

# 2SC4617G, S2SC4617G

## 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

- Reduces Board Space
- High  $h_{FE}$ , 210–460 (typical)
- Low  $V_{CE(sat)}$ , < 0.5 V
- Available in 8 mm, 7 inch/3000 Unit Tape and Reel
- AEC-Q101 Qualified and PPAP Capable
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*



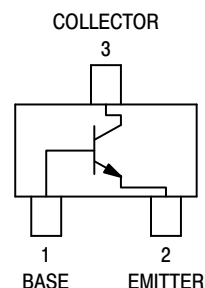
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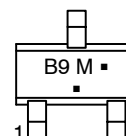
### NPN GENERAL PURPOSE AMPLIFIER TRANSISTORS SURFACE MOUNT



SC-75  
CASE 463-01  
STYLE 1



### MARKING DIAGRAM



B9 = Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

### ORDERING INFORMATION

| Device     | Package            | Shipping†         |
|------------|--------------------|-------------------|
| 2SC4617G   | SC-75<br>(Pb-Free) | 3,000/Tape & Reel |
| S2SC4617G  | SC-75<br>(Pb-Free) | 3,000/Tape & Reel |
| 2SC4617T1G | SC-75<br>(Pb-Free) | 3,000/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.

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

## 2SC4617G, S2SC4617G

### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ )

| Rating                         | Symbol        | Value | Unit  |
|--------------------------------|---------------|-------|-------|
| Collector-Base Voltage         | $V_{(BR)CBO}$ | 50    | Vdc   |
| Collector-Emitter Voltage      | $V_{(BR)CEO}$ | 50    | Vdc   |
| Emitter-Base Voltage           | $V_{(BR)EBO}$ | 5.0   | Vdc   |
| Collector Current – Continuous | $I_C$         | 100   | mA dc |

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) | $P_D$     | 125             | mW               |
| Junction Temperature       | $T_J$     | 150             | $^\circ\text{C}$ |
| Storage Temperature Range  | $T_{stg}$ | $-55 \sim +150$ | $^\circ\text{C}$ |

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

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

| Characteristic                                                                                            | Symbol        | Min | Typ | Max | Unit          |
|-----------------------------------------------------------------------------------------------------------|---------------|-----|-----|-----|---------------|
| Collector-Base Breakdown Voltage ( $I_C = 50 \mu\text{A dc}$ , $I_E = 0$ )                                | $V_{(BR)CBO}$ | 50  | –   | –   | Vdc           |
| Collector-Emitter Breakdown Voltage ( $I_C = 1.0 \text{ mA dc}$ , $I_B = 0$ )                             | $V_{(BR)CEO}$ | 50  | –   | –   | Vdc           |
| Emitter-Base Breakdown Voltage ( $I_E = 50 \mu\text{A dc}$ , $I_C = 0$ )                                  | $V_{(BR)EBO}$ | 5.0 | –   | –   | Vdc           |
| Collector-Base Cutoff Current ( $V_{CB} = 30 \text{ Vdc}$ , $I_E = 0$ )                                   | $I_{CBO}$     | –   | –   | 0.5 | $\mu\text{A}$ |
| Emitter-Base Cutoff Current ( $V_{EB} = 4.0 \text{ Vdc}$ , $I_B = 0$ )                                    | $I_{EBO}$     | –   | –   | 0.5 | $\mu\text{A}$ |
| Collector-Emitter Saturation Voltage (Note 2)<br>( $I_C = 60 \text{ mA dc}$ , $I_B = 5.0 \text{ mA dc}$ ) | $V_{CE(sat)}$ | –   | –   | 0.4 | Vdc           |
| DC Current Gain (Note 2)<br>( $V_{CE} = 6.0 \text{ Vdc}$ , $I_C = 1.0 \text{ mA dc}$ )                    | $h_{FE}$      | 120 | –   | 560 | –             |
| Transition Frequency ( $V_{CE} = 12 \text{ Vdc}$ , $I_C = 2.0 \text{ mA dc}$ , $f = 30 \text{ MHz}$ )     | $f_T$         | –   | 180 | –   | MHz           |
| Output Capacitance ( $V_{CB} = 12 \text{ Vdc}$ , $I_C = 0 \text{ A dc}$ , $f = 1 \text{ MHz}$ )           | $C_{OB}$      | –   | 2.0 | –   | pF            |

2. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , D.C.  $\leq 2\%$ .

TYPICAL ELECTRICAL CHARACTERISTICS

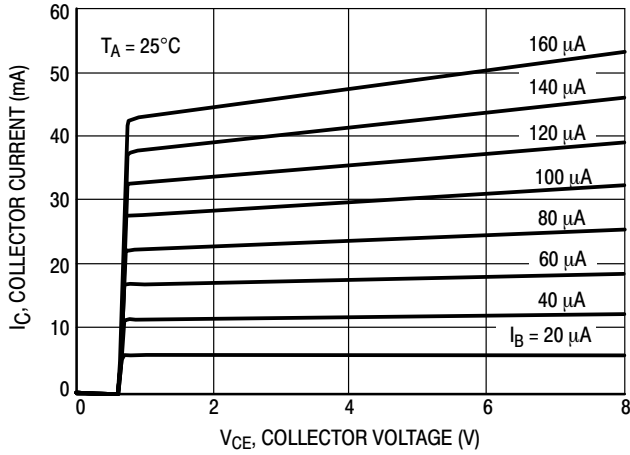


Figure 1.  $I_C - V_{CE}$

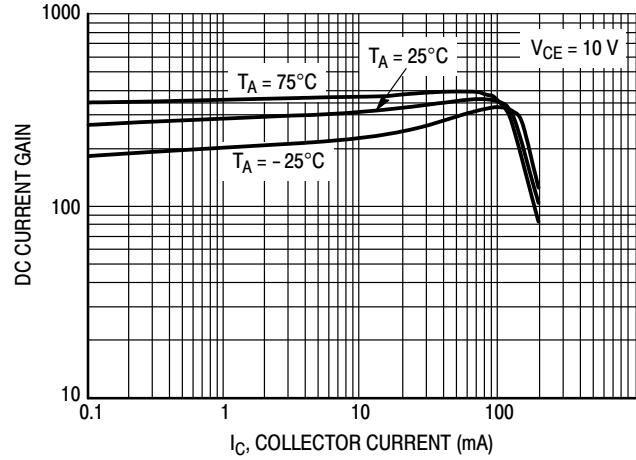


Figure 2. DC Current Gain

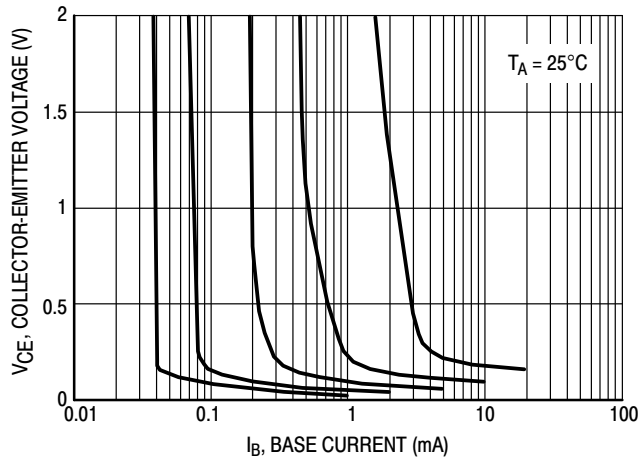


Figure 3. Collector Saturation Region

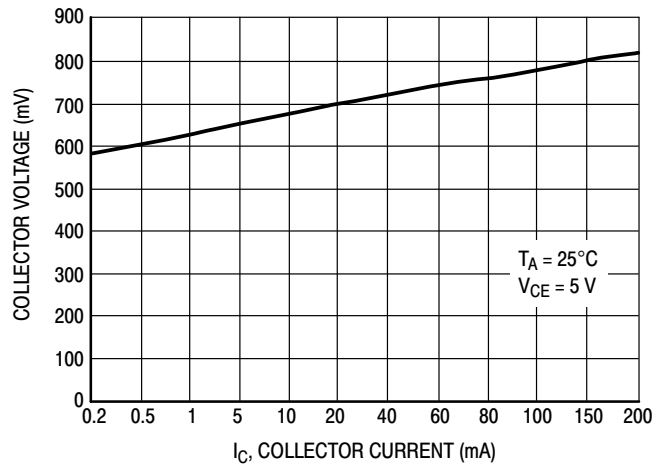


Figure 4. On Voltage

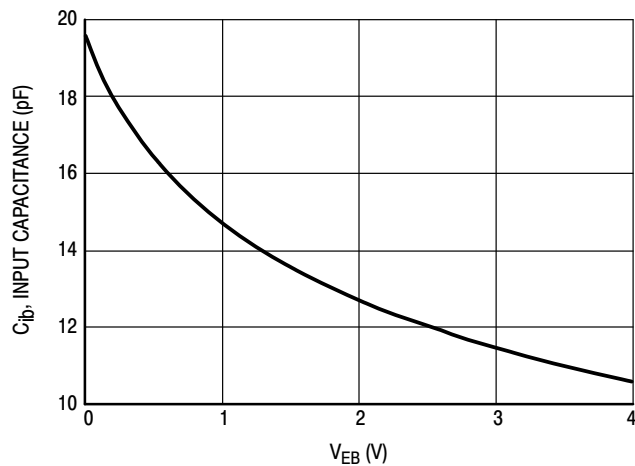


Figure 5. Capacitance

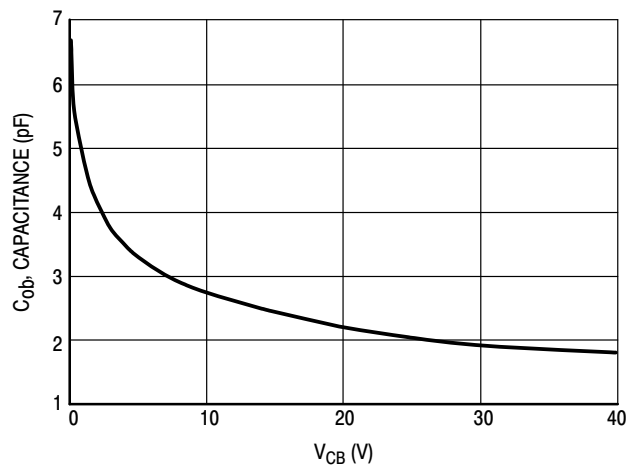
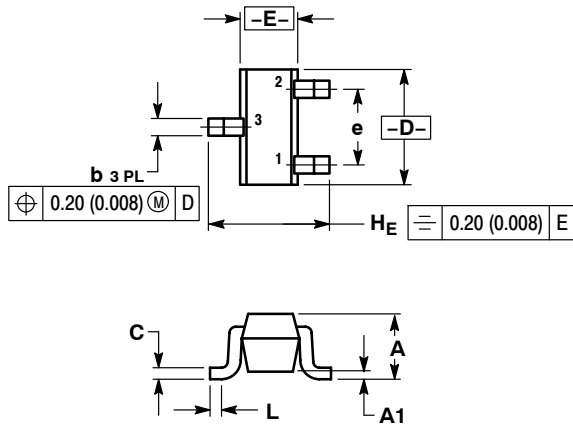


Figure 6. Capacitance

# 2SC4617G, S2SC4617G

## PACKAGE DIMENSIONS

SC-75/SOT-416  
CASE 463-01  
ISSUE F



### NOTES:

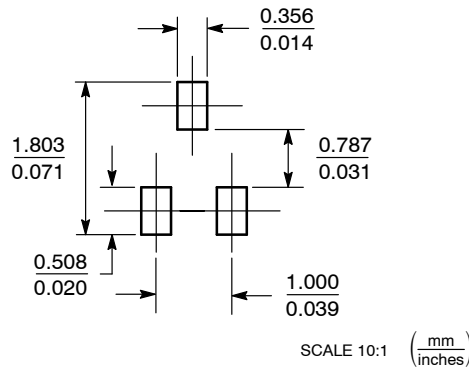
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

| DIM            | MILLIMETERS |      |      | INCHES   |       |       |
|----------------|-------------|------|------|----------|-------|-------|
|                | MIN         | NOM  | MAX  | MIN      | NOM   | MAX   |
| A              | 0.70        | 0.80 | 0.90 | 0.027    | 0.031 | 0.035 |
| A1             | 0.00        | 0.05 | 0.10 | 0.000    | 0.002 | 0.004 |
| b              | 0.15        | 0.20 | 0.30 | 0.006    | 0.008 | 0.012 |
| C              | 0.10        | 0.15 | 0.25 | 0.004    | 0.006 | 0.010 |
| D              | 1.55        | 1.60 | 1.65 | 0.059    | 0.063 | 0.067 |
| E              | 0.70        | 0.80 | 0.90 | 0.027    | 0.031 | 0.035 |
| e              | 1.00 BSC    |      |      | 0.04 BSC |       |       |
| L              | 0.10        | 0.15 | 0.20 | 0.004    | 0.006 | 0.008 |
| H <sub>E</sub> | 1.50        | 1.60 | 1.70 | 0.061    | 0.063 | 0.065 |

### STYLE 1:

1. BASE
2. EMITTER
3. 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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