

# 2SC4617

## NPN Silicon General Purpose Amplifier Transistor

This NPN transistor is designed for general purpose amplifier applications. This device is housed in the SC-75/SOT-416 package which is designed for low power surface mount applications, where board space is at a premium.

### Features

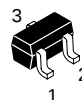
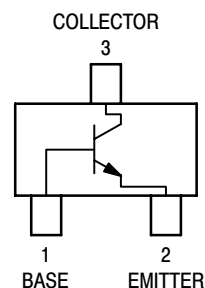
- Pb-Free Package is Available\*
- Reduces Board Space
- High  $h_{FE}$ , 210–460 (typical)
- Low  $V_{CE(sat)}$ ,  $< 0.5\text{ V}$
- Available in 8 mm, 7 inch/3000 Unit Tape and Reel



**ON Semiconductor®**

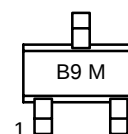
<http://onsemi.com>

### NPN GENERAL PURPOSE AMPLIFIER TRANSISTORS SURFACE MOUNT



SC-75  
CASE 463  
STYLE 1

### MARKING DIAGRAM



B9 = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

## 2SC4617

### MAXIMUM RATINGS (T<sub>J</sub> = 25°C)

| Rating                         | Symbol               | Value | Unit             |
|--------------------------------|----------------------|-------|------------------|
| Collector-Base Voltage         | V <sub>(BR)CBO</sub> | 50    | Vdc              |
| Collector-Emitter Voltage      | V <sub>(BR)CEO</sub> | 50    | Vdc              |
| Emitter-Base Voltage           | V <sub>(BR)EBO</sub> | 5.0   | Vdc              |
| Collector Current – Continuous | I <sub>C</sub>       | 100   | mA <sub>dc</sub> |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

| Characteristic             | Symbol           | Max        | Unit |
|----------------------------|------------------|------------|------|
| Power Dissipation (Note 1) | P <sub>D</sub>   | 125        | mW   |
| Junction Temperature       | T <sub>J</sub>   | 150        | °C   |
| Storage Temperature Range  | T <sub>stg</sub> | –55 ~ +150 | °C   |

1. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

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

| Characteristic                                                                                                                   | Symbol               | Min | Typ | Max | Unit |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------|-----|-----|-----|------|
| Collector-Base Breakdown Voltage (I <sub>C</sub> = 50 μA <sub>dc</sub> , I <sub>E</sub> = 0)                                     | V <sub>(BR)CBO</sub> | 50  | –   | –   | Vdc  |
| Collector-Emitter Breakdown Voltage (I <sub>C</sub> = 1.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)                                 | V <sub>(BR)CEO</sub> | 50  | –   | –   | Vdc  |
| Emitter-Base Breakdown Voltage (I <sub>E</sub> = 50 μA <sub>dc</sub> , I <sub>E</sub> = 0)                                       | V <sub>(BR)EBO</sub> | 5.0 | –   | –   | Vdc  |
| Collector-Base Cutoff Current (V <sub>CB</sub> = 30 Vdc, I <sub>E</sub> = 0)                                                     | I <sub>CBO</sub>     | –   | –   | 0.5 | μA   |
| Emitter-Base Cutoff Current (V <sub>EB</sub> = 4.0 Vdc, I <sub>B</sub> = 0)                                                      | I <sub>EBO</sub>     | –   | –   | 0.5 | μA   |
| Collector-Emitter Saturation Voltage (Note 2)<br>(I <sub>C</sub> = 60 mA <sub>dc</sub> , I <sub>B</sub> = 5.0 mA <sub>dc</sub> ) | V <sub>CE(sat)</sub> | –   | –   | 0.4 | Vdc  |
| DC Current Gain (Note 2)<br>(V <sub>CE</sub> = 6.0 Vdc, I <sub>C</sub> = 1.0 mA <sub>dc</sub> )                                  | h <sub>FE</sub>      | 120 | –   | 560 | –    |
| Transition Frequency (V <sub>CE</sub> = 12 Vdc, I <sub>C</sub> = 2.0 mA <sub>dc</sub> , f = 30 MHz)                              | f <sub>T</sub>       | –   | 180 | –   | MHz  |
| Output Capacitance (V <sub>CB</sub> = 12 Vdc, I <sub>C</sub> = 0 A <sub>dc</sub> , f = 1 MHz)                                    | C <sub>OB</sub>      | –   | 2.0 | –   | pF   |

2. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

### ORDERING INFORMATION

| Device     | Package            | Shipping <sup>†</sup> |
|------------|--------------------|-----------------------|
| 2SC4617    | SC-75              | 3,000 / Tape & Reel   |
| 2SC4617G   | SC-75<br>(Pb-Free) | 3,000 / Tape & Reel   |
| 2SC4617T1  | SC-75              | 3,000 / Tape & Reel   |
| 2SC4617T1G | SC-75<br>(Pb-Free) | 3,000 / Tape & Reel   |

<sup>†</sup>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.

TYPICAL ELECTRICAL CHARACTERISTICS

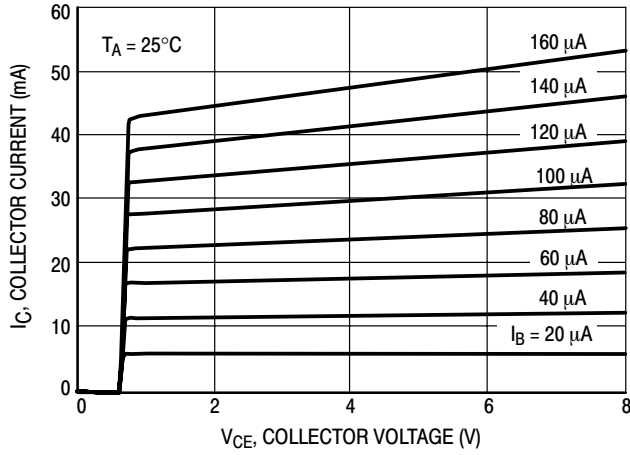


Figure 1.  $I_C - V_{CE}$

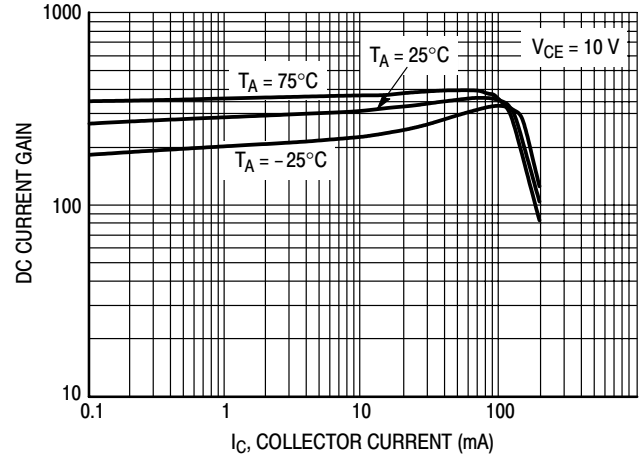


Figure 2. DC Current Gain

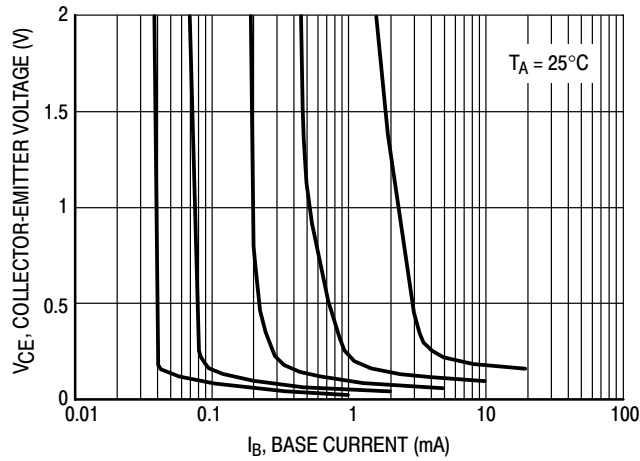


Figure 3. Collector Saturation Region

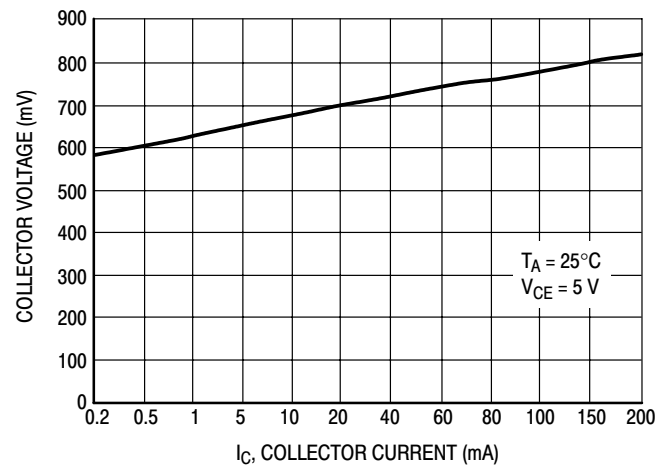


Figure 4. On Voltage

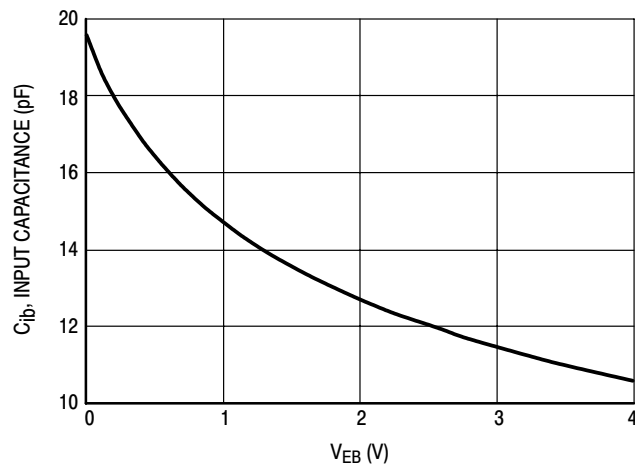


Figure 5. Capacitance

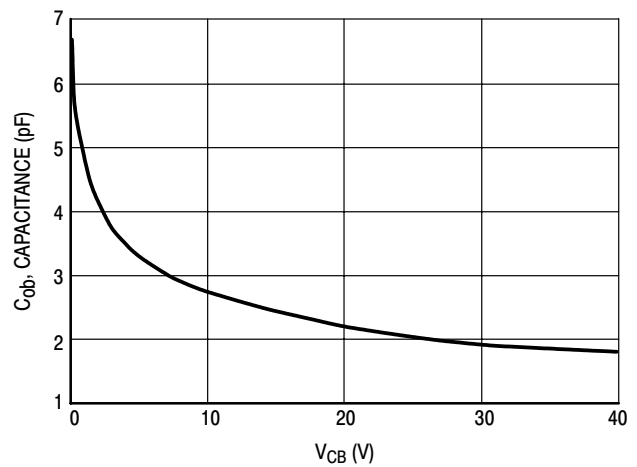
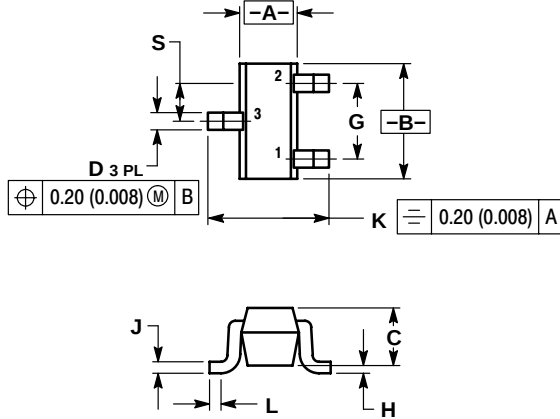


Figure 6. Capacitance

# 2SC4617

## PACKAGE DIMENSIONS

### SC-75 (SOT-416) CASE 463-01 ISSUE C



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 0.70        | 0.90 | 0.028     | 0.035 |
| B   | 1.40        | 1.80 | 0.055     | 0.071 |
| C   | 0.60        | 0.90 | 0.024     | 0.035 |
| D   | 0.15        | 0.30 | 0.006     | 0.012 |
| G   | 1.00 BSC    |      | 0.039 BSC |       |
| H   | ---         | 0.10 | ---       | 0.004 |
| J   | 0.10        | 0.25 | 0.004     | 0.010 |
| K   | 1.45        | 1.75 | 0.057     | 0.069 |
| L   | 0.10        | 0.20 | 0.004     | 0.008 |
| S   | 0.50 BSC    |      | 0.020 BSC |       |

#### STYLE 1:

- PIN 1. BASE
- EMITTER
- COLLECTOR

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