

# BCP53T1 Series

Preferred Devices

## PNP Silicon Epitaxial Transistors

This PNP Silicon Epitaxial transistor is 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.

- High Current: 1.5 Amps
- NPN Complement is BCP56
- 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 BCP53T1 to order the 7 inch/1000 unit reel.  
Use BCP53T3 to order the 13 inch/4000 unit reel.
- Device Marking:  
BCP53T1 = AH  
BCP53-10T1 = AH-10  
BCP53-16T1 = AH-16
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

### MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	-80	Vdc
Collector-Base Voltage	V <sub>CB0</sub>	-100	Vdc
Emitter-Base Voltage	V <sub>EB0</sub>	-5.0	Vdc
Collector Current	I <sub>C</sub>	1.5	Adc
Total Power Dissipation @ T <sub>A</sub> = 25°C (Note 1.) Derate above 25°C	P <sub>D</sub>	1.5 12	Watts mW/°C
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient (surface mounted)	R <sub>θJA</sub>	83.3	°C/W
Lead Temperature for Soldering, 0.0625" from case Time in Solder Bath	T <sub>L</sub>	260 10	°C Sec

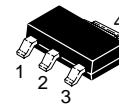
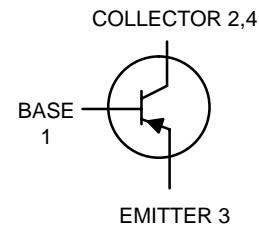
1. Device mounted on a glass epoxy printed circuit board 1.575 in. x 1.575 in. x 0.059 in.; mounting pad for the collector lead min. 0.93 sq. in.



ON Semiconductor®

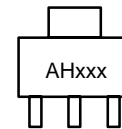
<http://onsemi.com>

## MEDIUM POWER HIGH CURRENT SURFACE MOUNT PNP TRANSISTORS



SOT-223  
CASE 318E  
STYLE 1

### MARKING DIAGRAM



AHxxx = Device Code  
xxx = -10 or -16

### ORDERING INFORMATION

Device	Package	Shipping†
BCP53T1	SOT-223	1000/Tape & Reel
BCP53T1G	SOT-223 (Pb-Free)	1000/Tape & Reel
BCP53-10T1	SOT-223	1000/Tape & Reel
BCP53-16T1	SOT-223	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.

Preferred devices are recommended choices for future use and best overall value.

# BCP53T1 Series

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

Characteristics	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Base Breakdown Voltage ( $I_C = -100 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	-100	-	-	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = -1.0 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	-80	-	-	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = -100 \mu\text{Adc}$ , $R_{BE} = 1.0 \text{ kohm}$ )	$V_{(BR)CER}$	-100	-	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E = -10 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	-5.0	-	-	Vdc
Collector-Base Cutoff Current ( $V_{CB} = -30 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	-	-	-100	nAdc
Emitter-Base Cutoff Current ( $V_{EB} = -5.0 \text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	-	-	-10	$\mu\text{Adc}$
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = -5.0 \text{ mAdc}$ , $V_{CE} = -2.0 \text{ Vdc}$ ) All Part Types ( $I_C = -150 \text{ mAdc}$ , $V_{CE} = -2.0 \text{ Vdc}$ )	$h_{FE}$	25	-	-	-
BCP53T1		40	-	250	
BCP53-10T1		63	-	160	
BCP53-16T1		100	-	250	
( $I_C = -500 \text{ mAdc}$ , $V_{CE} = -2.0 \text{ Vdc}$ ) All Part Types		25	-	-	
Collector-Emitter Saturation Voltage ( $I_C = -500 \text{ mAdc}$ , $I_B = -50 \text{ mAdc}$ )	$V_{CE(sat)}$	-	-	-0.5	Vdc
Base-Emitter On Voltage ( $I_C = -500 \text{ mAdc}$ , $V_{CE} = -2.0 \text{ Vdc}$ )	$V_{BE(on)}$	-	-	-1.0	Vdc
<b>DYNAMIC CHARACTERISTICS</b>					
Current-Gain – Bandwidth Product ( $I_C = -10 \text{ mAdc}$ , $V_{CE} = -5.0 \text{ Vdc}$ , $f = 35 \text{ MHz}$ )	$f_T$	-	50	-	MHz

## TYPICAL ELECTRICAL CHARACTERISTICS

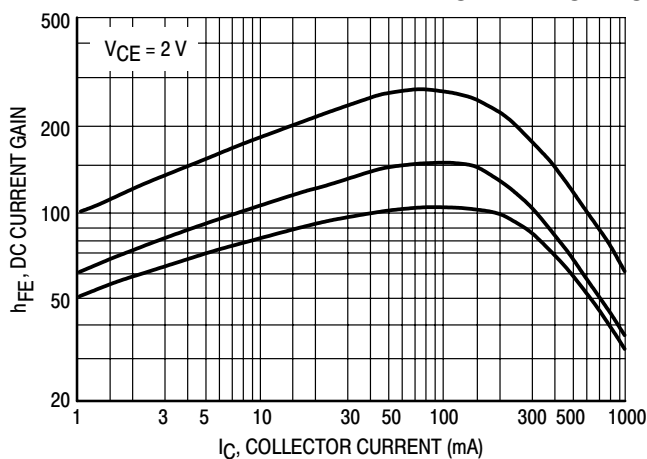


Figure 1. DC Current Gain

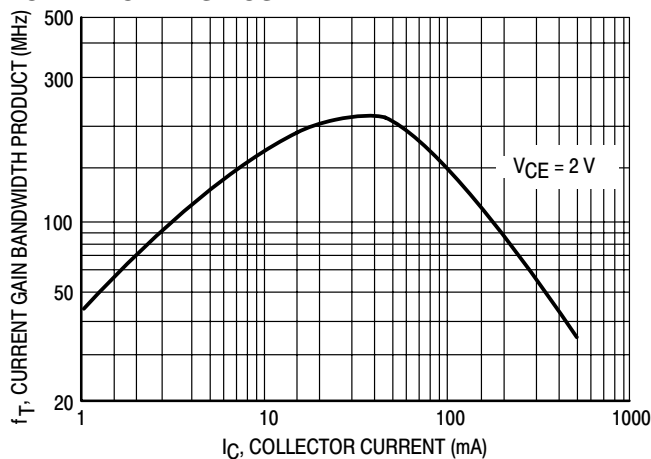


Figure 2. Current Gain Bandwidth Product

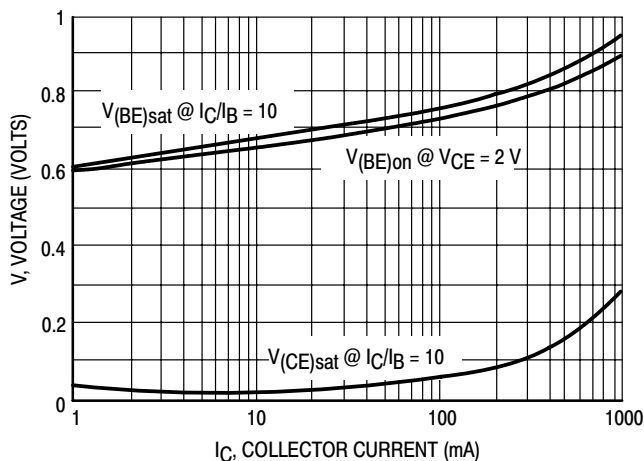


Figure 3. Saturation and "ON" Voltages

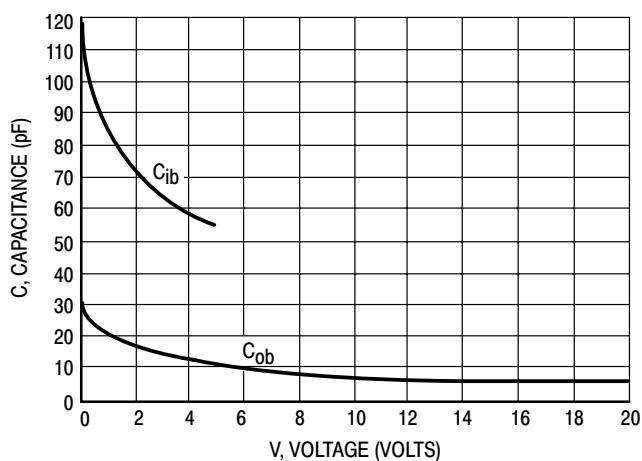
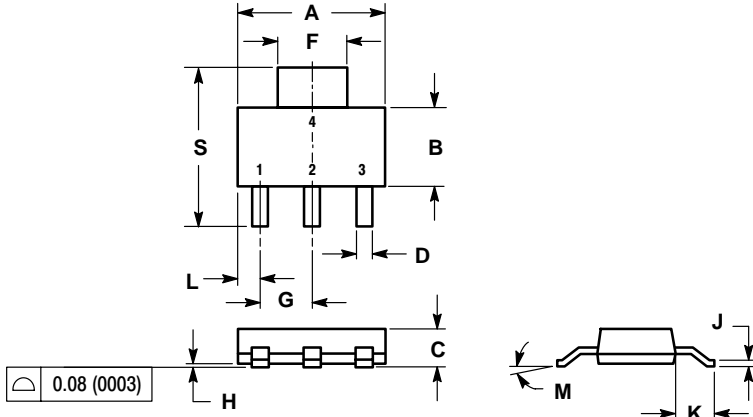


Figure 4. Capacitances

# BCP53T1 Series

## PACKAGE DIMENSIONS

**SOT-223**  
CASE 318E-04  
ISSUE K



**NOTES:**

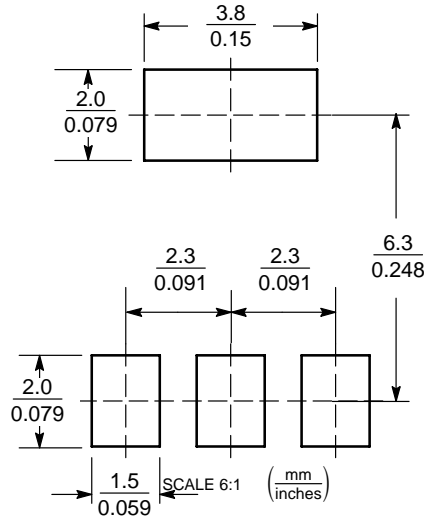
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.249	0.263	6.30	6.70
B	0.130	0.145	3.30	3.70
C	0.060	0.068	1.50	1.75
D	0.024	0.035	0.60	0.89
F	0.115	0.126	2.90	3.20
G	0.087	0.094	2.20	2.40
H	0.0008	0.0040	0.020	0.100
J	0.009	0.014	0.24	0.35
K	0.060	0.078	1.50	2.00
L	0.033	0.041	0.85	1.05
M	0°	10°	0°	10°
S	0.264	0.287	6.70	7.30

**STYLE 1:**

- PIN 1. BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR

### SOLDERING FOOTPRINT\*




**Figure 5. SOT-223**

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

# BCP53T1 Series

SENSEFET is a trademark of Semiconductor Components Industries, LLC.

**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](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada

**Japan:** ON Semiconductor, Japan Customer Focus Center  
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051  
**Phone:** 81-3-5773-3850

**ON Semiconductor Website:** <http://onsemi.com>

**Order Literature:** <http://www.onsemi.com/litorder>

For additional information, please contact your  
local Sales Representative.