

BSP52T1G, BSP52T3G

NPN Small-Signal Darlington Transistor

This NPN small signal Darlington transistor is designed for use in switching applications, such as print hammer, relay, solenoid and lamp drivers. The device is housed in the SOT-223 package, which is designed for medium power surface mount applications.

Features

- The SOT-223 Package can be soldered using wave or reflow. The formed leads absorb thermal stress during soldering, eliminating the possibility of damage to the die
- Available in 12 mm Tape and Reel
Use BSP52T1 to Order the 7 Inch/1000 Unit Reel
- PNP Complement is BSP62T1
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V _{CES}	80	V
Collector-Base Voltage	V _{CBO}	90	V
Emitter-Base Voltage	V _{EBO}	5.0	V
Collector Current	I _C	1.0	A
Total Power Dissipation (Note 1) @ T _A = 25°C Derate above 25°C	P _D	0.8 6.4	W mW/°C
Total Power Dissipation (Note 2) @ T _A = 25°C Derate above 25°C	P _D	1.25 10	W mW/°C
Operating and Storage Temperature Range	T _J , T _{stg}	-65 to 150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance (Note 1) Junction-to-Ambient	R _{θJA}	156	°C/W
Thermal Resistance (Note 2) Junction-to-Ambient	R _{θJA}	100	°C/W
Maximum Temperature for Soldering Purposes Time in Solder Bath	T _L	260 10	°C Sec

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

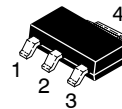
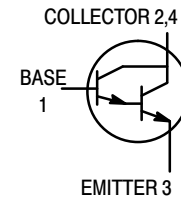
1. Device mounted on a FR-4 glass epoxy printed circuit board using minimum recommended footprint.
2. Device mounted on a FR-4 glass epoxy printed circuit board using 1 cm² pad.



ON Semiconductor[®]

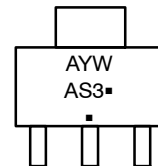
<http://onsemi.com>

MEDIUM POWER NPN SILICON SURFACE MOUNT DARLINGTON TRANSISTOR



**SOT-223
CASE 318E
STYLE 1**

MARKING DIAGRAM



A = Assembly Location
Y = Year
W = Work Week
AS3 = Specific Device Code
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
BSP52T1G	SOT-223 (Pb-Free)	1000 / Tape & Reel
BSP52T3G	SOT-223 (Pb-Free)	4000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

BSP52T1G, BSP52T3G

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
-----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

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

ON CHARACTERISTICS (Note 3)

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

SWITCHING CHARACTERISTICS

Rise Time (V _{CC} = 10 V, I _C = 150 mA, I _{B1} = 0.15 mA)	t _r	–	155	–	ns
Delay Time (V _{CC} = 10 V, I _C = 150 mA, I _{B1} = 0.15 mA)	t _d	–	205	–	ns
Storage Time (V _{CC} = 10 V, I _C = 150 mA, I _{B1} = 0.15 mA, I _{B2} = 0.15 mA)	t _s	–	420	–	ns
Fall Time (V _{CC} = 10 V, I _C = 150 mA, I _{B1} = 0.15 mA, I _{B2} = 0.15 mA)	t _f	–	365	–	ns

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

BSP52T1G, BSP52T3G

TYPICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

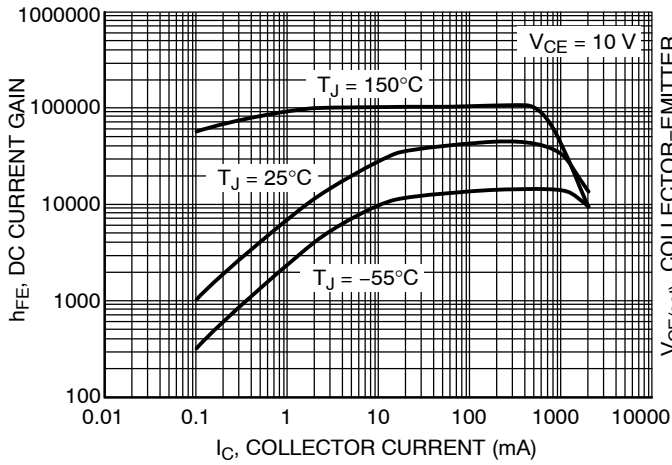


Figure 1. DC Current Gain

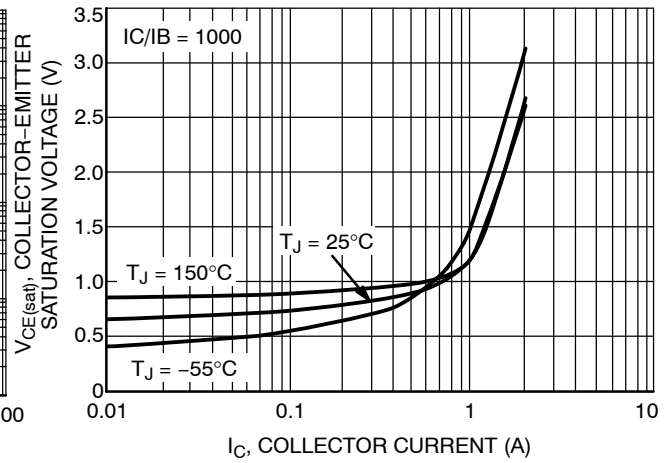


Figure 2. Collector-Emitter Saturation Voltage

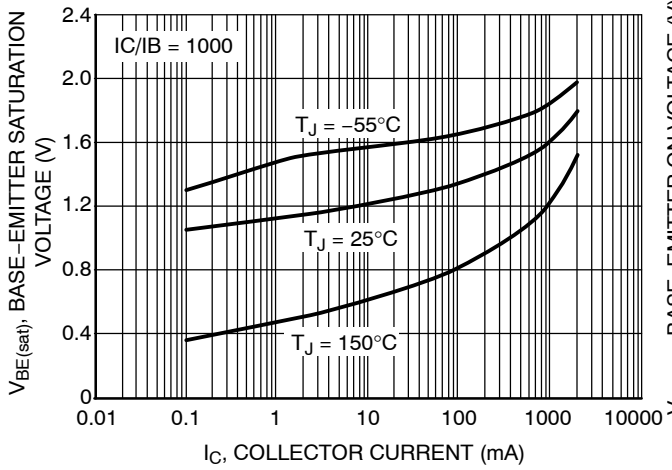


Figure 3. Base-Emitter Saturation Voltage

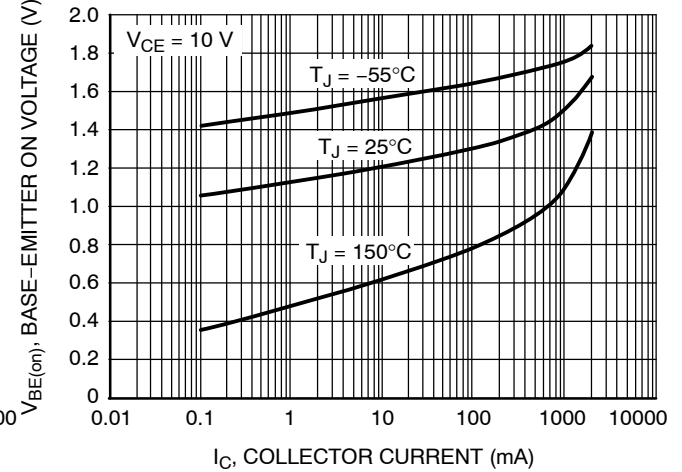


Figure 4. Base-Emitter ON Voltage

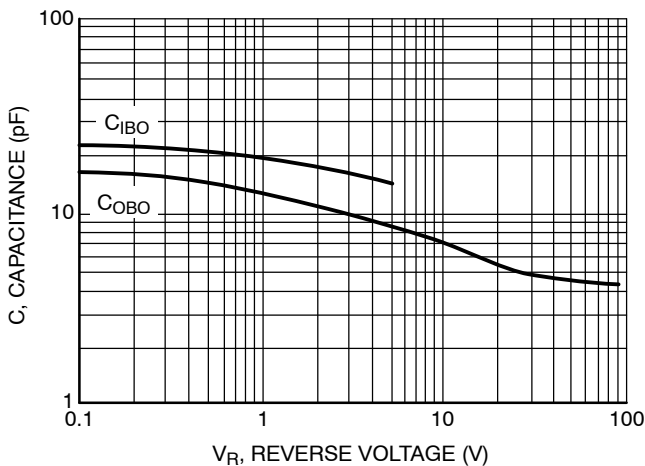


Figure 5. Capacitance

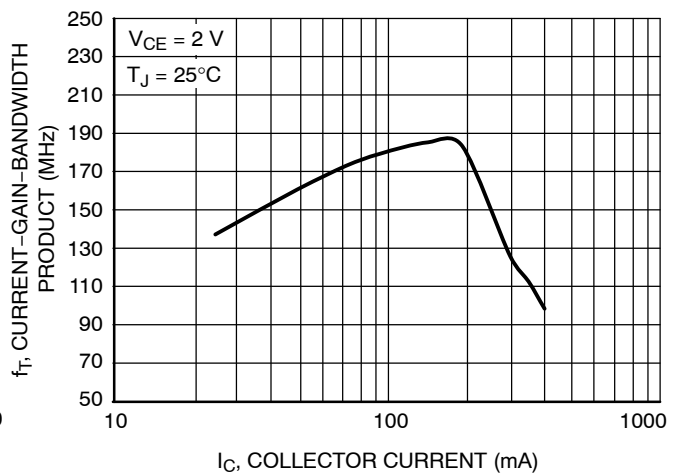
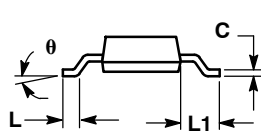
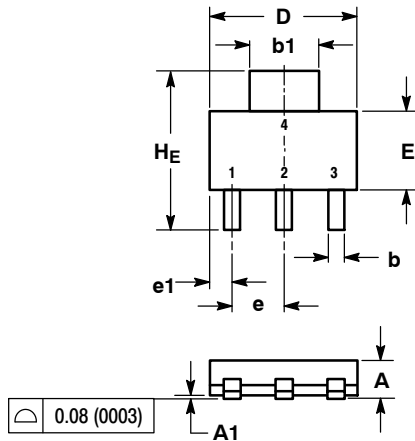


Figure 6. Current Gain Bandwidth Product vs. Collector Current

BSP52T1G, BSP52T3G

PACKAGE DIMENSIONS

SOT-223 (TO-261)
CASE 318E-04
ISSUE N



NOTES:

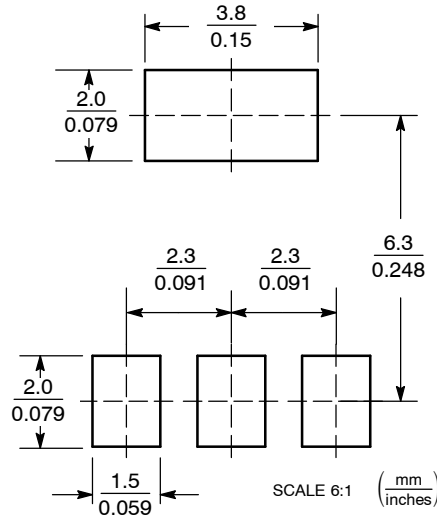
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.63	1.75	0.060	0.064	0.068
A1	0.02	0.06	0.10	0.001	0.002	0.004
b	0.60	0.75	0.89	0.024	0.030	0.035
b1	2.90	3.06	3.20	0.115	0.121	0.126
c	0.24	0.29	0.35	0.009	0.012	0.014
D	6.30	6.50	6.70	0.249	0.256	0.263
E	3.30	3.50	3.70	0.130	0.138	0.145
e	2.20	2.30	2.40	0.087	0.091	0.094
e1	0.85	0.94	1.05	0.033	0.037	0.041
L	0.20	---	---	0.008	---	---
L1	1.50	1.75	2.00	0.060	0.069	0.078
HE	6.70	7.00	7.30	0.264	0.276	0.287
θ	0°	---	10°	0°	---	10°

STYLE 1:

- PIN 1. BASE
- COLLECTOR
- EMITTER
- COLLECTOR

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.