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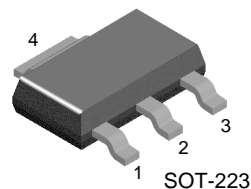
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## BSP50

### 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            |
|--------------------------------|--|-------------|------------------|
| $V_{\text{CER}}$               | Collector-Emitter Voltage                        | 45          | V                |
| $V_{\text{CBO}}$               | Collector-Base Voltage                           | 60          | V                |
| $V_{\text{EBO}}$               | Emitter-Base Voltage                             | 5           | V                |
| $I_{\text{C}}$                 | 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  $150^\circ\text{C}$ .
- 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 |
|-----------------------------|--------------------------------------|--|--------------|------|------|-------|
| <b>Off Characteristics</b>  |                                      |  |              |      |      |       |
| $V_{(\text{BR})\text{CBO}}$ | 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     |
| $I_{\text{CES}}$            | Collector Cutoff Current             | $V_{\text{CE}} = 45\text{V}, V_{\text{BE}} = 0$  |              |      | 50   | nA    |
| $I_{\text{EBO}}$            | Emitter Cutoff Current               | $V_{\text{EB}} = 4.0\text{V}, I_{\text{C}} = 0$  |              |      | 50   | nA    |
| <b>On Characteristics</b>   |                                      |  |              |      |      |       |
| $h_{\text{FE}}$             | DC Current Gain                      | $I_{\text{C}} = 150\text{mA}, V_{\text{CE}} = 10\text{V}$<br>$I_{\text{C}} = 500\text{mA}, V_{\text{CE}} = 10\text{V}$ | 1000<br>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     |

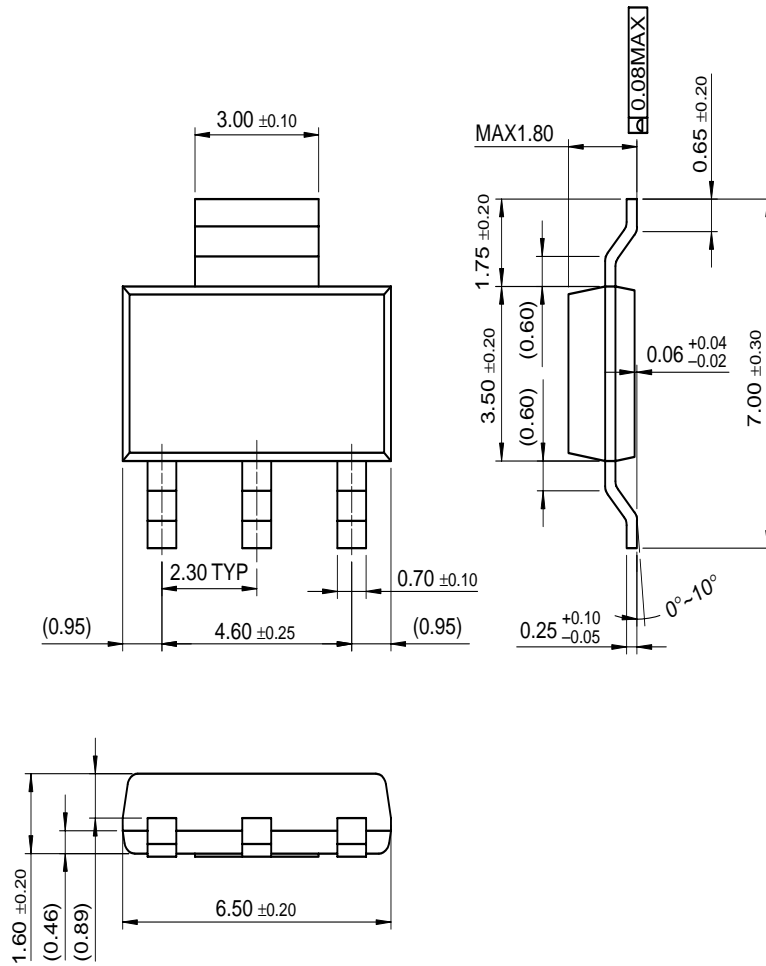
### Thermal Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol                | Parameter   | Max.        | Units                      |
|-----------------------|---|-------------|----------------------------|
| $P_{\text{D}}$        | Total Device Dissipation<br>Derate above $25^\circ\text{C}$ | 1000<br>8.0 | mW<br>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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| CROSSVOLT™                           | GlobalOptoisolator™ | MicroPak™     | QS™                 | SyncFET™        |
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