

BCP69T1G, NSVBCP69T1G

PNP Silicon Epitaxial Transistor

This PNP Silicon Epitaxial Transistor is designed for use in low voltage, high current applications. The device is housed in the SOT-223 package, which is designed for medium power surface mount applications.

Features

- High Current: $I_C = -1.0$ A
- The SOT-223 Package Can Be Soldered Using Wave or Reflow.
- SOT-223 package ensures level mounting, resulting in improved thermal conduction, and allows visual inspection of soldered joints. The formed leads absorb thermal stress during soldering, eliminating the possibility of damage to the die.
- NPN Complement is BCP68
- AEC-Q101 Qualified and PPAP Capable
- NSV 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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-20	Vdc
Collector-Base Voltage	V_{CBO}	-25	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current	I_C	-1.0	Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1) Derate above 25°C	P_D	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	T_J, T_{stg}	-65 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance – Junction-to-Ambient (Surface Mounted)	$R_{\theta JA}$	83.3	$^\circ\text{C}/\text{W}$
Lead Temperature for Soldering, 0.0625 in from case Time in Solder Bath	T_L	260 10	$^\circ\text{C}$ s

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.

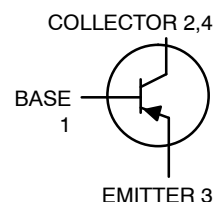
1. Device mounted on a glass epoxy printed circuit board 1.575 in. x 1.575 in. x 0.059 in.; mounting pad for the collector lead min. 0.93 sq. in.



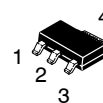
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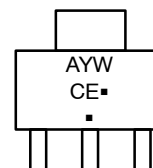
MEDIUM POWER PNP SILICON HIGH CURRENT TRANSISTOR SURFACE MOUNT



MARKING DIAGRAM



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



CE = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
▪ = Pb-Free Package

(*Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
BCP69T1G	SOT-223 (Pb-Free)	1000 / Tape & Reel
NSVBCP69T1G	SOT-223 (Pb-Free)	1000 / 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.

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

Characteristics	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = -100\ \mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CES}$	-25	-	-	Vdc
Collector-Emitter Breakdown Voltage ($I_C = -1.0\ \text{mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	-20	-	-	Vdc
Emitter-Base Breakdown Voltage ($I_E = -10\ \mu\text{Adc}$, $I_C = 0$)	$V_{(BR)EBO}$	-5.0	-	-	Vdc
Collector-Base Cutoff Current ($V_{CB} = -25\ \text{Vdc}$, $I_E = 0$)	I_{CBO}	-	-	-10	μAdc
Emitter-Base Cutoff Current ($V_{EB} = -5.0\ \text{Vdc}$, $I_C = 0$)	I_{EBO}	-	-	-10	μAdc
ON CHARACTERISTICS					
DC Current Gain ($I_C = -5.0\ \text{mAdc}$, $V_{CE} = -10\ \text{Vdc}$) ($I_C = -500\ \text{mAdc}$, $V_{CE} = -1.0\ \text{Vdc}$) ($I_C = -1.0\ \text{Adc}$, $V_{CE} = -1.0\ \text{Vdc}$)	h_{FE}	50 85 60	- - -	- 375 -	-
Collector-Emitter Saturation Voltage ($I_C = -1.0\ \text{Adc}$, $I_B = -100\ \text{mAdc}$)	$V_{CE(sat)}$	-	-	-0.5	Vdc
Base-Emitter On Voltage ($I_C = -1.0\ \text{Adc}$, $V_{CE} = -1.0\ \text{Vdc}$)	$V_{BE(on)}$	-	-	-1.0	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain – Bandwidth Product ($I_C = -10\ \text{mAdc}$, $V_{CE} = -5.0\ \text{Vdc}$)	f_T	-	60	-	MHz

TYPICAL ELECTRICAL CHARACTERISTICS

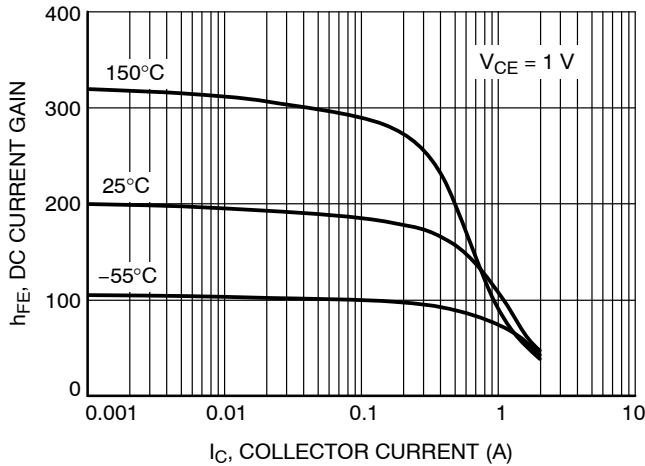


Figure 1. DC Current Gain

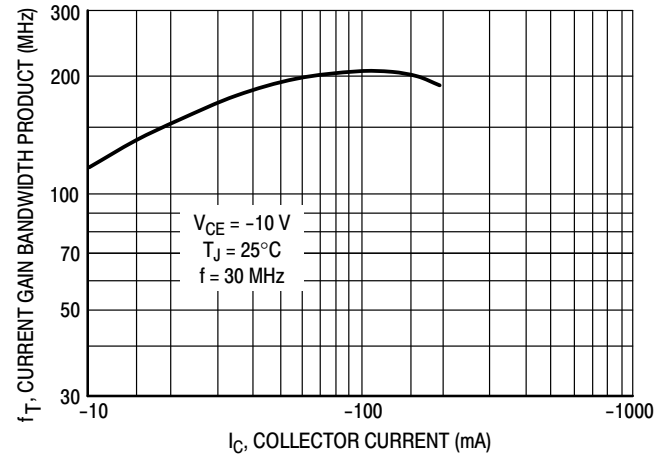


Figure 2. Current Gain Bandwidth Product

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TYPICAL ELECTRICAL CHARACTERISTICS

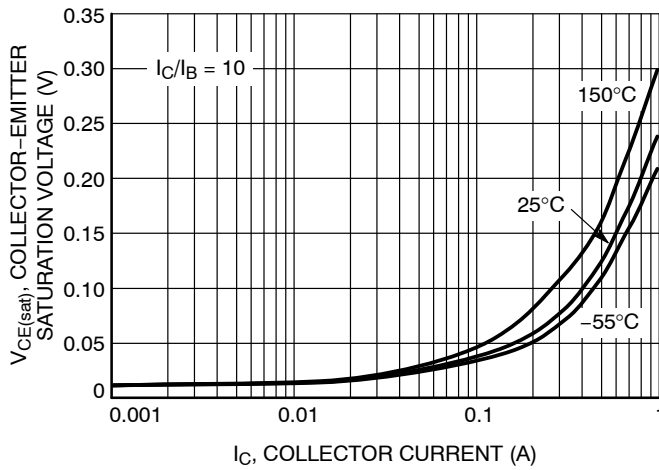


Figure 3. Collector Emitter Saturation Voltage vs. Collector Current

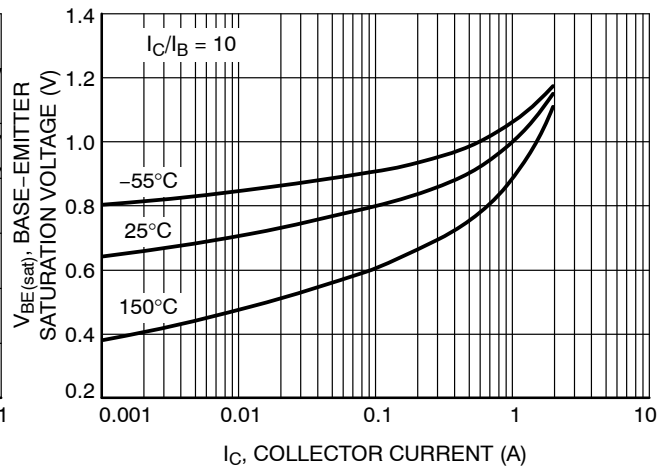


Figure 4. Base Emitter Saturation Voltage vs. Collector Current

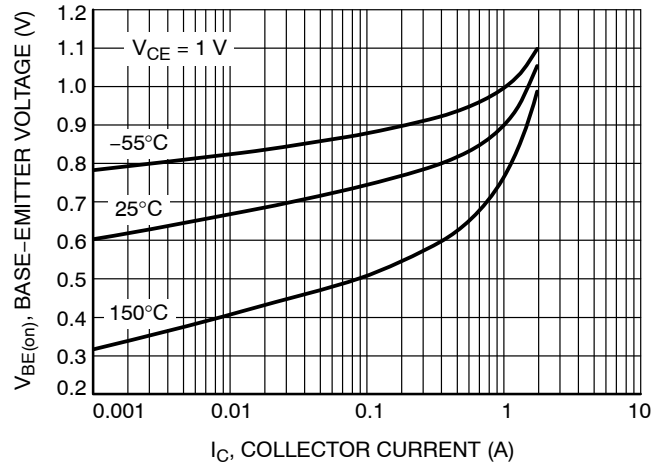


Figure 5. Base Emitter Voltage vs. Collector Current

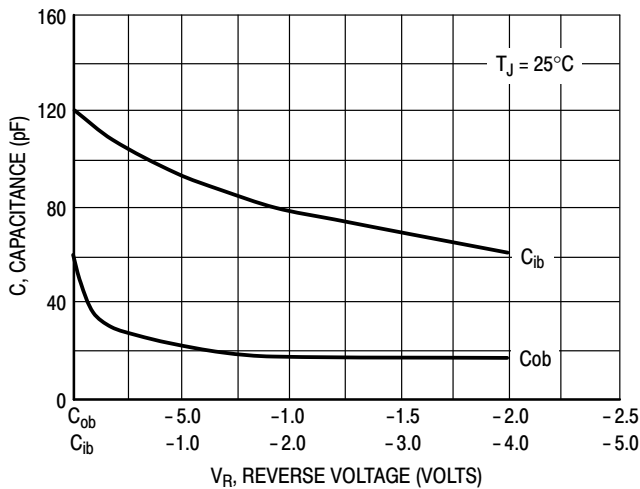


Figure 6. Capacitances

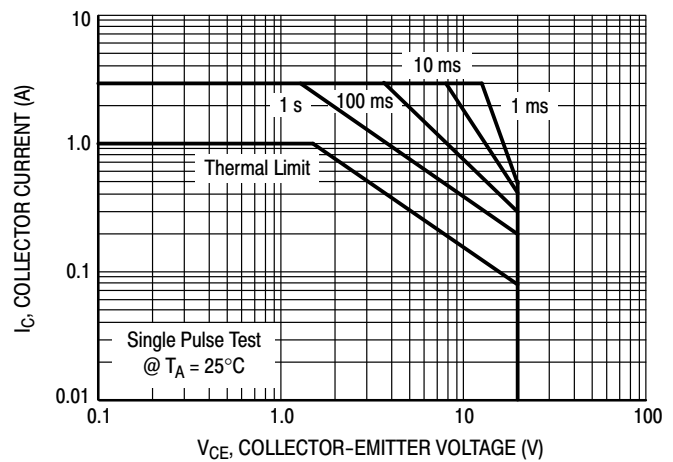
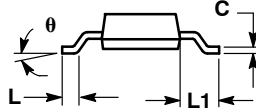
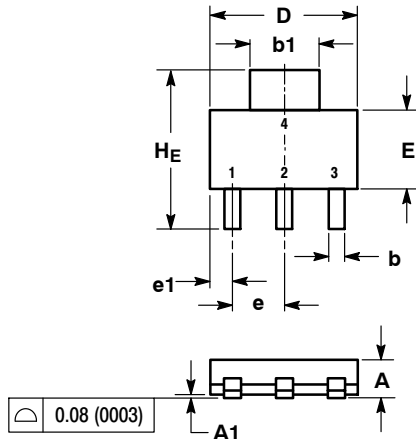


Figure 7. Safe Operating Area

BCP69T1G, NSVBCP69T1G

PACKAGE DIMENSIONS

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



NOTES:

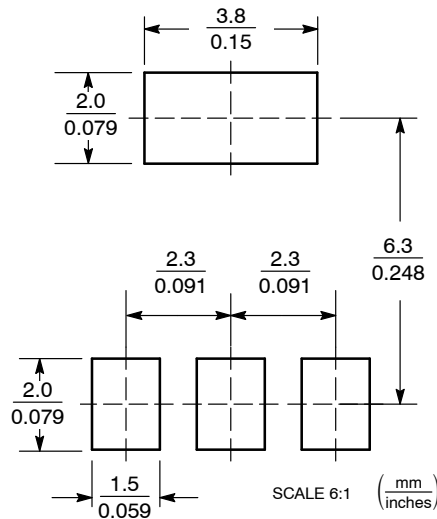
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

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:

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.

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