

# PNP Silicon Epitaxial Transistor

## PZT2907A

This PNP Silicon Epitaxial transistor is designed for use in linear and switching applications. The device is housed in the SOT-223 package which is designed for medium power surface mount applications.

### Features

- NPN Complement is PZT2222AT1
- The SOT-223 Package can be Soldered Using Wave or Reflow
- SOT-223 Package Ensures Level Mounting, Resulting in Improved Thermal Conduction, and Allows Visual Inspection of Soldered Joints. The Formed Leads Absorb Thermal Stress during Soldering Eliminating the Possibility of Damage to the Die
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	$V_{CEO}$	-60	Vdc
Collector – Base Voltage	$V_{CBO}$	-60	Vdc
Emitter – Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current – Continuous	$I_C$	-600	mAdc

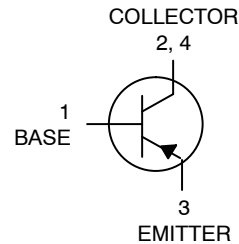
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

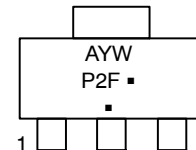
Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) $T_A = 25^\circ\text{C}$	$P_D$	1.5 12	W mW/°C
Thermal Resistance Junction-to-Ambient (Note 1)	$R_{\theta JA}$	83.3	°C/W
Lead Temperature for Soldering, 0.0625" from case Time in Solder Bath	$T_L$	260 10	°C Sec
Operating and Storage Temperature Range	$T_J, T_{stg}$	-65 to +150	°C

1. FR-4 with 1 oz and 713 mm<sup>2</sup> of copper area.

\*For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



### MARKING DIAGRAM



P2F = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
PZT2907AT1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel
SPZT2907AT1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel
PZT2907AT3G	SOT-223 (Pb-Free)	4,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# PZT2907A

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector-Base Breakdown Voltage ( $I_C = -10\ \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	-60	-	-	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 10\ \text{mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	-60	-	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E = -10\ \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	-5.0	-	-	Vdc
Collector-Base Cutoff Current ( $V_{CB} = -50\ \text{Vdc}$ , $I_E = 0$ )	$I_{CBO}$	-	-	-10	nAdc
Collector-Emitter Cutoff Current ( $V_{CE} = -30\ \text{Vdc}$ , $V_{BE} = 0.5\ \text{Vdc}$ )	$I_{CEX}$	-	-	-50	nAdc
Base-Emitter Cutoff Current ( $V_{CE} = -30\ \text{Vdc}$ , $V_{BE} = -0.5\ \text{Vdc}$ )	$I_{BEX}$	-	-	-50	nAdc

### ON CHARACTERISTICS (Note 2)

DC Current Gain ( $I_C = -0.1\ \text{mAdc}$ , $V_{CE} = -10\ \text{Vdc}$ ) ( $I_C = -1.0\ \text{mAdc}$ , $V_{CE} = -10\ \text{Vdc}$ ) ( $I_C = -10\ \text{mAdc}$ , $V_{CE} = -10\ \text{Vdc}$ ) ( $I_C = -150\ \text{mAdc}$ , $V_{CE} = -10\ \text{Vdc}$ ) ( $I_C = -500\ \text{mAdc}$ , $V_{CE} = -10\ \text{Vdc}$ )	$h_{FE}$	75 100 100 100 50	- - - - -	- - - 300 -	-
Collector-Emitter Saturation Voltages ( $I_C = -150\ \text{mAdc}$ , $I_B = -15\ \text{mAdc}$ ) ( $I_C = -500\ \text{mAdc}$ , $I_B = -50\ \text{mAdc}$ )	$V_{CE(sat)}$	- -	- -	-0.4 -1.6	Vdc
Base-Emitter Saturation Voltages ( $I_C = -150\ \text{mAdc}$ , $I_B = -15\ \text{mAdc}$ ) ( $I_C = -500\ \text{mAdc}$ , $I_B = -50\ \text{mAdc}$ )	$V_{BE(sat)}$	- -	- -	-1.3 -2.6	Vdc

### DYNAMIC CHARACTERISTICS

Current-Gain – Bandwidth Product ( $I_C = -50\ \text{mAdc}$ , $V_{CE} = -20\ \text{Vdc}$ , $f = 100\ \text{MHz}$ )	$f_T$	200	-	-	MHz
Output Capacitance ( $V_{CB} = -10\ \text{Vdc}$ , $I_E = 0$ , $f = 1.0\ \text{MHz}$ )	$C_c$	-	-	8.0	pF
Input Capacitance ( $V_{EB} = -2.0\ \text{Vdc}$ , $I_C = 0$ , $f = 1.0\ \text{MHz}$ )	$C_e$	-	-	30	pF

### SWITCHING TIMES

Turn-On Time	$(V_{CC} = -30\ \text{Vdc}$ , $I_C = -150\ \text{mAdc}$ , $I_{B1} = -15\ \text{mAdc}$ )	$t_{on}$	-	-	45	ns
Delay Time		$t_d$	-	-	10	
Rise Time		$t_r$	-	-	40	
Turn-Off Time	$(V_{CC} = -6.0\ \text{Vdc}$ , $I_C = -150\ \text{mAdc}$ , $I_{B1} = I_{B2} = -15\ \text{mAdc}$ )	$t_{off}$	-	-	100	ns
Storage Time		$t_s$	-	-	80	
Fall Time		$t_f$	-	-	30	

2. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

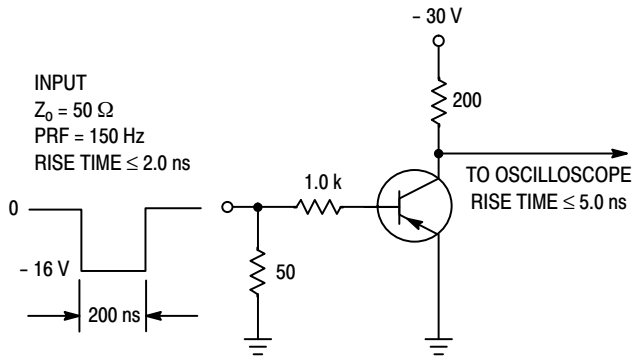


Figure 1. Delay and Rise Time Test Circuit

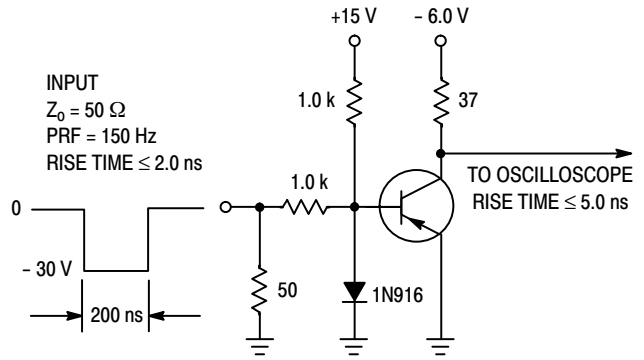


Figure 2. Storage and Fall Time Test Circuit

### TYPICAL ELECTRICAL CHARACTERISTICS

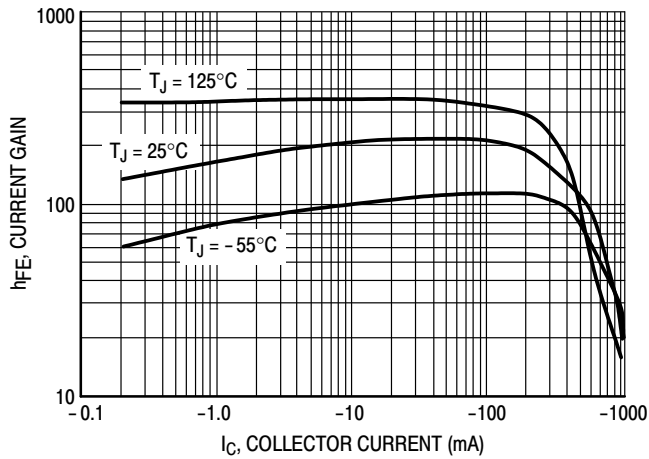


Figure 3. DC Current Gain

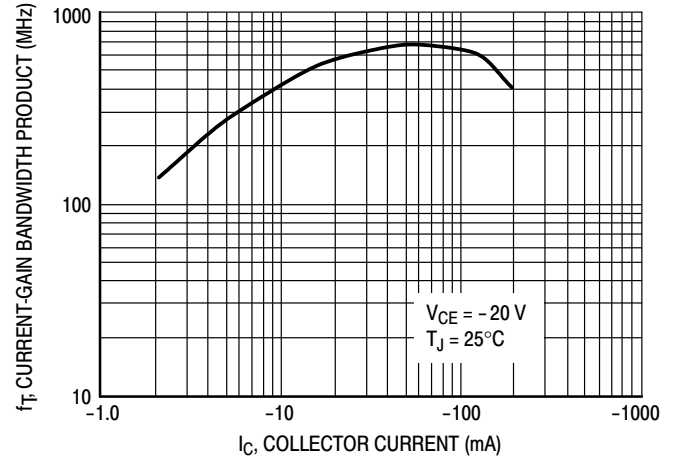


Figure 4. Current Gain Bandwidth Product

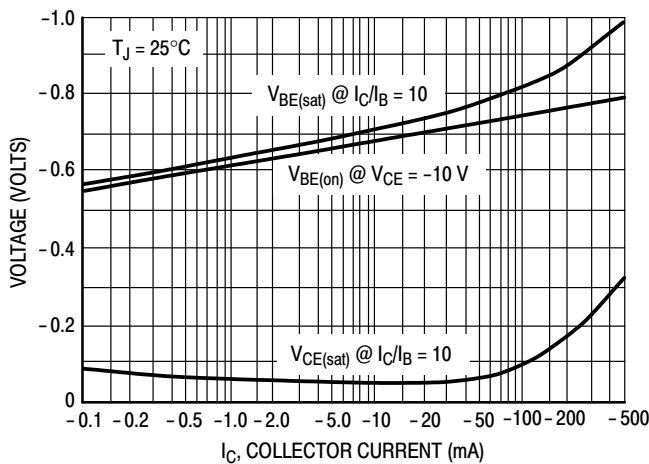


Figure 5. "ON" Voltage

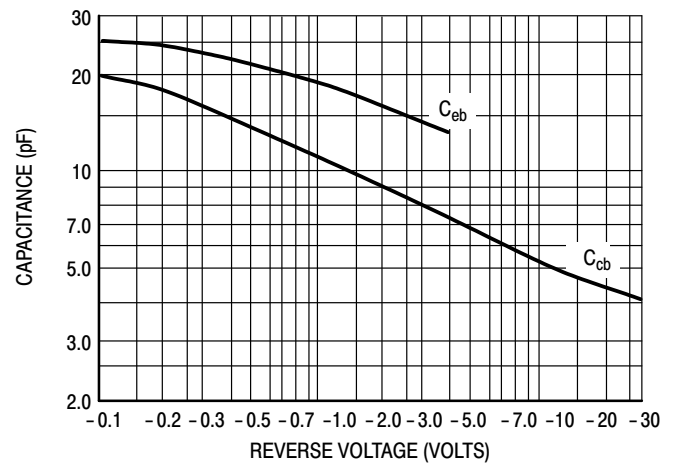


Figure 6. Capacitances

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