

# High Voltage Transistor Surface Mount

NPN Silicon

## PZTA42T1G

### Features

- PZTA42T1G is Complement to PZTA92T1G
- S 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)

Symbol	Rating	Value	Unit
V <sub>CEO</sub>	Collector-Emitter Voltage (Open Base)	300	Vdc
V <sub>CBO</sub>	Collector-Base Voltage (Open Emitter)	300	Vdc
V <sub>EBO</sub>	Emitter-Base Voltage (Open Collector)	6.0	Vdc
I <sub>C</sub>	Collector Current (DC)	500	mAdc
P <sub>D</sub>	Total Power Dissipation @ T <sub>A</sub> = 25°C (Note 1)	1.5	W
T <sub>stg</sub>	Storage Temperature Range	-65 to +150	°C
T <sub>J</sub>	Junction Temperature	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.

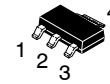
1. Device mounted on a FR-4 glass epoxy printed circuit board  
1.575 in x 1.575 in x 0.0625 in; mounting pad for the collector lead = 0.93 sq in.

### THERMAL CHARACTERISTICS

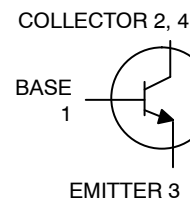
Symbol	Characteristic	Max	Unit
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient (Note 2)	83.3	°C/W

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.

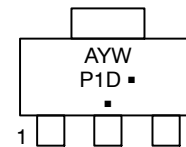
## SOT-223 PACKAGE NPN SILICON HIGH VOLTAGE TRANSISTOR SURFACE MOUNT



**SOT-223  
CASE 318E  
STYLE 1**



### MARKING DIAGRAM



- P1D = 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†
PZTA42T1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel
SPZTA42T1G	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](#).

# PZTA42T1G

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

Symbol	Characteristics	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage (Note 3) ( $I_C = 1.0\text{ mA}$ , $I_B = 0$ )	300	-	Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ )	300	-	Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_E = 100\text{ }\mu\text{A}$ , $I_C = 0$ )	6.0	-	Vdc
$I_{CBO}$	Collector-Base Cutoff Current ( $V_{CB} = 200\text{ Vdc}$ , $I_E = 0$ )	-	0.1	$\mu\text{A}$
$I_{EBO}$	Emitter-Base Cutoff Current ( $V_{BE} = 6.0\text{ Vdc}$ , $I_C = 0$ )	-	0.1	$\mu\text{A}$

## ON CHARACTERISTICS

$h_{FE}$	DC Current Gain ( $I_C = 1.0\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ ) ( $I_C = 10\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ ) ( $I_C = 30\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ )	25 40 40	- - -	-
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## DYNAMIC CHARACTERISTICS

$f_T$	Current-Gain – Bandwidth Product ( $I_C = 10\text{ mA}$ , $V_{CE} = 20\text{ Vdc}$ , $f = 100\text{ MHz}$ )	50	-	MHz
$C_{re}$	Feedback Capacitance ( $V_{CB} = 20\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )	-	3.0	pF
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C = 20\text{ mA}$ , $I_B = 2.0\text{ mA}$ )	-	0.5	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ( $I_C = 20\text{ mA}$ , $I_B = 2.0\text{ mA}$ )	-	0.9	Vdc

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

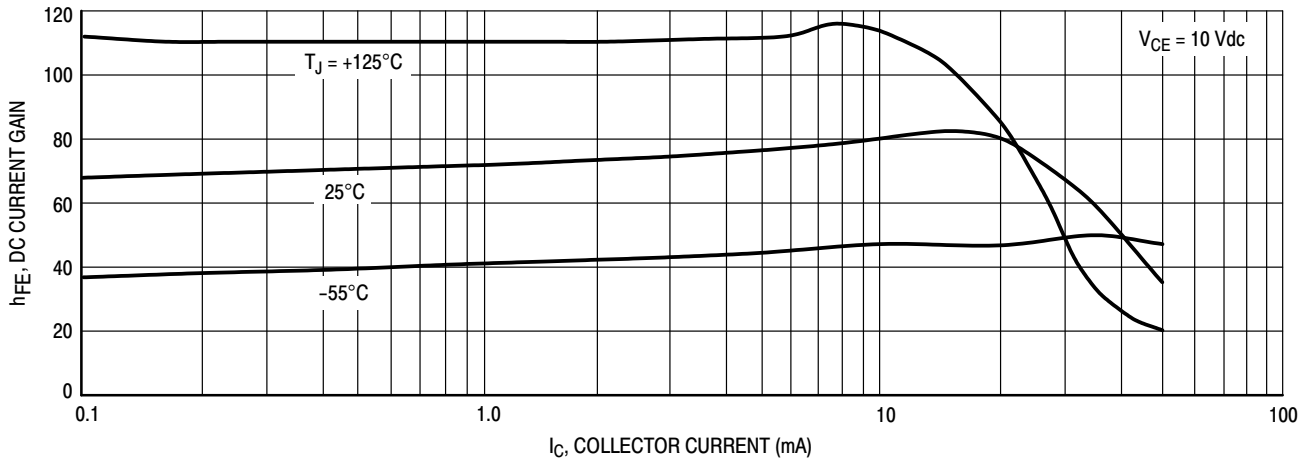


Figure 1. DC Current Gain

# PZTA42T1G

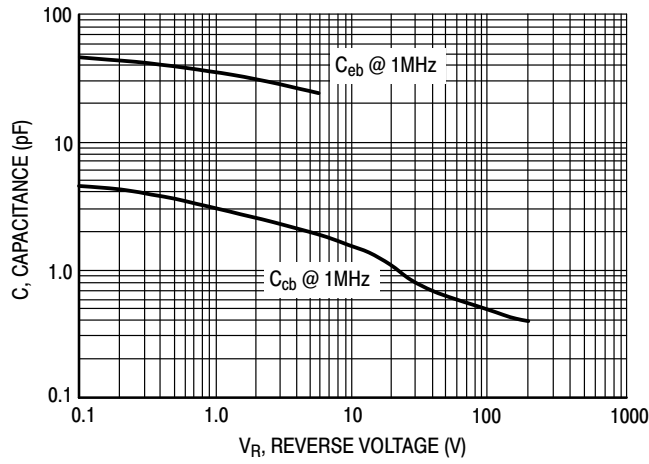


Figure 2. Capacitance

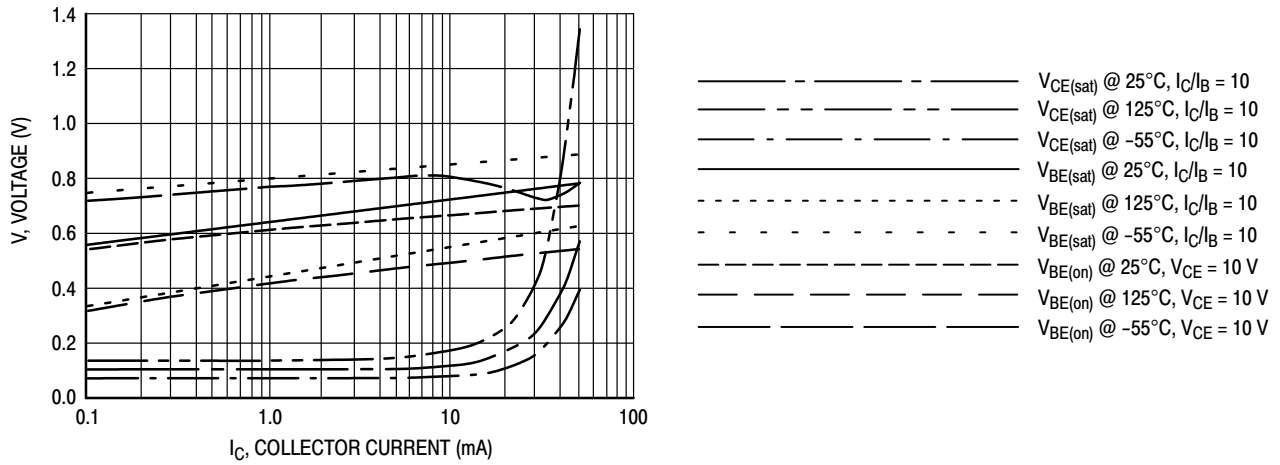


Figure 3. "ON" Voltages

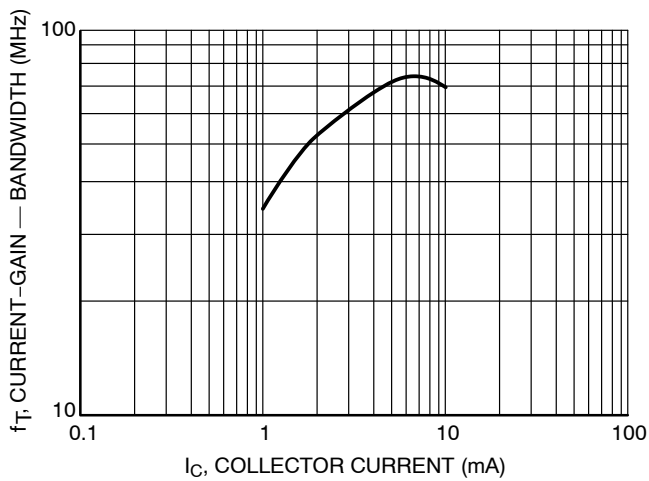


Figure 4. Current Gain Bandwidth Product

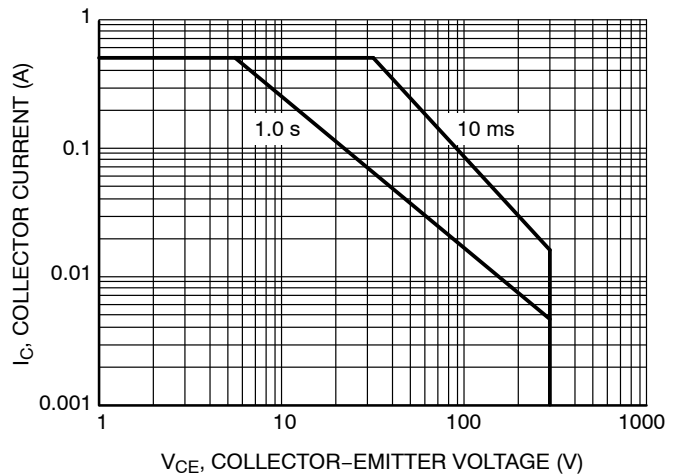


Figure 5. Safe Operating Area

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