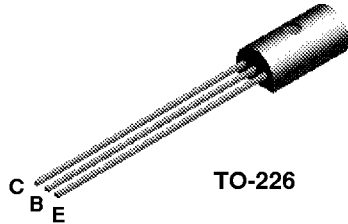
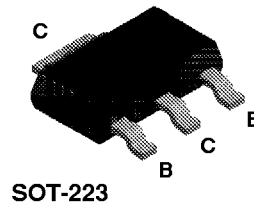


**TN6717A**



**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<br>Derate above 25°C | 1.0     | 1.0      | W     |
|                  |   | 8.0     | 8.0      | mW/°C |
| 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)

TN6717A / NZT6717

## Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|--------|-----------|-----------------|-----|-----|-------|
|--------|-----------|-----------------|-----|-----|-------|

### OFF CHARACTERISTICS

|               |                                      |   |     |     |               |
|---------------|--------------------------------------|---|-----|-----|---------------|
| $V_{(BR)CEO}$ | 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                      | $I_C = 50 \text{ mA}, V_{CE} = 1.0 \text{ V}$<br>$I_C = 250 \text{ mA}, V_{CE} = 1.0 \text{ V}$ | 80<br>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 |

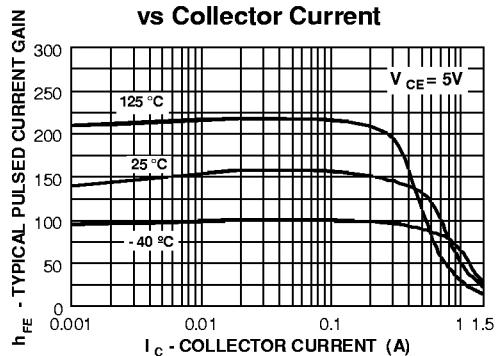
### SMALL SIGNAL CHARACTERISTICS

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

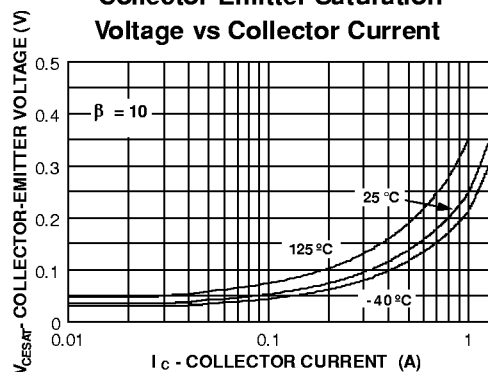
\*Pulse Test: Pulse Width  $\leq 300 \text{ } \mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

## Typical Characteristics

Typical Pulsed Current Gain vs Collector Current



Collector-Emitter Saturation Voltage vs Collector Current



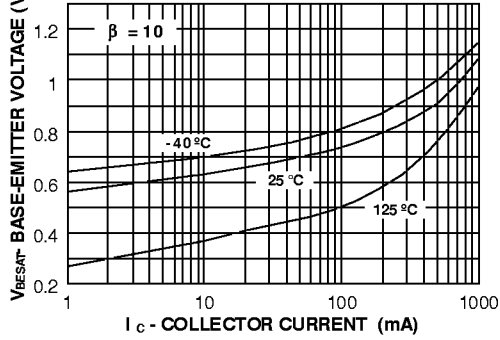
# NPN General Purpose Amplifier

(continued)

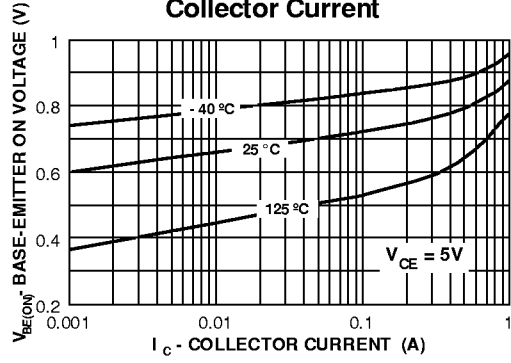
TN6717A / NZT6717

## Typical Characteristics (continued)

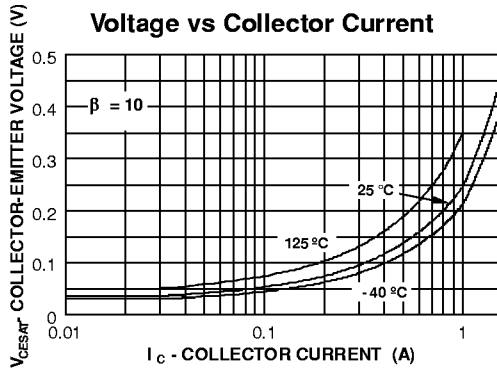
**Base-Emitter Saturation Voltage vs Collector Current**



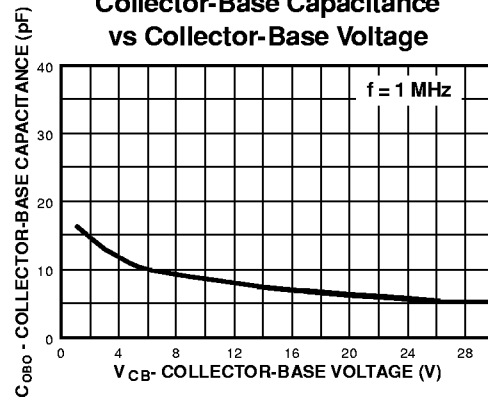
**Base-Emitter ON Voltage vs Collector Current**



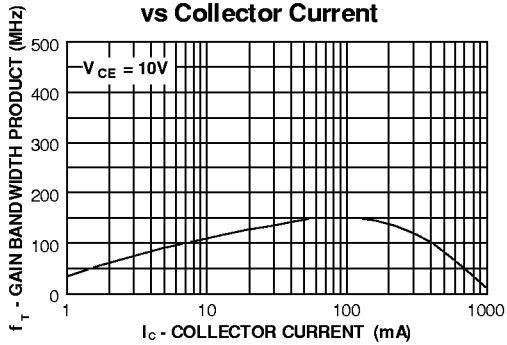
**Collector-Emitter Saturation Voltage vs Collector Current**



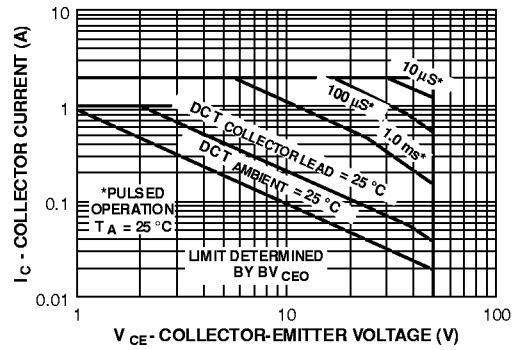
**Collector-Base Capacitance vs Collector-Base Voltage**



**Gain Bandwidth Product vs Collector Current**



**Safe Operating Area TO-226**



Typical Characteristics (continued)

