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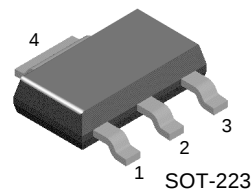
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BSP50

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:

- These ratings are based on a maximum junction temperature of 150°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
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			
$V_{\text{CE}}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 0.5\text{mA}$			1.3	V
$V_{\text{BE}}(\text{sat})$	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	$^{\circ}\text{C}/\text{W}$

Technical drawing of a mechanical part showing three views: front, side, and top.

Front View Dimensions:

- Top width: 3.00 ± 0.10
- Base width: 4.60 ± 0.25
- Base height: 0.70 ± 0.10
- Mounting hole spacing: 2.30 TYP
- Mounting hole diameter: $0.06 \begin{smallmatrix} +0.04 \\ -0.02 \end{smallmatrix}$
- Mounting hole depth: 0.65 ± 0.20
- Mounting hole diameter: 0.08 MAX

Side View Dimensions:

- Top width: 1.80 MAX
- Base width: 7.00 ± 0.30
- Base height: $0.25 \begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$
- Mounting hole spacing: 2.30 TYP
- Mounting hole diameter: $0.06 \begin{smallmatrix} +0.04 \\ -0.02 \end{smallmatrix}$
- Mounting hole depth: 0.65 ± 0.20
- Mounting hole diameter: 0.08 MAX

Top View Dimensions:

- Top width: 1.60 ± 0.20
- Base width: 6.50 ± 0.20
- Base height: $0.25 \begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$
- Mounting hole spacing: 2.30 TYP
- Mounting hole diameter: $0.06 \begin{smallmatrix} +0.04 \\ -0.02 \end{smallmatrix}$
- Mounting hole depth: 0.65 ± 0.20
- Mounting hole diameter: 0.08 MAX

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