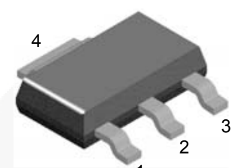
FAIRCHILD

November 2014

BCP69
PNP General-Purpose Amplifier

Description

This device is designed for general-purpose medium-power amplifiers and switches requiring collector currents to 1.0 A. Sourced from process 77.



1. Base 2,4. Collector 3. Emitter

Ordering Information

Part Number	Marking	Package	Packing Method
BCP69	BCP69	SOT-223 4L	Tape and Reel

Absolute Maximum Ratings[(1),(2)]

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°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-Emitter Voltage	-20	V
V_{CBO}	Collector-Base Voltage	-30	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
I_C	Collector Current - Continuous	-1.5	A
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

Notes:
1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation	1.0	W
	Derate Above 25°C	8.0	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	125	°C/W

Note:

3. Device is mounted on FR-4 PCB 36 mm × 18 mm × 1.5 mm; mounting pad for the collector lead minimum 6 cm^2.

Electrical Characteristics[4]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = -10 mA, I_B = 0	-20			V
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = -1.0 mA, I_E = 0	-30			V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = -100 µA, I_C = 0	-5.0			V
I_{CBO}	Collector-Base Cut-Off Current	V_{CB} = -25 V, I_E = 0			-100	nA
		V_{CB} = -25 V, I_E = 0, T_J = 150°C			-10	µA
I_{EBO}	Emitter-Base Cut-Off Current	V_{EB} = -5.0 V, I_C = 0			-100	nA
h_{FE}	DC Current Gain	I_C = -5 mA, V_{CE} = -1.0 V	50			
		I_C = -500 mA, V_{CE} = -1.0 V	85		375	
		I_C = -1.0 A, V_{CE} = -1.0 V	60			
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = -1.0 A, I_B = -100 mA			-0.5	V
V_{BE}(on)	Base-Emitter On Voltage	I_C = -1.0 A, V_{CE} = -1.0 V			-1.0	V
C_{cb}	Collector-Base Capacitance	V_{CB} = -10 V, I_E = 0, f = 1.0 MHz			30	pF
h_{fe}	Small-Signal Current Gain	I_C = -50 mA, V_{CE} = -10 V, f = 20 MHz	2.5			

Note:

4. Pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%

Typical Performance Characteristics

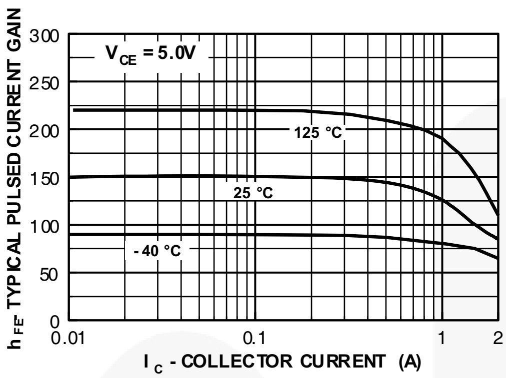


Figure 1. Typical Pulsed Current Gain vs. Collector Current

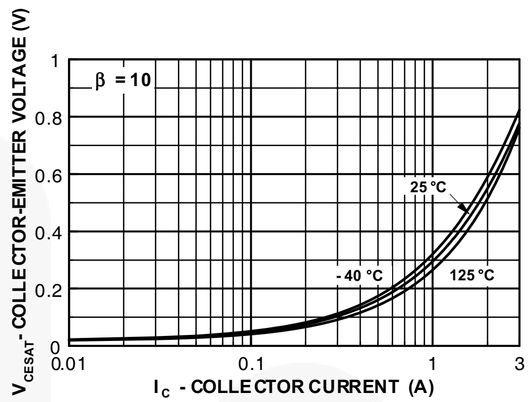


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

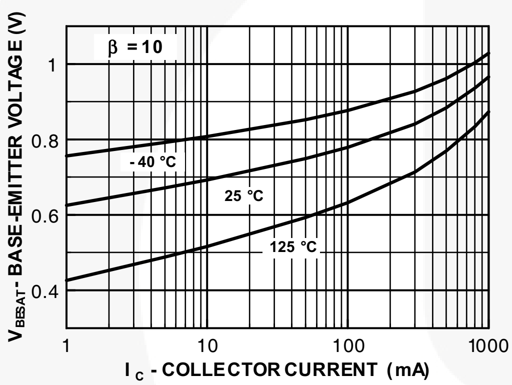


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

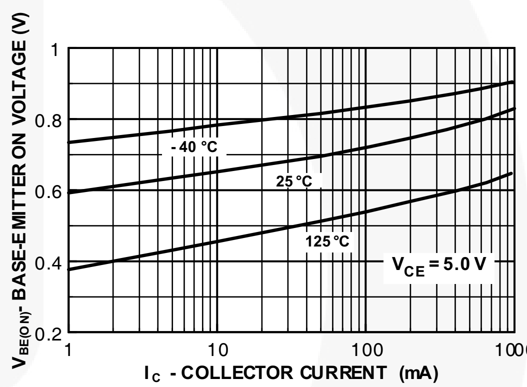


Figure 4. Base Emitter On Voltage vs. Collector Current

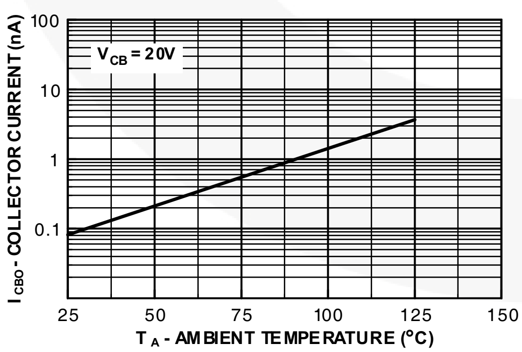


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

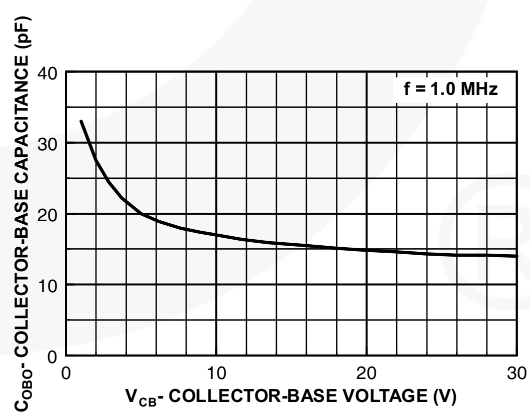


Figure 6. Collector-Base Capacitance vs. Collector-Base Voltage

Typical Performance Characteristics (Continued)

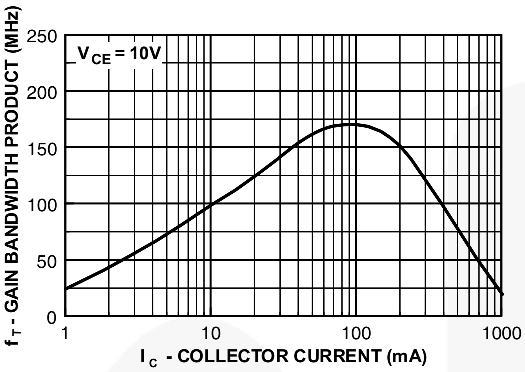


Figure 7. Gain Bandwidth Product vs. Collector Current

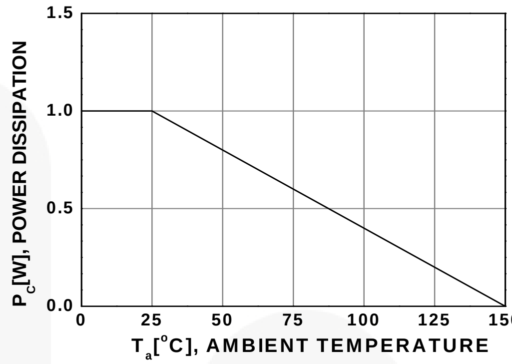
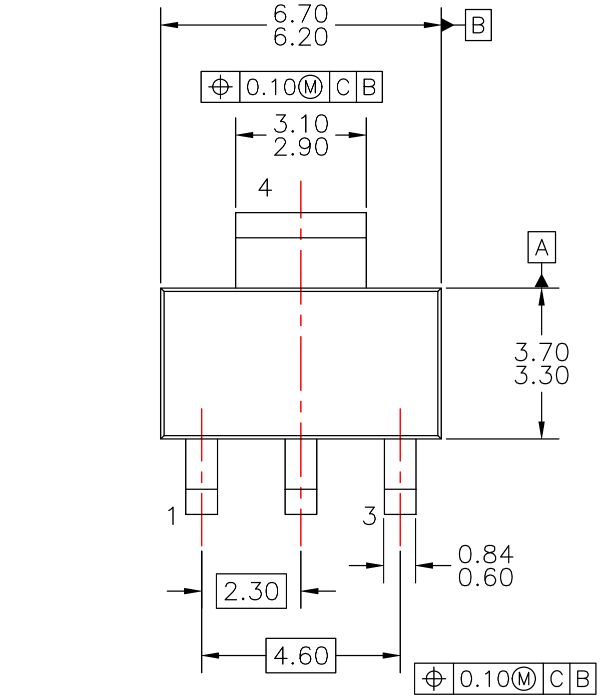


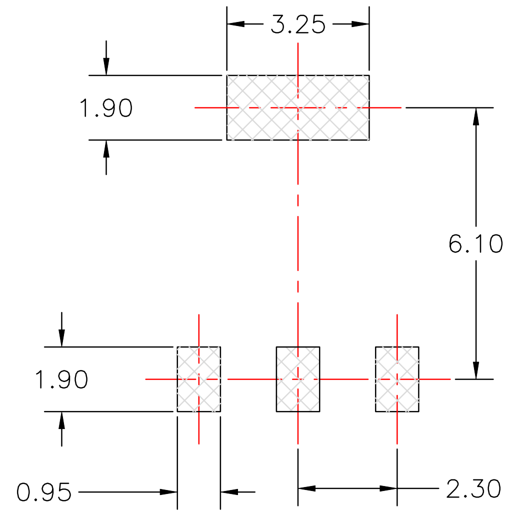
Figure 8. Power Dissipation vs. Ambient Temperature

APPROVED
July-14-2008

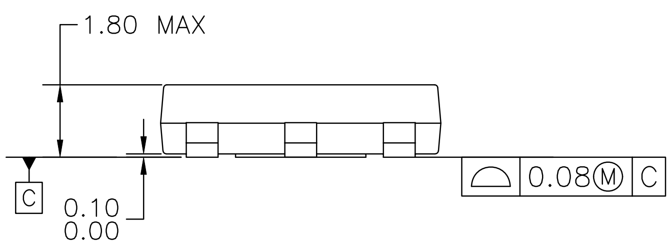
REVISIONS

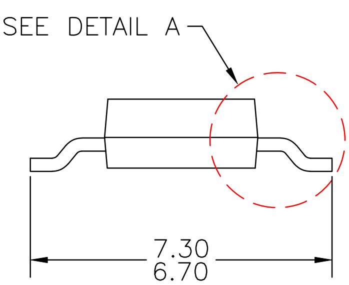
LTR	DESCRIPTION	DATE	NAME/SITE
A	RELEASE TO DOCUMENT CONTROL	JAN.25,1996	TL/FSCP
2	CHG DWG TEMPLATE FR NATIONAL TO FAIRCHILD; CHG DIM STYLE FR DUAL INCH[MM] TO SINGLE, MM; CHG LD WID FR $0.74^{+0.05}_{-0.07}$ TO 0.60–0.84; REMOVE PKG THICK DIM (1.6); CHG TOTAL PKG HT FR $^{1.80}_{1.55}$ TO 1.80 MAX; CHG FOOT LANDING DIM FR 0.91 MIN TO 0.60 MIN; CHG LD THICKNESS FR $0.3^{+0.02}_{-0.07}$ TO 0.20–0.35; ADD DRAFT ANGLE OF MOLDED BODY TOP & BOT; CHG LD LGTH TO PKG EDGE DIM TO BASIC: CHG LD PITCH FR 2.29 BS TO 2.30 BS; CHG BODY WID FR $3.56^{+0.15}_{-0.25}$ TO $^{3.70}_{3.30}$; CHG BODY LN FR $6.5^{+0.2}_{-0.2}$ TO $^{6.70}_{6.20}$; CHG TOTAL PKG WID FR $6.96^{+0.33}_{-0.25}$ TO $^{7.30}_{6.70}$; CHG PAD SIZE FR 0.99 MAX TO 0.95; CHG PAD PITCH FR 2.286 TO 2.30; CHG THERMAL TAB SIZE FR 3.28 MAX TO 3.25; CHG PAD SIZE FR 1.5 TO 1.90; CHG PAD SPACE FR 6.3 TO 6.10; CHG NOTE '2' TO 'A' W/O DATE; DEL NOTE ON LD FINISH; ADD NOTES B, C, D, E & F.	12FEB08	LZSC/FSCP

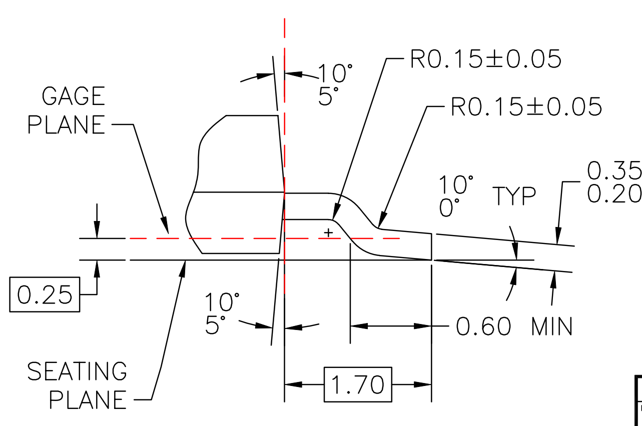




LAND PATTERN RECOMMENDATION







DETAIL A
SCALE: 2:1

NOTES: UNLESS OTHERWISE SPECIFIED

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B) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
C) ALL DIMENSIONS ARE IN MILLIMETERS.
D) DRAWING CONFORMS TO ASME Y14.5M–1994.
E) LANDPATTERN NAME: SOT230P700X180–4BN
F) DRAWING FILENAME: MKT–MA04AREV2

APPROVALS	DATE
DRAWN: J.U. COMPARATIVO JR.	26FEB2008
CHECKED: L.Z. STA CRUZ	
APPROVED: M.R. GESTOLE	
G.S. BAJE	

PROJECTION
INCH [MM]

FAIRCHILD SEMICONDUCTOR™

MOLDED PACKAGE
SOT–223, 4 LEAD

SCALE	SIZE	DRAWING NUMBER	REV
1:1	A3	MKT–MA04A	2

FORMERLY: N/A
SHEET : 1 OF 1

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Rev. I73