PZT2907AT1

Preferred Device

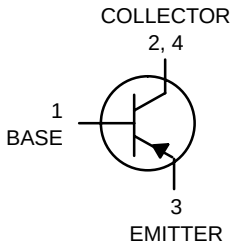
PNP Silicon Epitaxial Transistor

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.

- 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.
- Pb−Free Package is Available

ON Semiconductor®

http://onsemi.com



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

THERMAL CHARACTERISTICS

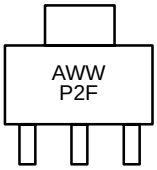
Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) T_A = 25°C	P_D	1.5 12	W mW/°C
Thermal Resistance Junction−to−Ambient (Note 1)	$R_{\theta JA}$	83.3	°C/W
Lead Temperature for Soldering, 0.0625″ from case Time in Solder Bath	T_L	 260 10	 °C Sec
Operating and Storage Temperature Range	T_J,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

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. FR−4 with 1 oz and 713 mm^2 of copper area.

SOT−223
CASE 318E
Style 1

MARKING DIAGRAM



P2F = Specific Device Code
A = Assembly Location
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping†
PZT2907AT1	SOT−223	1000 / Tape & Reel
PZT2907AT1G	SOT−223 (Pb−Free)	1000 / Tape & Reel
PZT2907AT3	SOT−223	4000 / 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.

Preferred devices are recommended choices for future use and best overall value.

© Semiconductor Components Industries, LLC, 2004

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector−Base Breakdown Voltage (I_C = −10 μAdc, I_E = 0)	$V_{(BR)CBO}$	−60	−	−	Vdc
Collector−Emitter Breakdown Voltage (I_C = 10 mAdc, I_B = 0)	$V_{(BR)CEO}$	−60	−	−	Vdc
Emitter−Base Breakdown Voltage (I_E = −10 μAdc, I_C = 0)	$V_{(BR)EBO}$	−5.0	−	−	Vdc
Collector−Base Cutoff Current (V_{CB} = −50 Vdc, I_E = 0)	I_{CBO}	−	−	−10	nAdc
Collector−Emitter Cutoff Current (V_{CE} = −30 Vdc, V_{BE} = 0.5 Vdc)	I_{CEX}	−	−	−50	nAdc
Base−Emitter Cutoff Current (V_{CE} = −30 Vdc, V_{BE} = −0.5 Vdc)	I_{BEX}	−	−	−50	nAdc
ON CHARACTERISTICS (Note 2)					
DC Current Gain	h_{FE}				−
(I_C = −0.1 mAdc, V_{CE} = −10 Vdc)		75	−	−	
(I_C = −1.0 mAdc, V_{CE} = −10 Vdc)		100	−	−	
(I_C = −10 mAdc, V_{CE} = −10 Vdc)		100	−	−	
(I_C = −150 mAdc, V_{CE} = −10 Vdc)		100	−	300	
(I_C = −500 mAdc, V_{CE} = −10 Vdc)		50	−	−	
Collector-Emitter Saturation Voltages	$V_{CE(sat)}$				Vdc
(I_C = −150 mAdc, I_B = −15 mAdc)		−	−	−0.4	
(I_C = − 500 mAdc, I_B = −50 mAdc)		−	−	−1.6	
Base-Emitter Saturation Voltages	$V_{BE(sat)}$				Vdc
(I_C = −150 mAdc, I_B = −15 mAdc)		−	−	−1.3	
(I_C = −500 mAdc, I_B = −50 mAdc)		−	−	−2.6	
DYNAMIC CHARACTERISTICS					
Current-Gain − Bandwidth Product (I_C = −50 mAdc, V_{CE} = −20 Vdc, f = 100 MHz)	f_T	200	−	−	MHz
Output Capacitance (V_{CB} = −10 Vdc, I_E = 0, f = 1.0 MHz)	C_c	−	−	8.0	pF
Input Capacitance (V_{EB} = −2.0 Vdc, I_C = 0, f = 1.0 MHz)	C_e	−	−	30	pF
SWITCHING TIMES					
Turn-On Time	(V_{CC} = −30 Vdc, I_C = −150 mAdc, I_{B1} = −15 mAdc)	t_{on}	−	−	45	ns
Delay Time		t_d	−	−	10	
Rise Time		t_r	−	−	40	
Turn-Off Time	(V_{CC} = −6.0 Vdc, I_C = −150 mAdc, I_{B1} = I_{B2} = −15 mAdc)	t_{off}	−	−	100	ns
Storage Time		t_s	−	−	80	
Fall Time		t_f	−	−	30	

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

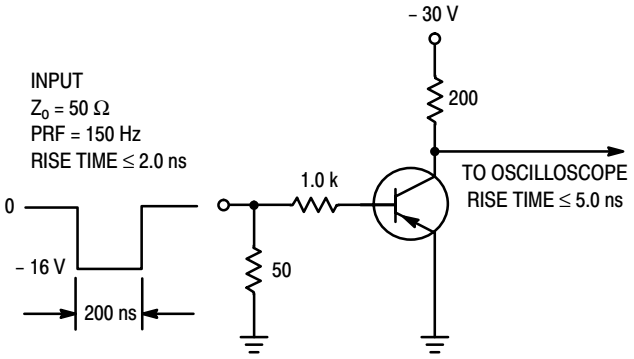


Figure 1. Delay and Rise Time Test Circuit

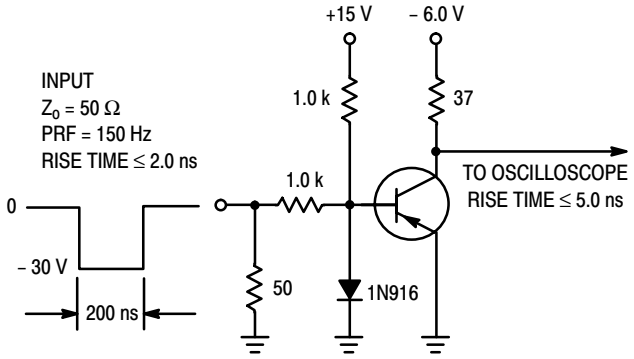


Figure 2. Storage and Fall Time Test Circuit

TYPICAL ELECTRICAL CHARACTERISTICS

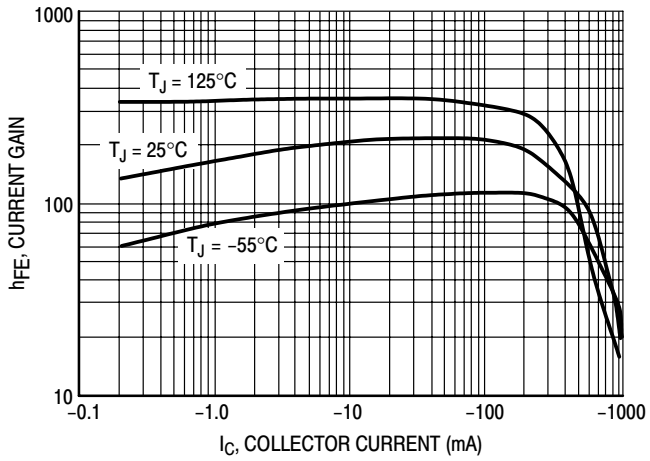


Figure 3. DC Current Gain

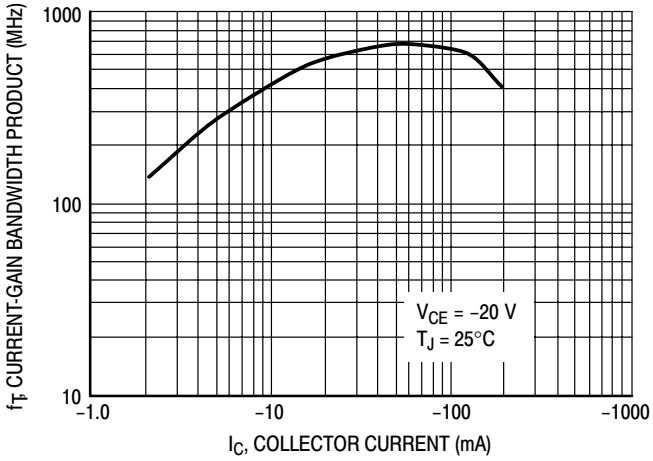


Figure 4. Current Gain Bandwidth Product

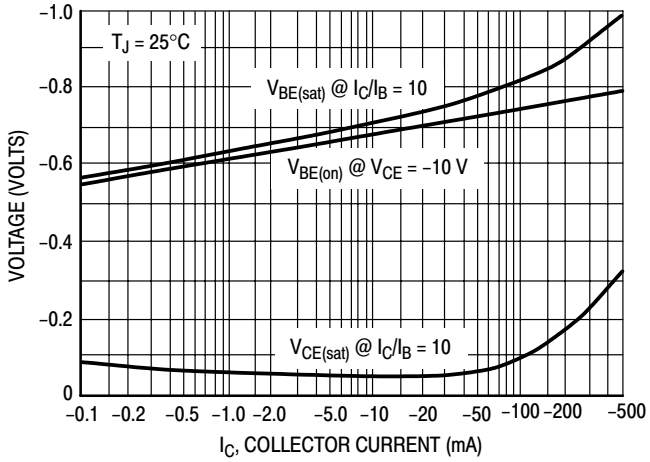


Figure 5. “ON” Voltage

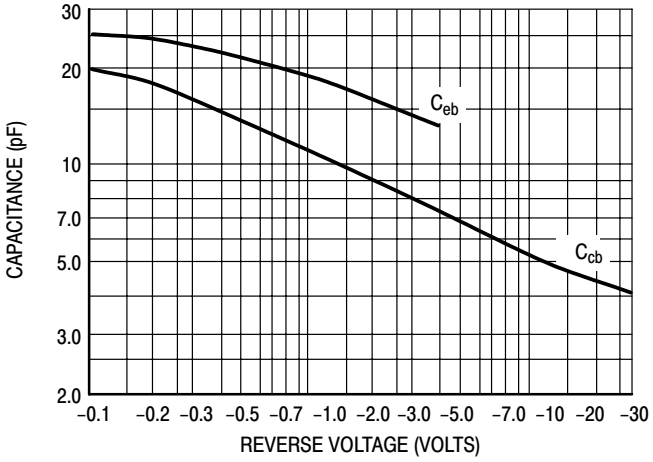
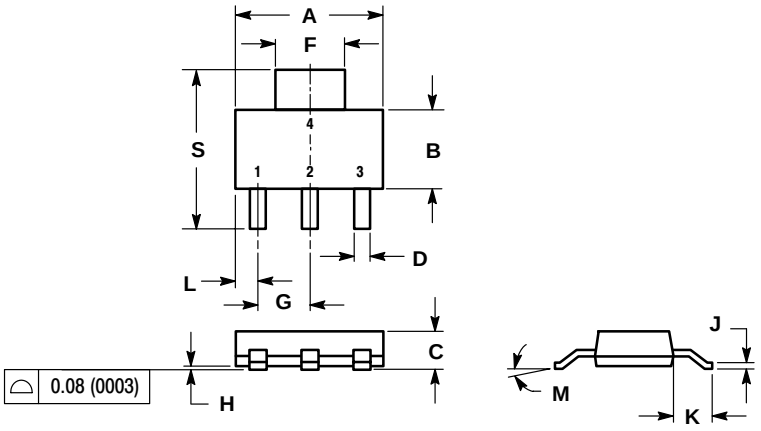


Figure 6. Capacitances

PZT2907AT1

PACKAGE DIMENSIONS

SOT−223 (TO−261)
CASE 318E−04
ISSUE K

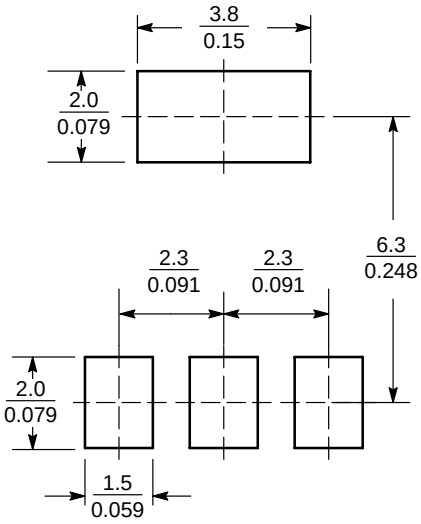


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.249	0.263	6.30	6.70
B	0.130	0.145	3.30	3.70
C	0.060	0.068	1.50	1.75
D	0.024	0.035	0.60	0.89
F	0.115	0.126	2.90	3.20
G	0.087	0.094	2.20	2.40
H	0.0008	0.0040	0.020	0.100
J	0.009	0.014	0.24	0.35
K	0.060	0.078	1.50	2.00
L	0.033	0.041	0.85	1.05
M	0 °	10 °	0 °	10 °
S	0.264	0.287	6.70	7.30

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. 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.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. “Typical” parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including “Typicals” must be validated for each customer application by customer’s technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.