

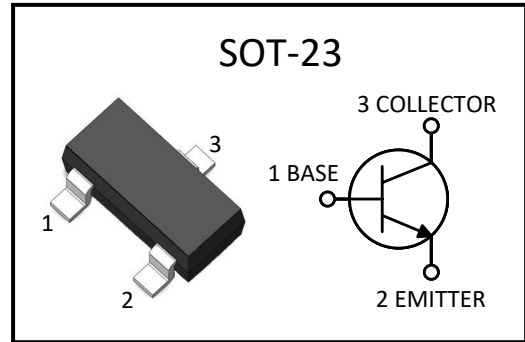
# S9014

NPN Plastic-Encapsulate Transistor

## Features

- $V_{CE}=45V$
- $I_C=0.1A$
- $f_T=150MHz$  @  $V_{CE}=5V$ ,  $I_C=10mA$ ,  $f=30MHz$

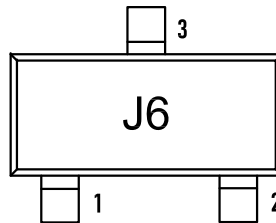
## Package



## Description

- As complementary type the PNP transistor S9015 is recommended
- Epitaxial planar die constructio
- SOT-23 Plastic Package.

## Marking



## Ordering information

| Order code | Package | Marking | Base qty | Delivery mode |
|------------|---------|---------|----------|---------------|
| S9014      | SOT-23  | J6      | 3K       | Tape and reel |

## Absolute Maximum Ratings @ $T_A=25^{\circ}C$ unless otherwise noted

| Symbol          | Parameter                                   | Value        | Unit          |
|-----------------|---------------------------------------------|--------------|---------------|
| $V_{CBO}$       | Collector-Base Voltage                      | 50           | V             |
| $V_{CEO}$       | Collector-Emitter Voltage                   | 45           | V             |
| $V_{EBO}$       | Emitter-Base Voltage                        | 5            | V             |
| $I_C$           | Collector Current                           | 0.1          | A             |
| $P_C$           | Collector Power Dissipation                 | 200          | mW            |
| $T_J$           | Junction Temperature                        | 150          | $^{\circ}C$   |
| $T_{stg}$       | Storage Temperature                         | -55 to + 150 | $^{\circ}C$   |
| $R_{\theta JA}$ | Thermal resistance From junction to ambient | 625          | $^{\circ}C/W$ |

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## Electrical Characteristics (T<sub>A</sub>=+25°C, unless otherwise specified)

| Symbol                  | Parameter                            | Test condition                                     | Min. | Typ. | Max. | Unit |
|-------------------------|--------------------------------------|----------------------------------------------------|------|------|------|------|
| V <sub>(BR)CBO</sub>    | Collector-base breakdown voltage     | I <sub>C</sub> =100μA, I <sub>E</sub> =0           | 50   | —    | —    | V    |
| V <sub>(BR)CEO</sub>    | Collector-emitter breakdown voltage  | I <sub>C</sub> =0.1mA, I <sub>B</sub> =0           | 45   | —    | —    |      |
| V <sub>(BR)EBO</sub>    | Emitter-base breakdown voltage       | I <sub>E</sub> =100μA, I <sub>C</sub> =0           | 5    | —    | —    |      |
| I <sub>CEO</sub>        | Collector cut-off current            | V <sub>CE</sub> =35V, I <sub>B</sub> =0            | —    | —    | 0.1  | uA   |
| I <sub>CBO</sub>        | Collector cut-off current            | V <sub>CB</sub> =50V, I <sub>E</sub> =0            | —    | —    | 0.1  |      |
| I <sub>EBO</sub>        | Emitter cut-off current              | V <sub>EB</sub> =3V, I <sub>C</sub> =0             | —    | —    | 0.1  |      |
| h <sub>FE</sub>         | DC current gain                      | V <sub>CE</sub> =5V, I <sub>C</sub> =1mA           | 200  | —    | 1000 |      |
| V <sub>CE(sat)</sub>    | Collector-emitter saturation voltage | I <sub>C</sub> =100mA, I <sub>B</sub> =5mA         | —    | —    | 0.3  | V    |
| V <sub>BE(sat)</sub>    | Base-emitter saturation voltage      | I <sub>C</sub> =100mA, I <sub>B</sub> =5mA         | —    | —    | 1.0  |      |
| f <sub>T</sub>          | Transition frequency                 | V <sub>CE</sub> =5V, I <sub>C</sub> =10mA, f=30MHZ | 150  | —    | —    | MHZ  |
| h <sub>FE(1)</sub> Rank | L(200-450)                           | H(450-1000)                                        |      |      |      |      |



Typical Performance Characteristics( $T_J = 25^\circ\text{C}$ , unless otherwise noted)

Figure 1 :  $I_C$  —  $V_{CE}$

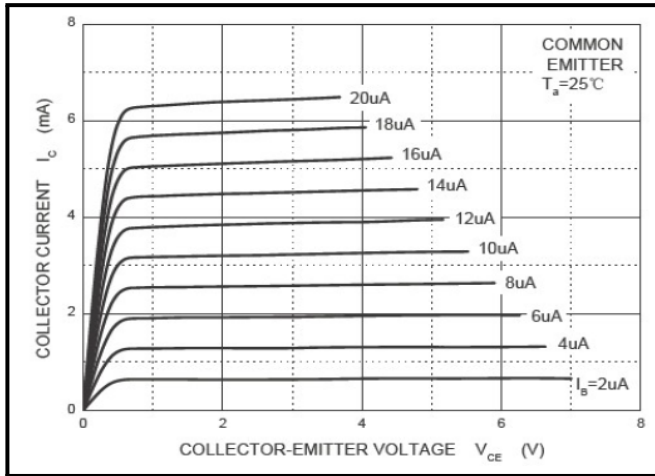


Figure 2 :  $h_{FE}$  —  $I_C$

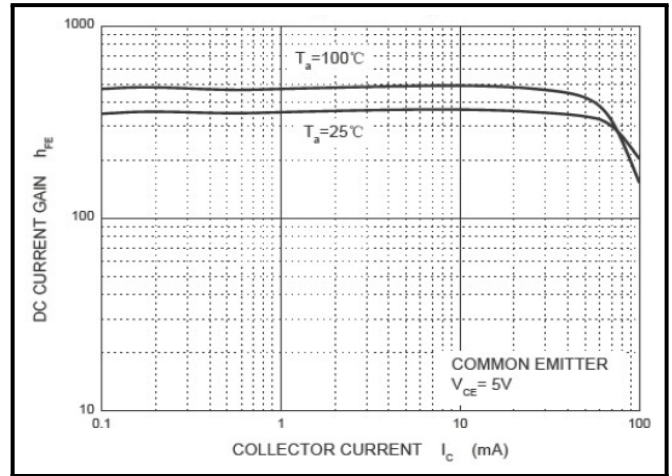


Figure 3 :  $V_{CE(sat)}$  —  $I_C$

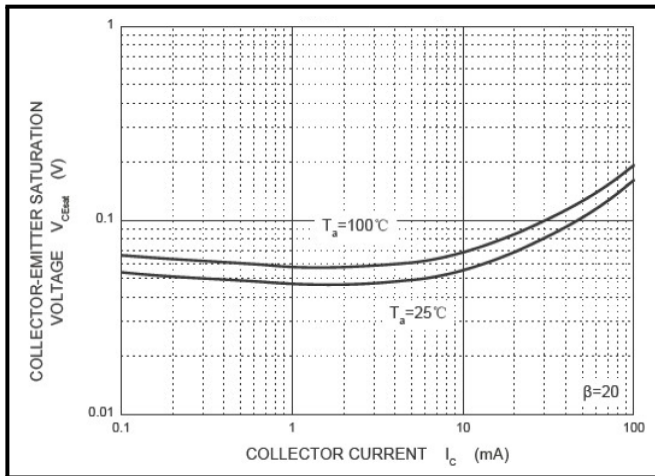


Figure 4 :  $V_{BE(sat)}$  —  $I_C$

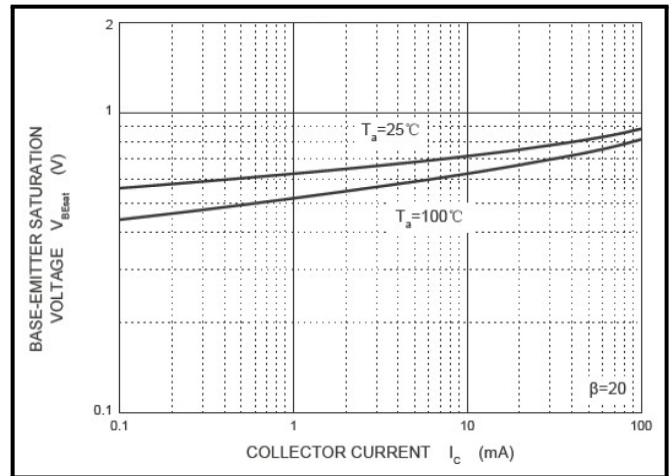


Figure 5 :  $I_C$  —  $V_{BE}$

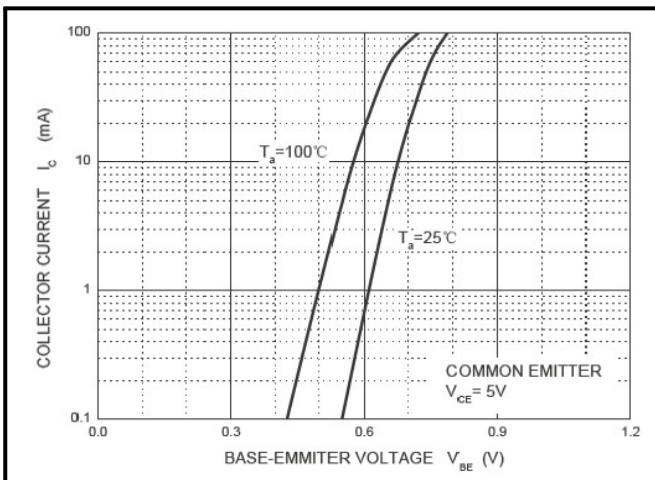
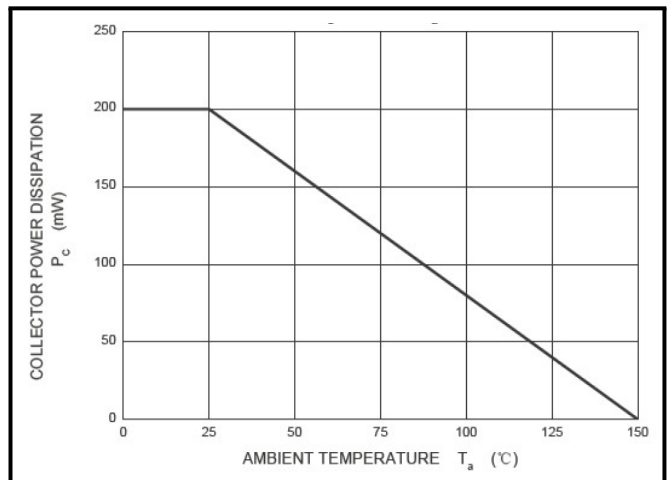


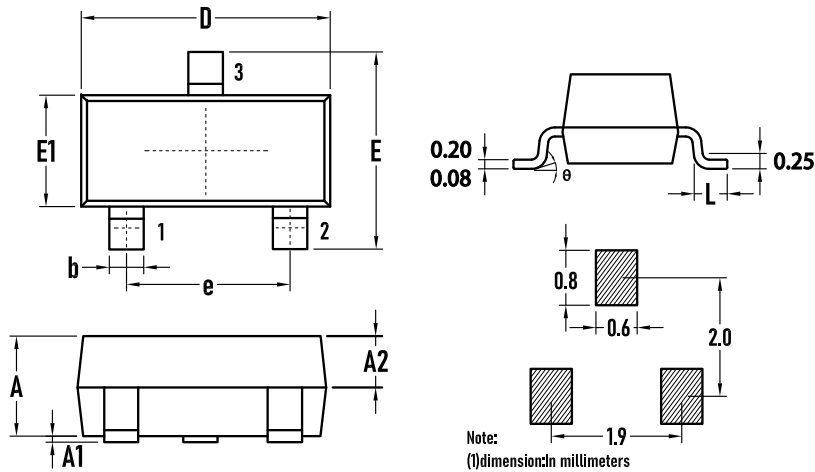
Figure 6 :  $P_C$  —  $T_a$



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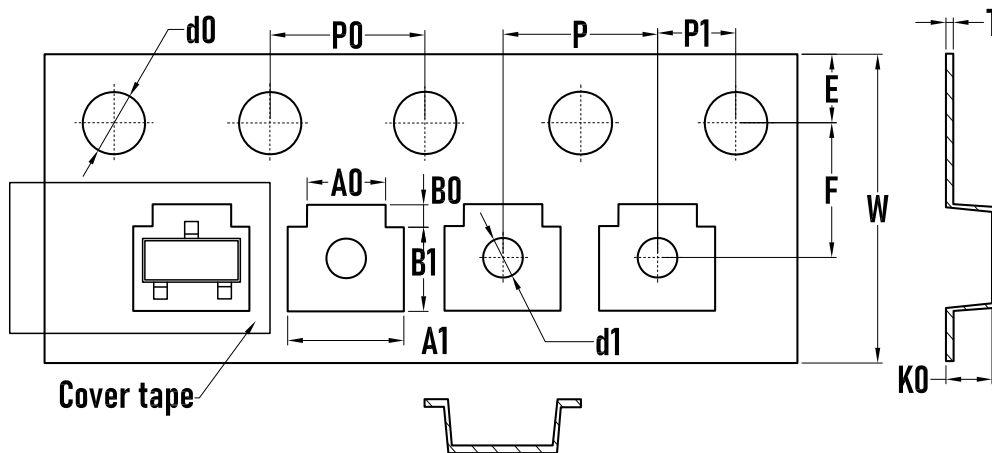
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## Outline Drawing - SOT-23



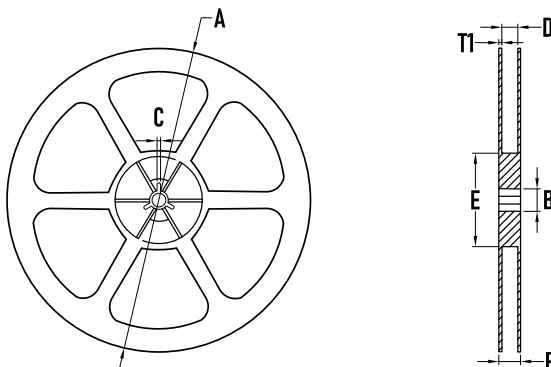
| SYMBOL | MILLIMETER |      |      |
|--------|------------|------|------|
|        | MIN.       | Typ  | MAX  |
| A      | 0.90       | 1.00 | 1.10 |
| A1     | 0.01       | —    | 0.10 |
| A2     | 0.50       | 0.60 | 0.70 |
| D      | 2.80       | 2.90 | 3.00 |
| b      | 0.25       | 0.35 | 0.45 |
| E      | 2.10       | 2.30 | 2.50 |
| E1     | 1.20       | 1.30 | 1.40 |
| e      | 1.80       | 1.90 | 2.00 |
| L      | 0.25       | 0.35 | 0.45 |
| θ      | 0          | —    | 8°   |

## Packaging Tape - SOT-23



| SYMBOL | MILLIMETER |
|--------|------------|
| A0     | 2.10±0.10  |
| A1     | 3.10±0.10  |
| B0     | 0.65±0.10  |
| B1     | 2.75±0.10  |
| d0     | 1.55±0.10  |
| d1     | 1.00±0.05  |
| E      | 1.75±0.10  |
| F      | 3.50±0.10  |
| K0     | 1.10±0.10  |
| P      | 4.00±0.10  |
| P0     | 4.00±0.10  |
| P1     | 2.00±0.10  |
| W      | 8.00±0.30  |
| T      | 0.20 ±0.05 |

## Packaging Reel



| SYMBOL   | MILLIMETER |
|----------|------------|
| A        | 177.8±0.2  |
| B        | 3.1        |
| C        | 13.50      |
| D        | 9.6±0.3    |
| E        | 75±0.2     |
| F        | 12.3±0.3   |
| T1       | 1.0±0.2    |
| Quantity | 3000PCS    |

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