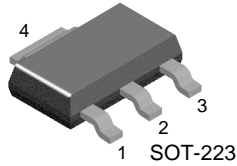


# PZTA29

## NPN Darlington Transistor

- This device designed for applications requiring extremely high current gain at collector currents to 500mA.
- Sourced from process 03.



1. Base 2.4. Collector 3. Emitter

### Absolute Maximum Ratings \* $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter  | Value       | Units            |
|----------------|--|-------------|------------------|
| $V_{CES}$      | Collector-Emitter Voltage                        | 100         | V                |
| $V_{CBO}$      | Collector-Base Voltage                           | 100         | V                |
| $V_{EBO}$      | Emitter-Base Voltage                             | 12          | V                |
| $I_C$          | Collector Current - Continuous                   | 800         | mA               |
| $T_J, T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to +150 | $^\circ\text{C}$ |

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady limits. The factory should be consulted on application involving pulsed or low duty cycle operations

### Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol                              | Parameter                            | Conditions  | Min.             | Max        | Units  |
|-------------------------------------|--------------------------------------|---|------------------|------------|--------|
| <b>Off Characteristics</b>          |                                      |   |                  |            |        |
| $V_{(BR)CES}$                       | Collector-Emitter Breakdown Voltage  | $I_C = 100\mu\text{A}, V_{BE} = 0$  | 100              |            | V      |
| $V_{(BR)CBO}$                       | Collector-Base Breakdown Voltage     | $I_C = 100\mu\text{A}, I_E = 0$   | 100              |            | V      |
| $V_{(BR)EBO}$                       | Emitter-Base Breakdown Voltage       | $I_E = 10\mu\text{A}, I_C = 0$  | 12               |            | V      |
| $I_{CBO}$                           | Collector Cutoff Current             | $V_{CB} = 80\text{V}, I_E = 0$  |                  | 100        | nA     |
| $I_{CES}$                           | Collector Cutoff Current             | $V_{CE} = 80\text{V}, V_{BE} = 0$   |                  | 500        | nA     |
| $I_{EBO}$                           | Emitter Cut-off Current              | $V_{EB} = 10\text{V}, I_C = 0$  |                  | 100        | nA     |
| <b>On Characteristics</b>           |                                      |   |                  |            |        |
| $h_{FE}$                            | DC Current Gain                      | $V_{CE} = 5.0\text{V}, I_C = 10\text{mA}$<br>$V_{CE} = 5.0\text{V}, I_C = 100\text{mA}$ | 10,000<br>10,000 |            |        |
| $V_{CE(sat)}$                       | Collector-Emitter Saturation Voltage | $I_C = 10\text{mA}, I_B = 0.01\text{mA}$<br>$I_C = 100\text{mA}, I_B = 0.1\text{mA}$    |                  | 1.2<br>1.5 | V<br>V |
| $V_{BE(on)}$                        | Base-Emitter On Voltage              | $I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$  |                  | 2.0        | V      |
| <b>Small Signal characteristics</b> |                                      |   |                  |            |        |
| $f_T$                               | Current Gain Bandwidth Product       | $I_C = 10\text{mA}, V_{CE} = 5.0\text{V}, f = 100\text{MHz}$                            | 125              |            | MHz    |
| $C_{obo}$                           | Output Capacitance                   | $V_{CB} = 1.0\text{V}, I_E = 0, f = 1.0\text{MHz}$                                      |                  | 8.0        | pF     |

\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

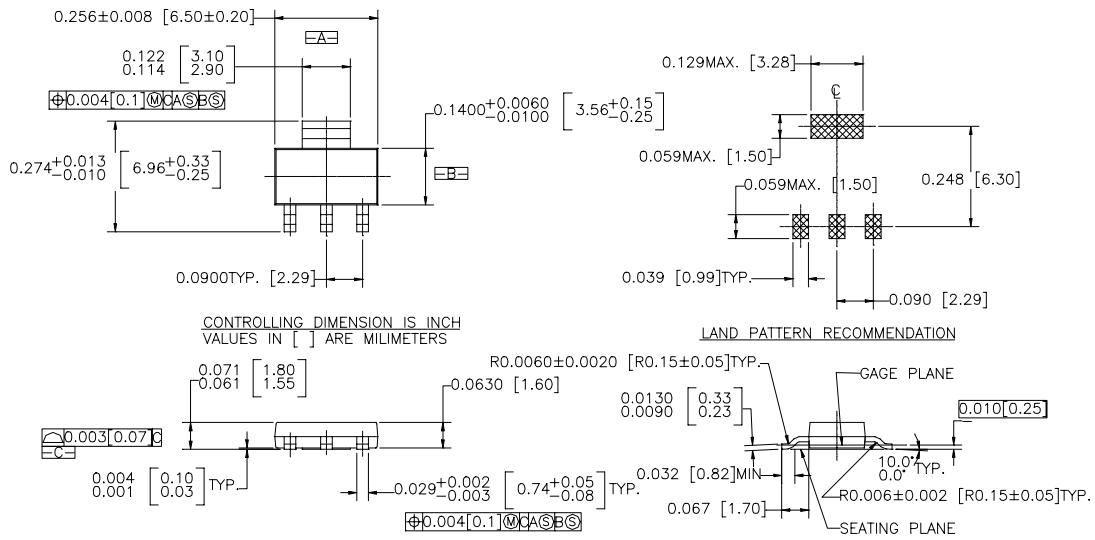
**Thermal Characteristics**  $T_a = 25^\circ\text{C}$  unless otherwise noted

| Symbol          | Parameter                               | Max.  | Units                     |
|-----------------|---|-------|---------------------------|
| $P_D$           | Total Device Dissipation                | 1,000 | mW                        |
|                 | Derate above $25^\circ\text{C}$         | 8.0   | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 125   | $^\circ\text{C}/\text{W}$ |

\* Device mounted on FR-4PCB  $36\text{mm} \times 18\text{mm} \times 1.5\text{mm}$ ; mounting pad for the collector lead min.  $6\text{cm}^2$

Mechanical Dimensions

SOT-223



NOTES : UNLESS OTHERWISE SPECIFIED  
 1. STANDARD LEAD FINISH TO BE 150 MICRONS/ 3.81 MICROMETERS  
 MINIMUM TIN/LEAD (SOLDER) ON COPPER.  
 2. REFERENCE JEDEC REGISTRATION TO-261, VARIATION AA, ISSUE A, DATED JAN 1990

Dimensions in Millimeters

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