

# BCP53 Series

## 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
- Device Marking:  
BCP53T1 = AH  
BCP53-10T1 = AH-10  
BCP53-16T1 = AH-16
- Pb-Free Packages are Available

### MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-80	Vdc
Collector-Base Voltage	$V_{CBO}$	-100	Vdc
Emitter-Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current	$I_C$	1.5	Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1.) Derate above $25^\circ\text{C}$	$P_D$	1.5 12	Watts 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" from case Time in Solder Bath	$T_L$	260 10	$^\circ\text{C}$ 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.

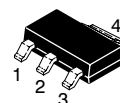
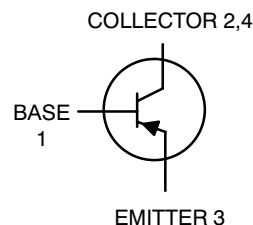
1. Device mounted on a glass epoxy printed circuit board 1.575 in. x 1.575 in. x 0.059 in.; mounting pad for the collector lead min. 0.93 sq. in.



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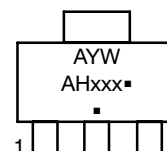
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## MEDIUM POWER HIGH CURRENT SURFACE MOUNT PNP TRANSISTORS



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

### MARKING DIAGRAM



AHxxx = Device Code  
xxx = -10 or -16  
A = Assembly Location  
Y = Year  
W = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### 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
BCP53-10T1G	SOT-223 (Pb-Free)	1000/Tape & Reel
BCP53-16T1	SOT-223	1000/Tape & Reel
BCP53-16T1G	SOT-223 (Pb-Free)	1000/Tape & Reel
BCP53-16T3	SOT-223	4000/Tape & Reel
BCP53-16T3G	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.

# BCP53 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 ( $I_C = -150 \text{ mAdc}$ , $V_{CE} = -2.0 \text{ Vdc}$ ) BCP53 BCP53-10 BCP53-16	$h_{FE}$	25 40 63 100 25	- - - - -	- 250 160 250 -	-
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

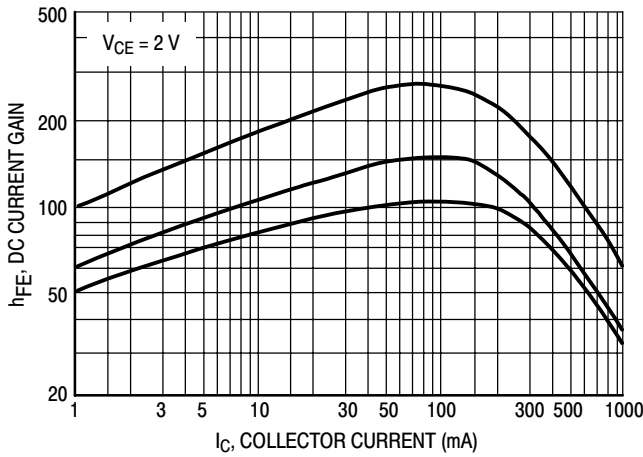


Figure 1. DC Current Gain

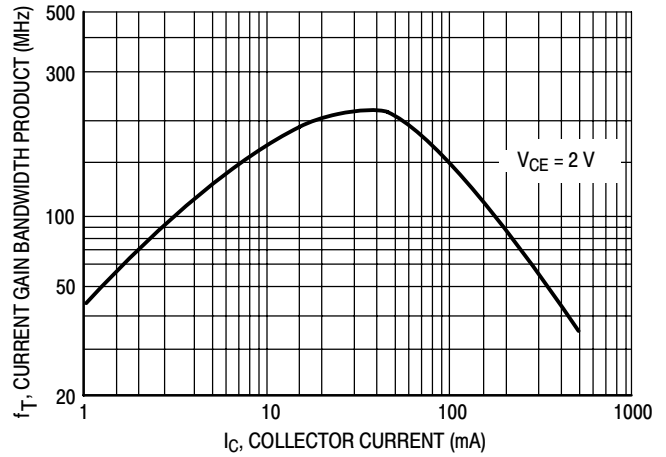


Figure 2. Current Gain Bandwidth Product

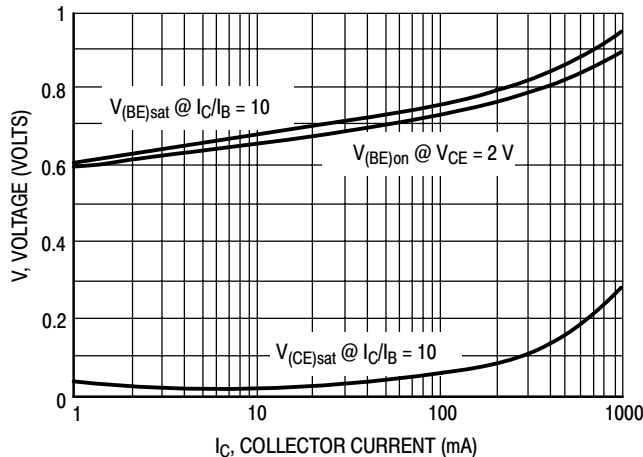


Figure 3. Saturation and "ON" Voltages

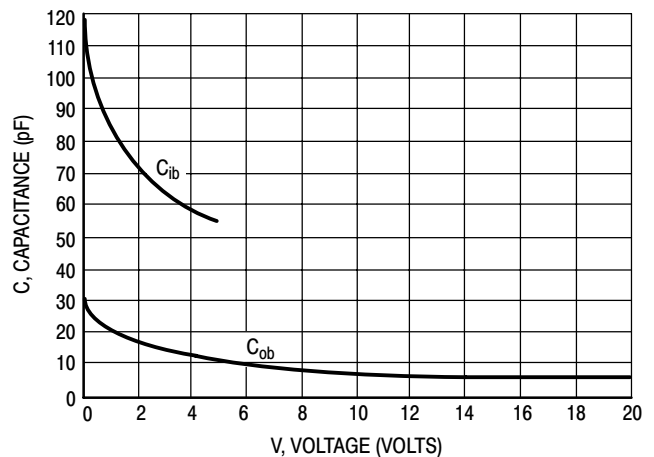
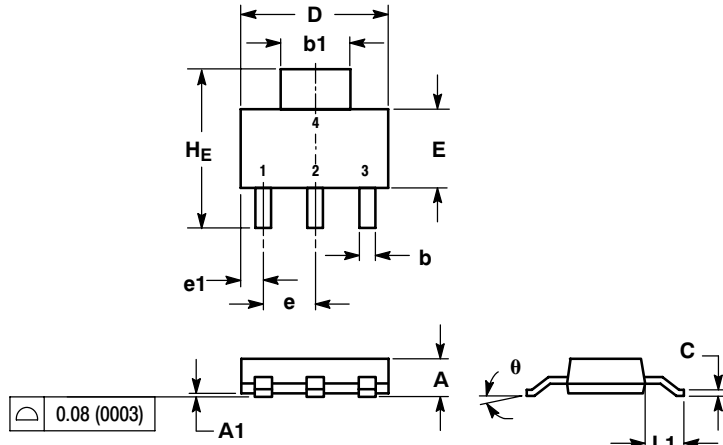


Figure 4. Capacitances

# BCP53 Series

## PACKAGE DIMENSIONS

SOT-223  
CASE 318E-04  
ISSUE K

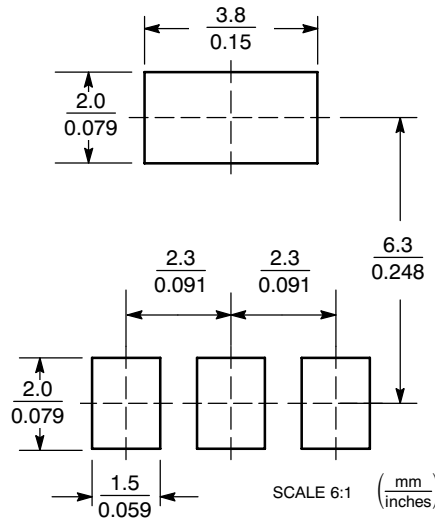


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.

DIM	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
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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