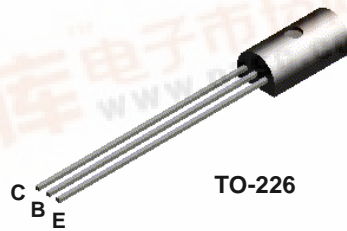




Discrete POWER & Signal Technologies

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	W
		8.0	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125	°C/W
R _{θJA}	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
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OFF CHARACTERISTICS

$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage*	$I_C = 50 \text{ mA}, I_B = 0$	250		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \text{ } \mu\text{A}, I_E = 0$	300		V
I_{CEO}	Collector-Cutoff Current	$V_{CE} = 200 \text{ V}, I_B = 0$		50	μA
I_{CEX}	Collector-Cutoff Current	$V_{CE} = 300 \text{ V}, V_{BE} = 1.5 \text{ V}$		500	μA
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 250 \text{ V}, I_E = 0$		20	μA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 5.0 \text{ V}, I_C = 0$		20	μA

ON CHARACTERISTICS

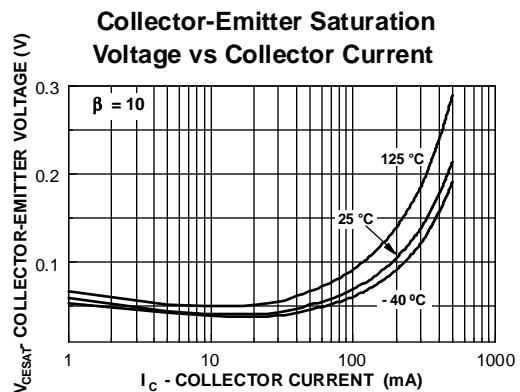
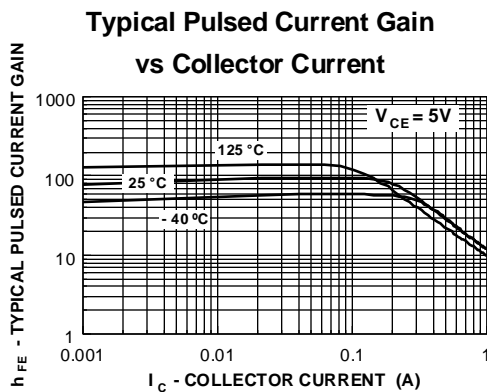
h_{FE}	DC Current Gain	$I_C = 2.0 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 20 \text{ mA}, V_{CE} = 10 \text{ V}$	30 40	160	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 50 \text{ mA}, I_B = 4.0 \text{ mA}$		0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 50 \text{ mA}, I_B = 4.0 \text{ mA}$		1.3	V

SMALL SIGNAL CHARACTERISTICS

f_T	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 5.0 \text{ MHz}$	15		MHz
C_{obo}	Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$		10	pF
C_{ibo}	Input Capacitance	$V_{BE} = 5.0 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$		95	pF
h_{fe}	Small-Signal Current Gain	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 1.0 \text{ kHz}$	25		

*Pulse Test: Pulse Width $\leq 300 \text{ } \mu\text{s}$, Duty Cycle $\leq 1.0\%$

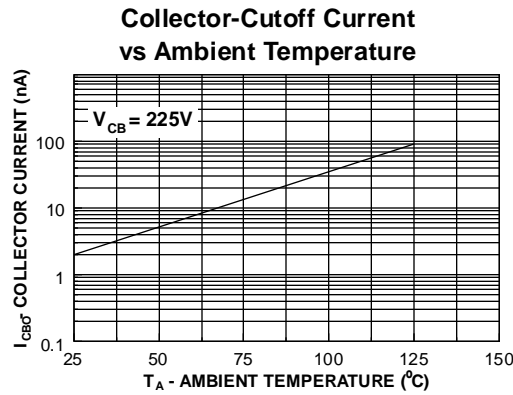
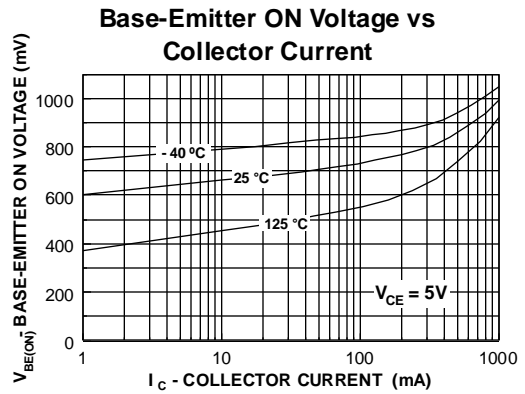
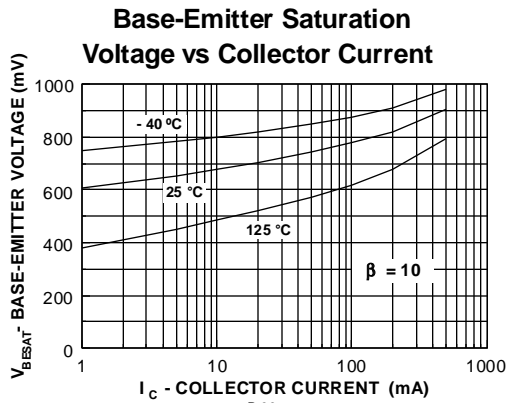
DC Typical Characteristics



NPN General Purpose Amplifier

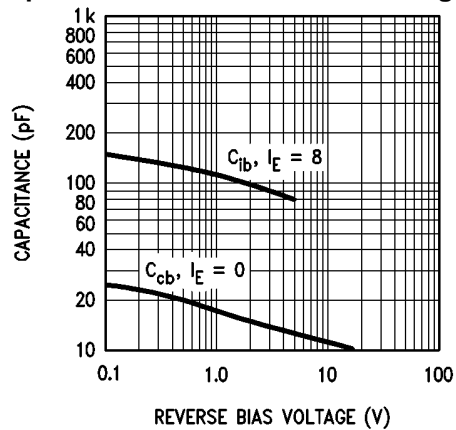
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DC Typical Characteristics (continued)

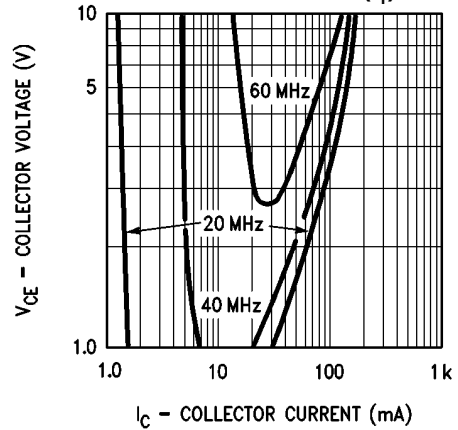


AC Typical Characteristics

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



Contours of Constant Gain Bandwidth Product (f_T)



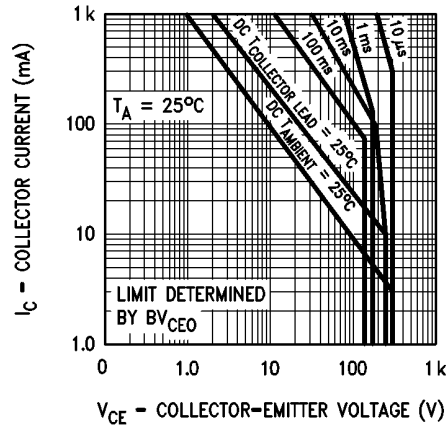
NPN General Purpose Amplifier

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TN3440A

AC Typical Characteristics (continued)

Safe Operating Area TO-226



POWER DISSIPATION vs AMBIENT TEMPERATURE

