

# BF720T1G, SBF720T1G, BF720T3G

## NPN Silicon Transistor

### Features

- AEC-Q101 Qualified and PPAP Capable
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	$V_{CEO}$	300	Vdc
Collector - Base Voltage	$V_{CBO}$	300	Vdc
Collector - Emitter Voltage	$V_{CER}$	300	Vdc
Emitter - Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current	$I_C$	100	mAdc
Total Power Dissipation up to $T_A = 25^\circ\text{C}$	$P_D$	1.5	W
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	83.3	$^\circ\text{C}/\text{W}$

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 glass epoxy printed circuit board 1.575 in. x 1.575 in. x 0.059 in.; mounting pad for the collector lead min. 0.93 in<sup>2</sup>.

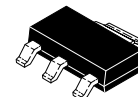
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



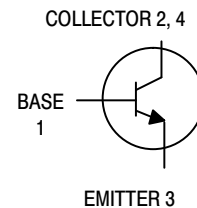
ON Semiconductor®

<http://onsemi.com>

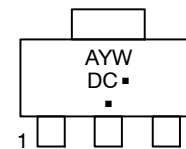
## NPN SILICON TRANSISTOR SURFACE MOUNT



SOT-223 (TO-261)  
CASE 318E  
STYLE 1



### MARKING DIAGRAM



- A = Assembly Location
- Y = Year
- W = Work Week
- DC = Device Code
- = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
BF720T1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel
SBF720T1G	SOT-223 (Pb-Free)	1,000 / Tape & Reel
BF720T3G	SOT-223 (Pb-Free)	4,000 / Tape & Reel

<sup>†</sup>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.

# BF720T1G, SBF720T1G, BF720T3G

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	300	–	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	300	–	Vdc
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = 100 μA, R <sub>BE</sub> = 2.7 kΩ)	V <sub>(BR)CER</sub>	300	–	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	5.0	–	Vdc
Collector-Base Cutoff Current (V <sub>CB</sub> = 200 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	–	10	nAdc
Collector-Emitter Cutoff Current (V <sub>CE</sub> = 250 Vdc, R <sub>BE</sub> = 2.7 kΩ) (V <sub>CE</sub> = 200 Vdc, R <sub>BE</sub> = 2.7 kΩ, T <sub>J</sub> = 150°C)	I <sub>CER</sub>	–	50 10	nAdc μAdc
<b>ON CHARACTERISTICS</b>				
DC Current Gain (I <sub>C</sub> = 25 mA, V <sub>CE</sub> = 20 Vdc)	h <sub>FE</sub>	50	–	–
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 30 mA, I <sub>B</sub> = 5.0 mA)	V <sub>CE(sat)</sub>	–	0.6	Vdc
<b>DYNAMIC CHARACTERISTICS</b>				
Current-Gain - Bandwidth Product (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 10 Vdc, f = 35 MHz)	f <sub>T</sub>	60	–	MHz
Feedback Capacitance (V <sub>CE</sub> = 30 Vdc, I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>re</sub>	–	1.6	pF

# BF720T1G, SBF720T1G, BF720T3G

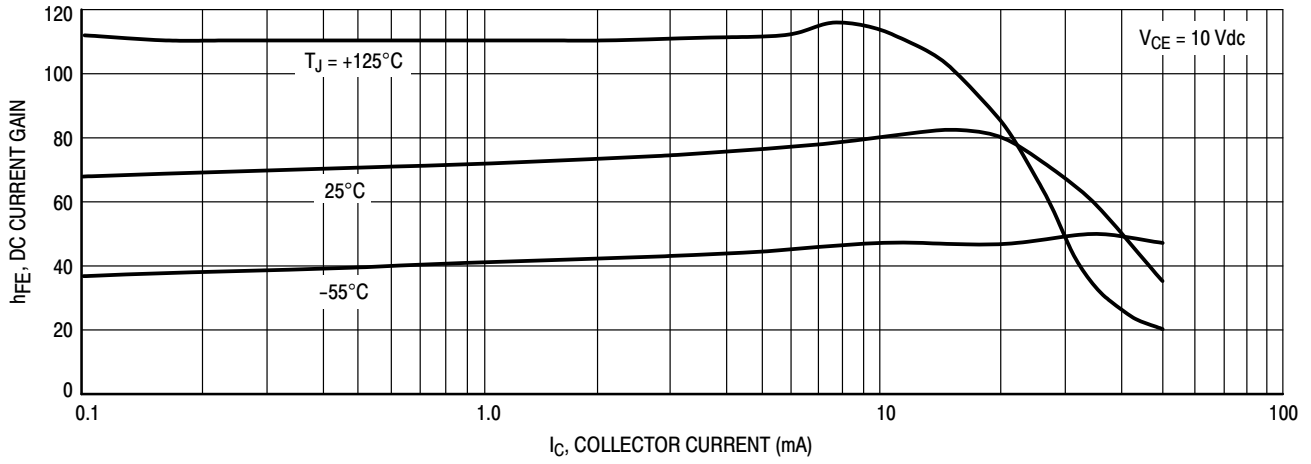


Figure 1. DC Current Gain

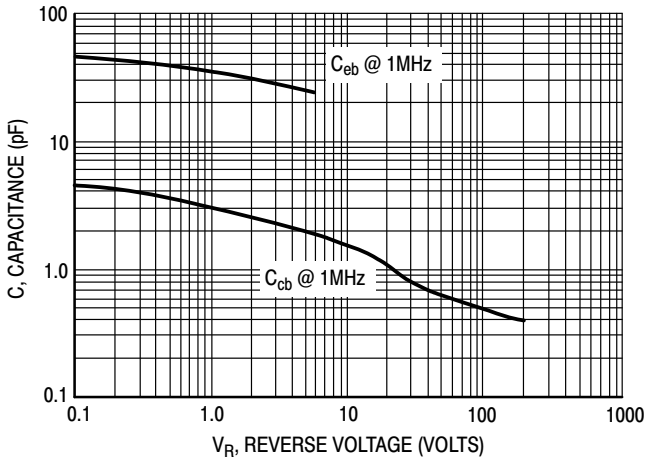


Figure 2. Capacitance

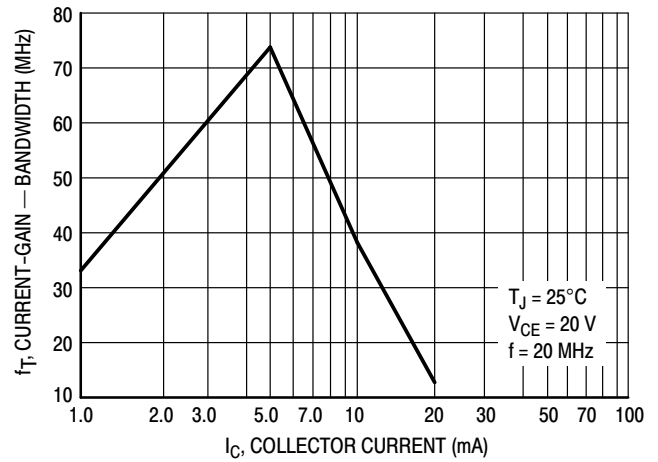


Figure 3. Current-Gain - Bandwidth

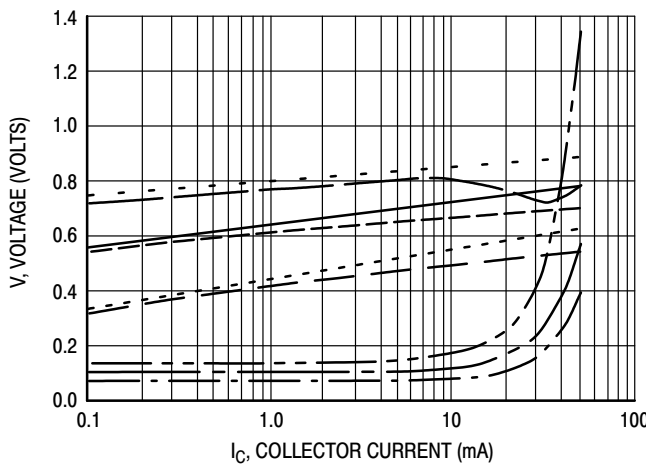


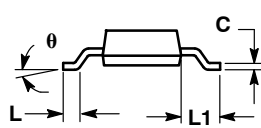
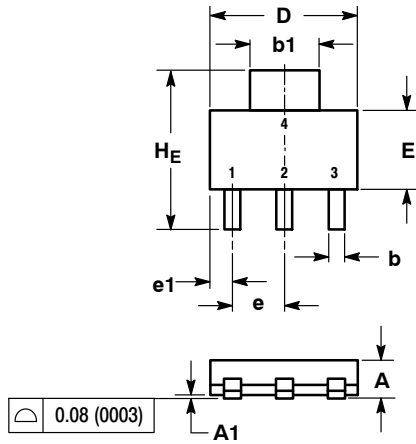
Figure 4. "ON" Voltages

- $V_{CE(sat)}$  @ 25°C,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @ 125°C,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @ -55°C,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @ 25°C,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @ 125°C,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @ -55°C,  $I_C/I_B = 10$
- $V_{BE(on)}$  @ 25°C,  $V_{CE} = 10$  V
- $V_{BE(on)}$  @ 125°C,  $V_{CE} = 10$  V
- $V_{BE(on)}$  @ -55°C,  $V_{CE} = 10$  V

# BF720T1G, SBF720T1G, BF720T3G

## PACKAGE DIMENSIONS

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

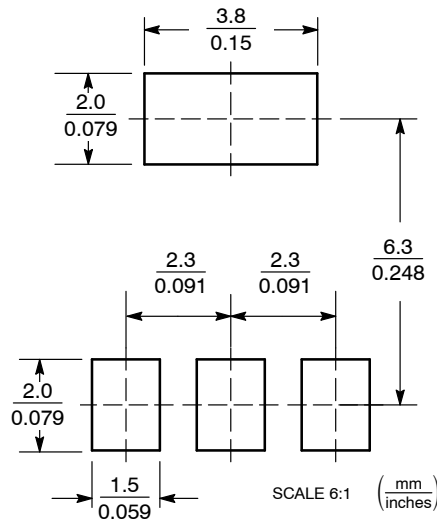


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.  
2. CONTROLLING DIMENSION: INCH.

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  
2: COLLECTOR  
3: EMITTER  
4: 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](http://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](mailto:org@eplast1.ru)

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