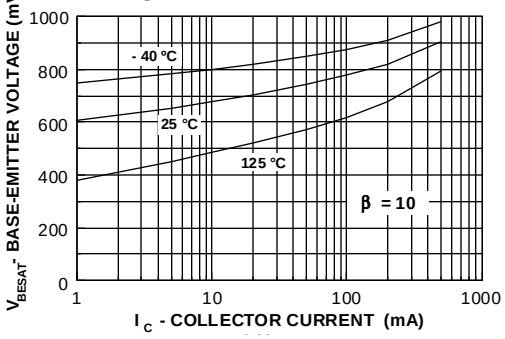


Collector-Emitter Saturation Voltage vs Collector Current

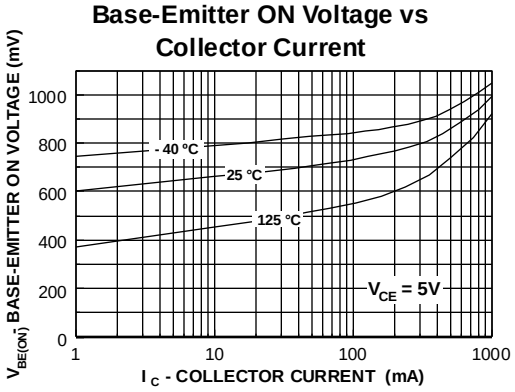


DC Typical Characteristics (continued)

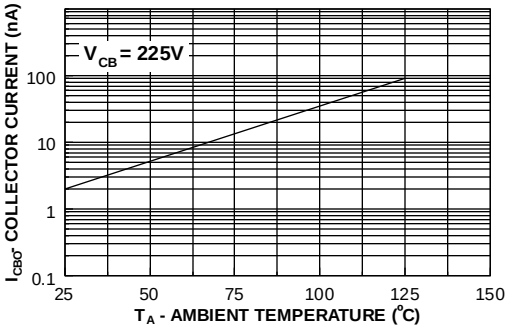
Base-Emitter Saturation Voltage vs Collector Current



Base-Emitter ON Voltage vs Collector Current

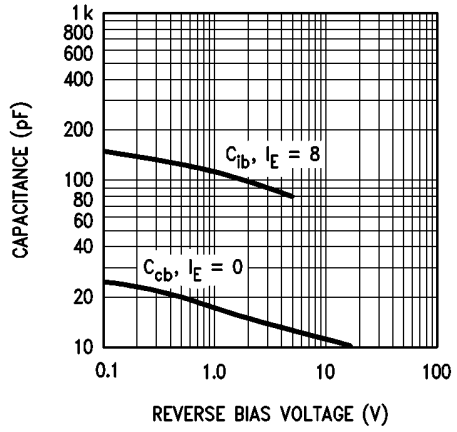


Collector-Cutoff Current vs Ambient Temperature

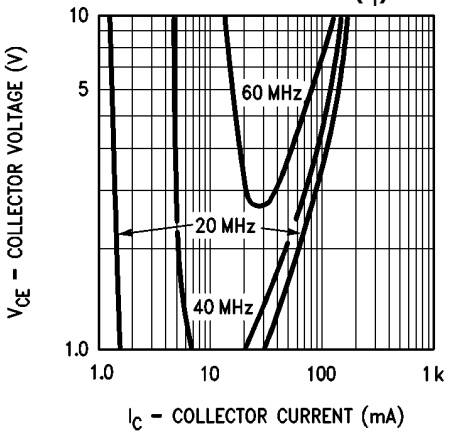


AC Typical Characteristics

Collector-Base / Emitter-Base Capacitance vs. Reverse Bias Voltage

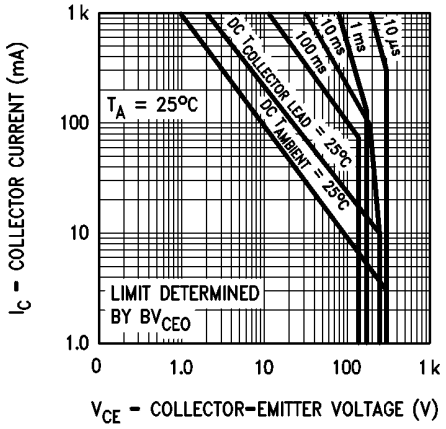


Contours of Constant Gain Bandwidth Product (f_T)



AC Typical Characteristics (continued)

Safe Operating Area TO-226



POWER DISSIPATION vs AMBIENT TEMPERATURE