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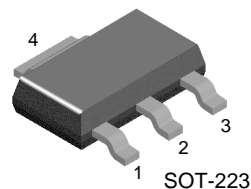
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BSP50

NPN Darlington Transistor

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



1. Base 2. Collector 3. Emitter

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

| Symbol | Parameter | Value | Units |
|--------------------------------|--|-------------|------------------|
| V_{CER} | Collector-Emitter Voltage | 45 | V |
| V_{CBO} | Collector-Base Voltage | 60 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_{C} | Collector Current - Continuous | 800 | mA |
| $T_{\text{J}}, T_{\text{STG}}$ | Operating and Storage Junction Temperature Range | - 55 ~ +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°C .
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-----------------------------|--------------------------------------|--|--------------|------|------|-------|
| Off Characteristics | | | | | | |
| $V_{(\text{BR})\text{CBO}}$ | Collector-Base Breakdown Voltage | $I_{\text{C}} = 100\mu\text{A}, I_{\text{E}} = 0$ | 60 | | | V |
| $V_{(\text{BR})\text{EBO}}$ | Emitter-Base Breakdown Voltage | $I_{\text{E}} = 10\mu\text{A}, I_{\text{C}} = 0$ | 5 | | | V |
| I_{CES} | Collector Cutoff Current | $V_{\text{CE}} = 45\text{V}, V_{\text{BE}} = 0$ | | | 50 | nA |
| I_{EBO} | Emitter Cutoff Current | $V_{\text{EB}} = 4.0\text{V}, I_{\text{C}} = 0$ | | | 50 | nA |
| On Characteristics | | | | | | |
| h_{FE} | DC Current Gain | $I_{\text{C}} = 150\text{mA}, V_{\text{CE}} = 10\text{V}$ $I_{\text{C}} = 500\text{mA}, V_{\text{CE}} = 10\text{V}$ | 1000 2000 | | | |
| $V_{\text{CE(sat)}}$ | Collector-Emitter Saturation Voltage | $I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 0.5\text{mA}$ | | | 1.3 | V |
| $V_{\text{BE(sat)}}$ | Base-Emitter Saturation Voltage | $I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 0.5\text{mA}$ | | | 1.9 | V |

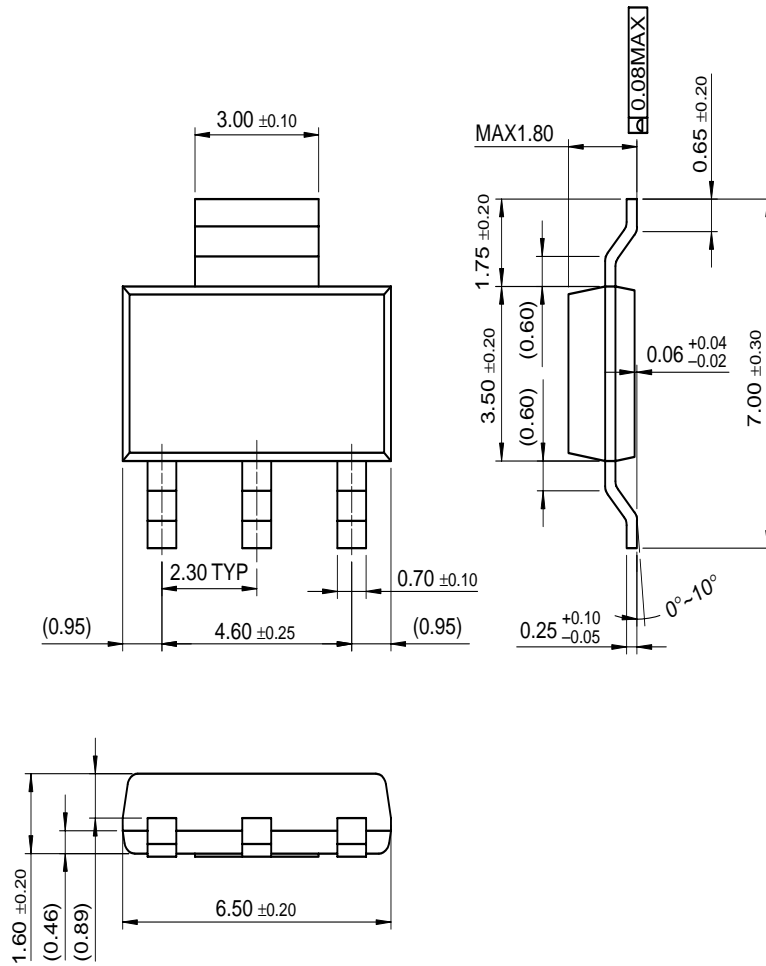
Thermal Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Max. | Units |
|-----------------------|---|-------------|----------------------------|
| P_{D} | Total Device Dissipation Derate above 25°C | 1000 8.0 | mW mW/ $^\circ\text{C}$ |
| $R_{\theta\text{JA}}$ | Thermal Resistance, Junction to Ambient | 125 | $^\circ\text{C}/\text{W}$ |

Package Dimensions

BSP50

SOT-223



Dimensions in Millimeters

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