

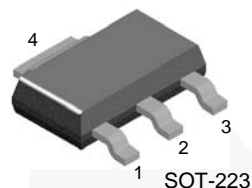


March 2014

## BCP52 PNP General-Purpose Amplifier

### Description

This device is designed for general-purpose medium-power amplifiers and switching circuits for collector currents to 1.0 A. Sourced from process 78.



1. Base 2,4. Collector 3. Emitter

### Ordering Information

Part Number	Marking	Package	Packing Method
BCP52	BCP52	SOT-223 4L	Tape and Reel

### Absolute Maximum Ratings<sup>(1),(2)</sup>

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CEO}$	Collector-Emitter Voltage	-60	V
$V_{CBO}$	Collector-Base Voltage	-60	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current - Continuous	-1.2	A
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

#### Notes:

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operation.

### Thermal Characteristics<sup>(3)</sup>

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

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

**Note:**

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

### Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10\text{ mA}$ , $I_B = 0$	-60		V
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -100\text{ }\mu\text{A}$ , $I_E = 0$	-60		V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10\text{ }\mu\text{A}$ , $I_C = 0$	-5.0		V
$I_{CBO}$	Collector-Base Cut-Off Current	$V_{CB} = -30\text{ V}$ , $I_E = 0$		-100	nA
		$V_{CB} = -30\text{ V}$ , $I_E = 0$ , $T_A = 125^\circ\text{C}$		-10	$\mu\text{A}$
$I_{EBO}$	Emitter-Base Cut-Off Current	$V_{EB} = -5.0\text{ V}$ , $I_C = 0$		-10	$\mu\text{A}$
$h_{FE}$	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	$I_C = -500\text{ mA}$ , $I_B = -50\text{ mV}$		-0.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = -500\text{ mA}$ , $V_{CE} = -2.0\text{ V}$		-1.0	V

## Typical Performance Characteristics

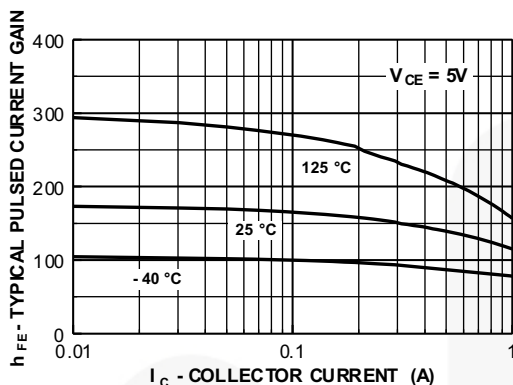


Figure 1. Typical Pulsed Current Gain vs. Collector Current

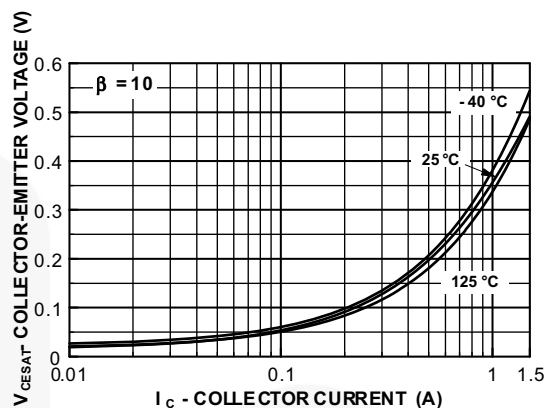


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

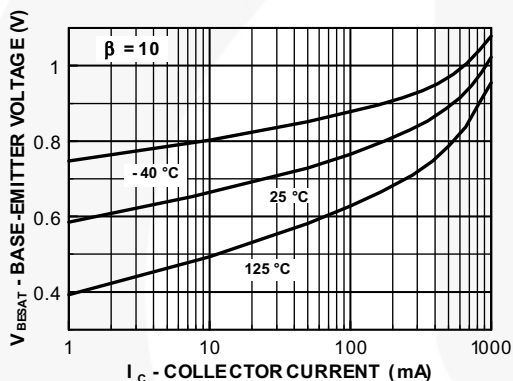


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

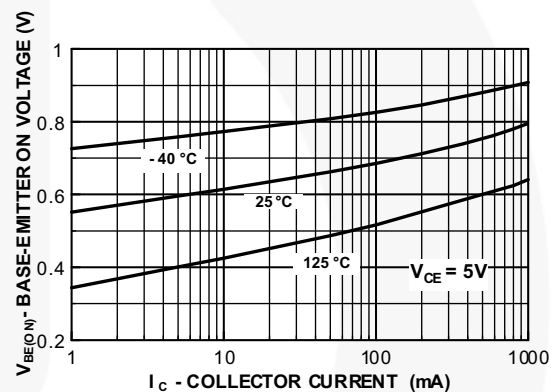


Figure 4. Base-Emitter On Voltage vs. Collector Current

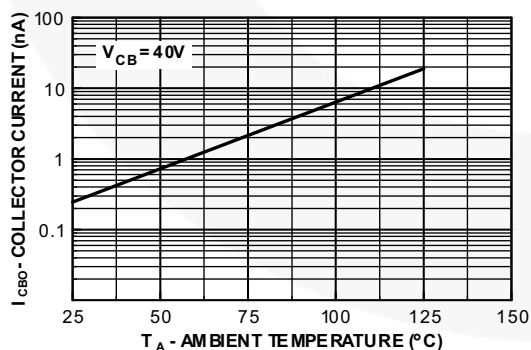


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

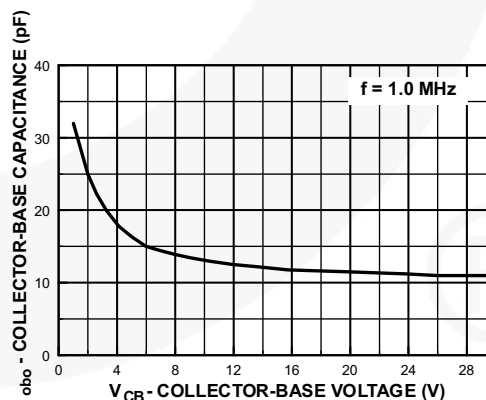


Figure 6. Collector-Base Capacitance vs. Collector-Base Voltage

# Typical Performance Characteristics (Continued)

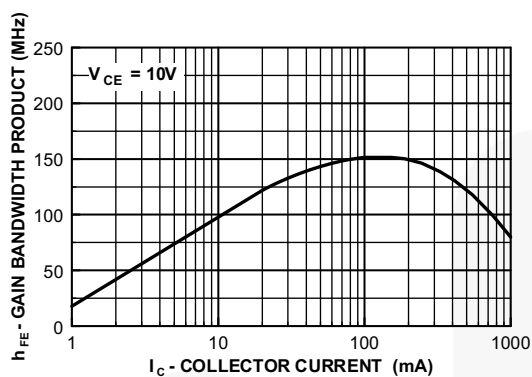


Figure 7. Gain Bandwidth Product vs. Collector Current

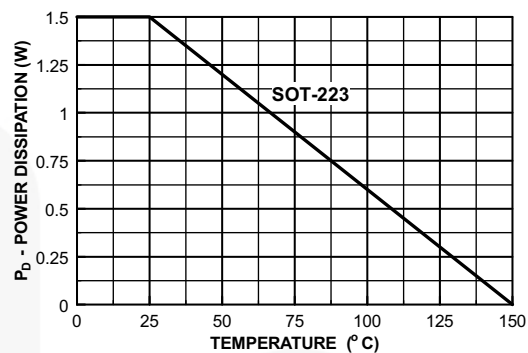


Figure 8. Power Dissipation vs. Ambient Temperature

## Physical Dimensions

## SOT-223

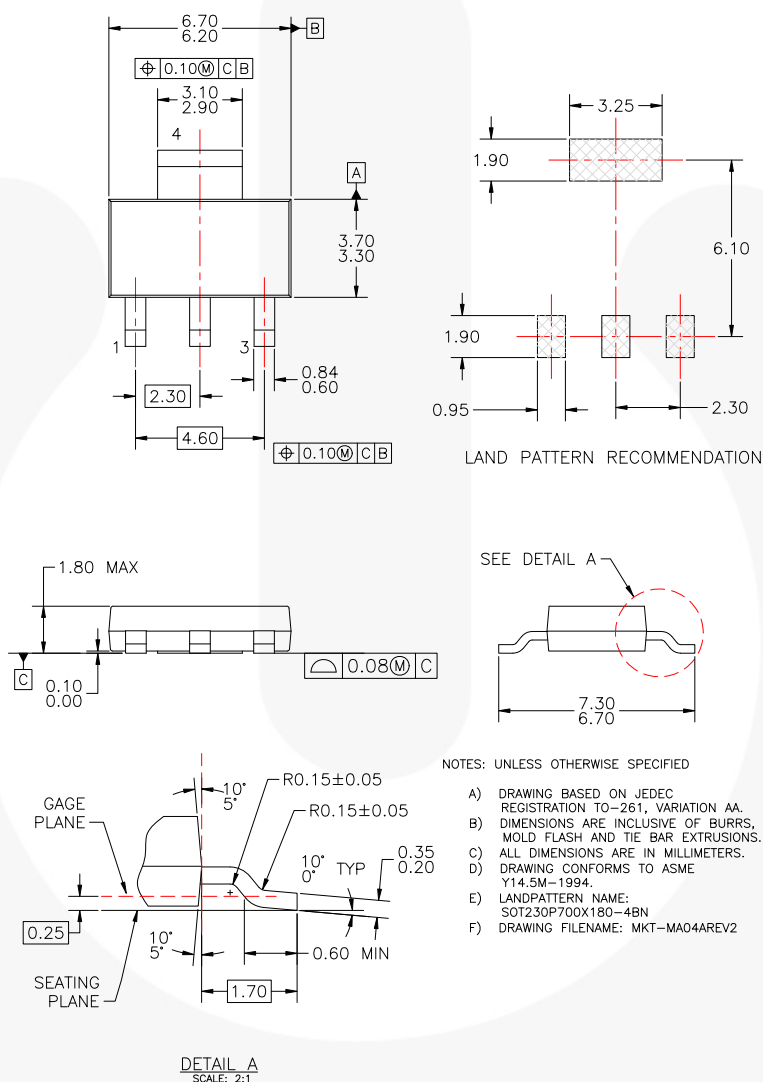


Figure 9. MOLDED PACKAGE, SOT-223, 4 LEAD (ACTIVE)

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