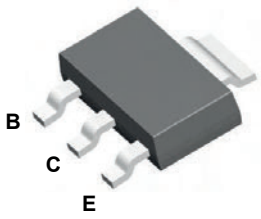
GOOD-ARK
SEMICONDUCTOR

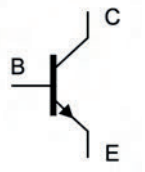
PZT3904
NPN Transistor

Features

- Low voltage and low current
- Complementary to PZT3906
- General purpose amplifier and switch application



SOT-223



Schematic Diagram

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	1	W
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	125	°C/W
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=0.01mA, I_E=0	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, I_B=0	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=0.01mA, I_C=0	6	-	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB}=30V, I_E=0	-	-	50	nA
Collector Cut-Off Current	I_{CEX}	V_{CE}=30V, V_{EB}=3V	-	-	50	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=5V, I_C=0	-	-	50	nA
DC Current Gain	$h_{FE(1)}$	V_{CE}=1V, I_C=0.1mA	40	-	-	-
	$h_{FE(2)}$	V_{CE}=1V, I_C=1mA	70	-	-	-
	$h_{FE(3)}$	V_{CE}=1V, I_C=10mA	100	-	300	-
	$h_{FE(4)}$	V_{CE}=1V, I_C=50mA	60	-	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=10mA, I_B=1mA	-	-	0.2	V
		I_C=50mA, I_B=5mA	-	-	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=10mA, I_B=1mA	0.65	-	0.85	V
		I_C=50mA, I_B=5mA	-	-	0.95	V
Transition Frequency	f_T	V_{CE}=20V, I_C=10mA, F=100MHz	300	-	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=5V, I_E=0, F=1MHz	-	-	4	pF
Delay Time	t_d	V_{CC}=3V, $V_{BE(off)}$=0.5V, I_C=10mA, I_{B1}=-I_{B2}=1mA	-	-	35	nS
Rise Time	t_r		-	-	35	
Storage Time	t_s	V_{CC}=3V, I_C=10mA, I_{B1}=-I_{B2}=1mA	-	-	200	nS
Fall Time	t_f		-	-	50	

Typical Electrical Characteristic Curves

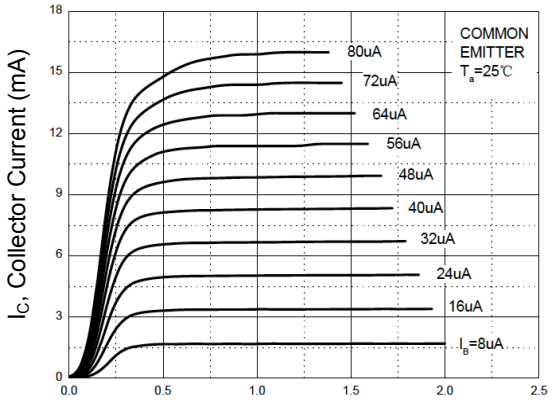


Figure 1. Static Characteristic

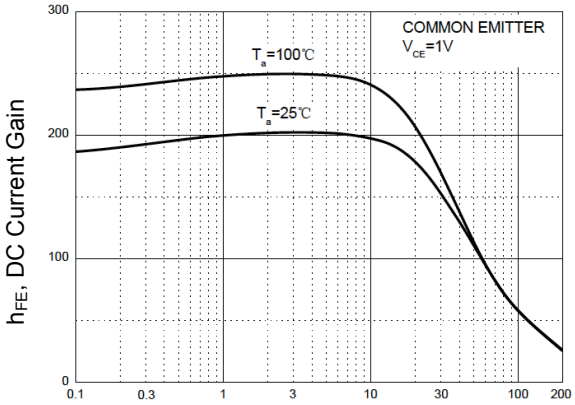


Figure 2. h_{FE} — I_C

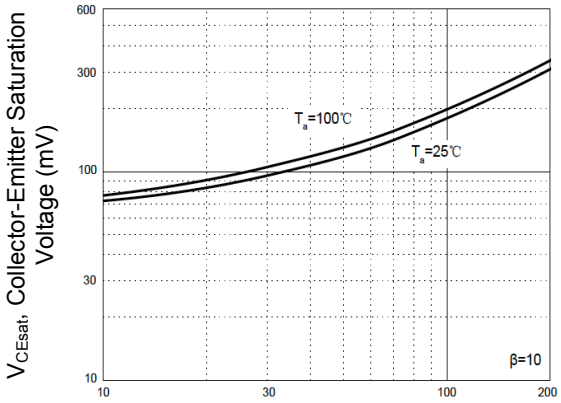


Figure 3. V_{CEsat} — I_C

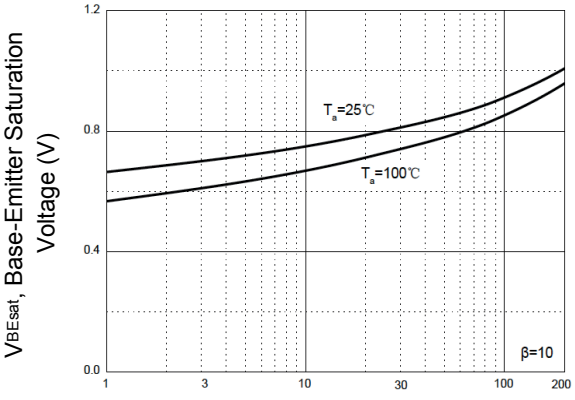


Figure 4. V_{BEsat} — I_C

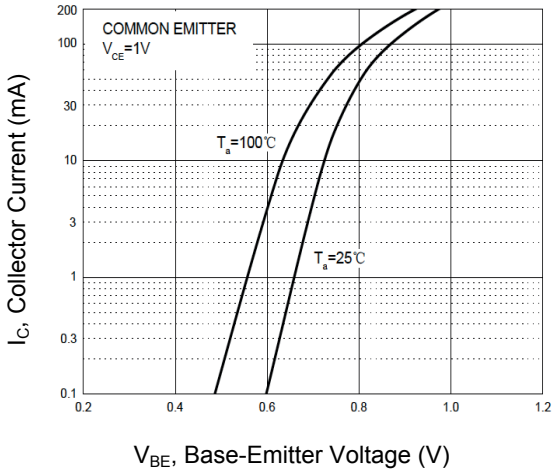


Figure 5. I_C — V_{BE}

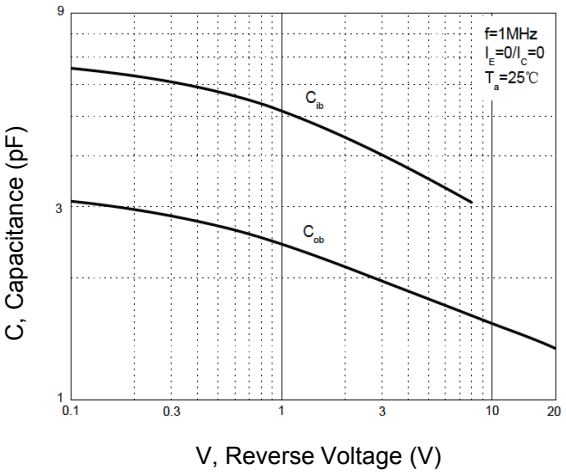


Figure 6. C_{ob}/C_{ib} — V_{CB}/V_{EB}

Typical Electrical Characteristic Curves

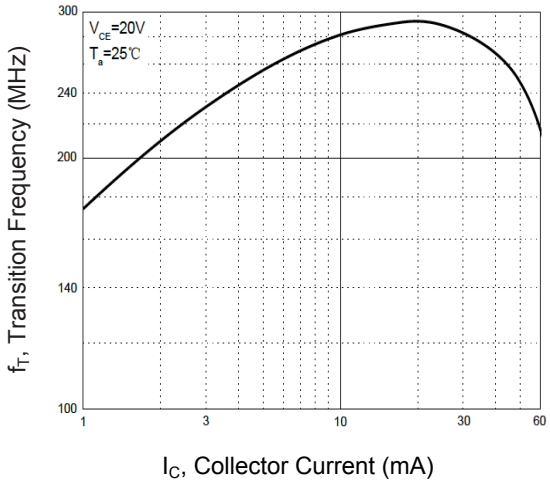


Figure 6. f_T — I_C

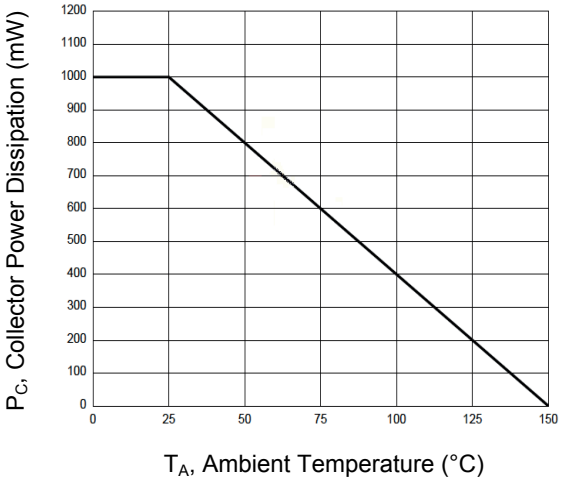
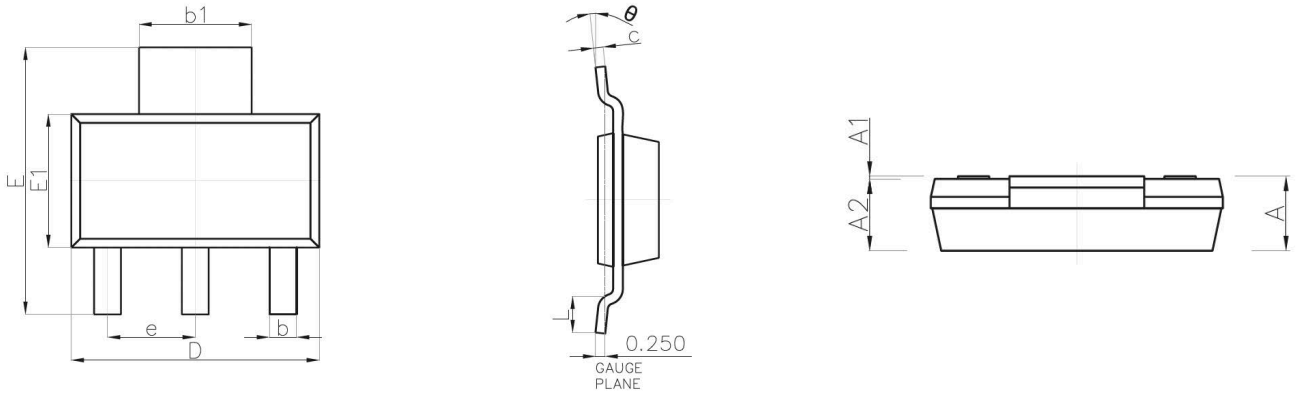


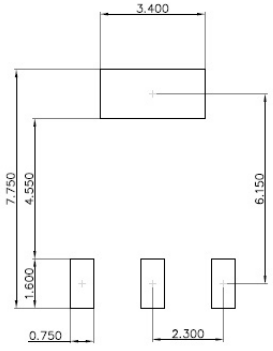
Figure 8. P_C — T_a

Package Outline Dimensions (SOT-223)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	-	1.800	-	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300 (BSC)		0.091 (BSC)	
L	0.750	-	0.030	-
θ	0°	10°	0°	10°

Recommended Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

Order Information

Device	Package	Marking	Quantity	HSF Status
PZT3904	SOT-223	ZT3904	2,500pcs / Reel	RoHS Compliant