

# PZT2907A

## PNP Silicon Epitaxial Transistor

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	mA dc

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### THERMAL CHARACTERISTICS

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

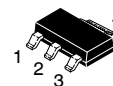
1. FR-4 with 1 oz and 713 mm<sup>2</sup> of copper area.

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

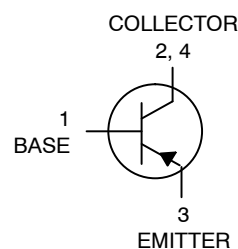


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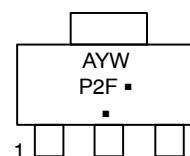
<http://onsemi.com>



SOT-223  
CASE 318E  
STYLE 1



### 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<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector-Base Breakdown Voltage (I <sub>C</sub> = -10 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	-60	-	-	Vdc
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = 10 mAdc, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	-60	-	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = -10 μAdc, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	-5.0	-	-	Vdc
Collector-Base Cutoff Current (V <sub>CB</sub> = -50 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	-	-10	nAdc
Collector-Emitter Cutoff Current (V <sub>CE</sub> = -30 Vdc, V <sub>BE</sub> = 0.5 Vdc)	I <sub>CEX</sub>	-	-	-50	nAdc
Base-Emitter Cutoff Current (V <sub>CE</sub> = -30 Vdc, V <sub>BE</sub> = -0.5 Vdc)	I <sub>BEX</sub>	-	-	-50	nAdc

### ON CHARACTERISTICS (Note 2)

DC Current Gain (I <sub>C</sub> = -0.1 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -1.0 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -10 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -150 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -500 mAdc, V <sub>CE</sub> = -10 Vdc)	h <sub>FE</sub>	75 100 100 100 50	- - - - -	- - - 300 -	-
Collector-Emitter Saturation Voltages (I <sub>C</sub> = -150 mAdc, I <sub>B</sub> = -15 mAdc) (I <sub>C</sub> = -500 mAdc, I <sub>B</sub> = -50 mAdc)	V <sub>CE(sat)</sub>	- -	- -	-0.4 -1.6	Vdc
Base-Emitter Saturation Voltages (I <sub>C</sub> = -150 mAdc, I <sub>B</sub> = -15 mAdc) (I <sub>C</sub> = -500 mAdc, I <sub>B</sub> = -50 mAdc)	V <sub>BE(sat)</sub>	- -	- -	-1.3 -2.6	Vdc

### DYNAMIC CHARACTERISTICS

Current-Gain - Bandwidth Product (I <sub>C</sub> = -50 mAdc, V <sub>CE</sub> = -20 Vdc, f = 100 MHz)	f <sub>T</sub>	200	-	-	MHz
Output Capacitance (V <sub>CB</sub> = -10 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>c</sub>	-	-	8.0	pF
Input Capacitance (V <sub>EB</sub> = -2.0 Vdc, I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>e</sub>	-	-	30	pF

### SWITCHING TIMES

Turn-On Time	(V <sub>CC</sub> = -30 Vdc, I <sub>C</sub> = -150 mAdc, I <sub>B1</sub> = -15 mAdc)	t <sub>on</sub>	-	-	45	ns
Delay Time		t <sub>d</sub>	-	-	10	
Rise Time		t <sub>r</sub>	-	-	40	
Turn-Off Time	(V <sub>CC</sub> = -6.0 Vdc, I <sub>C</sub> = -150 mAdc, I <sub>B1</sub> = I <sub>B2</sub> = -15 mAdc)	t <sub>off</sub>	-	-	100	ns
Storage Time		t <sub>s</sub>	-	-	80	
Fall Time		t <sub>f</sub>	-	-	30	

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

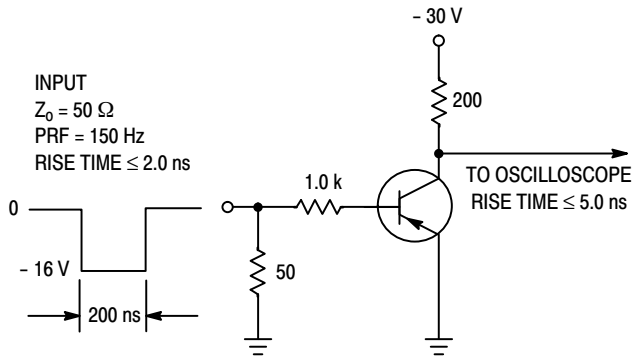


Figure 1. Delay and Rise Time Test Circuit

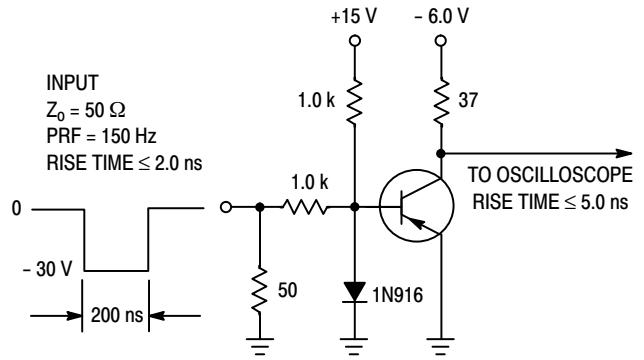


Figure 2. Storage and Fall Time Test Circuit

### TYPICAL ELECTRICAL CHARACTERISTICS

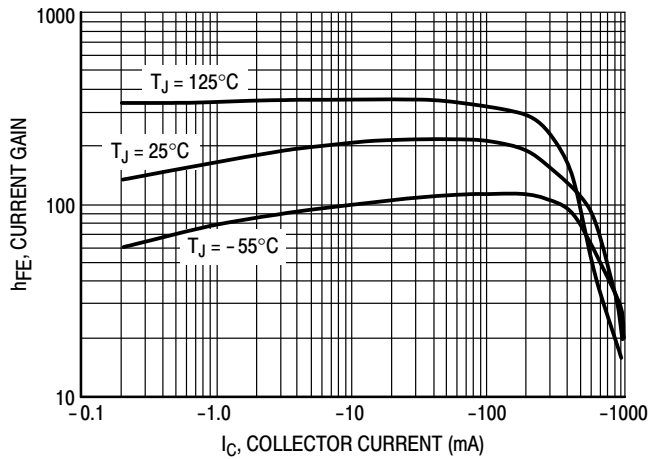


Figure 3. DC Current Gain

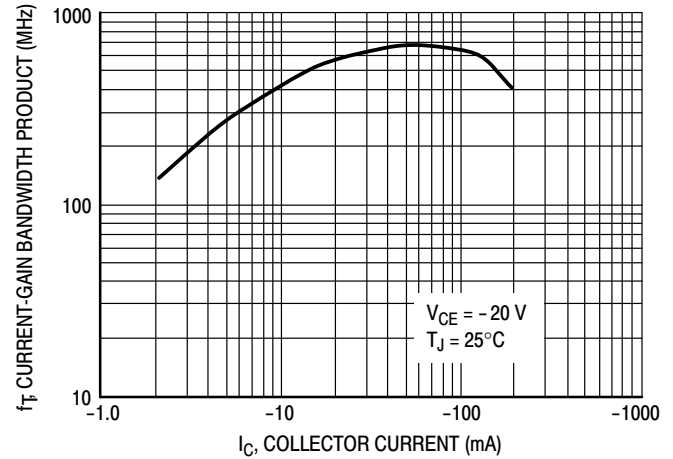


Figure 4. Current Gain Bandwidth Product

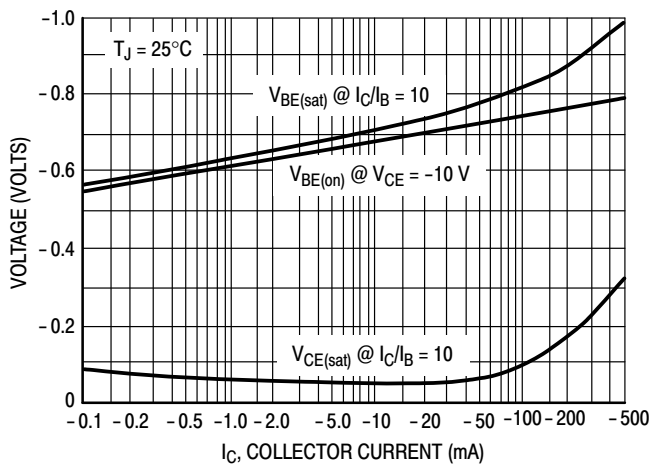


Figure 5. "ON" Voltage

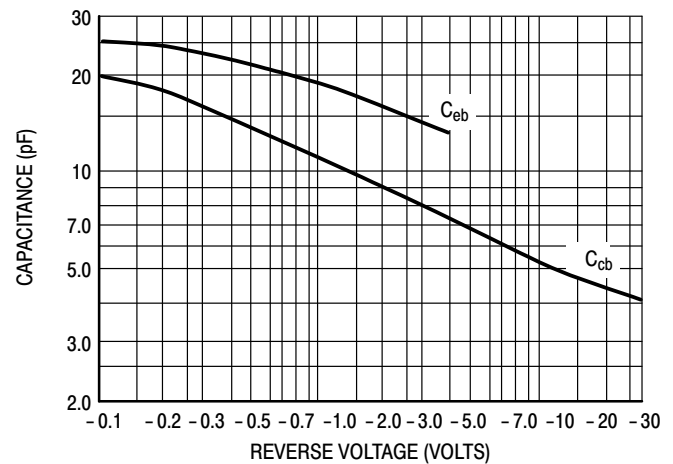
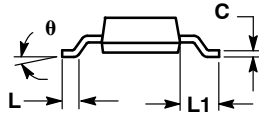
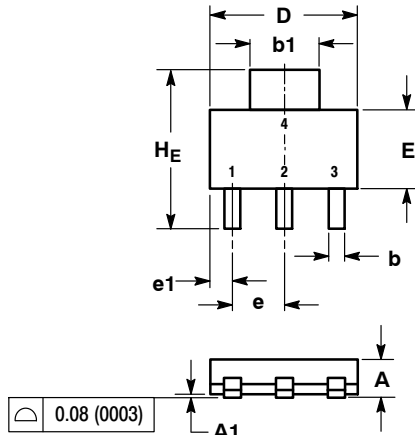


Figure 6. Capacitances

# PZT2907A

## PACKAGE DIMENSIONS

SOT-223 (TO-261)  
CASE 318E-04  
ISSUE N



### NOTES:

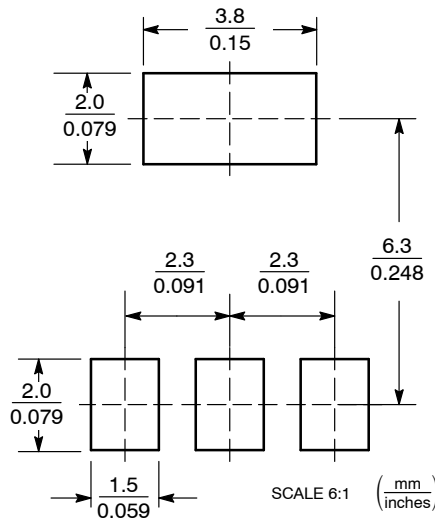
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.63	1.75	0.060	0.064	0.068
A1	0.02	0.06	0.10	0.001	0.002	0.004
b	0.60	0.75	0.89	0.024	0.030	0.035
b1	2.90	3.06	3.20	0.115	0.121	0.126
c	0.24	0.29	0.35	0.009	0.012	0.014
D	6.30	6.50	6.70	0.249	0.256	0.263
E	3.30	3.50	3.70	0.130	0.138	0.145
e	2.20	2.30	2.40	0.087	0.091	0.094
e1	0.85	0.94	1.05	0.033	0.037	0.041
L	0.20	---	---	0.008	---	---
L1	1.50	1.75	2.00	0.060	0.069	0.078
H_E	6.70	7.00	7.30	0.264	0.276	0.287
θ	0°	---	10°	0°	---	10°


### STYLE 1:

- PIN 1. BASE
- COLLECTOR
- EMITTER
- COLLECTOR

## SOLDERING FOOTPRINT\*



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

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