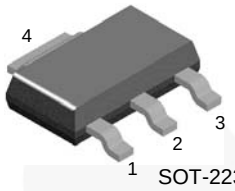
FAIRCHILD SEMICONDUCTOR®

January 2014

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.



SOT-223

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(1),(2)

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 Values are at T_A = 25°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	°C

Notes:

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

Thermal Characteristics[3]

Values are at T_A = 25°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	°C/W

Note:

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

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

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

Note:

4. Pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%.

Typical Performance Characteristics

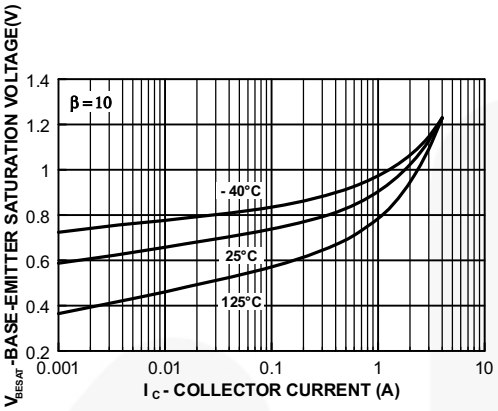


Figure 1. Base-Emitter Saturation Voltage vs. Collector Current

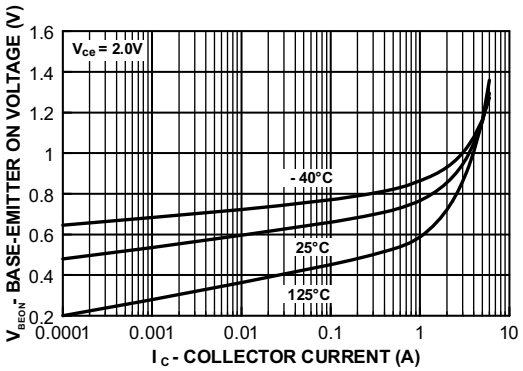


Figure 2. Base-Emitter On Voltage vs. Collector Current

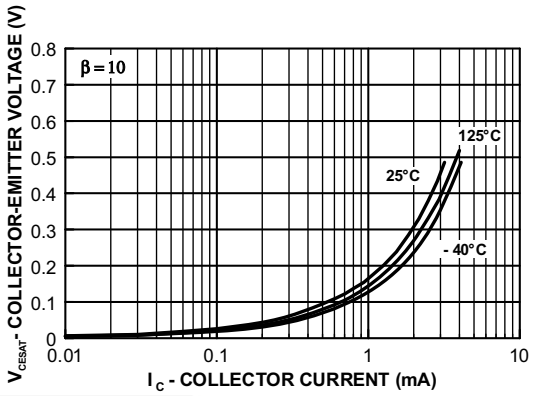


Figure 3. Collector-Emitter Saturation Voltage vs. Collector Current

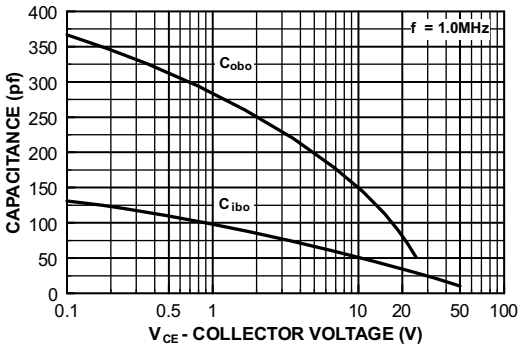


Figure 4. Input / Output Capacitance vs. Reverse Bias Voltage

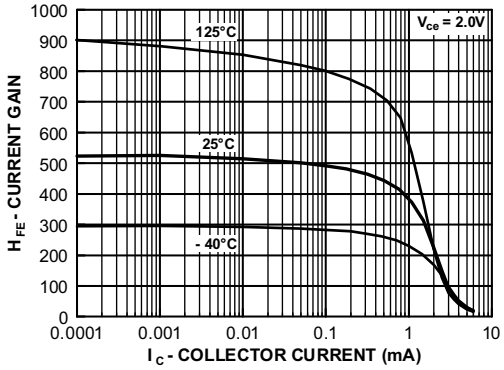


Figure 5. Current Gain vs. Collector Current

Physical Dimensions

SOT-223

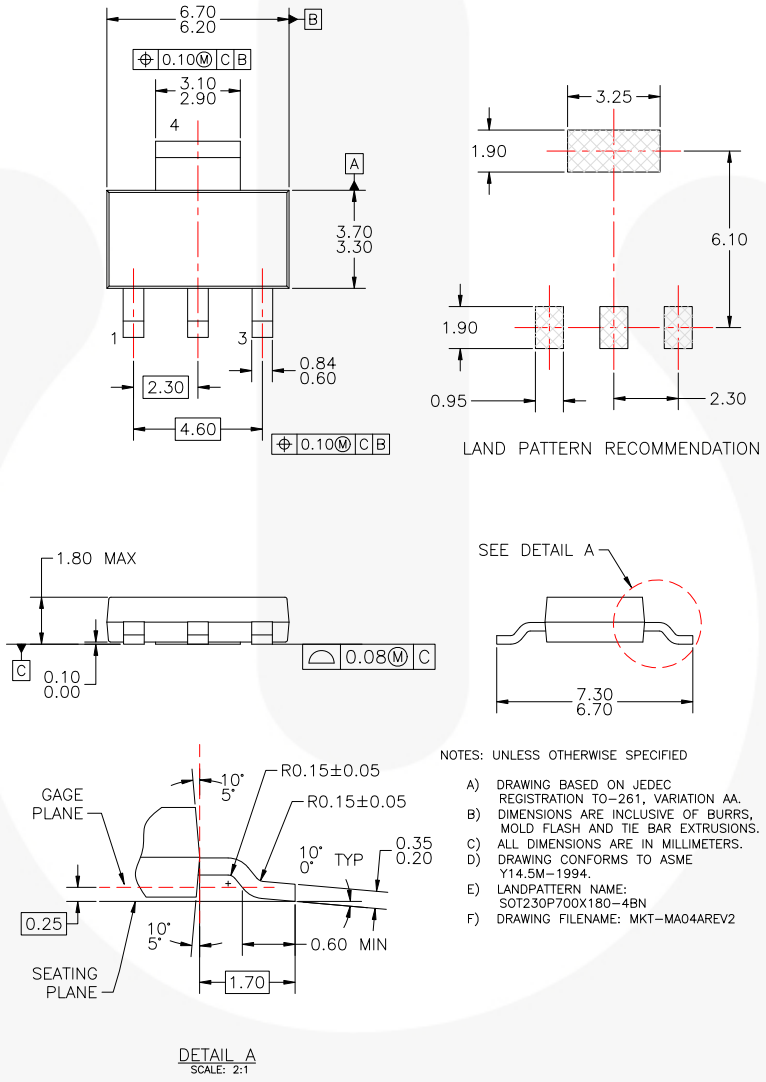


Figure 6. MOLDED PACKAGE, SOT-223, 4 LEAD (ACTIVE)

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