

# 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<br>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 those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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,<br>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.

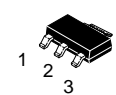
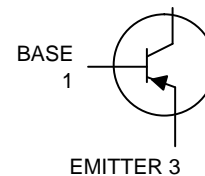


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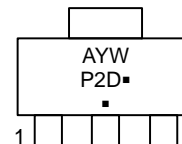
### SOT-223 PACKAGE PNP SILICON HIGH VOLTAGE TRANSISTOR SURFACE MOUNT

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,<br>NSVPZTA92T1G | SOT-223<br>(Pb-Free) | 1,000 / Tape & Reel |
| NSVPZTA92T3G               | SOT-223<br>(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 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)<br>( $I_C = -1.0\text{ mA}$ , $I_B = 0$ )  | $V_{(BR)CEO}$                  | -300           | -            | Vdc           |
| Collector-Base Breakdown Voltage<br>( $I_C = -100\text{ }\mu\text{A}$ , $I_E = 0$ )   | $V_{(BR)CBO}$                  | -300           | -            | Vdc           |
| Emitter-Base Breakdown Voltage<br>( $I_E = -100\text{ }\mu\text{A}$ , $I_C = 0$ )   | $V_{(BR)EBO}$                  | -5.0           | -            | Vdc           |
| Collector-Base Cutoff Current<br>( $V_{CB} = -200\text{ Vdc}$ , $I_E = 0$ )   | $I_{CBO}$                      | -              | -0.25        | $\mu\text{A}$ |
| Emitter-Base Cutoff Current<br>( $V_{BE} = -3.0\text{ Vdc}$ , $I_C = 0$ )   | $I_{EBO}$                      | -              | -0.1         | $\mu\text{A}$ |
| <b>ON CHARACTERISTICS</b>   |                                |                |              |               |
| DC Current Gain<br>( $I_C = -1.0\text{ mA}$ , $V_{CE} = -10\text{ Vdc}$ )<br>( $I_C = -10\text{ mA}$ , $V_{CE} = -10\text{ Vdc}$ )<br>( $I_C = -30\text{ mA}$ , $V_{CE} = -10\text{ Vdc}$ ) | $h_{FE}$                       | 25<br>40<br>40 | -<br>-<br>-  | -             |
| Saturation Voltages<br>( $I_C = -20\text{ mA}$ , $I_B = -2.0\text{ mA}$ )<br>( $I_C = -20\text{ mA}$ , $I_B = -2.0\text{ mA}$ )   | $V_{CE(sat)}$<br>$V_{BE(sat)}$ | -<br>-         | -0.5<br>-0.9 | Vdc           |
| <b>DYNAMIC CHARACTERISTICS</b>  |                                |                |              |               |
| Collector-Base Capacitance @ $f = 1.0\text{ MHz}$<br>( $V_{CB} = -20\text{ Vdc}$ , $I_E = 0$ )  | $C_{cb}$                       | -              | 6.0          | pF            |
| Current-Gain - Bandwidth Product<br>( $I_C = -10\text{ mA}$ , $V_{CE} = -20\text{ Vdc}$ , $f = 100\text{ MHz}$ )  | $f_T$                          | 50             | -            | MHz           |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

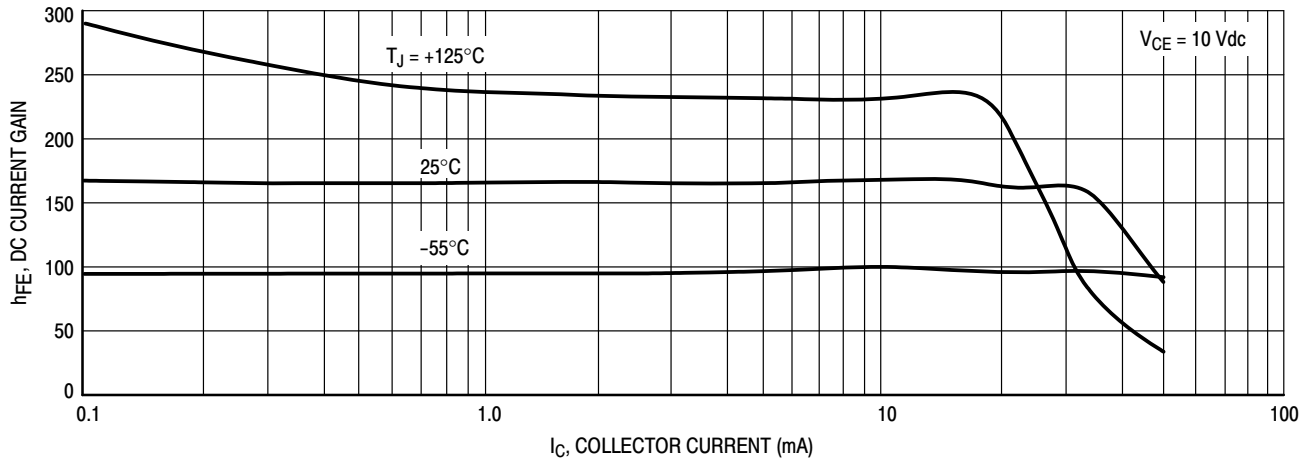


Figure 1. DC Current Gain

# PZTA92T1G, NSVPZTA92T1G

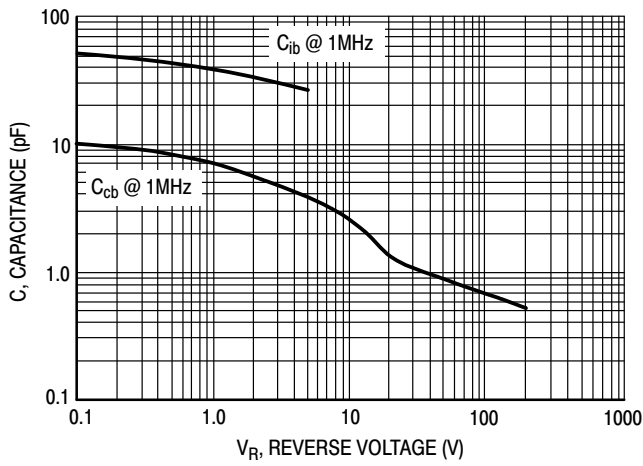


Figure 2. Capacitance

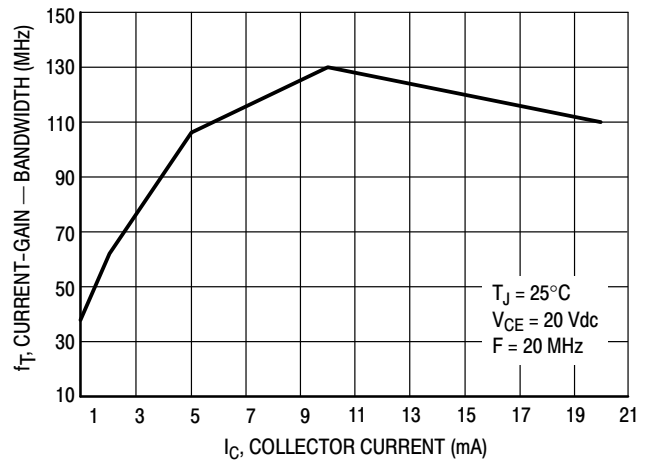


Figure 3. Current-Gain - Bandwidth

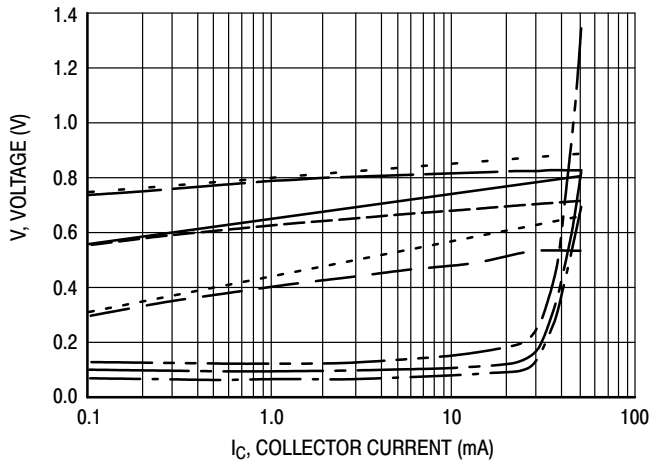


Figure 4. "ON" Voltages

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

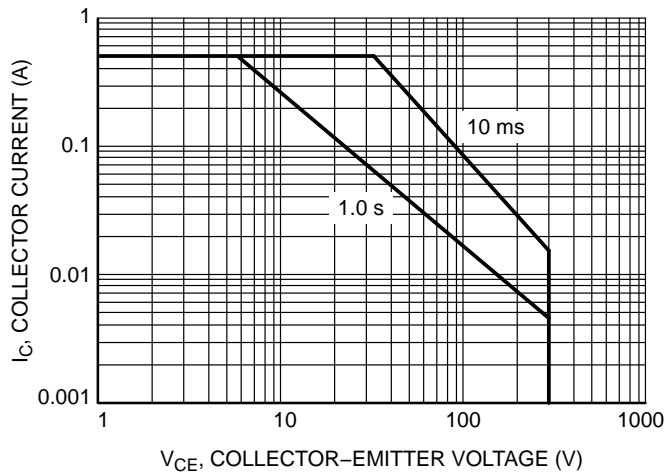


Figure 5. Safe Operating Area

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

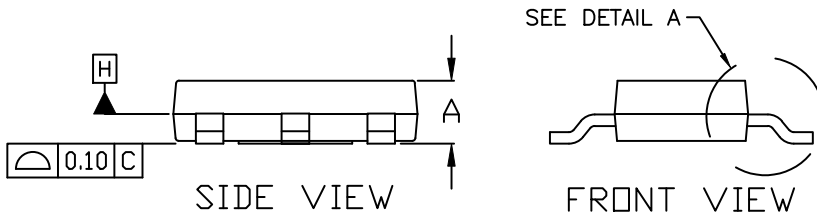
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SCALE 1:1

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

DATE 02 OCT 2018



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D & E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.200MM PER SIDE.
4. DATUMS A AND B ARE DETERMINED AT DATUM H.
5. A1 IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF THE PACKAGE BODY.
6. POSITIONAL TOLERANCE APPLIES TO DIMENSIONS b AND b1.

| MILLIMETERS |          |      |      |
|-------------|----------|------|------|
| DIM         | MIN.     | NOM. | MAX. |
| A           | 1.50     | 1.63 | 1.75 |
| A1          | 0.02     | 0.06 | 0.10 |
| b           | 0.60     | 0.75 | 0.89 |
| b1          | 2.90     | 3.06 | 3.20 |
| c           | 0.24     | 0.29 | 0.35 |
| D           | 6.30     | 6.50 | 6.70 |
| E           | 3.30     | 3.50 | 3.70 |
| e           | 2.30 BSC |      |      |
| L           | 0.20     | ---  | ---  |
| L1          | 1.50     | 1.75 | 2.00 |
| He          | 6.70     | 7.00 | 7.30 |
| θ           | 0°       | ---  | 10°  |



|                         |                         |  |
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**CASE 318E-04**  
**ISSUE R**

DATE 02 OCT 2018

- |  |   |   |   |   |
|--|---|---|---|---|
| <b>STYLE 1:</b><br>PIN 1. BASE<br>2. COLLECTOR<br>3. EMITTER<br>4. COLLECTOR | <b>STYLE 2:</b><br>PIN 1. ANODE<br>2. CATHODE<br>3. NC<br>4. CATHODE        | <b>STYLE 3:</b><br>PIN 1. GATE<br>2. DRAIN<br>3. SOURCE<br>4. DRAIN           | <b>STYLE 4:</b><br>PIN 1. SOURCE<br>2. DRAIN<br>3. GATE<br>4. DRAIN   | <b>STYLE 5:</b><br>PIN 1. DRAIN<br>2. GATE<br>3. SOURCE<br>4. GATE    |
| <b>STYLE 6:</b><br>PIN 1. RETURN<br>2. INPUT<br>3. OUTPUT<br>4. INPUT        | <b>STYLE 7:</b><br>PIN 1. ANODE 1<br>2. CATHODE<br>3. ANODE 2<br>4. CATHODE | <b>STYLE 8:</b><br>CANCELLED  | <b>STYLE 9:</b><br>PIN 1. INPUT<br>2. GROUND<br>3. LOGIC<br>4. GROUND | <b>STYLE 10:</b><br>PIN 1. CATHODE<br>2. ANODE<br>3. GATE<br>4. ANODE |
| <b>STYLE 11:</b><br>PIN 1. MT 1<br>2. MT 2<br>3. GATE<br>4. MT 2             | <b>STYLE 12:</b><br>PIN 1. INPUT<br>2. OUTPUT<br>3. NC<br>4. OUTPUT         | <b>STYLE 13:</b><br>PIN 1. GATE<br>2. COLLECTOR<br>3. EMITTER<br>4. COLLECTOR |   |   |

**GENERIC  
 MARKING DIAGRAM\***




- A = Assembly Location
- Y = Year
- W = Work Week
- XXXXX = Specific Device Code
- = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                         |                         |   |
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