

# BF721T1G

## PNP Silicon Transistor

### Features

- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

| Rating                                                          | Symbol    | Value       | Unit             |
|-----------------------------------------------------------------|-----------|-------------|------------------|
| Collector - Emitter Voltage                                     | $V_{CEO}$ | -300        | Vdc              |
| Collector - Base Voltage                                        | $V_{CBO}$ | -300        | Vdc              |
| Collector - Emitter Voltage                                     | $V_{CER}$ | -300        | Vdc              |
| Emitter - Base Voltage                                          | $V_{EBO}$ | -5.0        | Vdc              |
| Collector Current                                               | $I_C$     | -50         | mAdc             |
| Total Power Dissipation up to $T_A = 25^\circ\text{C}$ (Note 1) | $P_D$     | 1.5         | W                |
| Storage Temperature Range                                       | $T_{stg}$ | -65 to +150 | $^\circ\text{C}$ |
| Junction Temperature                                            | $T_J$     | 150         | $^\circ\text{C}$ |

### THERMAL CHARACTERISTICS

| Characteristic                                   | Symbol          | Max  | Unit               |
|--------------------------------------------------|-----------------|------|--------------------|
| Thermal Resistance, Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 83.3 | $^\circ\text{C/W}$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

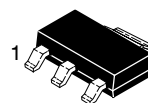
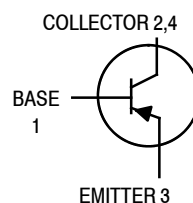
- Device mounted on a glass epoxy printed circuit board 1.575 in. x 1.575 in. x 0.059 in.; mounting pad for the collector lead min. 0.93 in<sup>2</sup>.



ON Semiconductor®

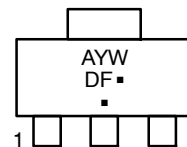
<http://onsemi.com>

## PNP SILICON TRANSISTOR SURFACE MOUNT



SOT-223 (TO-261)  
CASE 318E  
STYLE 1

### MARKING DIAGRAM



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

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device   | Package           | Shipping†          |
|----------|-------------------|--------------------|
| BF721T1G | SOT-223 (Pb-Free) | 1000 / Tape & Reel |

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# BF721T1G

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Characteristic                                                                                                                                                                                         | Symbol               | Min    | Max        | Unit                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------|------------|--------------------------------------|
| <b>OFF CHARACTERISTICS</b>                                                                                                                                                                             |                      |        |            |                                      |
| Collector-Emitter Breakdown Voltage<br>(I <sub>C</sub> = -1.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)                                                                                                   | V <sub>(BR)CEO</sub> | -300   | -          | V <sub>dc</sub>                      |
| Collector-Base Breakdown Voltage<br>(I <sub>C</sub> = -100 µA <sub>dc</sub> , I <sub>E</sub> = 0)                                                                                                      | V <sub>(BR)CBO</sub> | -300   | -          | V <sub>dc</sub>                      |
| Collector-Emitter Breakdown Voltage<br>(I <sub>C</sub> = -100 µA <sub>dc</sub> , R <sub>BE</sub> = 2.7 kΩ)                                                                                             | V <sub>(BR)CER</sub> | -300   | -          | V <sub>dc</sub>                      |
| Emitter-Base Breakdown Voltage<br>(I <sub>E</sub> = -10 µA <sub>dc</sub> , I <sub>C</sub> = 0)                                                                                                         | V <sub>(BR)EBO</sub> | -5.0   | -          | V <sub>dc</sub>                      |
| Collector-Base Cutoff Current<br>(V <sub>CB</sub> = -200 V <sub>dc</sub> , I <sub>E</sub> = 0)                                                                                                         | I <sub>CBO</sub>     | -      | -10        | nA <sub>dc</sub>                     |
| Collector-Emitter Cutoff Current<br>(V <sub>CE</sub> = -250 V <sub>dc</sub> , R <sub>BE</sub> = 2.7 kΩ)<br>(V <sub>CE</sub> = -200 V <sub>dc</sub> , R <sub>BE</sub> = 2.7 kΩ, T <sub>J</sub> = 150°C) | I <sub>CER</sub>     | -<br>- | -50<br>-10 | nA <sub>dc</sub><br>µA <sub>dc</sub> |
| <b>ON CHARACTERISTICS</b>                                                                                                                                                                              |                      |        |            |                                      |
| DC Current Gain<br>(I <sub>C</sub> = -25 mA <sub>dc</sub> , V <sub>CE</sub> = -20 V <sub>dc</sub> )                                                                                                    | h <sub>FE</sub>      | 50     | -          | -                                    |
| Collector-Emitter Saturation Voltage<br>(I <sub>C</sub> = -30 mA <sub>dc</sub> , I <sub>B</sub> = -5.0 mA <sub>dc</sub> )                                                                              | V <sub>CE(sat)</sub> | -      | -0.8       | V <sub>dc</sub>                      |
| <b>DYNAMIC CHARACTERISTICS</b>                                                                                                                                                                         |                      |        |            |                                      |
| Current-Gain - Bandwidth Product<br>(V <sub>CE</sub> = -10 V <sub>dc</sub> , I <sub>C</sub> = -10 mA <sub>dc</sub> , f = 35 MHz)                                                                       | f <sub>T</sub>       | 60     | -          | MHz                                  |
| Feedback Capacitance<br>(V <sub>CE</sub> = -30 V <sub>dc</sub> , I <sub>C</sub> = 0, f = 1.0 MHz)                                                                                                      | C <sub>re</sub>      | -      | 1.6        | pF                                   |

# BF721T1G

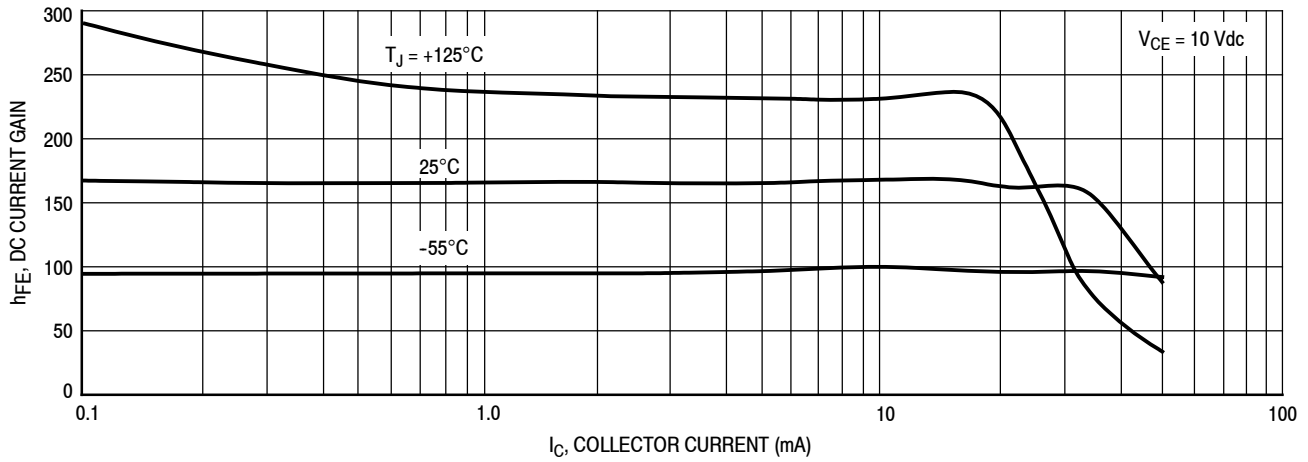


Figure 1. DC Current Gain

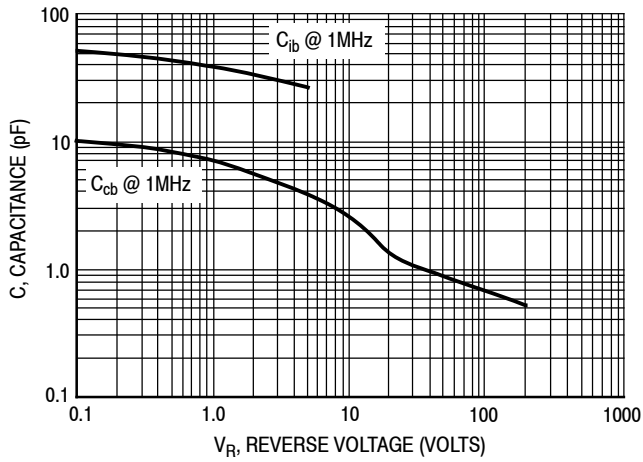


Figure 2. Capacitance

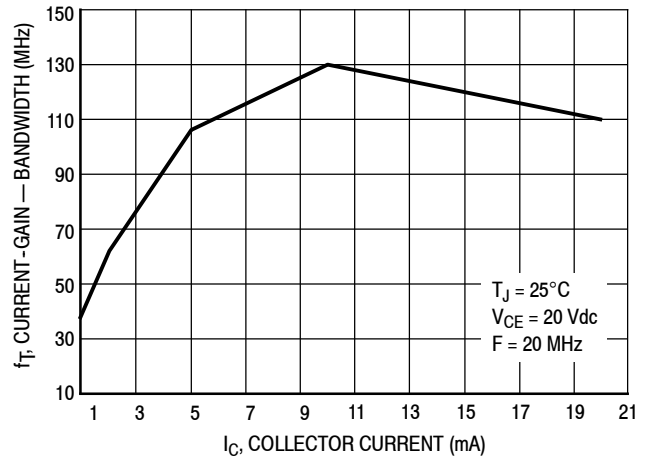


Figure 3. Current-Gain — Bandwidth

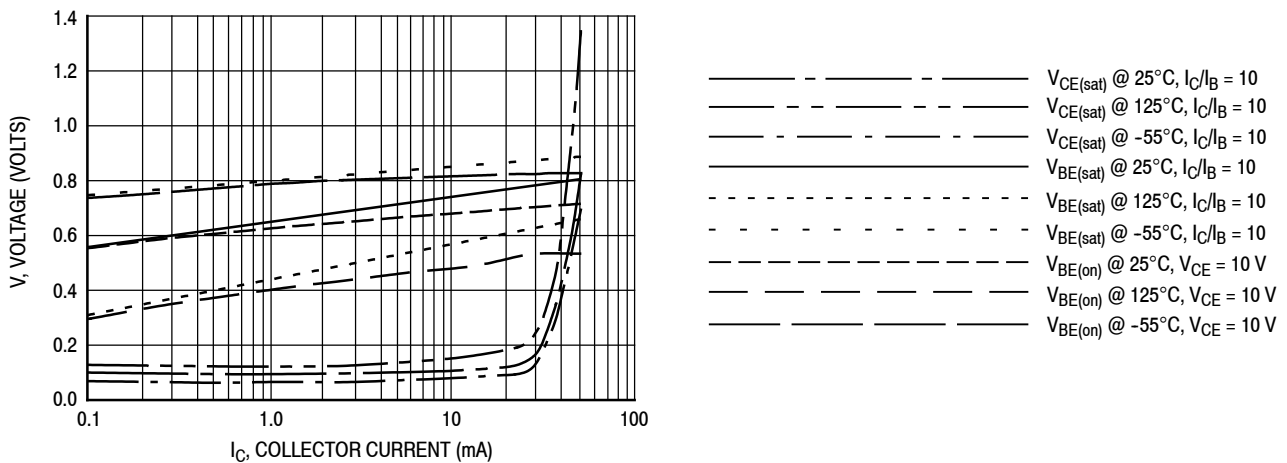
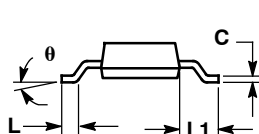
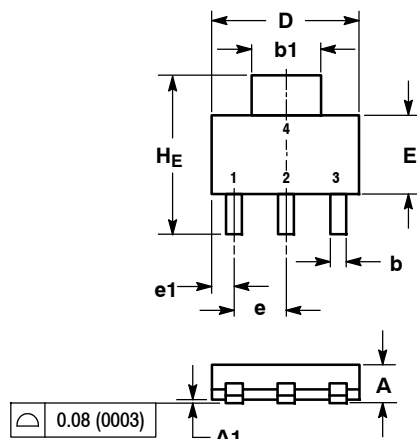


Figure 4. "ON" Voltages

# BF721T1G

## PACKAGE DIMENSIONS

SOT-223 (TO-261)  
CASE 318E-04  
ISSUE N



### NOTES:

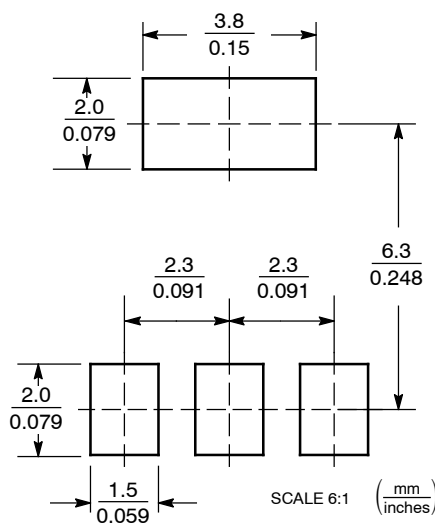
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

| DIM   | MILLIMETERS |      |      | INCHES |       |       |
|-------|-------------|------|------|--------|-------|-------|
|       | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A     | 1.50        | 1.63 | 1.75 | 0.060  | 0.064 | 0.068 |
| A1    | 0.02        | 0.06 | 0.10 | 0.001  | 0.002 | 0.004 |
| b     | 0.60        | 0.75 | 0.89 | 0.024  | 0.030 | 0.035 |
| b1    | 2.90        | 3.06 | 3.20 | 0.115  | 0.121 | 0.126 |
| c     | 0.24        | 0.29 | 0.35 | 0.009  | 0.012 | 0.014 |
| D     | 6.30        | 6.50 | 6.70 | 0.249  | 0.256 | 0.263 |
| E     | 3.30        | 3.50 | 3.70 | 0.130  | 0.138 | 0.145 |
| e     | 2.20        | 2.30 | 2.40 | 0.087  | 0.091 | 0.094 |
| e1    | 0.85        | 0.94 | 1.05 | 0.033  | 0.037 | 0.041 |
| L     | 0.20        | ---  | ---  | 0.008  | ---   | ---   |
| L1    | 1.50        | 1.75 | 2.00 | 0.060  | 0.069 | 0.078 |
| H_E   | 6.70        | 7.00 | 7.30 | 0.264  | 0.276 | 0.287 |
| theta | 0°          | -    | 10°  | 0°     | -     | 10°   |

### STYLE 1:

- PIN 1: BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR

### SOLDERING FOOTPRINT\*



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

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