

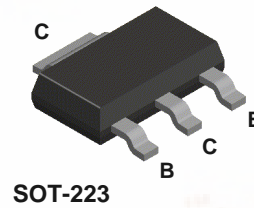


Discrete POWER & Signal Technologies

## TN6717A



## NZT6717



### NPN General Purpose Amplifier

This device is designed for general purpose medium power amplifiers and switches requiring collector currents to 1.0 A. Sourced from Process 39.

#### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	80	V
V <sub>CBO</sub>	Collector-Base Voltage	80	V
V <sub>EBO</sub>	Emitter-Base Voltage	5.0	V
I <sub>C</sub>	Collector Current - Continuous	1.2	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
		TN6717A	*NZT6717	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	1.0	1.0	W
		8.0	8.0	
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	50		°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	125	125	°C/W

\*Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.

## NPN General Purpose Amplifier

(continued)

### Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
<b>OFF CHARACTERISTICS</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 1.0 \text{ mA}, I_B = 0$	80		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \text{ } \mu\text{A}, I_E = 0$	80		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \text{ } \mu\text{A}, I_C = 0$	5.0		V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 60 \text{ V}, I_E = 0$		0.1	$\mu\text{A}$
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 5.0 \text{ V}, I_C = 0$		0.1	$\mu\text{A}$

### ON CHARACTERISTICS\*

$h_{FE}$	DC Current Gain	$I_C = 50 \text{ mA}, V_{CE} = 1.0 \text{ V}$ $I_C = 250 \text{ mA}, V_{CE} = 1.0 \text{ V}$	80 50	250	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 250 \text{ mA}, I_B = 100 \text{ mA}$		0.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 250 \text{ mA}, V_{CE} = 1.0 \text{ V}$		1.2	V

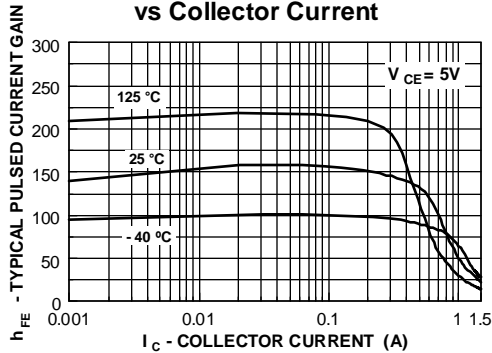
### SMALL SIGNAL CHARACTERISTICS

$h_{fe}$	Small-Signal Current Gain	$I_C = 200 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 20 \text{ MHz}$	2.5	25	
$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$		30	pF

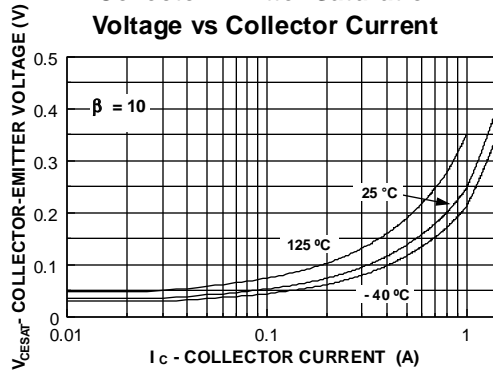
\*Pulse Test: Pulse Width  $\leq 300 \text{ } \mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

## Typical Characteristics

**Typical Pulsed Current Gain vs Collector Current**



**Collector-Emitter Saturation Voltage vs Collector Current**



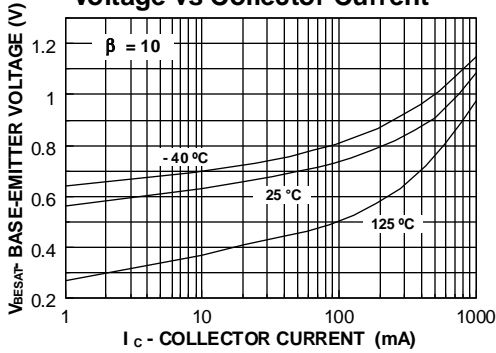
# NPN General Purpose Amplifier

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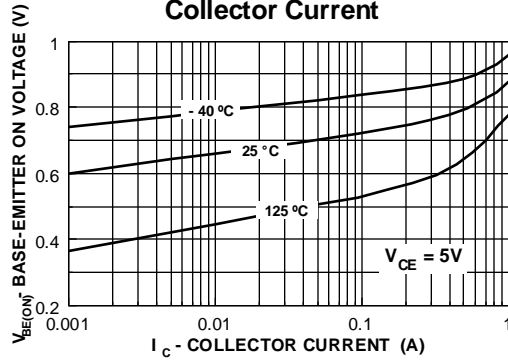
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## Typical Characteristics (continued)

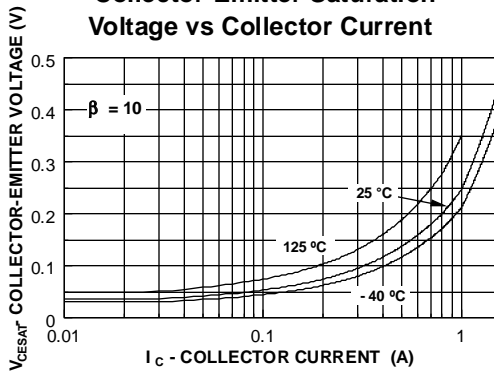
**Base-Emitter Saturation Voltage vs Collector Current**



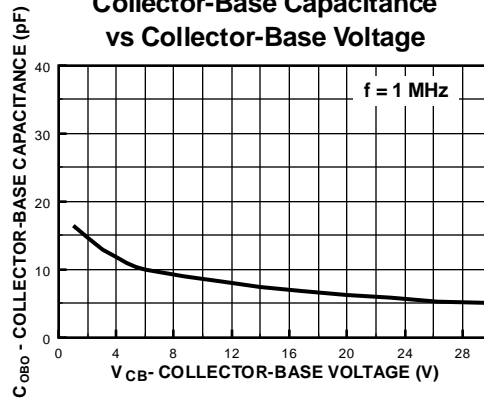
**Base-Emitter ON Voltage vs Collector Current**



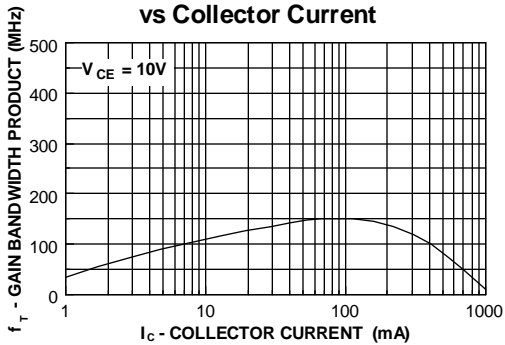
**Collector-Emitter Saturation Voltage vs Collector Current**



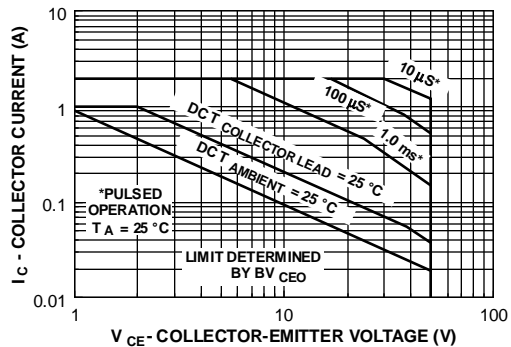
**Collector-Base Capacitance vs Collector-Base Voltage**



**Gain Bandwidth Product vs Collector Current**



**Safe Operating Area TO-226**



**NPN General Purpose Amplifier**  
(continued)

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**Typical Characteristics** (continued)

