

# DATA SHEET



**PSS9014C**

**NPN general purpose transistor**

Product specification  
Supersedes data of 2002 Sep 20

2004 Aug 10

# NPN general purpose transistor

# PSS9014C

### FEATURES

- High power dissipation: 500 mW
- Low collector capacitance
- Low collector-emitter saturation voltage
- High current capability.

### APPLICATIONS

- General purpose switching and amplification.

### DESCRIPTION

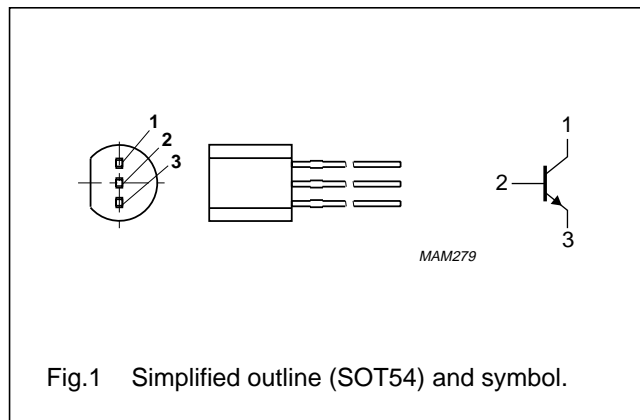
NPN low  $V_{CEsat}$  transistor in a SOT54 (TO-92) plastic package.

### MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PSS9014C    | S9014C       |

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | collector   |
| 2   | base        |
| 3   | emitter     |



### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL    | PARAMETER                     | CONDITIONS                                       | MIN. | MAX. | UNIT             |
|-----------|-------------------------------|--|------|------|------------------|
| $V_{CBO}$ | collector-base voltage        | open emitter                                     | -    | 50   | V                |
| $V_{CEO}$ | collector-emitter voltage     | open base  | -    | 45   | V                |
| $V_{EBO}$ | emitter-base voltage          | open collector                                   | -    | 5    | V                |
| $I_C$     | collector current (DC)        |  | -    | 100  | mA               |
| $I_{CM}$  | peak collector current        |  | -    | 200  | mA               |
| $I_{BM}$  | peak base current             |  | -    | 200  | mA               |
| $P_{tot}$ | total power dissipation       | $T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1 | -    | 500  | mW               |
| $T_{stg}$ | storage temperature           |  | -65  | +150 | $^\circ\text{C}$ |
| $T_j$     | junction temperature          |  | -    | 150  | $^\circ\text{C}$ |
| $T_{amb}$ | operating ambient temperature |  | -65  | +150 | $^\circ\text{C}$ |

### Note

1. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

## NPN general purpose transistor

## PSS9014C

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                   | CONDITIONS          | VALUE | UNIT |
|---------------|---|---------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | in free air; note 1 | 250   | K/W  |

## Note

1. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

## CHARACTERISTICS

$T_{amb} = 25\text{ °C}$  unless otherwise specified.

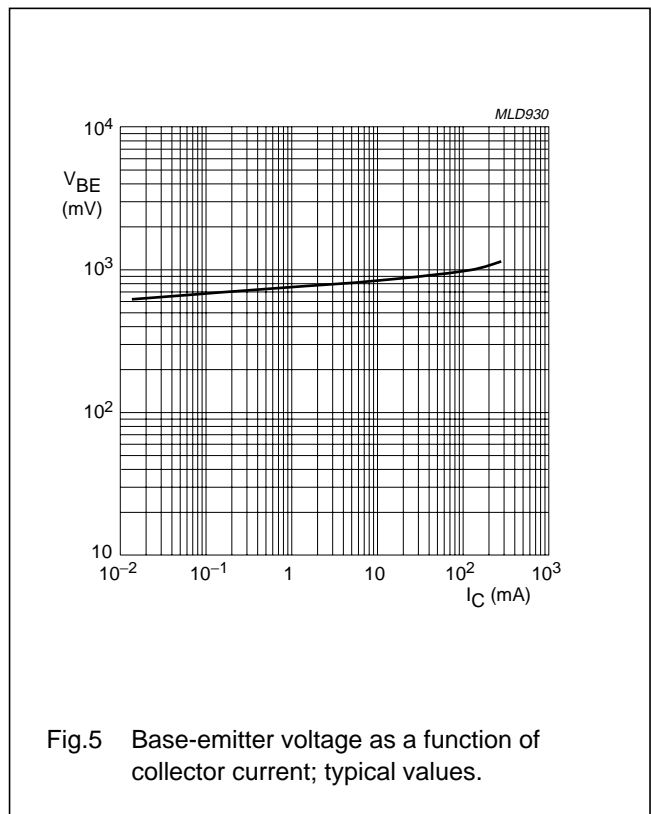
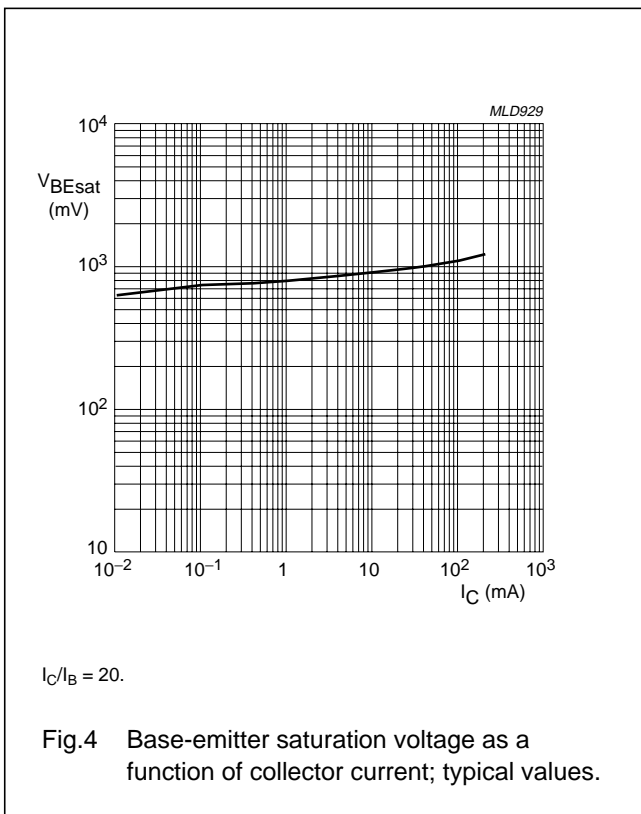
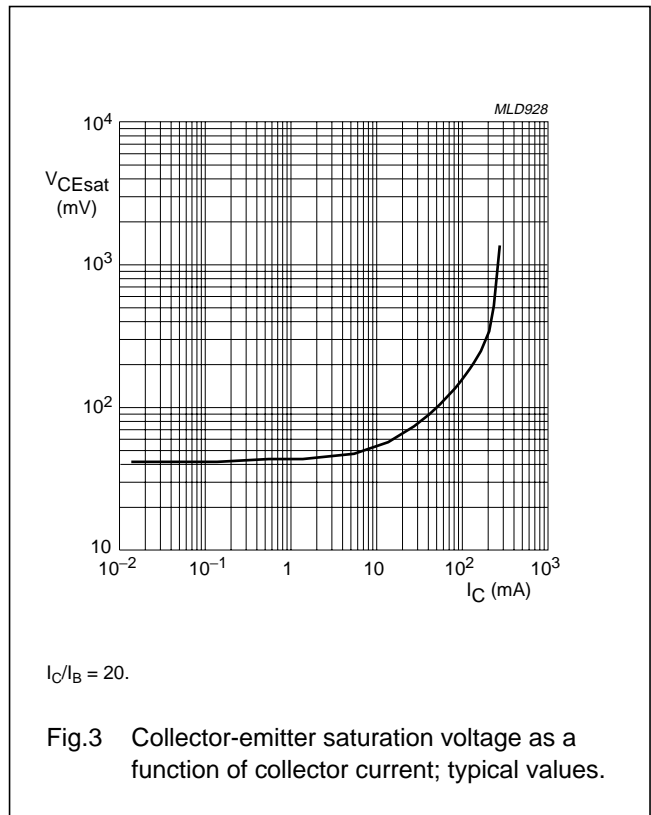
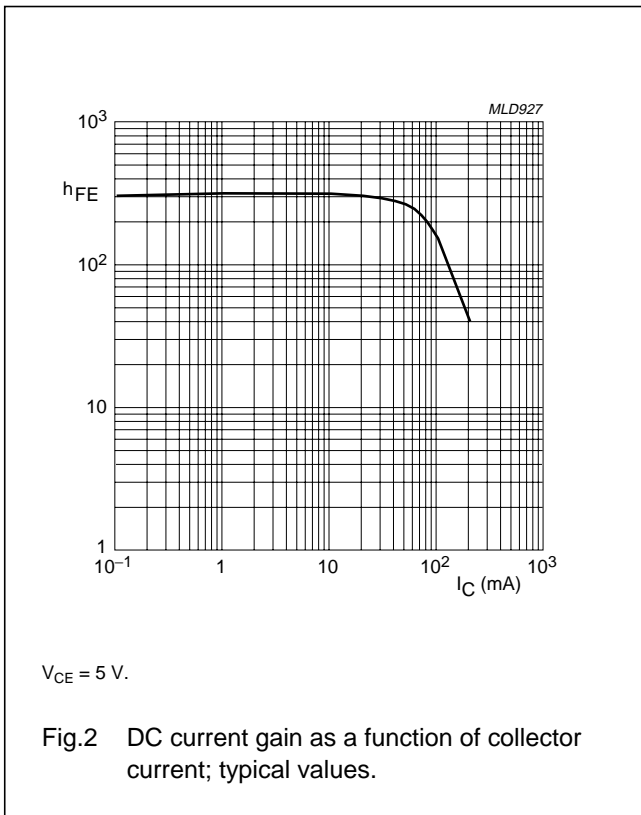
| SYMBOL      | PARAMETER                            | CONDITIONS  | MIN. | TYP. | MAX. | UNIT          |
|-------------|--------------------------------------|---|------|------|------|---------------|
| $I_{CBO}$   | collector-base cut-off current       | $V_{CB} = 30\text{ V}; I_E = 0$   | –    | –    | 15   | nA            |
|             |                                      | $V_{CB} = 30\text{ V}; I_E = 0; T_{amb} = 150\text{ °C}$  | –    | –    | 5    | $\mu\text{A}$ |
| $I_{CEO}$   | collector-emitter cut-off current    | $V_{CE} = 30\text{ V}; I_B = 0$   | –    | –    | 100  | nA            |
| $I_{EBO}$   | emitter-base cut-off current         | $V_{EB} = 5\text{ V}; I_C = 0$  | –    | –    | 100  | nA            |
| $h_{FE}$    | DC current gain                      | $I_C = 1\text{ mA}; V_{CE} = 5\text{ V}$  | 200  | 300  | 600  |               |
|             |                                      | $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$  | 200  | 300  | 450  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 100\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$   | –    | 200  | 300  | mV            |
| $V_{BEsat}$ | base-emitter saturation voltage      | $I_C = 100\text{ mA}; I_B = 0.5\text{ mA}; \text{note 1}$   | –    | 815  | 850  | mV            |
| $V_{BEon}$  | base-emitter turn-on voltage         | $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$  | 580  | 650  | 700  | mV            |
| $f_T$       | transition frequency                 | $I_C = 50\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$  | 100  | 220  | –    | MHz           |
| $C_c$       | collector capacitance                | $V_{CB} = 10\text{ V}; I_E = i_e = 0; f = 1\text{ MHz}$   | –    | 1.6  | 1.75 | pF            |
| F           | noise figure                         | $V_{CE} = 5\text{ V}; I_C = 0.2\text{ mA}; R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$ | –    | –    | 10   | dB            |

## Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

NPN general purpose transistor

PSS9014C



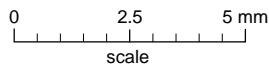
NPN general purpose transistor

PSS9014C

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



**DIMENSIONS (mm are the original dimensions)**

| UNIT | A          | b            | b <sub>1</sub> | c            | D          | d          | E          | e    | e <sub>1</sub> | L            | L <sub>1</sub> <sup>(1)</sup><br>max. |
|------|------------|--------------|----------------|--------------|------------|------------|------------|------|----------------|--------------|---------------------------------------|
| mm   | 5.2<br>5.0 | 0.48<br>0.40 | 0.66<br>0.55   | 0.45<br>0.38 | 4.8<br>4.4 | 1.7<br>1.4 | 4.2<br>3.6 | 2.54 | 1.27           | 14.5<br>12.7 | 2.5                                   |

**Note**

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

| OUTLINE<br>VERSION | REFERENCES |       |        | EUROPEAN<br>PROJECTION | ISSUE DATE            |
|--------------------|------------|-------|--------|------------------------|-----------------------|
|                    | IEC        | JEDEC | JEITA  |                        |                       |
| SOT54              |            | TO-92 | SC-43A |                        | -97-02-28<br>04-06-28 |

## NPN general purpose transistor

PSS9014C

## DATA SHEET STATUS

| LEVEL | DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)(3)</sup> | DEFINITION   |
|-------|----------------------------------|----------------------------------|--|
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