

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_C = 25°C unless otherwise noted)

| Rating | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Collector-Emitter Voltage | V _{CEO} | -300 | Vdc |
| Collector-Base Voltage | V _{CB0} | -300 | Vdc |
| Emitter-Base Voltage | V _{EBO} | -5.0 | Vdc |
| Collector Current | I _C | -500 | mAdc |
| Total Power Dissipation up to @ T _A = 25°C (Note 1) | P _D | 1.5 | W |
| Storage Temperature Range | T _{stg} | -65 to +150 | °C |
| Junction Temperature | T _J | 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, Junction-to-Ambient (Note 2) | R _{θJA} | 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.

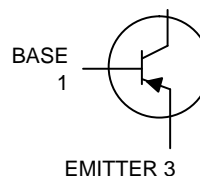


ON Semiconductor®

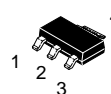
www.onsemi.com

SOT-223 PACKAGE PNP SILICON HIGH VOLTAGE TRANSISTOR SURFACE MOUNT

COLLECTOR 2,4

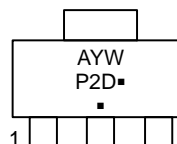


EMITTER 3



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, NSVPZTA92T1G | SOT-223 (Pb-Free) | 1,000 / Tape & Reel |
| NSVPZTA92T3G | SOT-223 (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 |
|---|--------------------------------|----------------|--------------|---------------|
| OFF CHARACTERISTICS | | | | |
| 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 | μA |
| Emitter-Base Cutoff Current ($V_{BE} = -3.0\text{ Vdc}$, $I_C = 0$) | I_{EBO} | - | -0.1 | μA |
| ON CHARACTERISTICS | | | | |
| 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 |
| DYNAMIC CHARACTERISTICS | | | | |
| 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 |

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, $t_p = 300\text{ }\mu\text{s}$, $\delta = 0.02$.

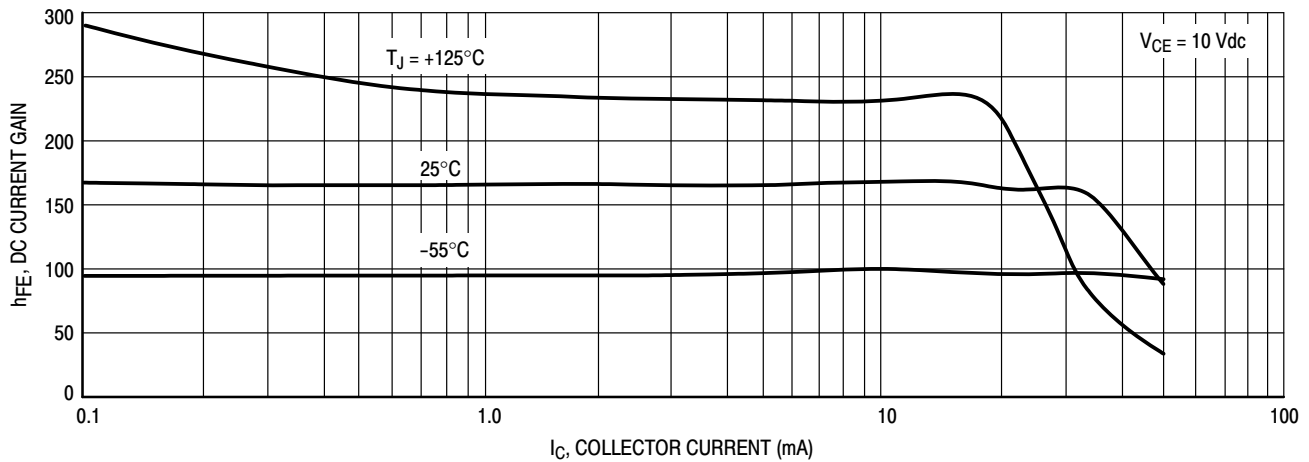


Figure 1. DC Current Gain

PZTA92T1G, NSVPZTA92T1G

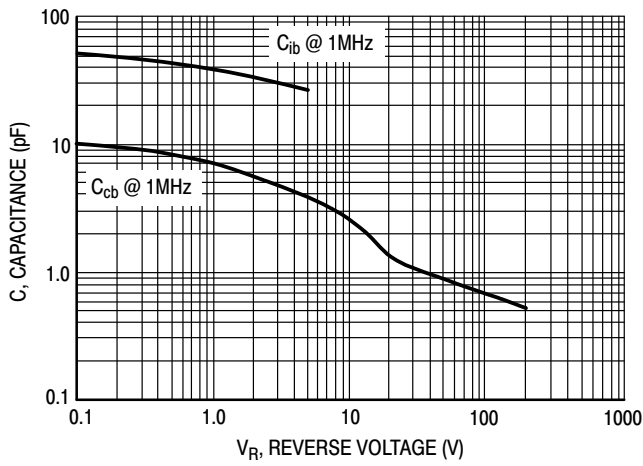


Figure 2. Capacitance

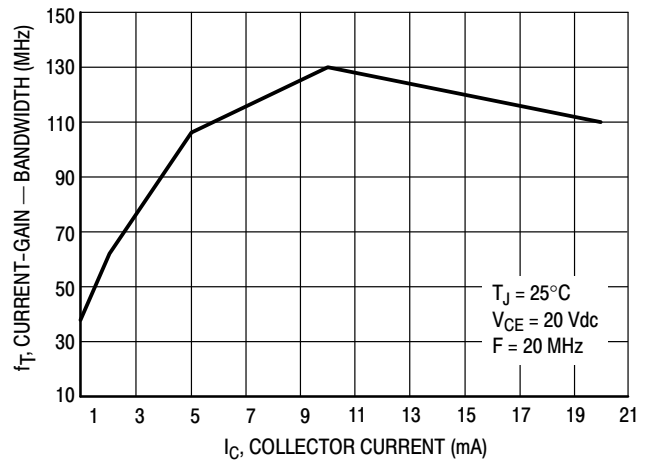


Figure 3. Current-Gain - Bandwidth

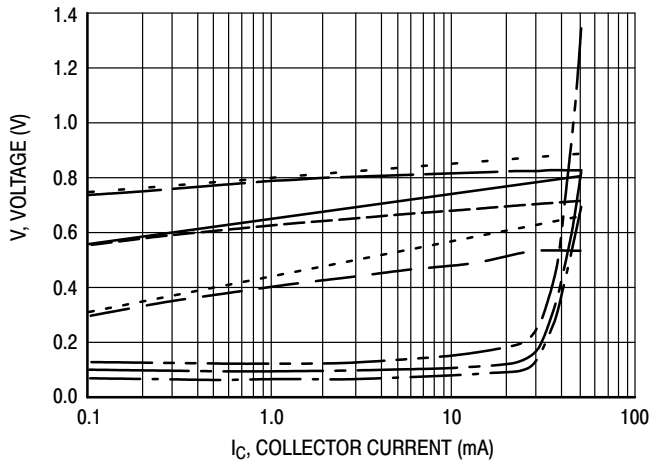


Figure 4. "ON" Voltages

- $V_{CE(sat)}$ @ 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

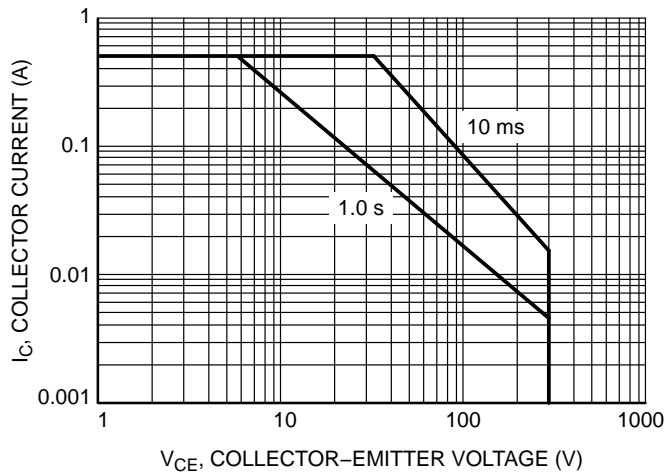


Figure 5. Safe Operating Area

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®



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° |



| | | |
|------------------|------------------|--|
| DOCUMENT NUMBER: | 98ASB42680B | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION: | SOT-223 (TO-261) | PAGE 1 OF 2 |

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

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

DATE 02 OCT 2018

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

| | | |
|-------------------------|-------------------------|--|
| DOCUMENT NUMBER: | 98ASB42680B | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION: | SOT-223 (TO-261) | PAGE 2 OF 2 |

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales