PNP Silicon Epitaxial Transistor

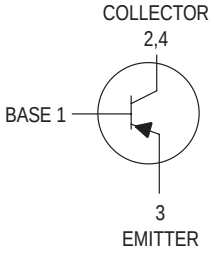
PZT2907AT1

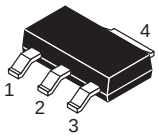
Motorola Preferred Device

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.
- Available in 12 mm tape and reel
  Use PZT2907AT1 to order the 7 inch/1000 unit reel.
  Use PZT2907AT3 to order the 13 inch/4000 unit reel.

SOT-223 PACKAGE
PNP SILICON
TRANSISTOR
SURFACE MOUNT





CASE 318E-04, STYLE 1
TO-261AA

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

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	I_C	–600	mAdc
Total Power Dissipation @ T_A = 25°C(1) Derate above 25°C	P_D	1.5 12	Watts mW/°C
Operating and Storage Temperature Range	T_J, T_{stg}	–65 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance — Junction-to-Ambient (surface mounted)	$R_{\theta JA}$	83.3	°C/W
Lead Temperature for Soldering, 0.0625″ from case Time in Solder Bath	T_L	260 10	°C Sec

DEVICE MARKING

P2F

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

1. Device mounted on a glass epoxy printed circuit board 1.575 in. x 1.575 in. x 0.059 in.; mounting pad for the collector lead min. 0.93 sq. in.

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

REV 4

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

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS(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%.

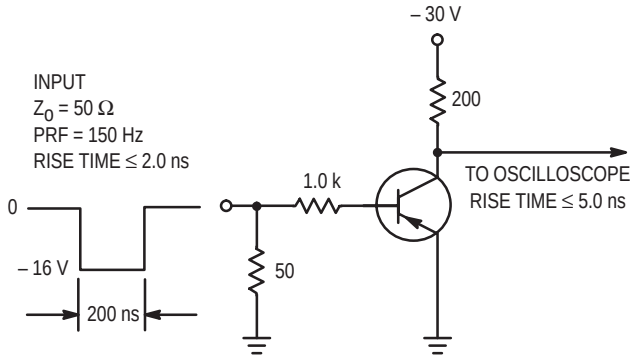


Figure 1. Delay and Rise Time Test Circuit

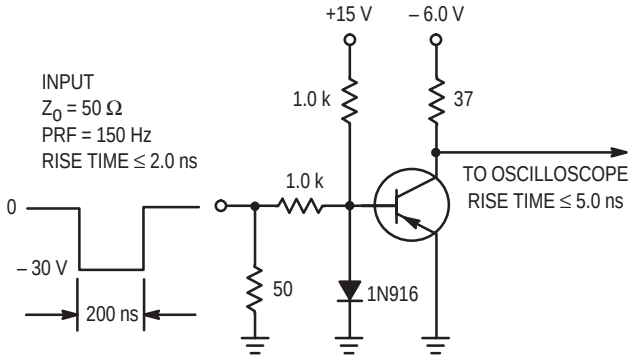


Figure 2. Storage and Fall Time Test Circuit

TYPICAL ELECTRICAL CHARACTERISTICS

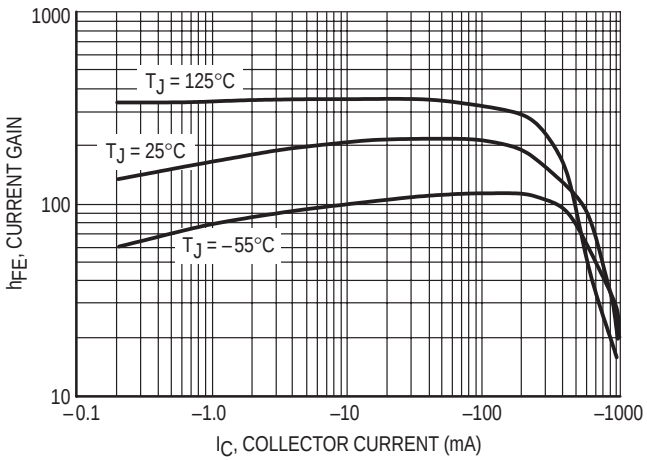


Figure 3. DC Current Gain

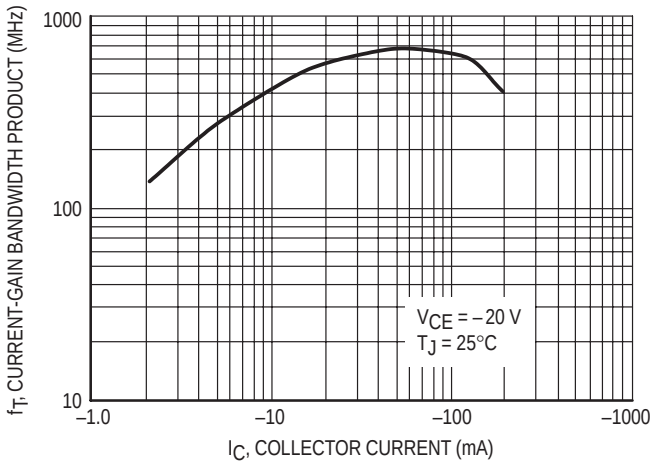


Figure 4. Current Gain Bandwidth Product

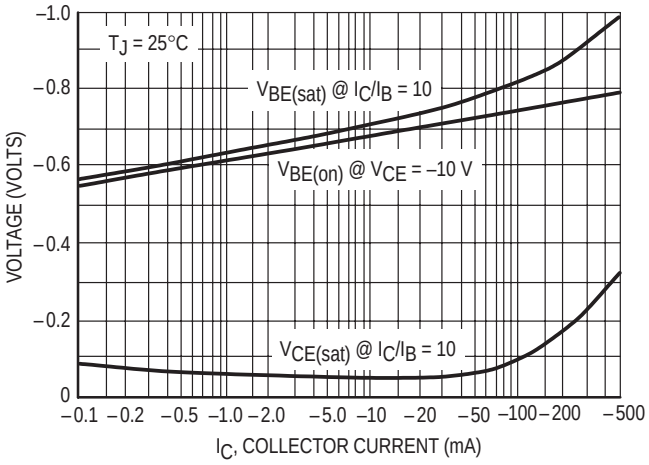


Figure 5. “ON” Voltage

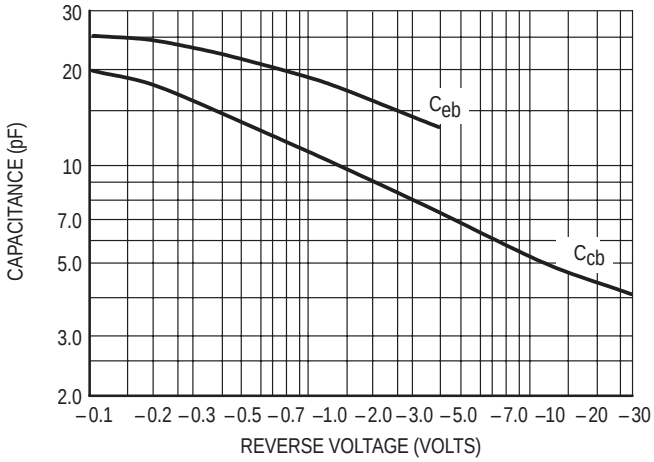


Figure 6. Capacitances