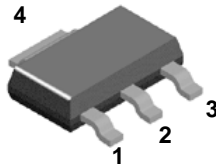


BSP51

NPN Darlington Transistor

This device is designed for applications requiring extremely high current gain at collector currents to 500mA.



SOT-223

1. Base 2. Collector 3. Emitter

Absolute Maximum Ratings * T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CES}	Collector-Emitter Voltage	80	V
V _{CBO}	Collector-Base Voltage	90	V
V _{EBO}	Emitter-Base Voltage	5.0	V
I _C	Collector Current (Continuous)	500	mA
T _J , T _{STG}	Junction Temperature, Storage Temperature	-55 ~ +150	°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 degrees 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°C unless otherwise noted

Symbol	Parameter	Test Condition	MIN	MAX	Units
--------	-----------	----------------	-----	-----	-------

Off Characteristics

V _{(BR)CBO}	Collector-Base Breakdown Voltage	I _C = 100 μA, I _E = 0	90		V
V _{(BR)EBO}	Emitter-Base Breakdown Voltage	I _E = 10 μA, I _C = 0	5.0		V
I _{CES}	Collector Cutoff Current	V _{CE} = 80 V, I _{BE} = 0		10	μA
I _{EBO}	Emitter Cutoff Current	V _{EB} = 4.0 V, I _C = 0		10	μA

On Characteristics

h _{FE}	DC Current Gain	I _C = 150 mA, V _{CE} = 10 V I _C = 500 mA, V _{CE} = 10 V	1000 2000		
V _{CE(sat)}	Collector-Emitter Saturation Voltage *	I _C = 500 mA, I _B = 0.5 mA		1.3	V
V _{BE(sat)}	Base-Emitter Saturation Voltage *	I _C = 500 mA, I _B = 0.5 mA		1.9	V

* Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%

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

Symbol	Characteristic	Max	Units
P _D	Total Device Dissipation	1000	mW
	Derate above 25°...	8.0	mW/°C
R _{θ JA}	Thermal Resistance, Junction to Ambient	125	°C/W

*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06".

BSP51 NPN Darlington Transistor