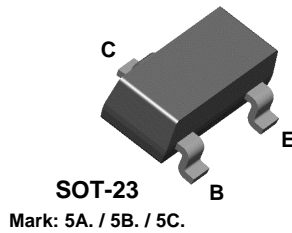


# BC807-16 BC807-25 BC807-40



## PNP General Purpose Amplifier

This device is designed for general purpose amplifier and switching applications at currents to 1.0 A. Sourced from Process 78.

### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

| Symbol                            | Parameter  | Value       | Units |
|-----------------------------------|--|-------------|-------|
| V <sub>CEO</sub>                  | Collector-Emitter Voltage                        | 45          | V     |
| V <sub>CES</sub>                  | Collector-Base Voltage                           | 50          | V     |
| V <sub>EBO</sub>                  | Emitter-Base Voltage                             | 5.0         | V     |
| I <sub>C</sub>                    | Collector Current - Continuous                   | 1.2         | A     |
| T <sub>J</sub> , T <sub>stg</sub> | Operating and Storage Junction Temperature Range | -55 to +150 | °C    |

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- 3) All voltages (V) and currents (A) are negative polarity for PNP transistors.

### Thermal Characteristics

TA = 25°C unless otherwise noted

| Symbol           | Characteristic                                | Max                   | Units       |
|------------------|---|-----------------------|-------------|
|                  |   | *BC807-16 / -25 / -40 |             |
| P <sub>D</sub>   | Total Device Dissipation<br>Derate above 25°C | 350<br>2.8            | mW<br>mW/°C |
| R <sub>θJA</sub> | Thermal Resistance, Junction to Ambient       | 357                   | °C/W        |

\* Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

# PNP General Purpose Amplifier

(continued)

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

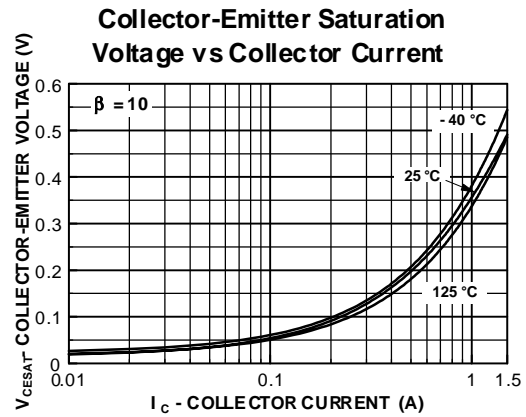
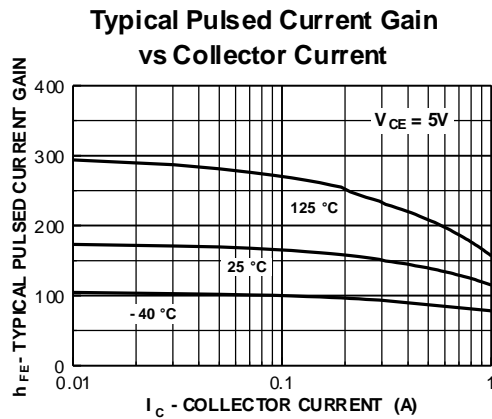
| Symbol                     | Parameter                           | Test Conditions  | Min | Max        | Units               |
|----------------------------|-------------------------------------|--|-----|------------|---------------------|
| <b>OFF CHARACTERISTICS</b> |                                     |  |     |            |                     |
| $V_{(BR)CEO}$              | Collector-Emitter Breakdown Voltage | $I_C = 10\text{ mA}$ , $I_B = 0$   | 45  |            | V                   |
| $V_{(BR)CES}$              | Collector-Base Breakdown Voltage    | $I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$                                   | 50  |            | 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            | $V_{CB} = 20\text{ V}$<br>$V_{CB} = 20\text{ V}$ , $T_A = 150^\circ\text{C}$ |     | 100<br>5.0 | nA<br>$\mu\text{A}$ |

## ON CHARACTERISTICS

|               |                                      |  |                         |                   |   |
|---------------|--------------------------------------|--|-------------------------|-------------------|---|
| $h_{FE}$      | DC Current Gain                      | $I_C = 100\text{ mA}$ , $V_{CE} = 1.0\text{ V}$<br>- 16<br>- 25<br>- 40<br><br>$I_C = 500\text{ mA}$ , $V_{CE} = 1.0\text{ V}$<br>40 | 100<br>160<br>250<br>40 | 250<br>400<br>600 |   |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$   |                         | 0.7               | V |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $I_C = 500\text{ mA}$ , $V_{CE} = 1.0\text{ V}$  |                         | 1.2               | V |

**NOTE:** All voltages (V) and currents (A) are negative polarity for PNP transistors.

## Typical Characteristics



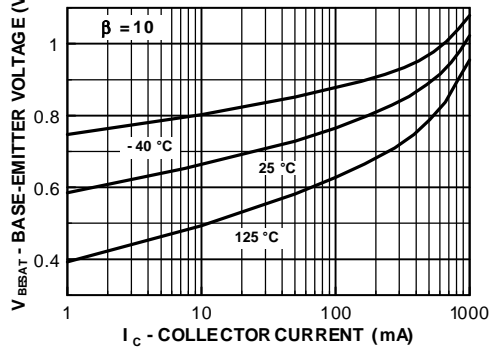
BC807-16 / BC807-25 / BC807-40

# PNP General Purpose Amplifier (continued)

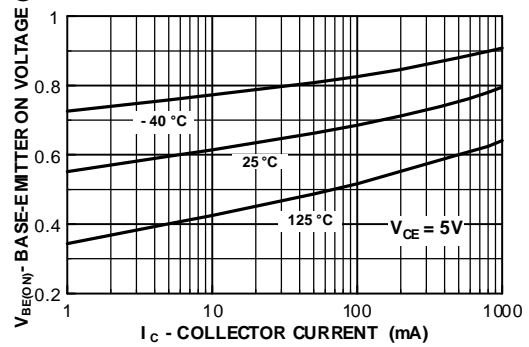
BC807-16 / BC807-25 / BC807-40

## Typical Characteristics (continued)

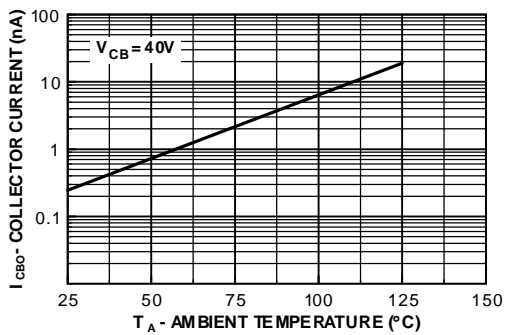
Base-Emitter Saturation  
Voltage vs Collector Current



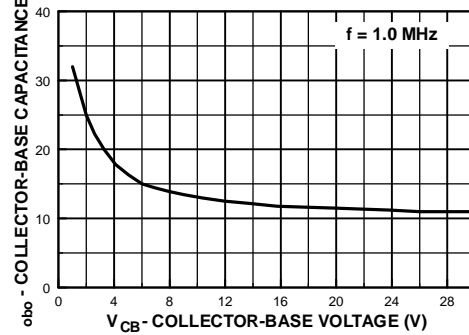
Base-Emitter ON Voltage vs  
Collector Current



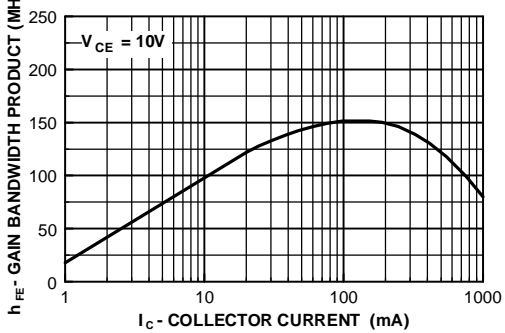
Collector-Cutoff Current  
vs Ambient Temperature



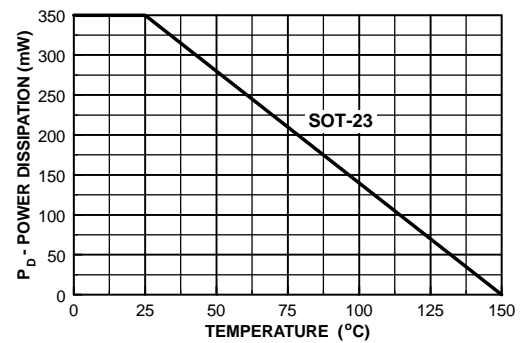
Collector-Base Capacitance  
vs Collector-Base Voltage



Gain Bandwidth Product  
vs Collector Current



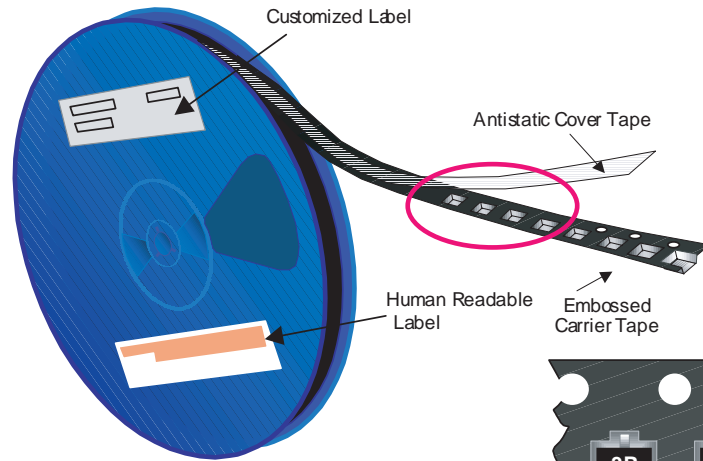
Power Dissipation vs  
Ambient Temperature



## SOT-23 Tape and Reel Data



### SOT-23 Packaging Configuration: Figure 10



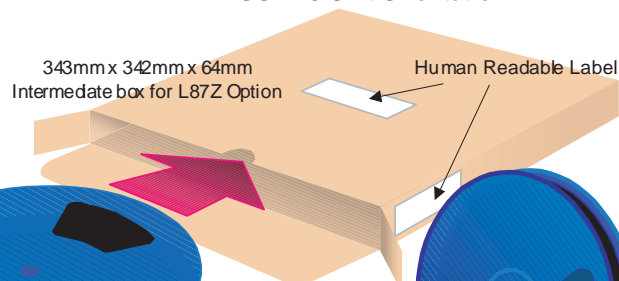
#### Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 177cm diameter reel. The reels are dark blue in color and is made of polystyrene plastic (anti-static coated). Other option comes in 10,000 units per 13" or 330cm diameter reel. This and some other options are described in the Packaging Information table.

These full reels are individually labeled and placed inside a standard intermediate made of recyclable corrugated brown paper with a Fairchild logo printing. One pizza box contains eight reels maximum. And these intermediate boxes are placed inside a labeled shipping box which comes in different sizes depending on the number of parts shipped.

| SOT-23 Packaging Information |                         |            |
|------------------------------|-------------------------|------------|
| Packaging Option             | Standard (no flow code) | D87Z       |
| Packaging type               | TNR                     | TNR        |
| Qty per Reel/Tube/Bag        | 3,000                   | 10,000     |
| Reel Size                    | 7" Dia                  | 13"        |
| Box Dimension (mm)           | 187x107x183             | 343x343x64 |
| Max qty per Box              | 24,000                  | 30,000     |
| Weight per unit (gm)         | 0.0082                  | 0.0082     |
| Weight per Reel (kg)         | 0.1175                  | 0.4006     |
| Note/Comments                |                         |            |

#### SOT-23 Unit Orientation

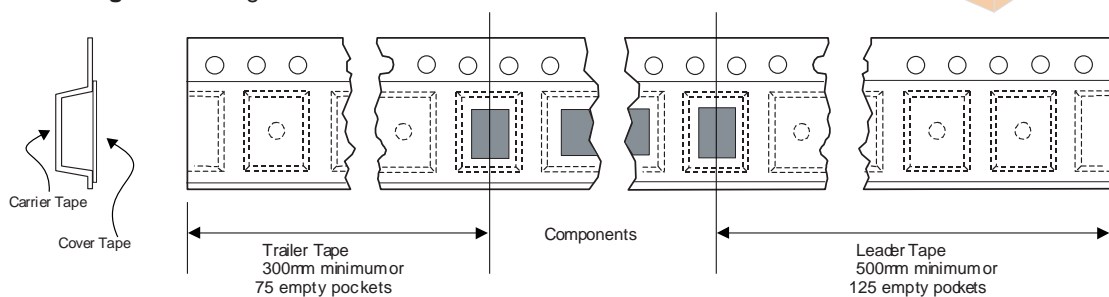


#### Human Readable Label sample



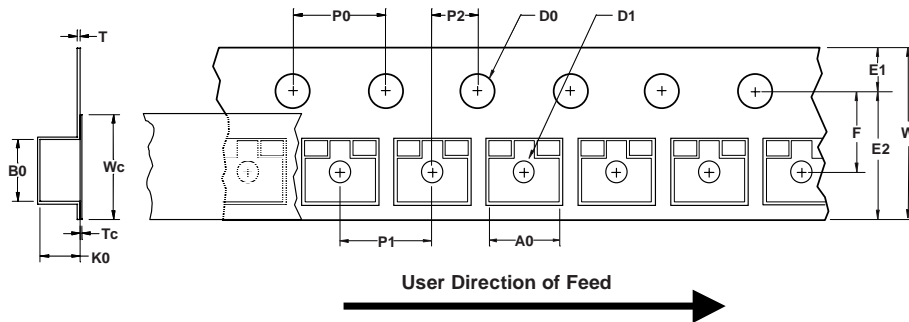
Human readable Label

### SOT-23 Tape Leader and Trailer Configuration: Figure 20



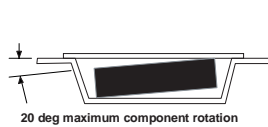
## SOT-23 Tape and Reel Data, continued

### SOT-23 Embossed Carrier Tape Configuration: Figure 3.0

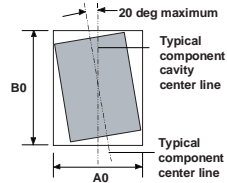


| Dimensions are in millimeter |                 |                 |               |                 |                   |                 |             |                 |               |               |                 |                   |               |                 |
|------------------------------|-----------------|-----------------|---------------|-----------------|-------------------|-----------------|-------------|-----------------|---------------|---------------|-----------------|-------------------|---------------|-----------------|
| Pkg type                     | A0              | B0              | W             | D0              | D1                | E1              | E2          | F               | P1            | P0            | K0              | T                 | Wc            | Tc              |
| SOT-23 (8mm)                 | 3.15<br>+/-0.10 | 2.77<br>+/-0.10 | 8.0<br>+/-0.3 | 1.55<br>+/-0.05 | 1.125<br>+/-0.125 | 1.75<br>+/-0.10 | 6.25<br>min | 3.50<br>+/-0.05 | 4.0<br>+/-0.1 | 4.0<br>+/-0.1 | 1.30<br>+/-0.10 | 0.228<br>+/-0.013 | 5.2<br>+/-0.3 | 0.06<br>+/-0.02 |

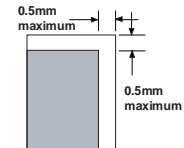
Notes: A0, B0, and K0 dimensions are determined with respect to the EIA/Jedec RS-481 rotational and lateral movement requirements (see sketches A, B, and C).



Sketch A (Side or Front Sectional View)  
Component Rotation

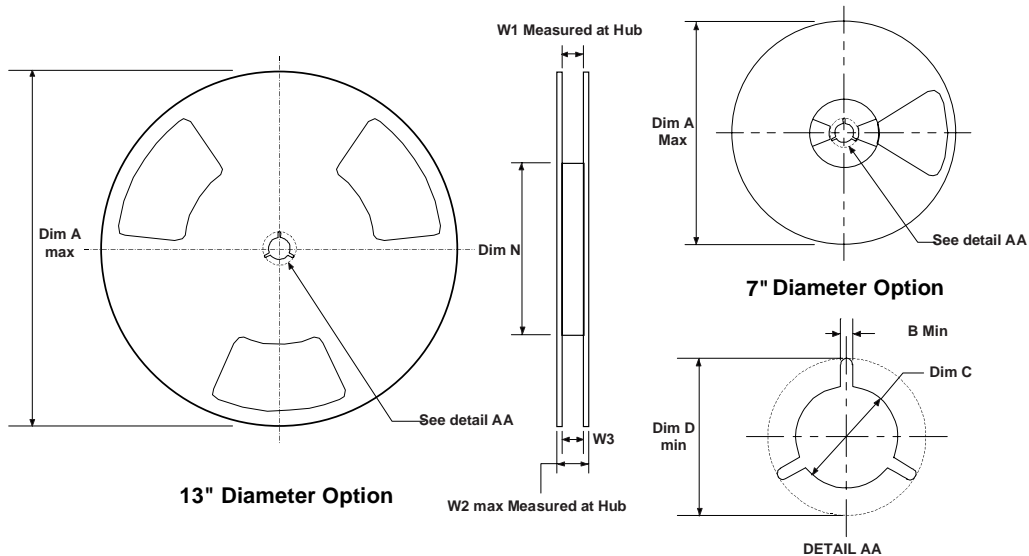


Sketch B (Top View)  
Component Rotation



Sketch C (Top View)  
Component lateral movement

### SOT-23 Reel Configuration: Figure 4.0

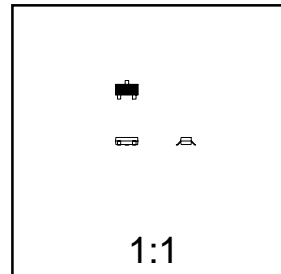
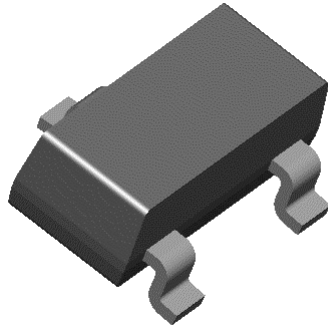


| Dimensions are in inches and millimeters |             |               |              |                                   |               |             |                                   |               |                             |
|--|-------------|---------------|--------------|-----------------------------------|---------------|-------------|-----------------------------------|---------------|-----------------------------|
| Tape Size                                | Reel Option | Dim A         | Dim B        | Dim C                             | Dim D         | Dim N       | Dim W1                            | Dim W2        | Dim W3 (LSL-USL)            |
| 8mm                                      | 7" Dia      | 7.00<br>177.8 | 0.059<br>1.5 | 512 +0.020/-0.008<br>13 +0.5/-0.2 | 0.795<br>20.2 | 2.165<br>55 | 0.331 +0.059/-0.000<br>8.4 +1.5/0 | 0.567<br>14.4 | 0.311 - 0.429<br>7.9 - 10.9 |
| 8mm                                      | 13" Dia     | 13.00<br>330  | 0.059<br>1.5 | 512 +0.020/-0.008<br>13 +0.5/-0.2 | 0.795<br>20.2 | 4.00<br>100 | 0.331 +0.059/-0.000<br>8.4 +1.5/0 | 0.567<br>14.4 | 0.311 - 0.429<br>7.9 - 10.9 |

## SOT-23 Package Dimensions



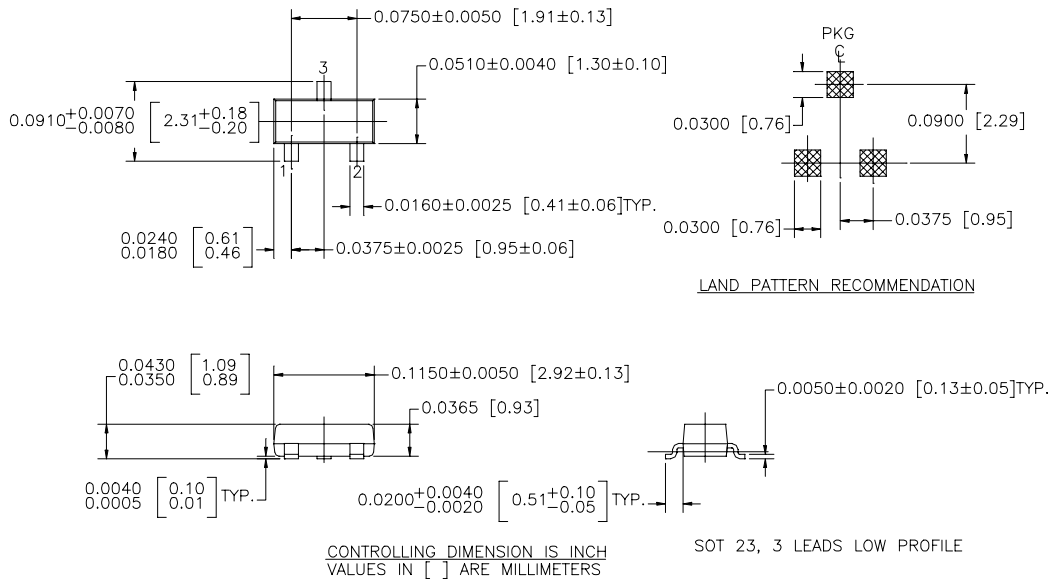
### SOT-23 (FS PKG Code 49)



Scale 1:1 on letter size paper

Dimensions shown below are in:  
inches [millimeters]

Part Weight per unit (gram): 0.0082



NOTE : UNLESS OTHERWISE SPECIFIED

- STANDARD LEAD FINISH 150 MICROINCHES / 3.81 MICROMETERS  
MINIMUM TIN / LEAD (SOLDER) ON ALLOY 42
- REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE G, DATED JUL 1993

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| E <sup>2</sup> CMOS <sup>TM</sup> | MICROWIRE <sup>TM</sup>          | SILENT SWITCHER <sup>®</sup>     |                         |
| EnSigna <sup>TM</sup>             | OPTOLOGIC <sup>TM</sup>          | SMART START <sup>TM</sup>        |                         |
| FACT <sup>TM</sup>                | OPTOPLANAR <sup>TM</sup>         | SuperSOT <sup>TM</sup> -3        |                         |
| FACT Quiet Series <sup>TM</sup>   | PACMAN <sup>TM</sup>             | SuperSOT <sup>TM</sup> -6        |                         |
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