

# PZTA92T1G, NSVPZTA92T1G

## High Voltage Transistor

### PNP Silicon

#### Features

- Complement to PZTA42T1G
- NSV 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 (T<sub>C</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	-300	Vdc
Collector-Base Voltage	V <sub>CB0</sub>	-300	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	-5.0	Vdc
Collector Current	I <sub>C</sub>	-500	mAdc
Total Power Dissipation up to @ T <sub>A</sub> = 25°C (Note 1)	P <sub>D</sub>	1.5	W
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Junction Temperature	T <sub>J</sub>	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. Device mounted on a FR-4 glass epoxy printed circuit board  
1.575 in x 1.575 in x 0.0625 in; mounting pad for the collector lead = 0.93 sq in.

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient (Note 2)	R <sub>θJA</sub>	83.3	°C/W

2. Device mounted on a FR-4 glass epoxy printed circuit board  
1.575 in x 1.575 in x 0.0625 in; mounting pad for the collector lead = 0.93 sq in.

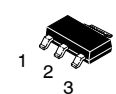
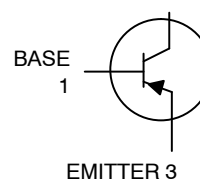


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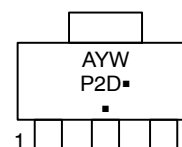
### SOT-223 PACKAGE PNP SILICON HIGH VOLTAGE TRANSISTOR SURFACE MOUNT

COLLECTOR 2,4



SOT-223  
CASE 318E  
STYLE 1

#### MARKING DIAGRAM



P2D = 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†
PZTA92T1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel
NSVPZTA92T1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel

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

# PZTA92T1G, NSVPZTA92T1G

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

Characteristics	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage (Note 3) ( $I_C = -1.0\text{ mA}$ , $I_B = 0$ )	$V_{(BR)CEO}$	-300	-	Vdc
Collector-Base Breakdown Voltage ( $I_C = -100\text{ }\mu\text{A}$ , $I_E = 0$ )	$V_{(BR)CBO}$	-300	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E = -100\text{ }\mu\text{A}$ , $I_C = 0$ )	$V_{(BR)EBO}$	-5.0	-	Vdc
Collector-Base Cutoff Current ( $V_{CB} = -200\text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	-	-0.25	$\mu\text{A}$
Emitter-Base Cutoff Current ( $V_{BE} = -3.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	-	-0.1	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>				
DC Current Gain ( $I_C = -1.0\text{ mA}$ , $V_{CE} = -10\text{ Vdc}$ ) ( $I_C = -10\text{ mA}$ , $V_{CE} = -10\text{ Vdc}$ ) ( $I_C = -30\text{ mA}$ , $V_{CE} = -10\text{ Vdc}$ )	$h_{FE}$	25 40 40	- - -	-
Saturation Voltages ( $I_C = -20\text{ mA}$ , $I_B = -2.0\text{ mA}$ ) ( $I_C = -20\text{ mA}$ , $I_B = -2.0\text{ mA}$ )	$V_{CE(sat)}$ $V_{BE(sat)}$	- -	-0.5 -0.9	Vdc
<b>DYNAMIC CHARACTERISTICS</b>				
Collector-Base Capacitance @ $f = 1.0\text{ MHz}$ ( $V_{CB} = -20\text{ Vdc}$ , $I_E = 0$ )	$C_{cb}$	-	6.0	pF
Current-Gain - Bandwidth Product ( $I_C = -10\text{ mA}$ , $V_{CE} = -20\text{ Vdc}$ , $f = 100\text{ MHz}$ )	$f_T$	50	-	MHz

3. Pulse Test Conditions,  $t_p = 300\text{ }\mu\text{s}$ ,  $\delta = 0.02$ .

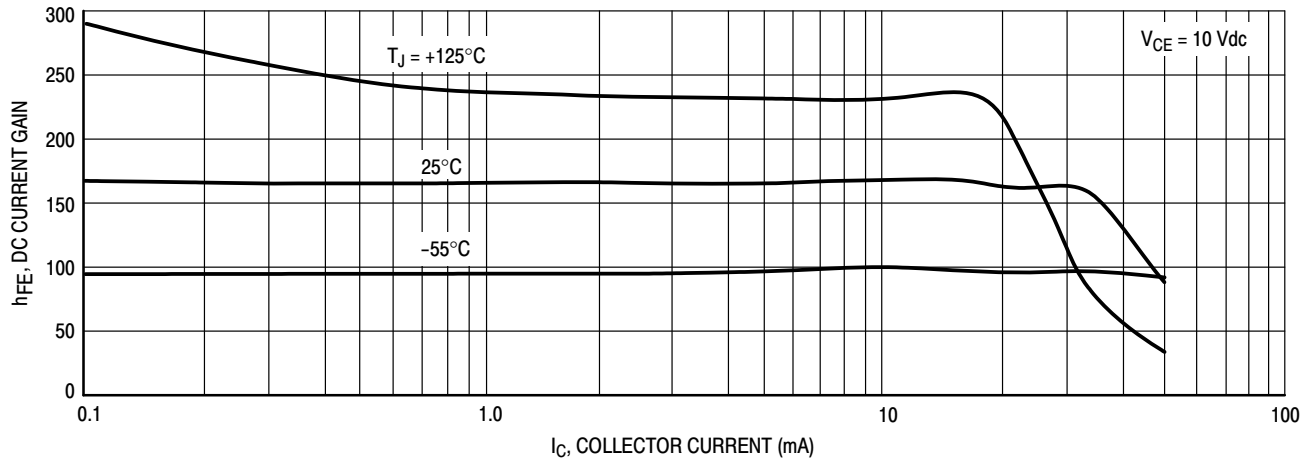


Figure 1. DC Current Gain

# PZTA92T1G, NSVPZTA92T1G

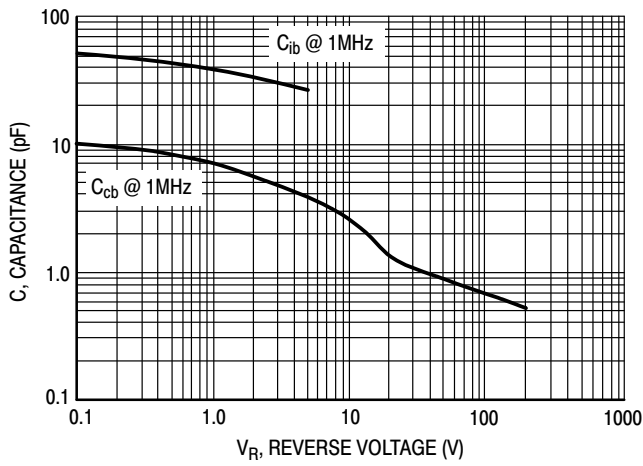


Figure 2. Capacitance

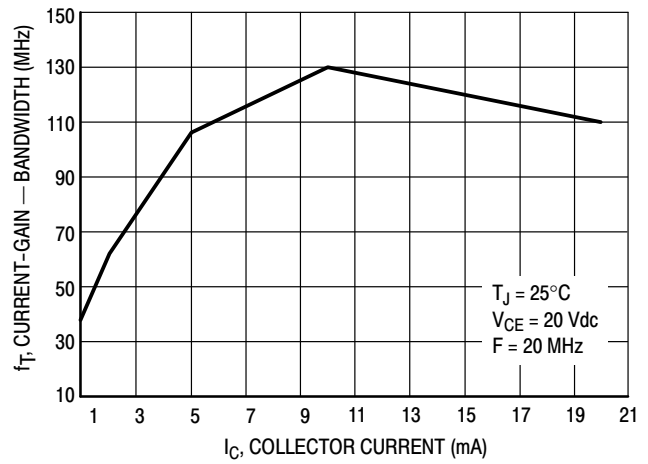


Figure 3. Current-Gain - Bandwidth

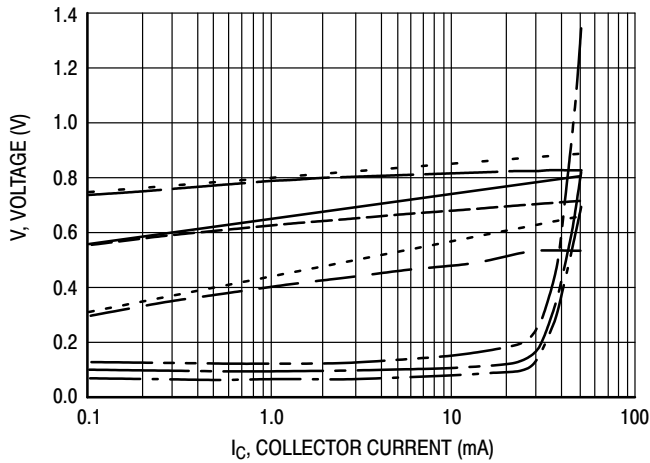


Figure 4. "ON" Voltages

- $V_{CE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(on)}$  @  $25^\circ\text{C}$ ,  $V_{CE} = 10\text{ V}$
- $V_{BE(on)}$  @  $125^\circ\text{C}$ ,  $V_{CE} = 10\text{ V}$
- $V_{BE(on)}$  @  $-55^\circ\text{C}$ ,  $V_{CE} = 10\text{ V}$

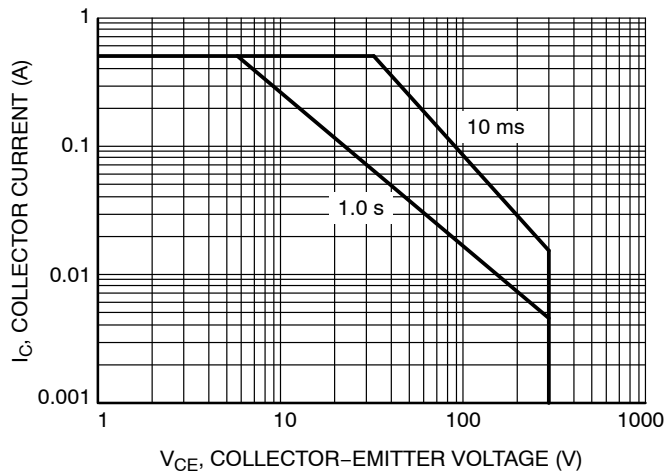
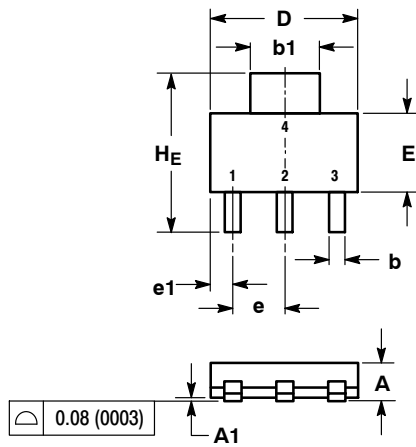


Figure 5. Safe Operating Area

# PZTA92T1G, NSVPZTA92T1G

## PACKAGE DIMENSIONS

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

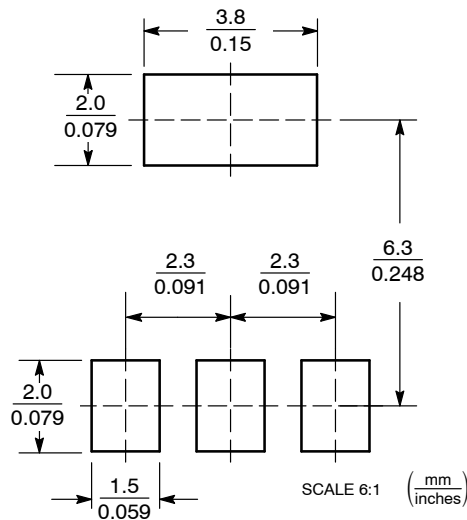


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.  
2. CONTROLLING DIMENSION: INCH.

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
HE	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.

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