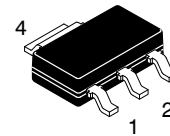


NPN General Purpose Amplifier

BCP54

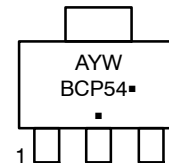
This device is designed for general purpose medium power amplifiers and switching circuits requiring collector currents to 1.2 A. Sourced from Process 38.



1: Base
2, 4: Collector
3: Emitter

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MARKING DIAGRAM



A = Assembly Location
Y = Year
W = Work Week
BCP54 = Specific Device Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Ratings	Unit
V_{CEO}	Collector-Emitter Voltage	45	V
V_{CBO}	Collector-Base Voltage	45	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current – Continuous	1.5	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

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.

- These ratings are based on a maximum junction temperature of 150°C .
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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

Symbol	Characteristic	Max	Unit
P_D	Total Device Dissipation Derate Above 25°C	1.5 12	W mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	83.3	$^\circ\text{C}/\text{W}$

ORDERING INFORMATION

Device	Package	Shipping
BCP54	SOT-223 (Pb-Free)	4,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

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

Symbol	Parameter	Conditions	Min	Max	Unit
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{ mA}, I_B = 0$	45	–	V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\text{ }\mu\text{A}, I_E = 0$	45	–	V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}, I_C = 0$	5.0	–	V
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 30\text{ V}, I_E = 0$ $V_{CB} = 30\text{ V}, I_E = 0, T_A = 125^\circ\text{C}$	– –	100 10	nA μA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 5.0\text{ V}, I_C = 0$	–	10	μA

ON CHARACTERISTICS

h_{FE}	DC Current Gain	$I_C = 5.0\text{ mA}, V_{CE} = 2.0\text{ V}$	25	–	
		$I_C = 150\text{ mA}, V_{CE} = 2.0\text{ V}$	40	250	
		$I_C = 500\text{ mA}, V_{CE} = 2.0\text{ V}$	25	–	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$	–	0.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 500\text{ mA}, V_{CE} = 2.0\text{ V}$	–	1.0	V

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.

TYPICAL CHARACTERISTICS

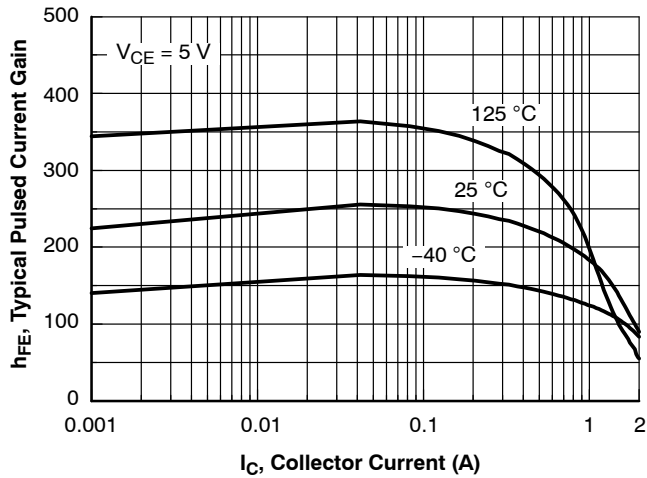


Figure 1. Typical Pulsed Current Gain vs Collector Current

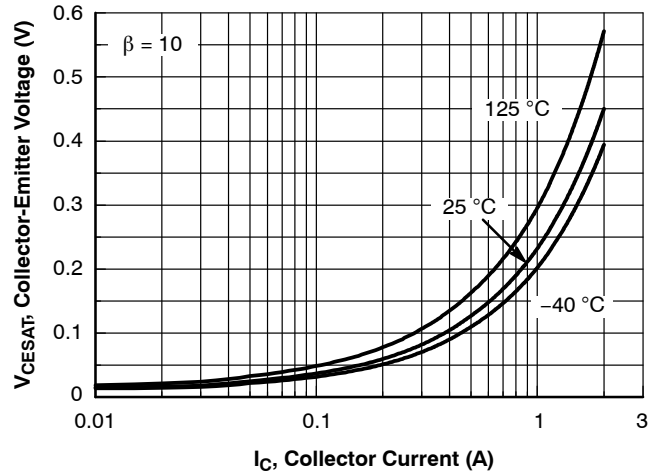


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

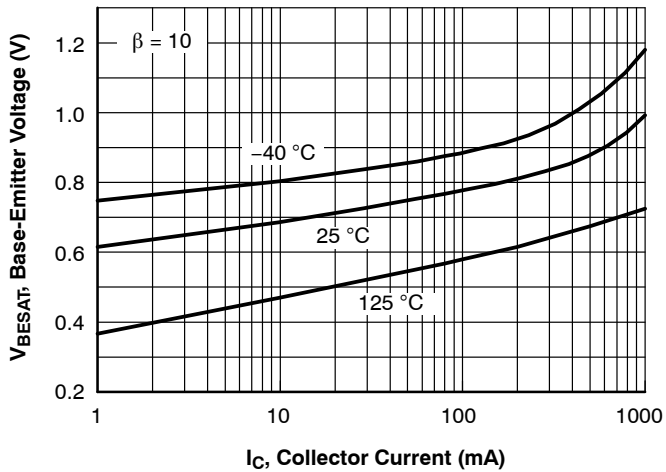


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

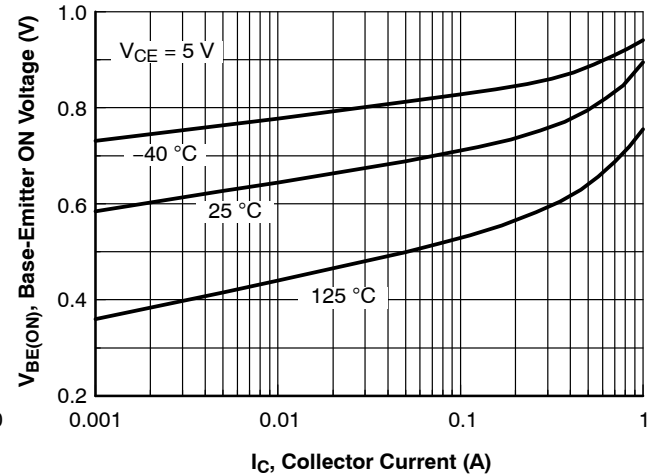


Figure 4. Base-Emitter ON Voltage vs Collector Current

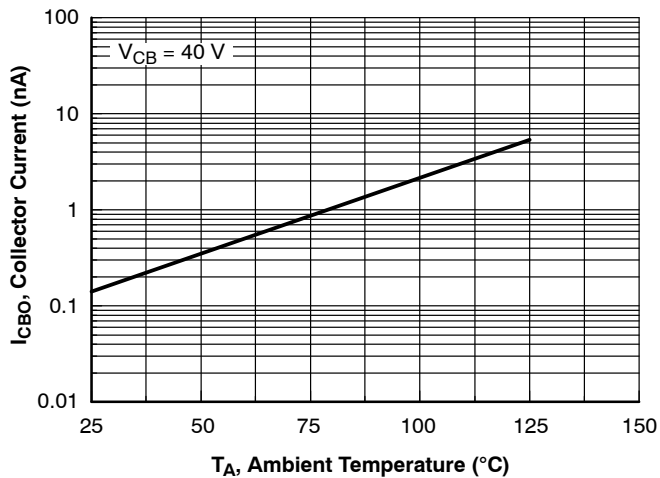


Figure 5. Collector-Cutoff Current vs Ambient Temperature

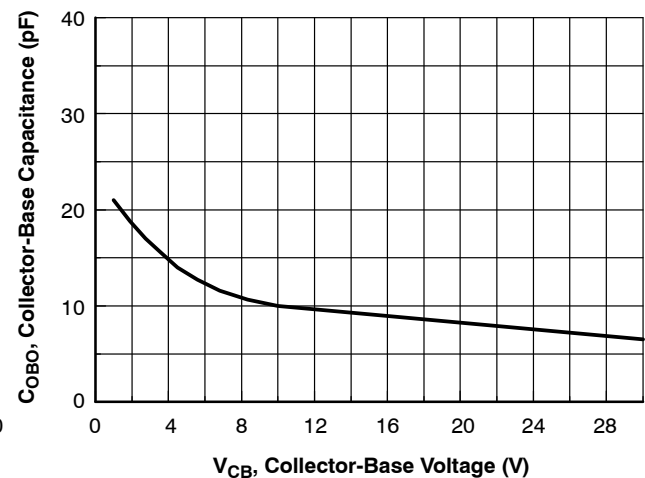


Figure 6. Collector-Base Capacitance vs Collector-Base Voltage

TYPICAL CHARACTERISTICS (Continued)

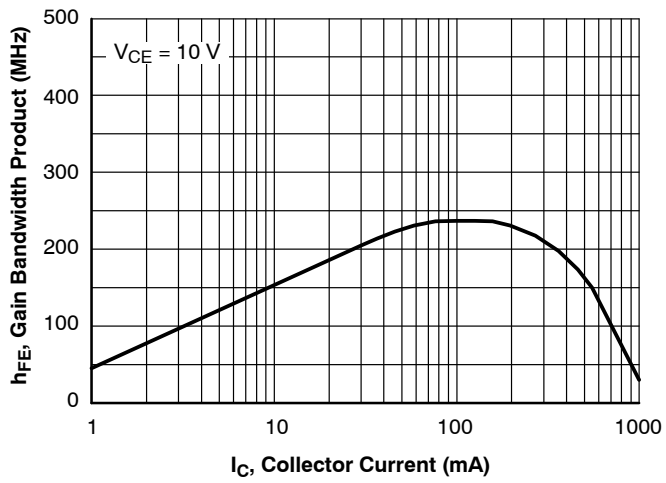


Figure 7. Gain Bandwidth Product vs Collector Current

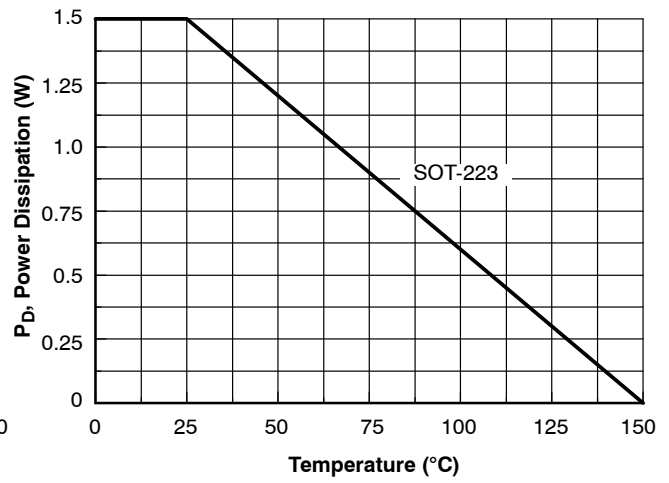
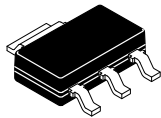


Figure 8. Power Dissipation vs Ambient Temperature



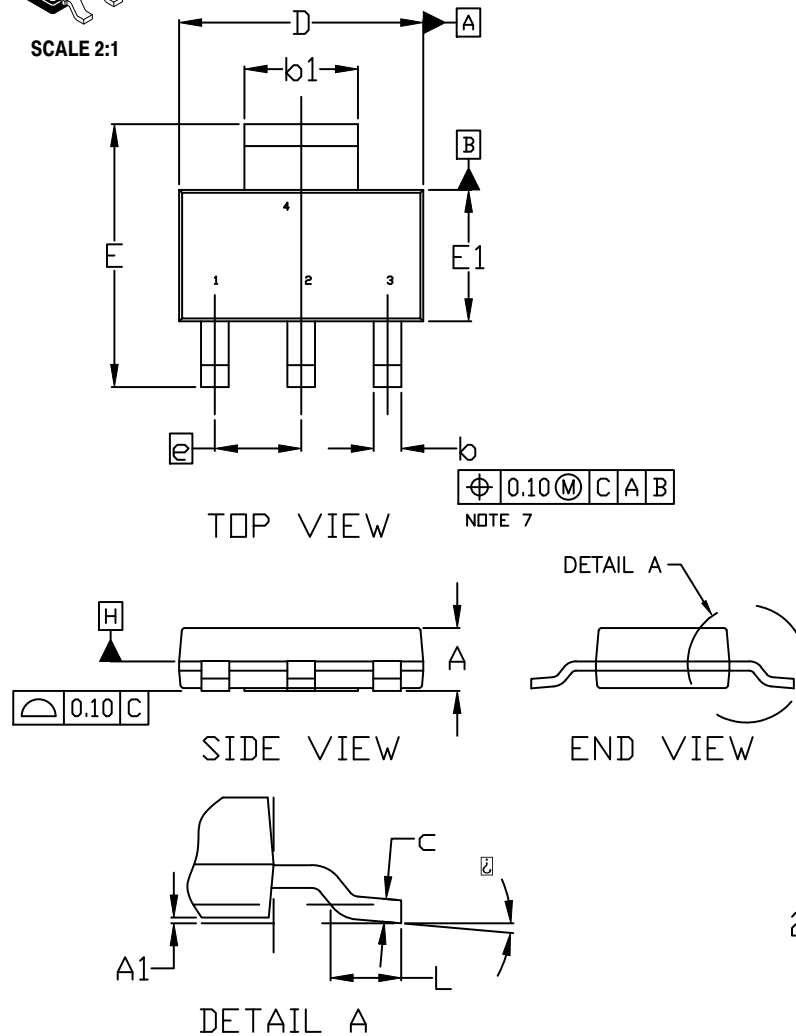
SCALE 2:1

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ISSUE B

DATE 13 MAY 2020

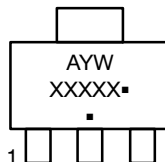
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D & E1 ARE DETERMINED AT DATUM H. DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. SHALL NOT EXCEED 0.23mm PER SIDE.
4. LEAD DIMENSIONS b AND b1 DO NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION IS 0.08mm PER SIDE.
5. DATUMS A AND B ARE DETERMINED AT DATUM H.
6. A1 IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF THE PACKAGE BODY.
7. POSITIONAL TOLERANCE APPLIES TO DIMENSIONS b AND b1.



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	---	---	1.80
A1	0.02	0.06	0.11
b	0.60	0.74	0.88
b1	2.90	3.00	3.10
c	0.24	---	0.35
D	6.30	6.50	6.70
E	6.70	7.00	7.30
E1	3.30	3.50	3.70
e	2.30 BSC		
L	0.25	---	---
⌀	0°	---	10°

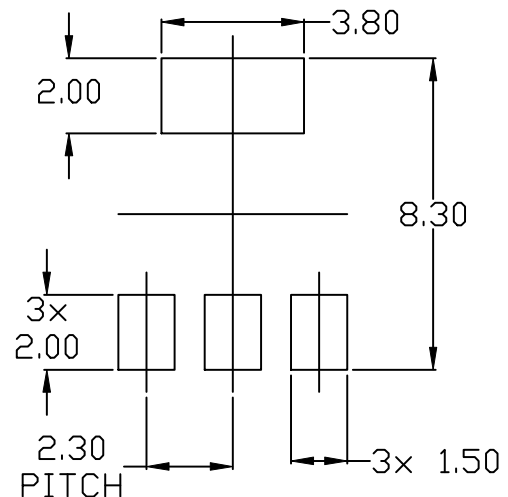
GENERIC MARKING DIAGRAM*



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

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



RECOMMENDED MOUNTING FOOTPRINT

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

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