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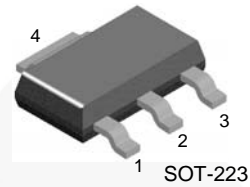
November 2014

BSP52

NPN Darlington Transistor

Description

This device is designed for applications requiring extremely high-current gain at collector currents to 500 mA. Sourced from process 03.



1. Base 2,4. Collector 3. Emitter

Ordering Information

Part Number	Marking	Package	Packing Method
BSP52	BSP52	SOT-223 4L	Tape and Reel

Absolute Maximum Ratings^{(1),(2)}

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage	80	V
V_{CBO}	Collector-Base Voltage	90	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current - Continuous	800	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Notes:

1. These ratings are based on a maximum junction temperature of 150°C .
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics⁽³⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation	1000	mW
	Derate Above 25°C	8.0	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	125	$^\circ\text{C}/\text{W}$

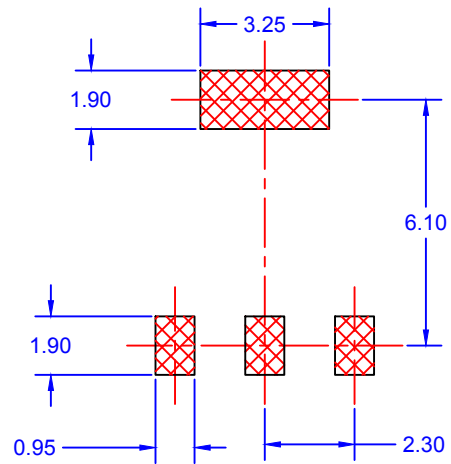
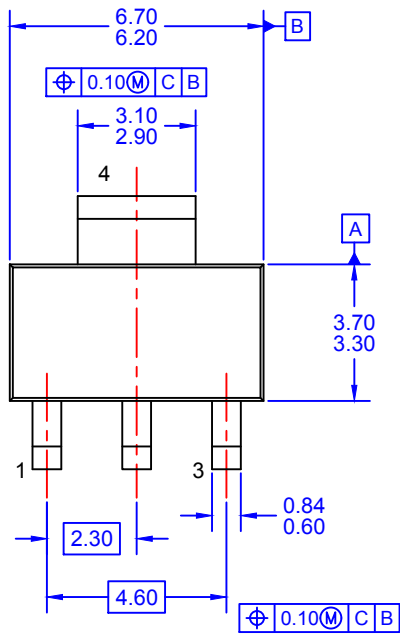
Note:

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

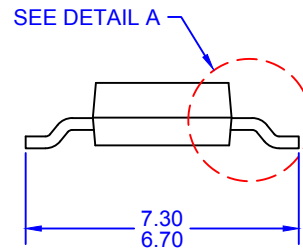
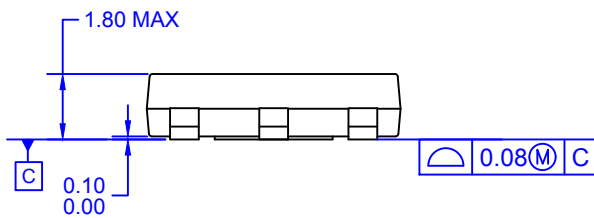
Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

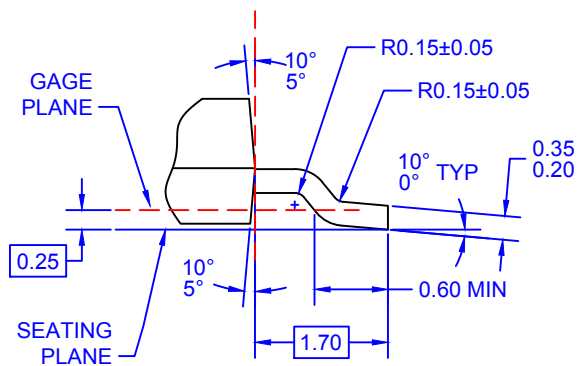
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}$, $I_E = 0$	90			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}$, $I_C = 0$	5			V
I_{CES}	Collector Cut-Off Current	$V_{CE} = 80 \text{ V}$, $V_{BE} = 0$			10	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 4.0 \text{ V}$, $I_C = 0$			10	μA
h_{FE}	DC Current Gain	$I_C = 150 \text{ mA}$, $V_{CE} = 10 \text{ V}$	1000			
		$I_C = 500 \text{ mA}$, $V_{CE} = 10 \text{ V}$	2000			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500 \text{ mA}$, $I_B = 0.5 \text{ mA}$			1.3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 500 \text{ mA}$, $I_B = 0.5 \text{ mA}$			1.9	V



LAND PATTERN RECOMMENDATION



SEE DETAIL A



DETAIL A
SCALE: 2:1

- NOTES: UNLESS OTHERWISE SPECIFIED
 A) DRAWING BASED ON JEDEC REGISTRATION TO-261C, VARIATION AA.
 B) ALL DIMENSIONS ARE IN MILLIMETERS.
 C) DIMENSIONS DO NOT INCLUDE BURRS OR MOLD FLASH. MOLD FLASH OR BURRS DOES NOT EXCEED 0.10MM.
 D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
 E) LANDPATTERN NAME: SOT230P700X180-4BN
 F) DRAWING FILENAME: MKT-MA04AREV3





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Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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