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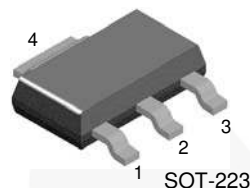
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# NZT660 / NZT660A

## PNP Low Saturation Transistor

### Description

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



1. Base 2,4. Collector 3. Emitter

### Ordering Information

Part Number	Marking	Package	Packing Method
NZT660	660	SOT-223 4L	Tape and Reel
NZT660A	660A	SOT-223 4L	Tape and Reel

### Absolute Maximum Ratings<sup>(1),(2)</sup>

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value		Unit
		NZT660	NZT660A	
$V_{CEO}$	Collector-Emitter Voltage	-60	-60	V
$V_{CBO}$	Collector-Base Voltage	-80	-60	V
$V_{EBO}$	Emitter-Base Voltage	-5	-5	V
$I_C$	Collector Current - Continuous	-3	-3	A
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	-55 to +150	$^\circ\text{C}$

#### Notes:

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. These are steady state limits. Fairchild Semiconductor should be consulted on application involving pulsed or low-duty cycle operation.

### Thermal Characteristics<sup>(3)</sup>

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Max.	Unit
$P_D$	Total Device Dissipation	2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C/W}$

**Note:**

3. PCB size: FR-4 76 x 114 x 1.57 mm<sup>3</sup> (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

### Electrical Characteristics

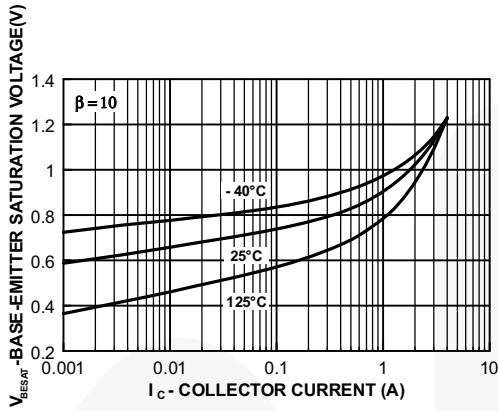
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit	
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10\text{ mA}$	-60		V	
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -100\ \mu\text{A}$	NZT660 -80		V	
			NZT660A -60			
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -100\ \mu\text{A}$	-5		V	
$I_{CBO}$	Collector-Base Cut-Off Current	$V_{CB} = -30\text{ V}$		-100	nA	
		$V_{CB} = -30\text{ V}, T_A = 100^\circ\text{C}$		-10	$\mu\text{A}$	
$I_{EBO}$	Emitter-Base Cut-Off Current	$V_{EB} = -4\text{ V}$		-100	nA	
$h_{FE}$	DC Current Gain <sup>(4)</sup>	$I_C = -100\text{ mA}, V_{CE} = -2\text{ V}$		70		
		$I_C = -500\text{ mA}, V_{CE} = -2\text{ V}$	NZT660	100		300
			NZT660A	250		550
		$I_C = -1\text{ A}, V_{CE} = -2\text{ V}$		80		
		$I_C = -3\text{ A}, V_{CE} = -2\text{ V}$		25		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage <sup>(4)</sup>	$I_C = -1\text{ A}, I_B = -100\text{ mV}$		-300	mV	
		$I_C = -3\text{ A}, I_B = -300\text{ mV}$	NZT660	-550		
			NZT660A	-500		
$V_{BE(sat)}$	Base-Emitter Saturation Voltage <sup>(4)</sup>	$I_C = -1\text{ A}, I_B = -100\text{ mV}$		-1.25	V	
$V_{BE(on)}$	Base-Emitter On Voltage <sup>(4)</sup>	$I_C = -1\text{ A}, V_{CE} = -2\text{ V}$		-1	V	
$C_{ob}$	Output Capacitance	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$		45	pF	
$f_T$	Transition Frequency	$I_C = -100\text{ mA}, V_{CE} = -5\text{ V}, f = 100\text{ MHz}$	75		MHz	

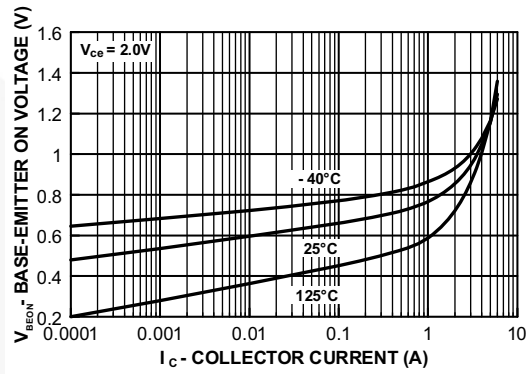
**Note:**

4. Pulse test: pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2.0\%$ .

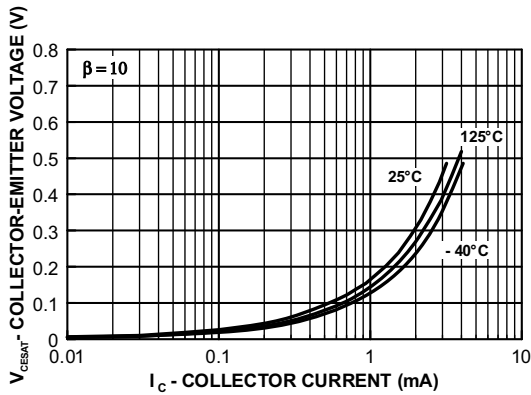
## Typical Performance Characteristics



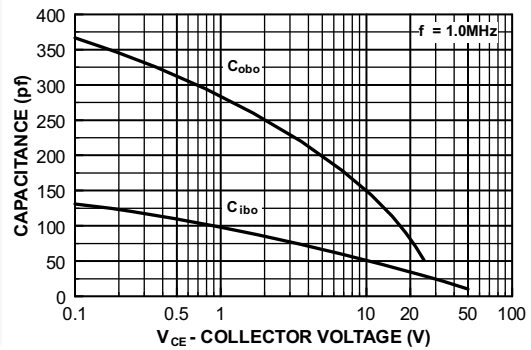
**Figure 1. Base-Emitter Saturation Voltage vs. Collector Current**



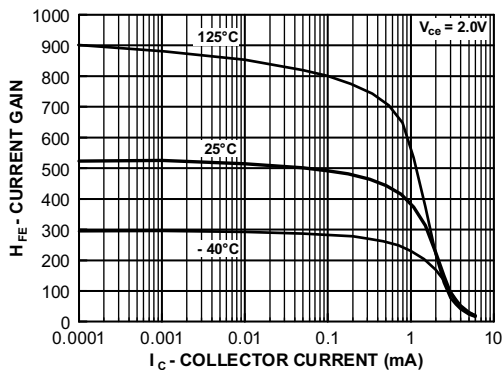
**Figure 2. Base-Emitter On Voltage vs. Collector Current**



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



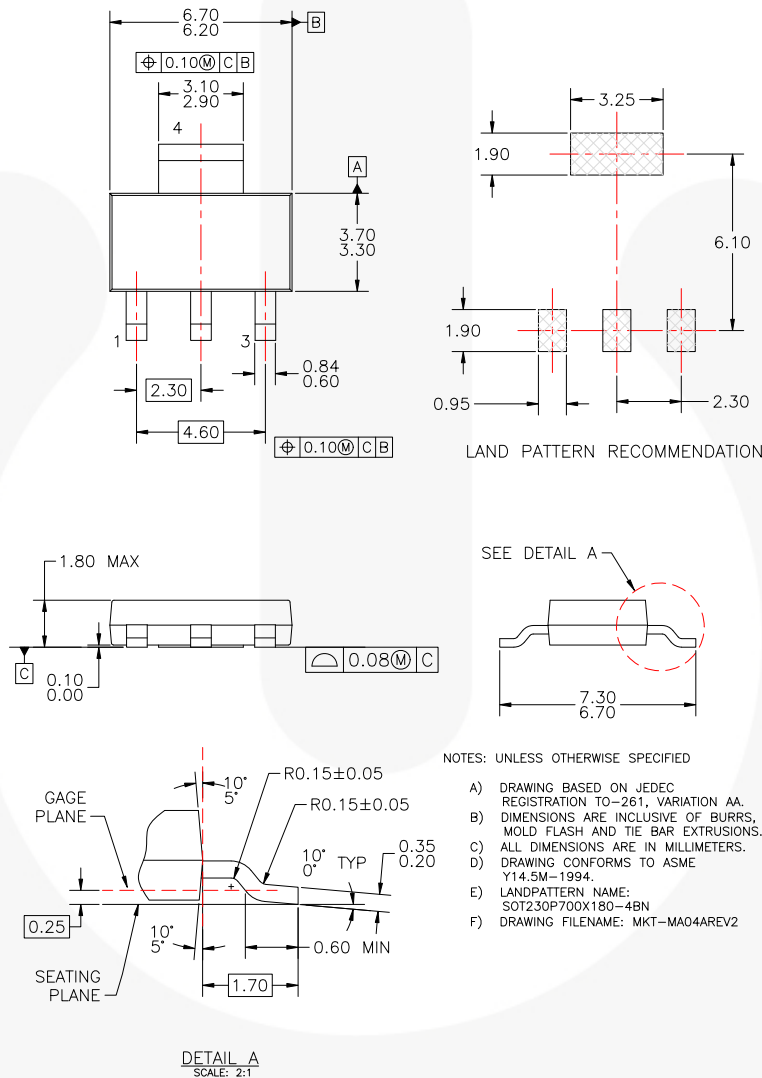
**Figure 4. Input / Output Capacitance vs. Reverse Bias Voltage**



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

**Physical Dimensions**

**SOT-223**



**Figure 6. MOLDED PACKAGE, SOT-223, 4 LEAD (ACTIVE)**

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