

NPN Transistor



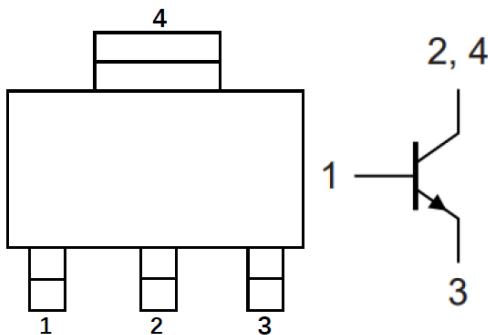
Features

- Epoxy meets UL-94 V-0 flammability rating
- Halogen free available upon request by adding suffix "HF"
- Moisture Sensitivity Level 1

Mechanical Data

- **Package:** SOT-223
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** ZT3904

Equivalent circuit



Maximum Ratings (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Value
Minimum Collector-Emitter Voltage	V_{CEO}	V	$I_C=1mA, I_B=0$	40
Minimum Collector-Base Voltage	V_{CBO}	V	$I_C=10uA, I_E=0$	60
Minimum Emitter-Base Voltage	V_{EBO}	V	$I_E=10uA, I_C=0$	6
Collector Current	I_C	A		0.2
Power Dissipation	P_D	W		1
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	°C/W		125
Operation Junction Temperature	T_J	°C		-55 to +150
Storage Temperature	T_{stg}	°C		-55 to +150

PZT3904

■Electrical Characteristics (Ta=25℃ unless otherwise noted)

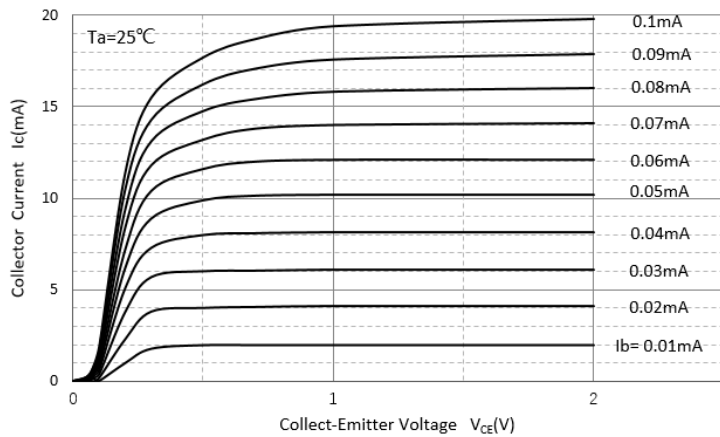
Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V_{CBO}	V	$I_C=10\mu A, I_E=0$	60	-	-
Collector-emitter breakdown voltage	V_{CEO^*}	V	$I_C=1mA, I_B=0$	40	-	-
Emitter-base breakdown voltage	V_{EBO}	V	$I_E=10\mu A, I_C=0$	6	-	-
Collector-emitter cut-off current	I_{CEX}	nA	$V_{CE}=30V, V_{EB}=3V$	-	-	50
Collector-base cut-off current	I_{CBO}	nA	$V_{CB}=30V, I_E=0$	-	-	50
Emitter-base cut-off current	I_{EBO}	nA	$V_{EB}=5V, I_C=0$	-	-	50
DC current gain	h_{FE}		$V_{CE}=1V, I_C=0.1mA$	40	-	-
	h_{FE}		$V_{CE}=1V, I_C=1mA$	70	-	-
	h_{FE}		$V_{CE}=1V, I_C=10mA$	100	-	300
	h_{FE}		$V_{CE}=1V, I_C=50mA$	60	-	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=10mA, I_B=1mA$	-	-	0.2
			$I_C=50mA, I_B=5mA$	-	-	0.3
Base-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C=10mA, I_B=1mA$	0.65	-	0.85
			$I_C=50mA, I_B=5mA$	-	-	0.95
Transition frequency	f_T	MHz	$V_{CE}=20V, I_C=10mA, f=100MHz$	300	-	-
Output Capacitance	C_{ob}	pF	$V_{CB}=5V, I_E=0, f=1MHz$	-	-	4
Delay time	t_d	ns	$V_{CC}=3.0Vdc, V_{BE}=0.5Vdc, I_C=10mAdc, I_{B1}=1.0mAdc$	-	-	35
Rise time	t_r	ns		-	-	35
Storage time	t_s	ns	$V_{CC}=3.0Vdc, I_C=10mAdc, I_{B1}=-I_{B2}=1.0mAdc$	-	-	200
Fall time	t_f	ns		-	-	50

■Ordering Information (Example)

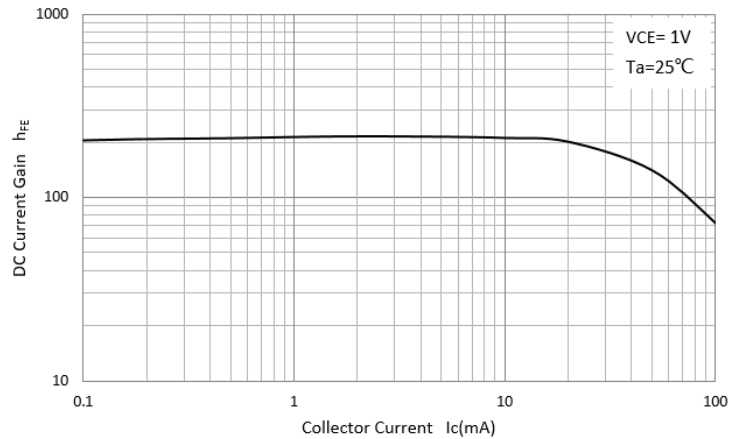
PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
PZT3904	F2	Approximate 0.11	2500	5000	25000	13" reel

■ Characteristics (Typical)

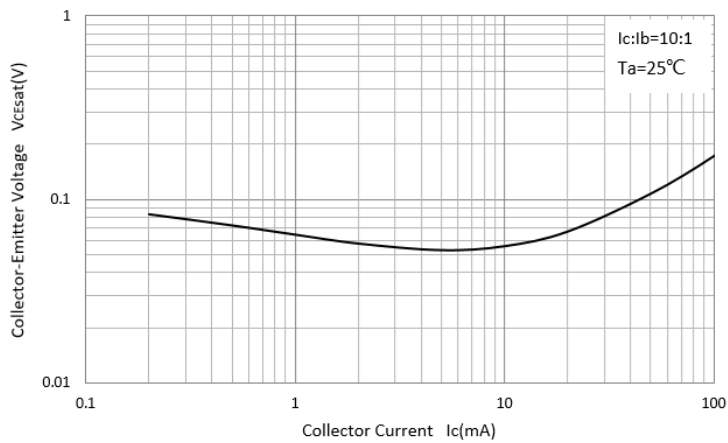
Static Characteristic



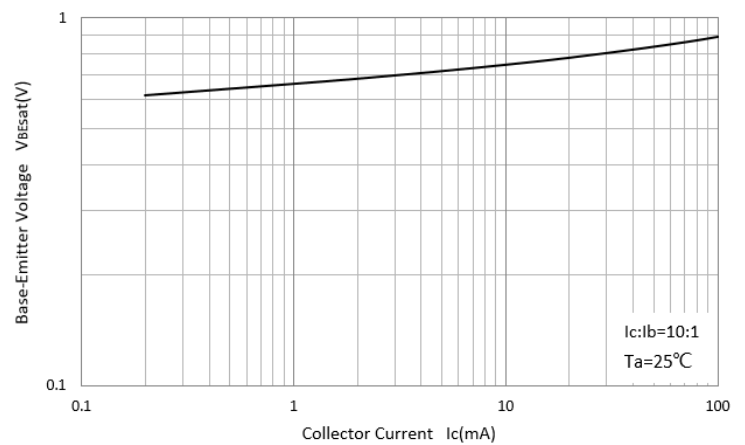
DC Current Gain



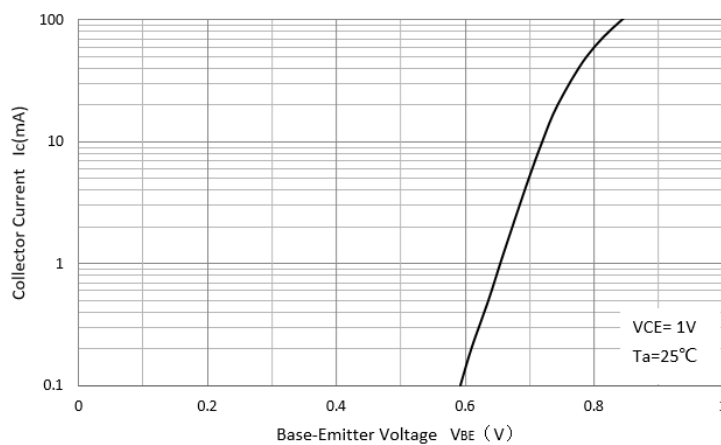
Collector-Emittor Saturation Voltage



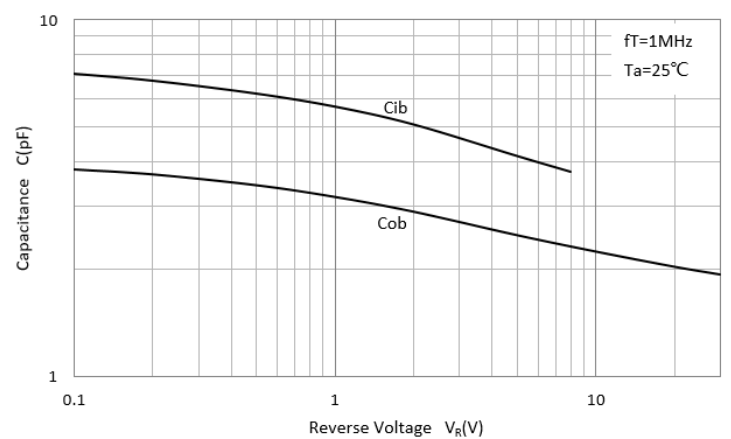
Base-Emittor Saturation Voltage

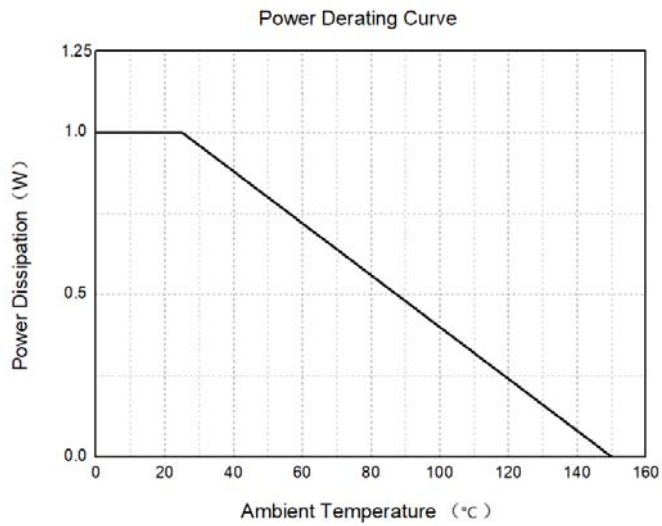


Base-Emittor On Voltage

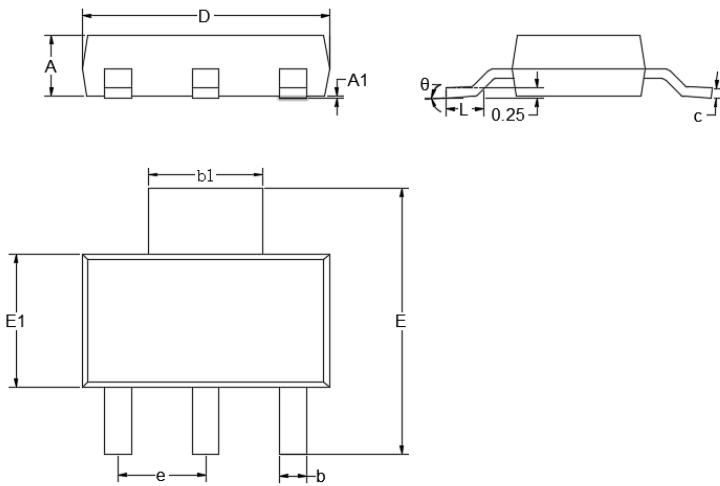


$C_{ob}/C_{ib}-V_{CB}/V_{EB}$



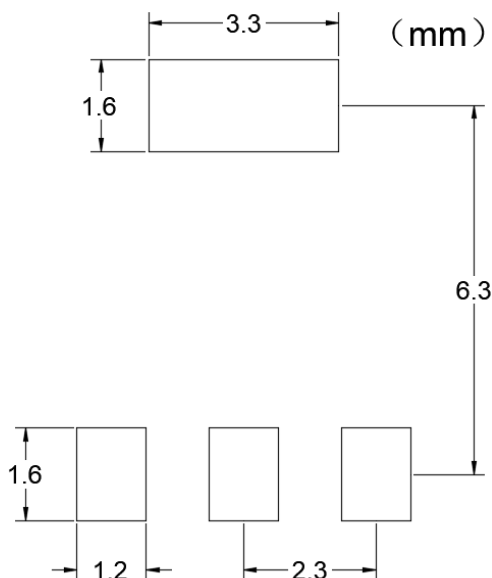


■SOT-223 Package Outline Dimensions



DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.0591	0.0670	1.5000	1.7000
A1	0.0008	0.0039	0.0200	0.1000
b	0.0259	0.0330	0.6600	0.8400
b1	0.1140	0.1220	2.9000	3.1000
c	0.0090	0.0138	0.2300	0.3500
D	0.2480	0.2640	6.3000	6.7000
E	0.2637	0.2874	6.7000	7.3000
E1	0.1290	0.1460	3.3000	3.7000
e	0.0866	0.0945	2.2000	2.4000
L	0.0295	0.0492	0.7500	1.2500
θ	0°	10°	0°	10°

■SOT-223 Suggested Pad Layout



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