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.

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.
- Pb−Free Packages are Available

ON Semiconductor®

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**MARKING
DIAGRAM**

**SOT−223
CASE 318E
STYLE 1**

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

(Note: Microdot may be in either location)

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

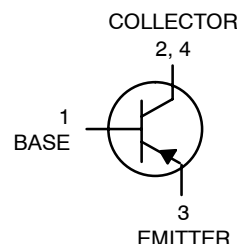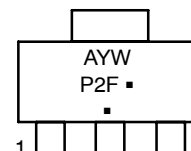| Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) $T_A = 25°C$	P_D	1.5 12	W mW/°C
Thermal Resistance Junction−to−Ambient (Note 1)	$R_{\theta JA}$	83.3	°C/W
Lead Temperature for Soldering, 0.0625″ from case Time in Solder Bath	T_L	260 10	°C Sec
Operating and Storage Temperature Range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

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

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
PZT2907AT3G	SOT−223 (Pb−Free)	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.

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

Characteristic		Symbol	Min	Typ	Max	Unit
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%.
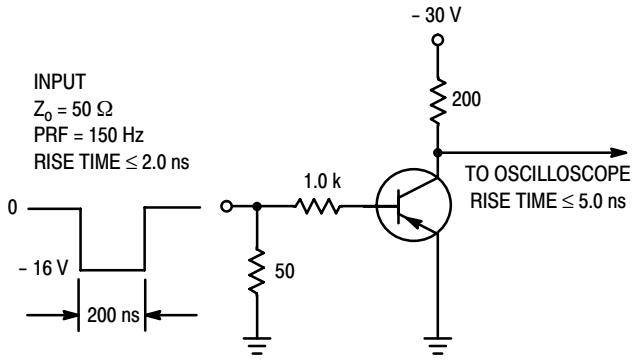
PZT2907AT1

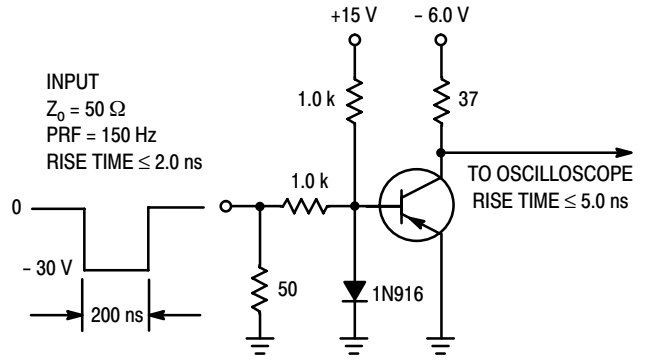**Figure 1. Delay and Rise Time Test Circuit**

Figure 2. Storage and Fall Time Test Circuit
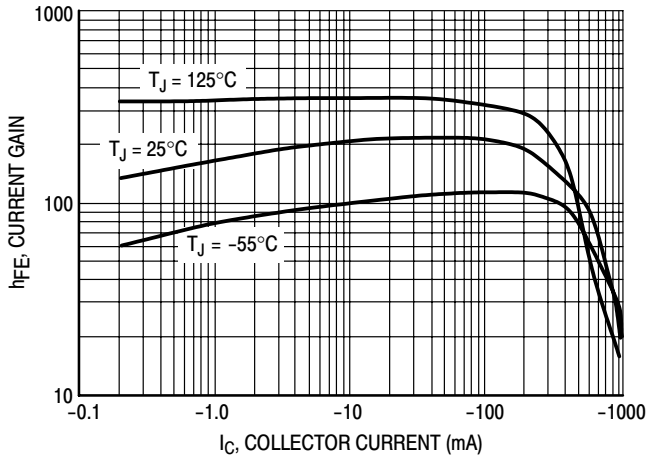
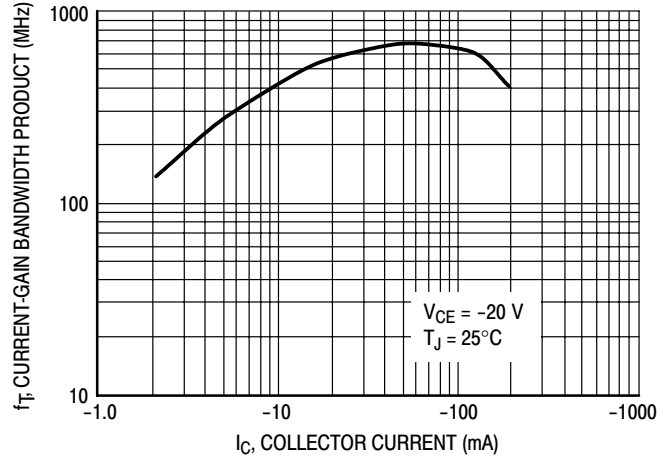## TYPICAL ELECTRICAL CHARACTERISTICS

Figure 3. DC Current Gain

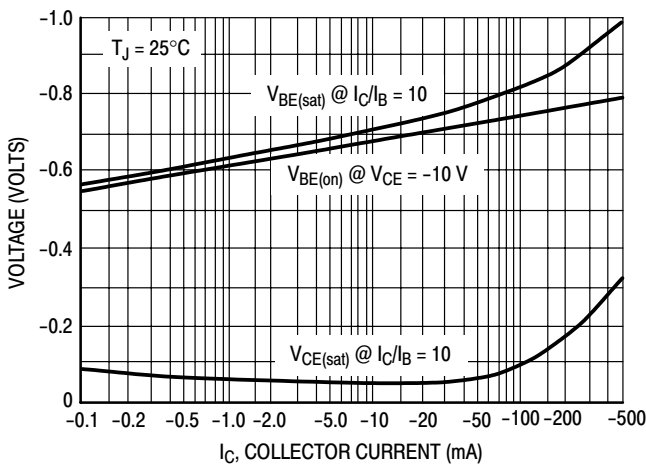

Figure 4. Current Gain Bandwidth Product
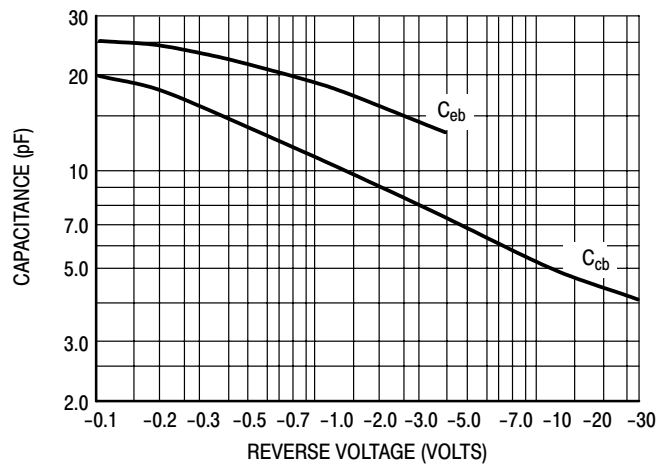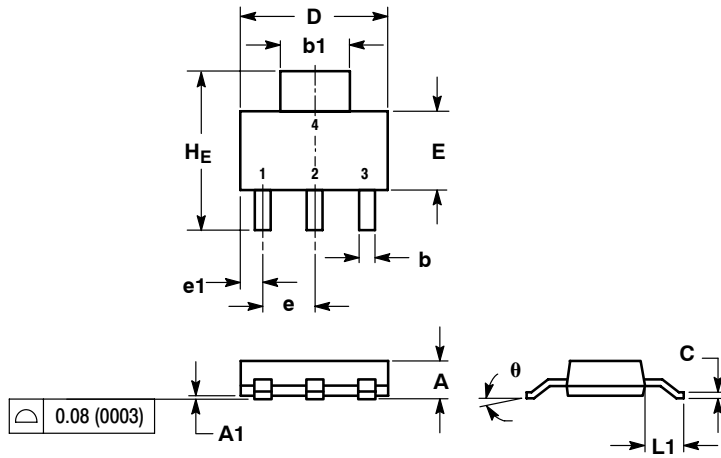

Figure 5. "ON" Voltage

Figure 6. Capacitances

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PACKAGE DIMENSIONS

SOT−223 (TO−261)
CASE 318E−04
ISSUE L

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
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
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
2. COLLECTOR
3. EMITTER
4. COLLECTOR

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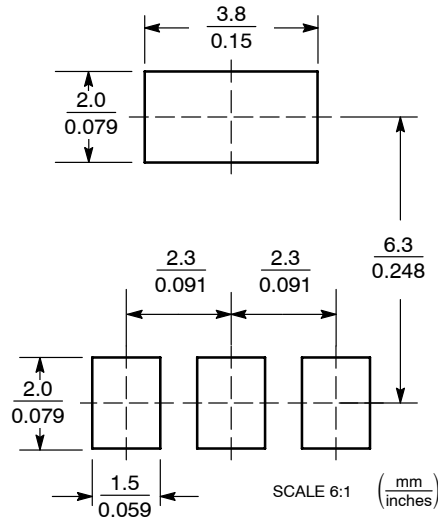
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.