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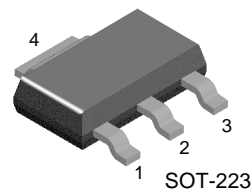
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# BSP50

## 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:

- These ratings are based on a maximum junction temperature of  $150^{\circ}\text{C}$ .
- 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

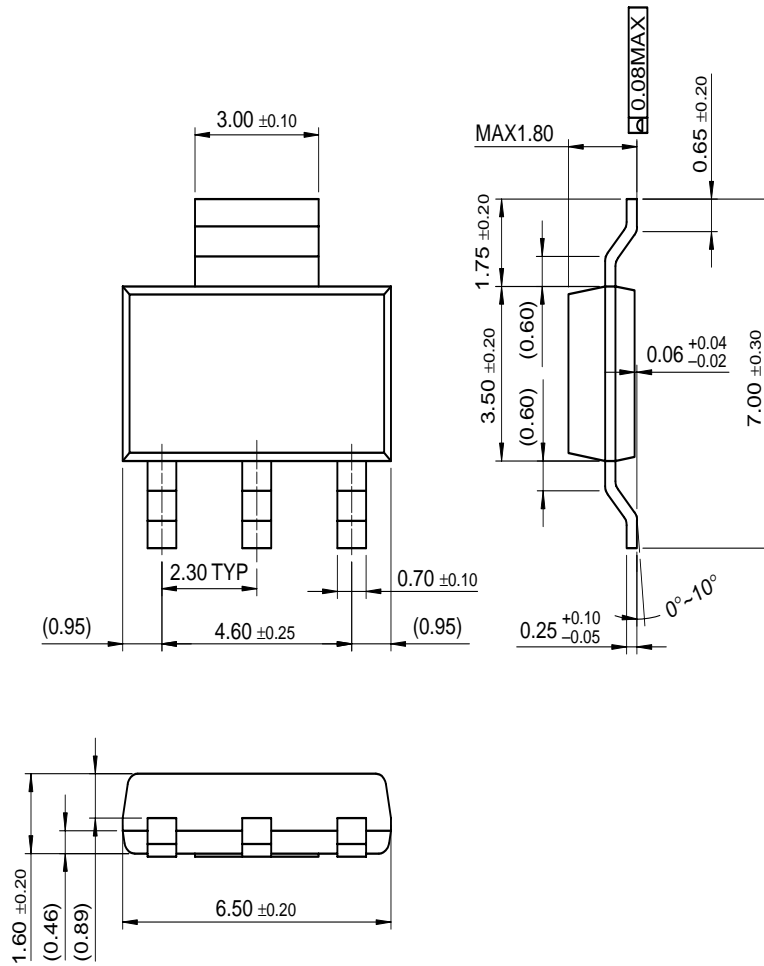
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
$V_{(\text{BR})\text{CBO}}$	Collector-Base Breakdown Voltage	$I_{\text{C}} = 100\mu\text{A}, I_{\text{E}} = 0$	60			V
$V_{(\text{BR})\text{EBO}}$	Emitter-Base Breakdown Voltage	$I_{\text{E}} = 10\mu\text{A}, I_{\text{C}} = 0$	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	$I_{\text{C}} = 150\text{mA}, V_{\text{CE}} = 10\text{V}$ $I_{\text{C}} = 500\text{mA}, V_{\text{CE}} = 10\text{V}$	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
$P_{\text{D}}$	Total Device Dissipation Derate above $25^{\circ}\text{C}$	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

## SOT-223



Dimensions in Millimeters

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