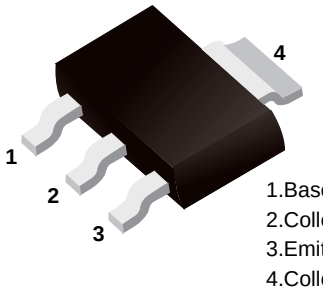
## NPN Low Saturation Transistor

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
4.Collector

SOT-223

### Features

- High collector current
- Low collector-emitter saturation voltage
- Complementary types: NZT660/NZT660A

### Absolute Maximum Ratings (Ta=25℃)

| Parameter | Symbol | NZT560/NZT560A | Unit |
|---|---|---|---|
| Collector-Base Voltage | $BV_{CBO}$ | 80 | V |
| Collector-Emitter Voltage | $BV_{CEO}$ | 60 | V |
| Emitter-Base Voltage | $BV_{EBO}$ | 5 | V |
| Collector Current | $I_C$ | 3 | A |
| Collector Power Dissipation | $P_C$ | 1 | W |
| Junction Temperature | Tj | 150 | ℃ |
| Storage Temperature | Tstg | -55～+150 | ℃ |

### Electrical Characteristics (Ta=25℃)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | $I_C$ = 100μA, $I_E$ = 0 | 80 | | | V |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | $I_C$ = 10mA, $I_B$ = 0 | 60 | | | V |
| Emitter-base breakdown voltage | $BV_{EBO}$ | $I_E$ = 100μA, $I_C$ = 0 | 5 | | | V |
| Collector-base cut-off current | $I_{CBO}$ | $V_{CB}$ = 30V, $I_E$ = 0 | | | 100 | nA |
| Emitter-base cut-off current | $I_{EBO}$ | $V_{EB}$ = 4V, $I_C$ = 0 | | | 100 | nA |
| DC current gain* | $h_{FE}(1)$ | $V_{CE}$ = 2V, $I_C$= 10mA | 70 | | | |
| | $h_{FE}(2)$ | $V_{CE}$ = 2V, $I_C$= 500mA | 100 | | 560 | |
| | $h_{FE}(3)$ | $V_{CE}$ = 2V, $I_C$= 1A | 80 | | | |
| | $h_{FE}(4)$ | $V_{CE}$ = 2V, $I_C$= 3A | 25 | | | |
| Collector-emitter saturation voltage* | $V_{CE(sat)}$ | $I_C$ = 1A, $I_B$ = 100mA<br>$I_C$ = 3A, $I_B$ = 300mA | | | 0.3<br>0.4 | V |
| Base-emitter On Voltage* | $V_{BE(on)}$ | $V_{CE}$ = 2V, $I_C$= 1A | | | 1 | V |
| Transition Frequency | $f_T$ | $V_{CE}$ = 5V, $I_C$= 100mA | 75 | | | MHZ |
| Output Capacitance | $C_{ob}$ | $V_{CE}$ =10V, $I_E$=0, f=1MHz | | | 30 | pF |

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

### $h_{FE}$ (2) Classification

| Classification | NZT560 | NZT560A |
|---|---|---|
| Range | 100~300 | 250~550 |

## Thermal Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Junction to Ambie | $R_{\theta JA}$ | | | 125 | | ℃/W |

## Typical Characteristics

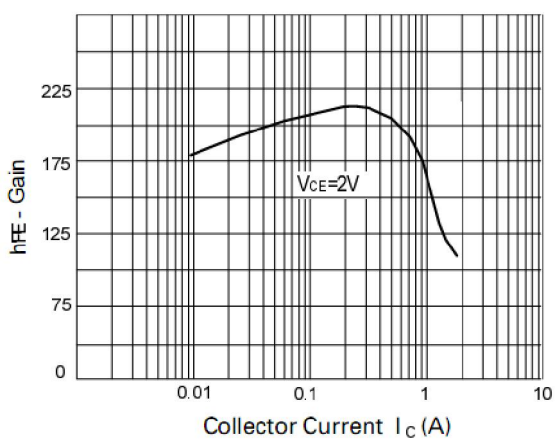



Figure 1. DC current Gain

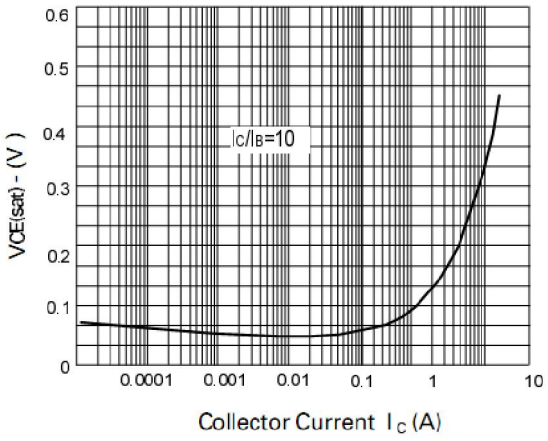



Figure 2. Collector-Emitter Saturation Voltage

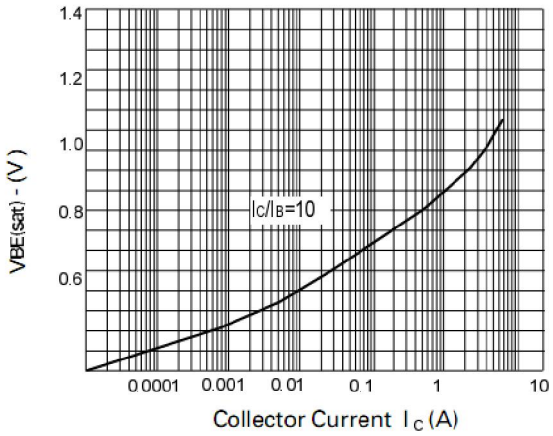



Figure 3. Base-Emitter Saturation Voltage

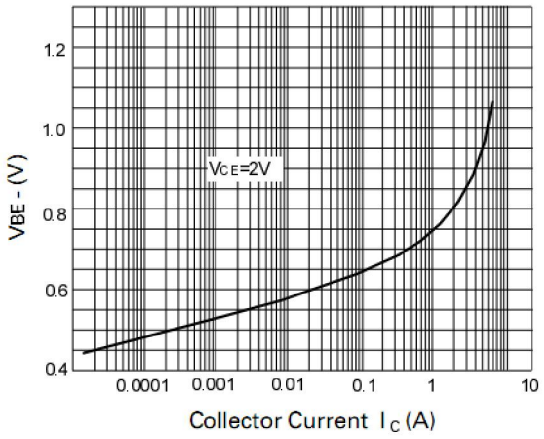



Figure 4. Base-Emitter on Voltage

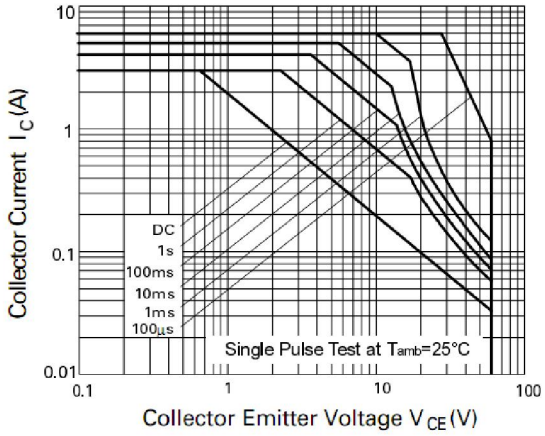


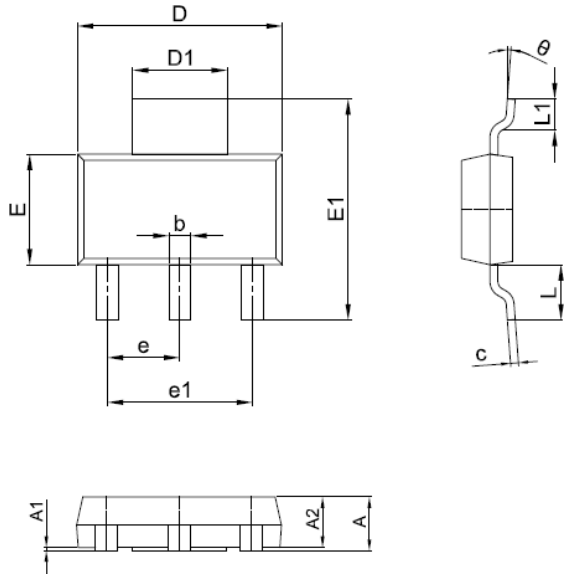

Figure 5. Safe Operating Area

## Ordering information

| Package | Packing Description | Base Quantity | Packing Quantity |
|---|---|---|---|
| SOT-223 | Tape/Reel,7”reel | 1000pcs/Reel | 6000PCS/Box 30000PCS/Carton |
| | Tape/Reel,13”reel | 2500pcs/Reel | 5000PCS/Box 30000PCS/Carton |

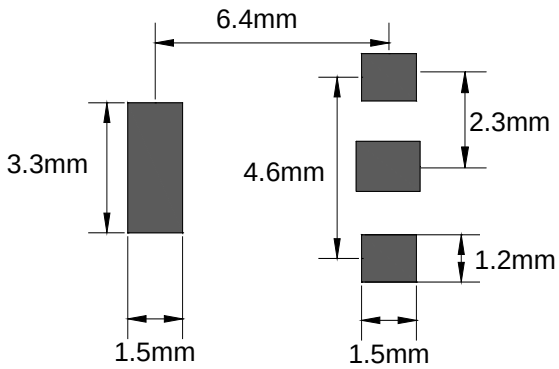
## Package Dimensions

**SOT-223**




| Dim | Millimeter | | Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.50 | 1.80 | 0.059 | 0.071 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 1.50 | 1.70 | 0.059 | 0.067 |
| b | 0.65 | 0.75 | 0.026 | 0.030 |
| c | 0.20 | 0.30 | 0.008 | 0.012 |
| D | 6.40 | 6.60 | 0.252 | 0.260 |
| D1 | 2.90 | 3.10 | 0.114 | 0.122 |
| E | 3.30 | 3.70 | 0.130 | 0.146 |
| E1 | 6.85 | 7.15 | 0.270 | 0.281 |
| e | 2.20 | 2.40 | 0.087 | 0.094 |
| e1 | 4.40 | 4.80 | 0.173 | 0.189 |
| L | 1.65 | 1.85 | 0.065 | 0.073 |
| L1 | 0.90 | 1.15 | 0.035 | 0.045 |

## The recommended mounting pad size



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