
PART NUMBER**BCP56-16T1G-ROC**

Rochester Electronics**Manufactured Components**

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All re-creations are done with the approval of the Original Component Manufacturer. (OCM)

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-38535
 - Class Q Military
 - Class V Space Level

Qualified Suppliers List of Distributors (QSLD)

- Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OCM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

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BCP56 Series

NPN Silicon Epitaxial Transistor

These NPN Silicon Epitaxial transistors are designed for use in audio amplifier applications. The device is housed in the SOT–223 package, which is designed for medium power surface mount applications.

Features

- High Current: 1.0 A
- 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 BCP56T1G to Order the 7 inch/1000 Unit Reel
 - Use BCP56T3G to Order the 13 inch/4000 Unit Reel
- PNP Complement is BCP53T1G
- S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC–Q101 Qualified and PPAP Capable
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

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

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V _{CEO}	80	Vdc
Collector–Base Voltage	V _{CBO}	100	Vdc
Emitter–Base Voltage	V _{EBO}	5	Vdc
Collector Current	I _C	1	Adc
Collector Current – Peak (Note 1)	I _{CM}	2	Adc
Total Power Dissipation @ T _A = 25°C (Note 2) Derate above 25°C	P _D	1.5 12	W mW/°C
Operating and Storage Temperature Range	T _J , T _{stg}	–65 to 150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Ambient (surface mounted)	R _{θJA}	83.3	°C/W
Maximum Temperature for Soldering Purposes Time in Solder Bath	T _L	260 10	°C Sec

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

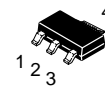
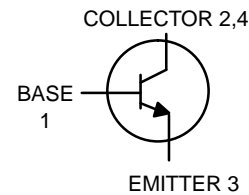
1. Reference SOA curve.
2. Device mounted on a FR–4 glass epoxy printed circuit board 1.575 in x 1.575 in x 0.0625 in; mounting pad for the collector lead = 0.93 sq in.



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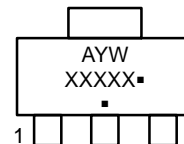
www.onsemi.com

MEDIUM POWER NPN SILICON HIGH CURRENT TRANSISTOR SURFACE MOUNT



**SOT–223
CASE 318E
STYLE 1**

MARKING DIAGRAM



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

ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 5 of this data sheet.

BCP56 Series

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

Characteristics	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Base Breakdown Voltage (I _C = 100 μAdc, I _E = 0)	V _{(BR)CBO}	100	–	–	Vdc
Collector–Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B = 0)	V _{(BR)CEO}	80	–	–	Vdc
Emitter–Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V _{(BR)EBO}	5.0	–	–	Vdc
Collector–Base Cutoff Current (V _{CB} = 30 Vdc, I _E = 0)	I _{CBO}	–	–	100	nAdc
Emitter–Base Cutoff Current (V _{EB} = 5.0 Vdc, I _C = 0)	I _{EBO}	–	–	10	μAdc

ON CHARACTERISTICS (Note 3)

DC Current Gain (I _C = 5.0 mA, V _{CE} = 2.0 V) (I _C = 150 mA, V _{CE} = 2.0 V) (I _C = 500 mA, V _{CE} = 2.0 V)	h _{FE} All Part Types BCP56 BCP56–10 BCP56–16 All Types	25 40 63 100 25	– – – – –	– 250 160 250 –	–
Collector–Emitter Saturation Voltage (I _C = 500 mAdc, I _B = 50 mAdc)	V _{CE(sat)}	–	–	0.5	Vdc
Base–Emitter On Voltage (I _C = 500 mAdc, V _{CE} = 2.0 Vdc)	V _{BE(on)}	–	–	1.0	Vdc

SWITCHING CHARACTERISTICS

Rise Time (V _{CC} = 30 Vdc, I _C = 150 mA, I _{B1} = 15 mA)	t _r	–	14	–	ns
Delay Time (V _{CC} = 30 Vdc, I _C = 150 mA, I _{B1} = 15 mA)	t _d	–	9	–	ns
Storage Time (V _{CC} = 30 Vdc, I _C = 150 mA, I _{B1} = 15 mA, I _{B2} = 15 mA)	t _s	–	714	–	ns
Fall Time (V _{CC} = 30 Vdc, I _C = 150 mA, I _{B1} = 15 mA, I _{B2} = 15 mA)	t _f	–	58	–	ns

DYNAMIC CHARACTERISTICS

Current–Gain – Bandwidth Product (I _C = 10 mAdc, V _{CE} = 5.0 Vdc, f = 35 MHz)	f _T	–	130	–	MHz
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Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

BCP56 Series

TYPICAL ELECTRICAL CHARACTERISTICS

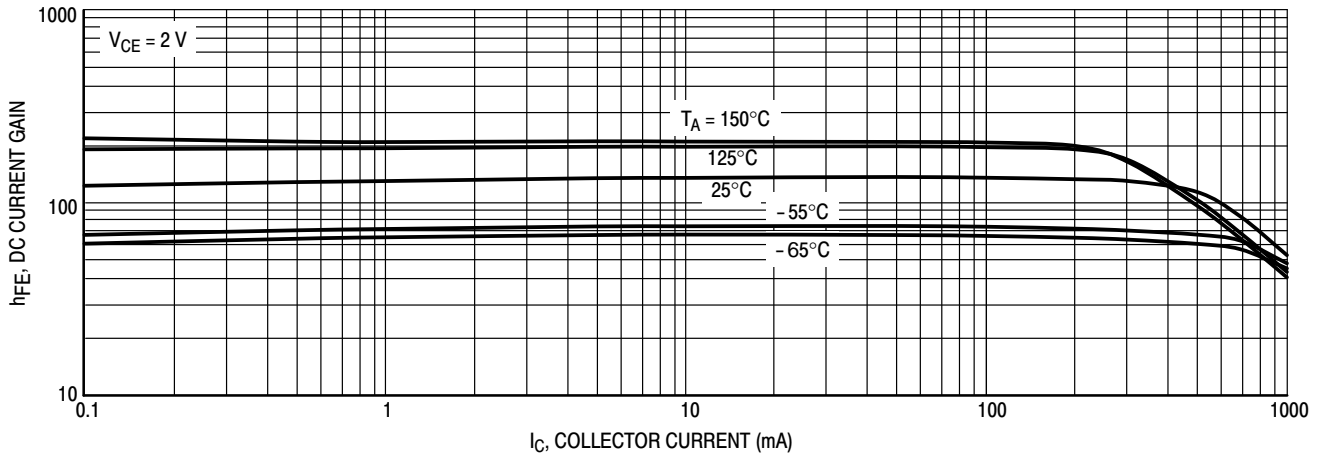


Figure 1. DC Current Gain

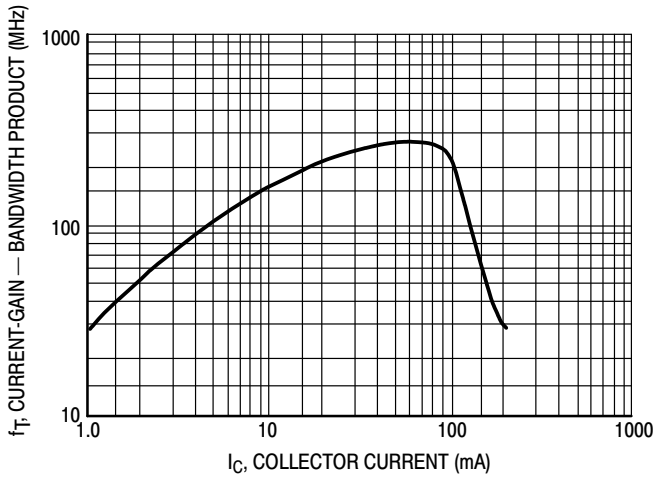


Figure 2. Current-Gain - Bandwidth Product

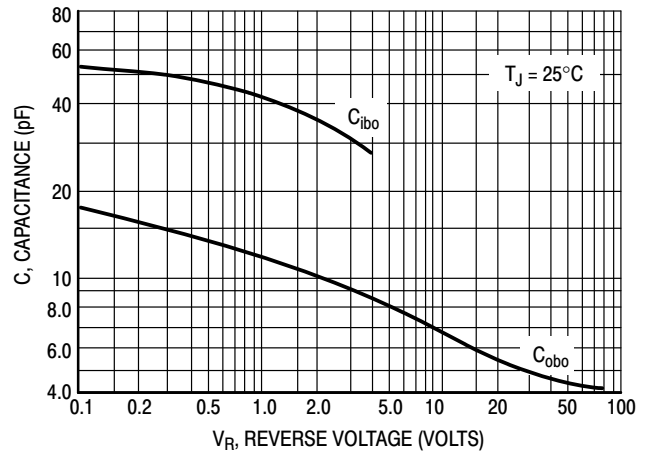


Figure 3. Capacitance

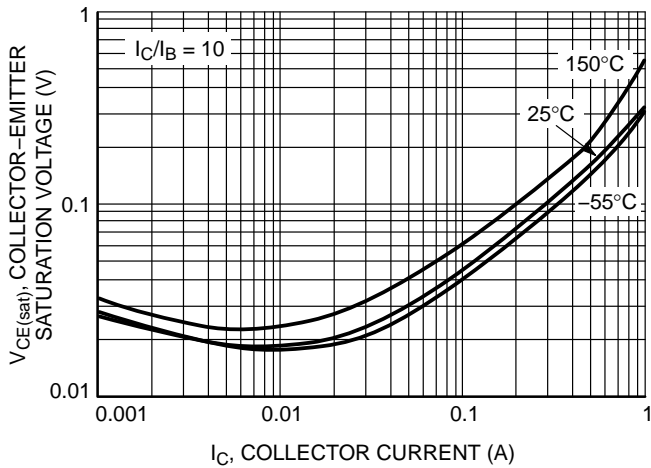


Figure 4. Collector Emitter Saturation Voltage vs. Collector Current

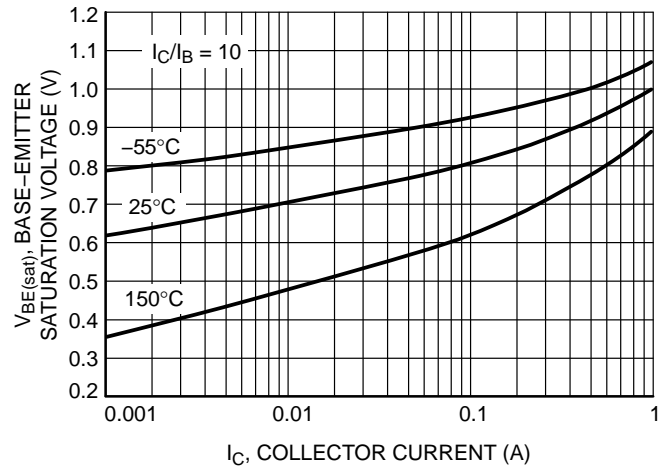


Figure 5. Base Emitter Saturation Voltage vs. Collector Current

BCP56 Series

TYPICAL ELECTRICAL CHARACTERISTICS

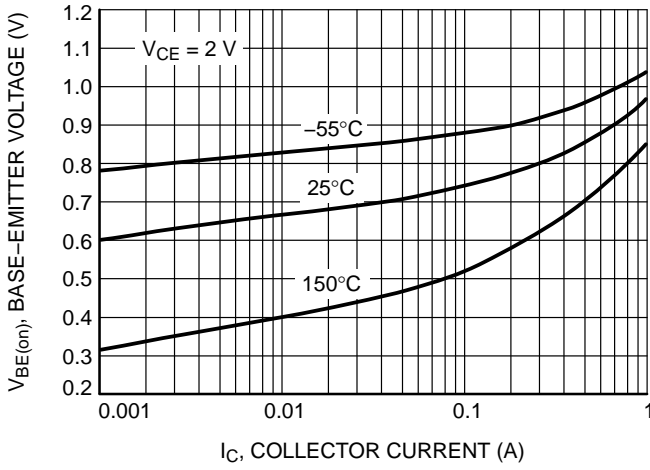


Figure 6. Base Emitter Voltage vs. Collector Current

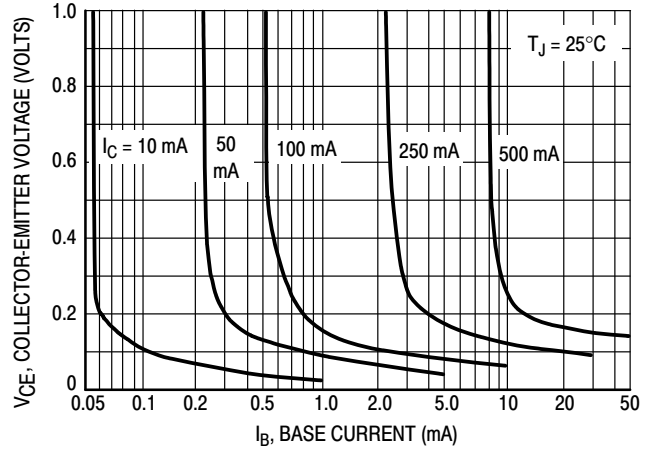


Figure 7. Collector Saturation Region

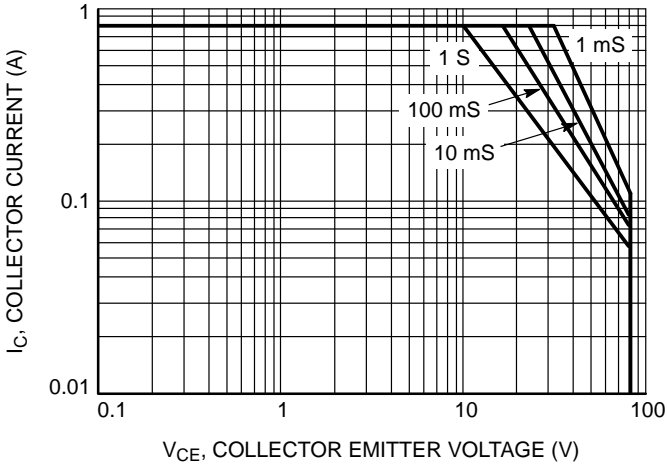


Figure 8. Safe Operating Area

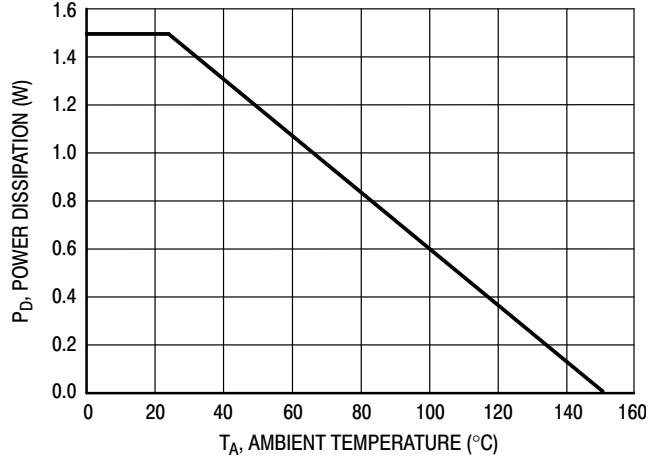


Figure 9. Power Derating Curve

BCP56 Series

ORDERING INFORMATION

Device	Marking	Package	Shipping†
BCP56T1G	BH	SOT-223 (Pb-Free)	1000 / Tape & Reel
SBCP56T1G*			
BCP56T3G	BH	SOT-223 (Pb-Free)	4000 / Tape & Reel
SBCP56T3G*			
BCP56-10T1G	BH-10	SOT-223 (Pb-Free)	1000 / Tape & Reel
SBCP56-10T1G*			
BCP56-10T3G	BH-10	SOT-223 (Pb-Free)	4000 / Tape & Reel
NSVBCP56-10T3G*			
BCP56-16T1G	BH-16	SOT-223 (Pb-Free)	1000 / Tape & Reel
SBCP56-16T1G*			
BCP56-16T3G	BH-16	SOT-223 (Pb-Free)	4000 / Tape & Reel
SBCP56-16T3G*			

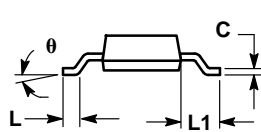
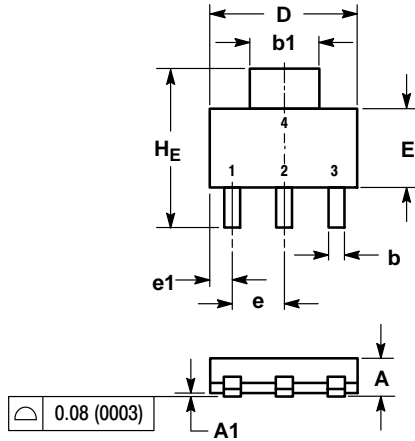
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

BCP56 Series

PACKAGE DIMENSIONS

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

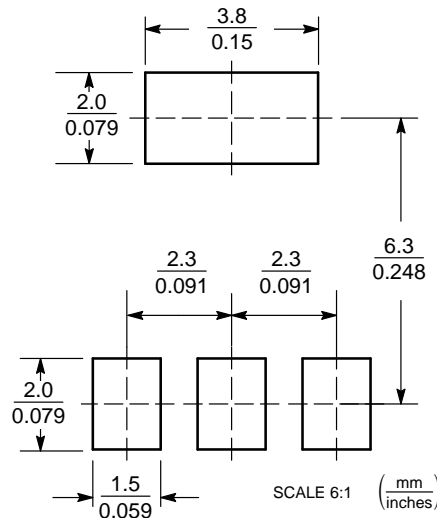


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

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.

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