FAIRCHILD SEMICONDUCTOR®

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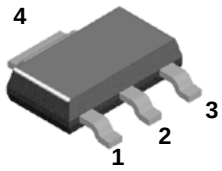
BSP51

NPN Darlington Transistor

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

Sourced from process 03.



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≤300μs, Duty Cycle≤2%

Thermal Characteristics

* T_a = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
P_D	Total Device Dissipation	1000	mW
	Derate above 25°…	8.0	mW/℃
$R_{\Theta JA}$	Thermal Resistance, Junction to Ambient	125	℃/W

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

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