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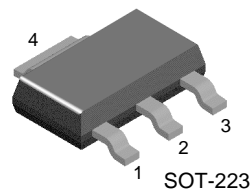
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BSP50

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	$^\circ\text{C}/\text{W}$

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