# SSCN9013GS6

## NPN Switching Transistor

### ➢ Features

| VCB | VCE | VEB | IC |
|---|---|---|---|
| 40V | 25V | 5V | 500mA |

### ➢ Description

The NPN Transistor is designed for use in linear and switching applications. The device is housed in the SOT-23 package, which is designed for telephony and professional communication equipment.

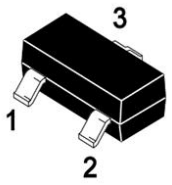
### ➢ Applications

- General purpose switching and amplification
- Telephony and professional communication equipment

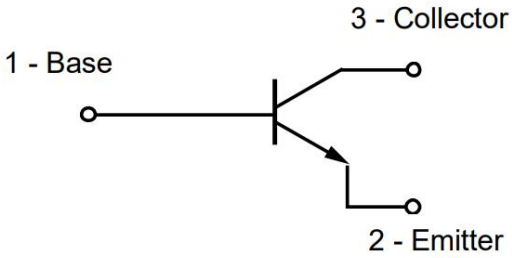
### ➢ Ordering Information

| Device | Package | Shipping |
|---|---|---|
| SSCN9013GS6 | SOT-23 | 3000/Reel |

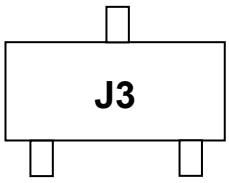
### ➢ Pin configuration




**SOT-23**




**Circuit Diagram**




**Marking (Top View)**

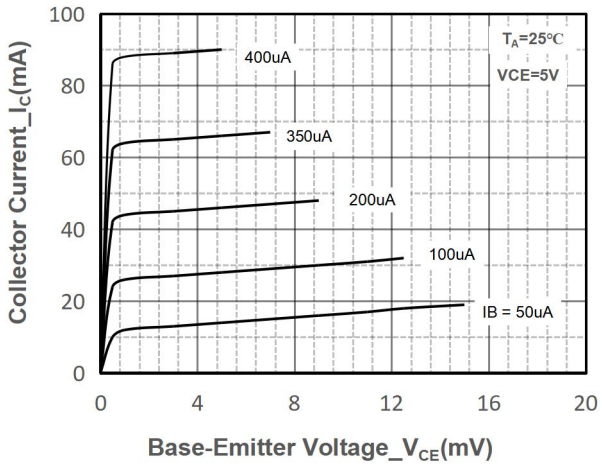
## ➢ Absolute Maximum Ratings ($T_A$ = 25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 40 | V |
| Collector- Emitter Voltage | $V_{CEO}$ | 25 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Collector Current-Continuous | $I_C$ | 500 | mA |
| Collector Power Dissipation | $P_C$ | 300 | mW |
| Junction Temperature | $T_J$ | -55 to 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 to 150 | ℃ |

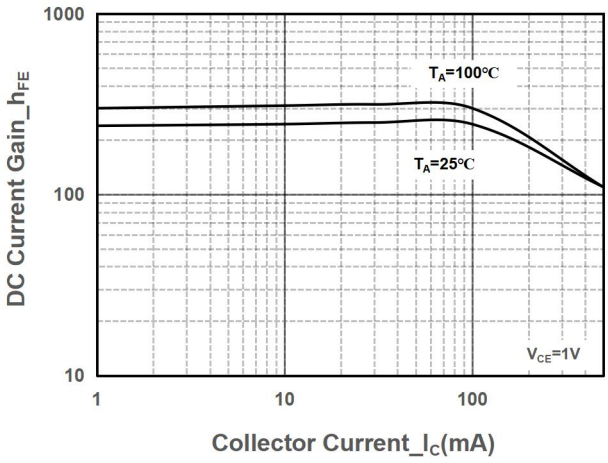
## ➢ Electrical Characteristics ($T_A$ = 25℃ unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | $I_C$ = 100uA, $I_E$ = 0 | 40 | | | V |
| Collector-emitter Breakdown Voltage | $BV_{CEO}$ | $I_C$ = 1mA, $I_B$ = 0 | 25 | | | V |
| Emitter -Base Breakdown Voltage | $BV_{EBO}$ | $I_E$ = 100uA, $I_C$ = 0 | 5 | | | V |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$ = 40V, $I_E$ = 0 | | | 0.1 | μA |
| Collector Cutoff Current | $I_{CEO}$ | $V_{CE}$ = 20V, $I_B$ = 0 | | | 0.1 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$ = 5V, $I_C$ = 0 | | | 0.1 | μA |
| DC Current Gain | $h_{FE\ (1)}$ | $V_{CE}$ = 1V, $I_C$ = 50mA | 120 | | 400 | |
| | $h_{FE\ (2)}$ | $V_{CE}$ =1V, $I_C$ = 500mA | 40 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE\ (sat)}$ | $I_C$ = 500mA, $I_B$ = 50mA | | | 0.6 | V |
| Base-Emitter Saturation Voltage | $V_{BE\ (sat)}$ | $I_C$ = 500mA, $I_B$= 50mA | | | 1.2 | V |
| Base-Emitter Voltage | $V_{BE}$ | $V_{CB}$ = 1V, $I_C$ = 10mA | | | 0.7 | |
| Transition frequency | $f_T$ | $V_{CE}$ = 6V, $I_C$ = 20mA f = 30MHz | 150 | | | MHz |
| Collector output capacitance | $c_{ob}$ | $V_{CB}$ = 6V, $I_E$ = 0, f = 1MHz | | | 8 | pF |

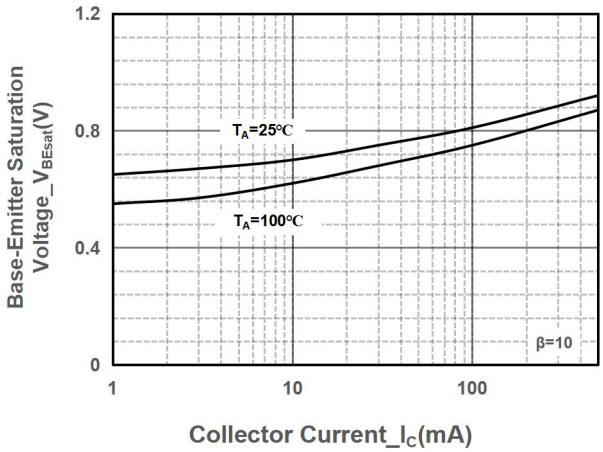
## ➢ Typical Performance Characteristics ($T_A$ = 25℃ unless otherwise noted)



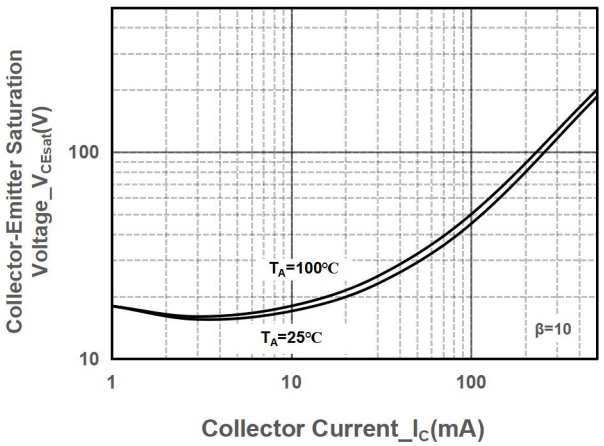

Collector Current vs. Base-Emitter Voltage



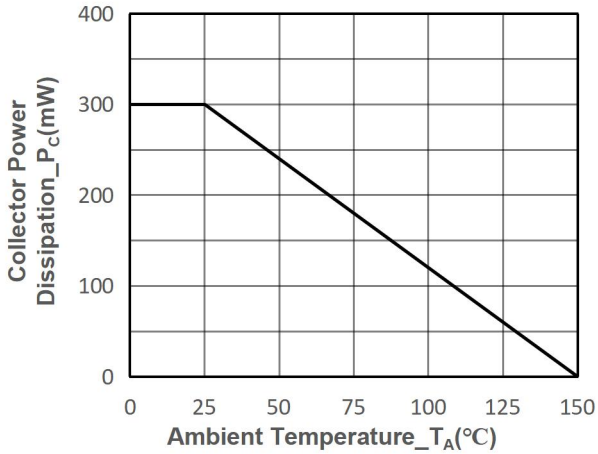

DC Current Gain vs. Collector Current



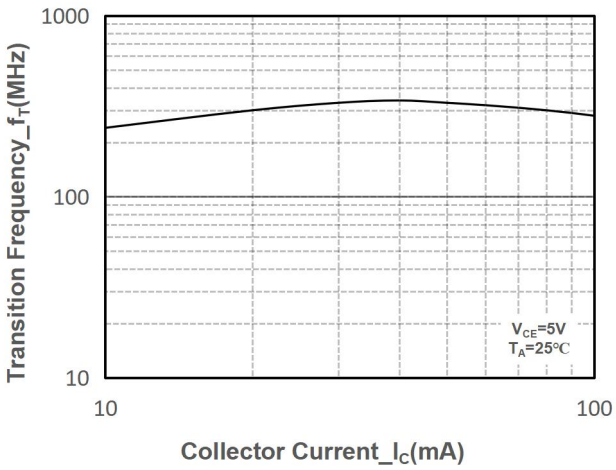

$V_{BE\ (sat)}$ vs. Collector Current




$V_{CE\ (sat)}$ vs. Collector Current



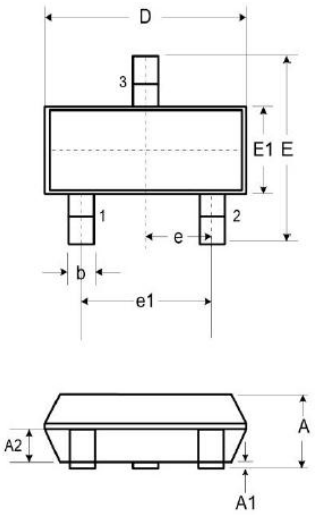

Power derating vs. Ambient temperature

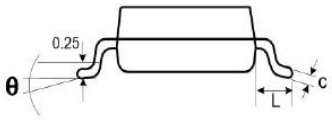



Transition Frequency vs. Collector Current

## ➢ Package Information

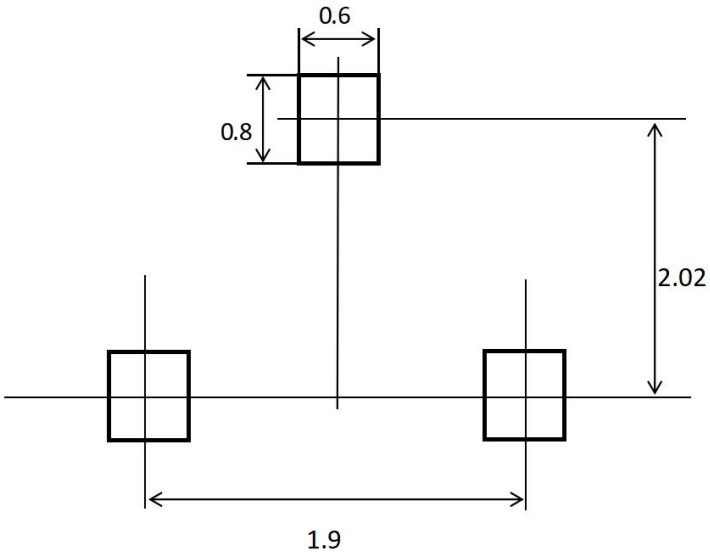
**SOT-23**




| DIM | Millimeters | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.900 | - | 1.150 |
| A1 | 0.00 | - | 0.100 |
| A2 | 0.900 | - | 1.050 |
| b | 0.300 | - | 0.500 |
| c | 0.080 | - | 0.150 |
| D | 2.800 | - | 3.000 |
| E | 2.250 | - | 2.550 |
| E1 | 1.200 | - | 1.40 |
| e | 0.950 | | |
| e1 | 1.800 | - | 2.000 |
| L | 0.550 | | |
| L1 | 0.300 | | 0.500 |
| N | 3 | | |
| θ | 0° | - | 8° |

**Recommended Pad outline (Unit: mm)**



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