FAIRCHILD SEMICONDUCTOR®

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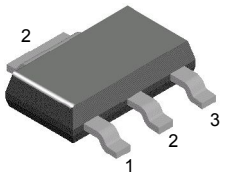
# NZT560/NZT560A
# NPN Low Saturation Transistor

## Features

- These devices are designed with high current gain and low saturation voltage with collector currents up to 3A continuous.




1. Base 2. Collector 3. Emitter

## Absolute Maximum Ratings $T_A$=25°C unless otherwise noted

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 80 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5 | V |
| $I_C$ | Collector Current | 3 | A |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | - 55 ~ +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°C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Thermal Characteristics $T_A$=25°C unless otherwise noted

| Symbol | Parameter | Max. | | Units |
|---|---|---|---|---|
| | | NZT560 | NZT560A | |
| $P_D$ | Total Device Dissipation | 1 | | W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 125 | | °C/W |

## Electrical Characteristics $T_a$=25×C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$ = 10mA | 60 | | | V |
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 100μA | 80 | | | V |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 100μA | 5 | | | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$ = 30V<br>$V_{CB}$ = 30V, $T_A$ = 100°C | | | 100<br>10 | nA<br>μA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$ = 4V | | | 100 | nA |
| **On Characteristics *** | | | | | | |
| $h_{FE}$ | DC Current Gain | $I_C$ = 100mA, $V_{CE}$ = 2V<br>$I_C$ = 500mA, $V_{CE}$ = 2V NZT560<br>NZT560A<br>$I_C$ = 1A, $V_{CE}$ = 2V<br>$I_C$ = 3A, $V_{CE}$ = 2V | 70<br>100<br>250<br>80<br>25 | | <br>300<br>550 | |
| $V_{CE}$(sat) | Collector-Emitter Saturation Voltage | $I_C$ = 1A, $I_B$ = 100mA<br>$I_C$ = 3A, $I_B$ = 300mA NZT560<br>NZT560A | | | 300<br>450<br>400 | mV<br>mV<br>mV |
| $V_{BE}$(sat) | Base-Emitter Saturation Voltage | $I_C$ = 1A, $I_B$ = 100mA | | | 1.25 | V |
| $V_{BE}$(on) | Base-Emitter On Voltage | $I_C$ = 1A, $V_{CE}$ = 2V | | | 1 | V |
| **Small Signal Characteristics** | | | | | | |
| $C_{obo}$ | Output Capacitance | $V_{CB}$ = 10V, $I_E$ = 0, f = 1MHz | | | 30 | pF |
| $f_T$ | Transition Frequency | $I_C$ = 100mA, $V_{CE}$ = 5V, f = 100MHz | 75 | | | MHz |

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

## Typical Performance Characteristics

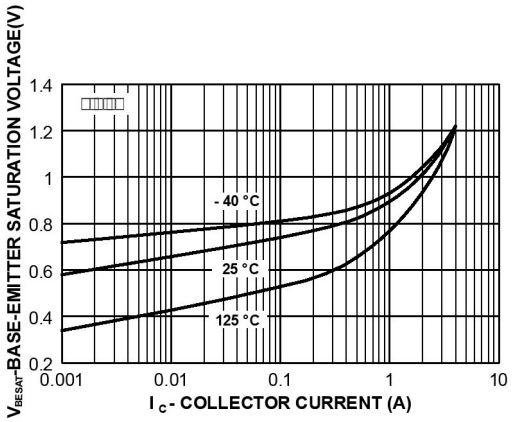



**Figure 1. Base-Emitter Saturation Voltage vs Collector Current**

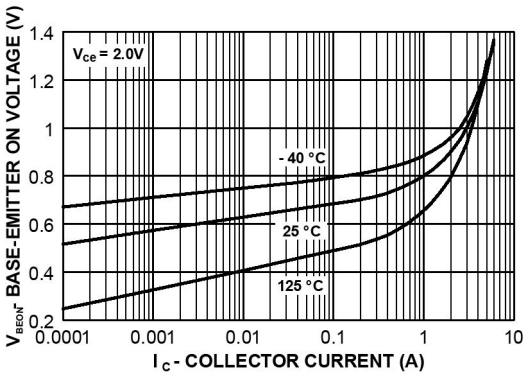



**Figure 2. Base-Emitter On Voltag vs Collector Current**

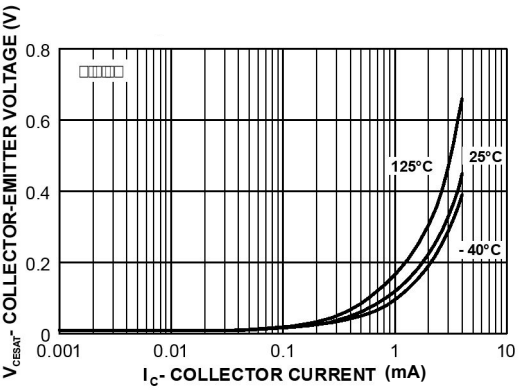



**Figure 3. Collector-Emitter Saturation Voltage vs Collector Current**

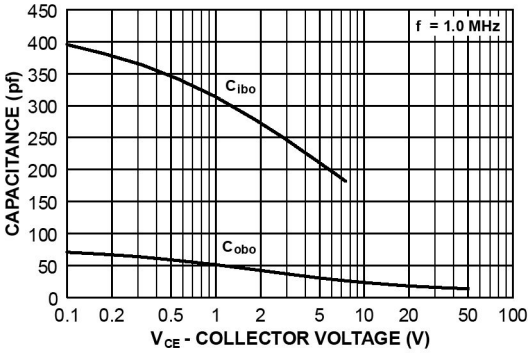



**Figure 4. Input/Output Capacitance vs Reverse Bias Voltage**

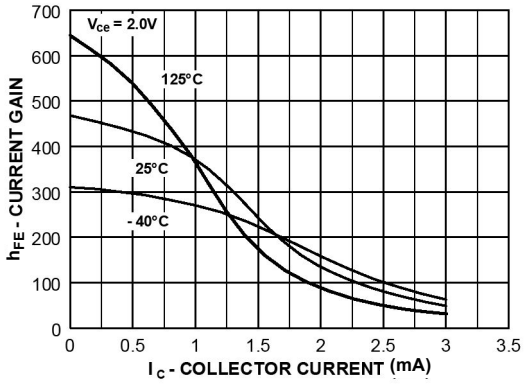
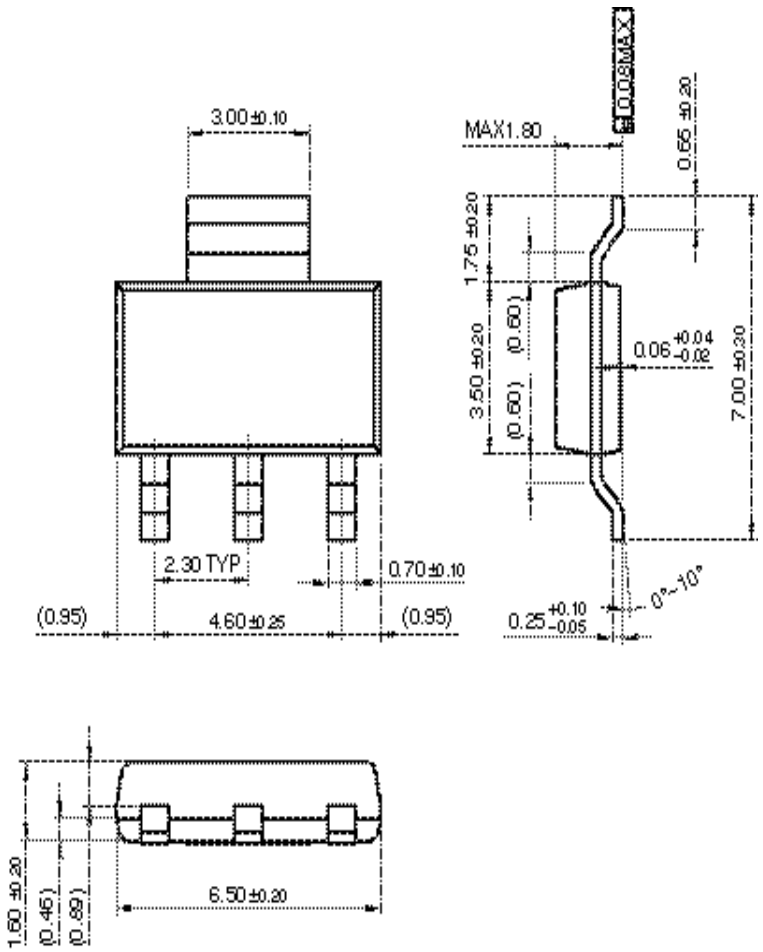



**Figure 5. Current Gain vs Collector Current**

## Package Dimensions

SOT-223




Dimensions in Millimeters

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