



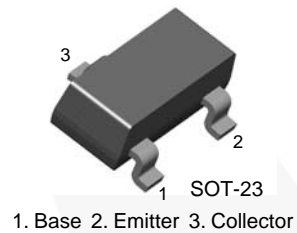
November 2014



# BC807 / BC808 PNP Epitaxial Silicon Transistor

## Features

- Switching and Amplifier Applications
- Suitable for AF-Driver Stages and Low Power Output Stages
- Complement to BC817 / BC818



## Ordering Information

Part Number	Marking	Package	Packing Method
BC80716MTF	9FA	SOT-23 3L	Tape and Reel
BC80725MTF	9FB	SOT-23 3L	Tape and Reel
BC80740MTF	9FC	SOT-23 3L	Tape and Reel
BC80840MTF	9GC	SOT-23 3L	Tape and Reel

## Absolute Maximum Ratings

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
$V_{CES}$	Collector-Emitter Voltage	BC807	-50	V
		BC808	-30	
$V_{CEO}$	Collector-Emitter Voltage	BC807	-45	V
		BC808	-25	
$V_{EBO}$	Emitter-Base Voltage		-5	V
$I_C$	Collector Current (DC)		-800	mA
$T_J$	Junction Temperature		150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature		-65 to +150	$^\circ\text{C}$

## Thermal Characteristics<sup>(1)</sup>

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

Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	310	mW
	Derate Above $25^\circ\text{C}$	2.48	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	403	$^\circ\text{C}/\text{W}$

### Note:

1. 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.	Typ.	Max.	Unit	
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	BC807	$I_C = -10\text{ mA}, I_B = 0$	-45			V
		BC808		-25			
$BV_{CES}$	Collector-Emitter Breakdown Voltage	BC807	$I_C = -0.1\text{ mA}, V_{BE} = 0$	-50			V
		BC808		-30			
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -0.1\text{ mA}, I_C = 0$	-5			V	
$I_{CES}$	Collector Cut-Off Current	$V_{CE} = -25\text{ V}, V_{BE} = 0$			-100	nA	
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = -4\text{ V}, I_C = 0$			-100	nA	
$h_{FE1}$	DC Current Gain	$V_{CE} = -1\text{ V}, I_C = -100\text{ mA}$	100		630		
$h_{FE2}$		$V_{CE} = -1\text{ V}, I_C = -300\text{ mA}$	60				
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -500\text{ mA}, I_B = -50\text{ mA}$			-0.7	V	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -1\text{ V}, I_C = -300\text{ mA}$			-1.2	V	
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}, f = 50\text{ MHz}$		100		MHz	
$C_{ob}$	Output Capacitance	$V_{CB} = -10\text{ V}, f = 1\text{ MHz}$			12	pF	

## $h_{FE}$ Classification

Classification	16	25	40
$h_{FE1}$	100 ~ 250	160 ~ 400	250 ~ 630
$h_{FE2}$	60 ~	100 ~	170 ~

## Typical Performance Characteristics

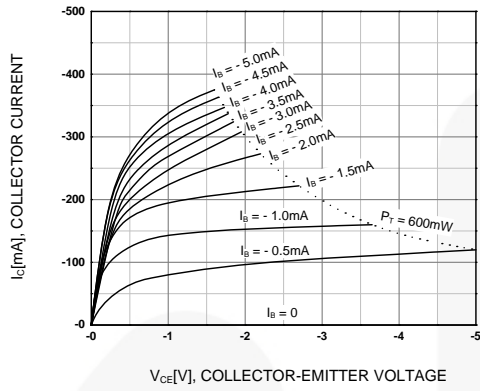


Figure 1. Static Characteristic

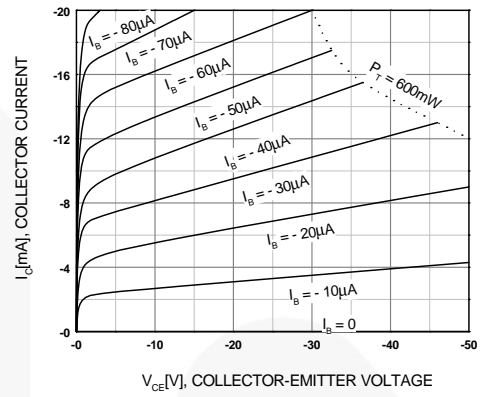


Figure 2. Static Characteristic

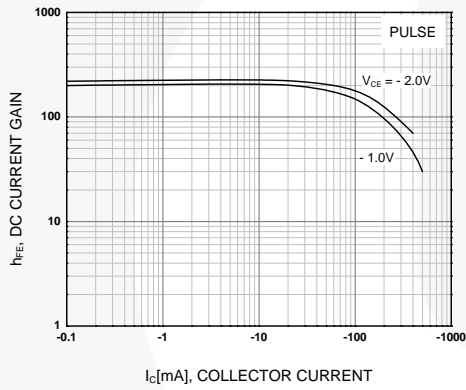


Figure 3. DC Current Gain

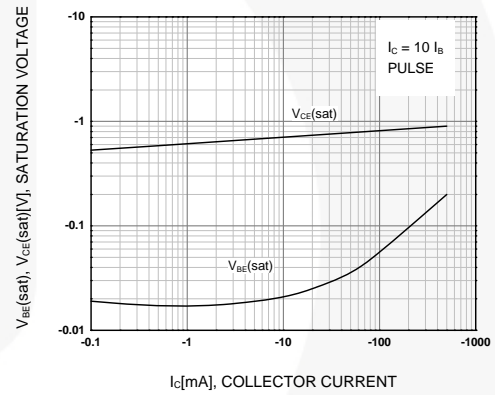


Figure 4. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

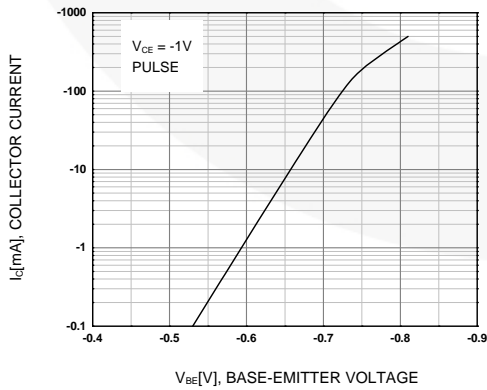


Figure 5. Base-Emitter On Voltage

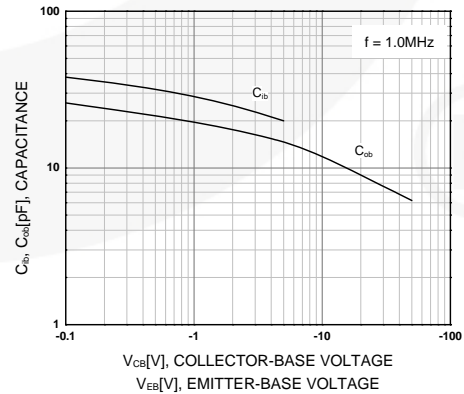


Figure 6. Input Output Capacitance

### Typical Performance Characteristics (Continued)

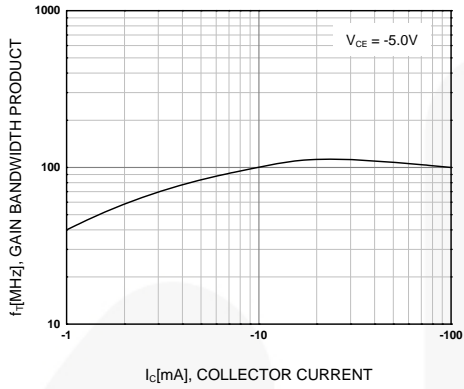
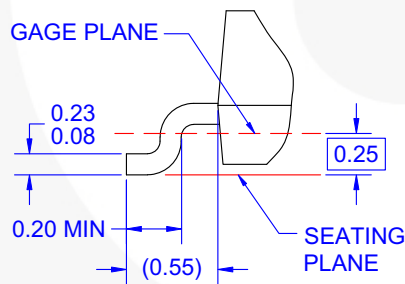
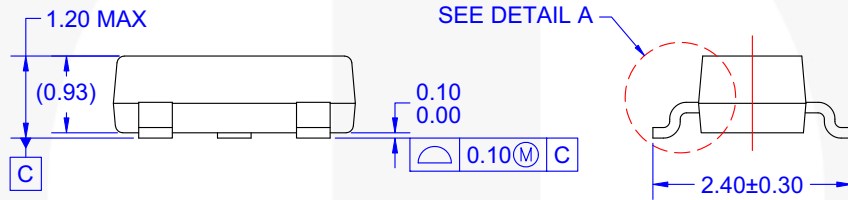
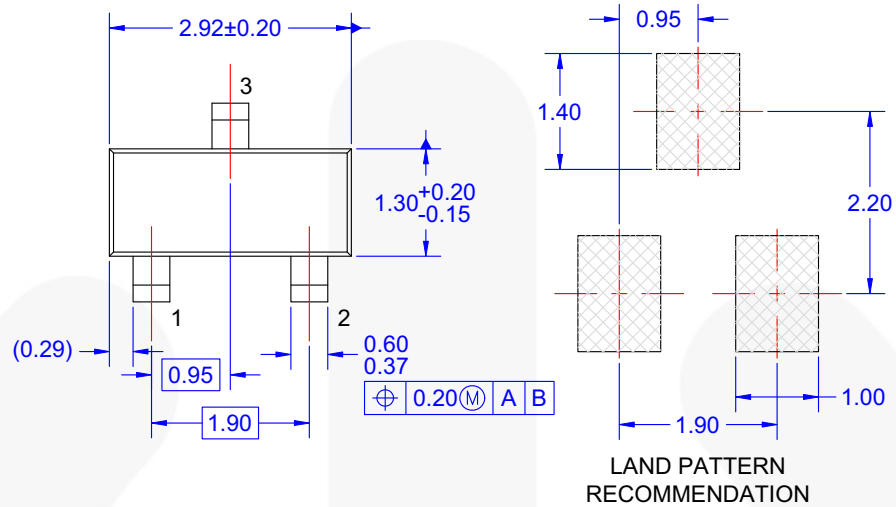


Figure 7. Current Gain Bandwidth Product



Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.
- E) DRAWING FILE NAME: MA03DREV10






**DETAIL A**  
SCALE: 2X

Figure 8. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE



**TRADEMARKS**

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

- |  |  |   |   |
|--|--|---|---|
| AccuPower™   | F-PFS™   | OPTOPLANAR®   |  SYSTEM GENERAL® |
| Awinda®  | FRFET®   |  ® | TinyBoost®  |
| AX-CAP®*   | Global Power Resource™                         | PowerTrench®  | TinyBuck®   |
| BitSiC™  | GreenBridge™                                   | PowerXS™  | TinyCalc™   |
| Build it Now™  | Green FPS™                                     | Programmable Active Droop™  | TinyLogic®  |
| CorePLUS™  | Green FPS™ e-Series™                           | QFET®   | TINYOPTO™   |
| CorePOWER™   | Gmax™  | QS™   | TinyPower™  |
| CROSSVOLT™   | GTO™   | Quiet Series™   | TinyPWM™  |
| CTL™   | IntelliMAX™                                    | RapidConfigure™   | TinyWire™   |
| Current Transfer Logic™  | ISOPLANAR™                                     |  ™ | TranSiC™  |
| DEUXPEED®  | Making Small Speakers Sound Louder and Better™ | Saving our world, 1mW/W/kW at a time™   | TriFault Detect™  |
| Dual Cool™   | MegaBuck™                                      | SignalWise™   | TRUECURRENT®*   |
| EcoSPARK®  | MICROCOUPLER™                                  | SmartMax™   | µSerDes™  |
| EfficientMax™  | MicroFET™                                      | SMART START™  |  SerDes™         |
| ESBC™  | MicroPak™                                      | Solutions for Your Success™   | UHC®  |
|  Fairchild® | MicroPak2™                                     | SPM®  | Ultra FRFET™  |
| Fairchild Semiconductor®   | MillerDrive™                                   | STEALTH™  | UniFET™   |
| FACT Quiet Series™   | MotionMax™                                     | SuperFET®   | VCX™  |
| FACT®  | MotionGrid®                                    | SuperSOT™-3   | VisualMax™  |
| FAST®  | MTi®   | SuperSOT™-6   | VoltagePlus™  |
| FastvCore™   | MTx®   | SuperSOT™-8   | XS™   |
| FETBench™  | MVN®   | SupreMOS®   | Xsens™  |
| FPS™   | mWSaver®                                       | SyncFET™  | 仙童™   |
|  | OptoHiT™                                       | Sync-Lock™  |   |
|  | OPTOLOGIC®                                     |   |   |

\* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. TO OBTAIN THE LATEST, MOST UP-TO-DATE DATASHEET AND PRODUCT INFORMATION, VISIT OUR WEBSITE AT [HTTP://WWW.FAIRCHILDSEMI.COM](http://www.fairchildsemi.com). FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

**ANTI-COUNTERFEITING POLICY**

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, [www.fairchildsemi.com](http://www.fairchildsemi.com), under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

**PRODUCT STATUS DEFINITIONS**

**Definition of Terms**

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I72