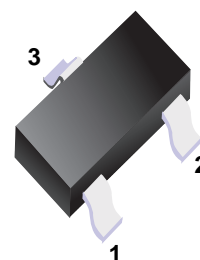


## NPN Transistors

### ■ Features

- Small Package
- Complementary to MMBT2907AT



- 1.Base
- 2.Emitter
- 3.Collector

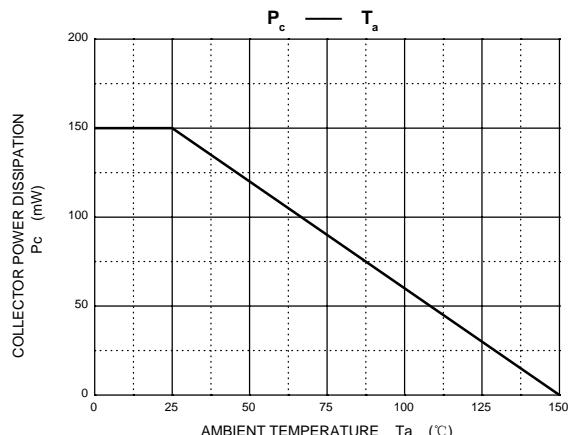
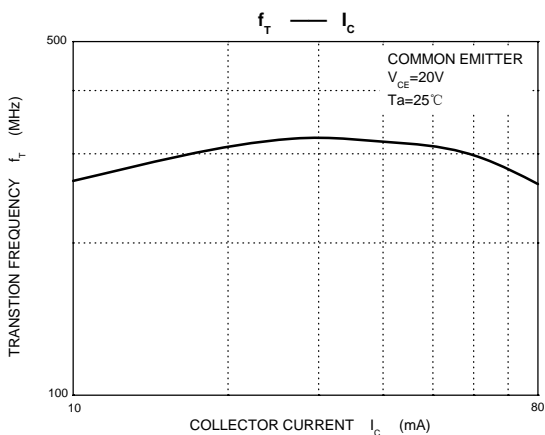
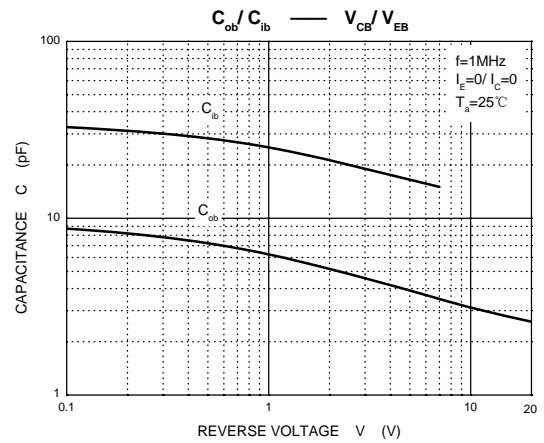
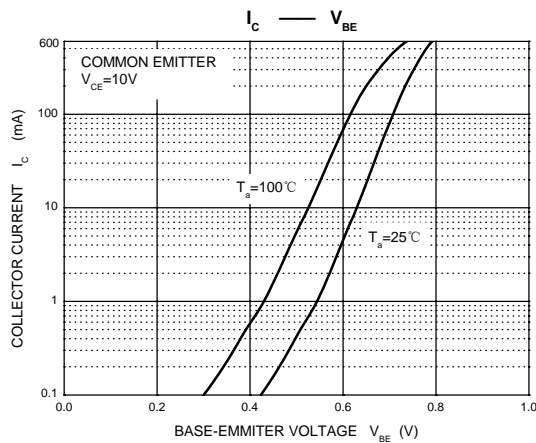
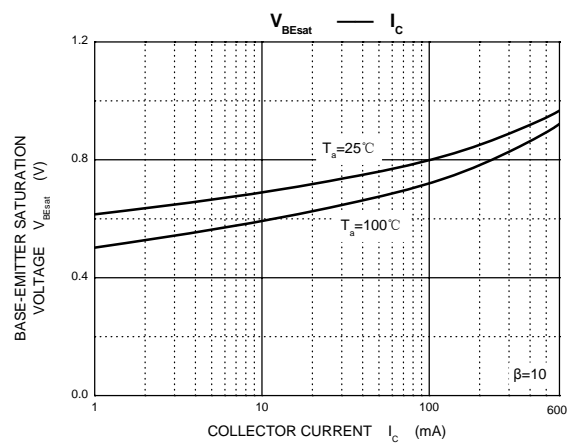
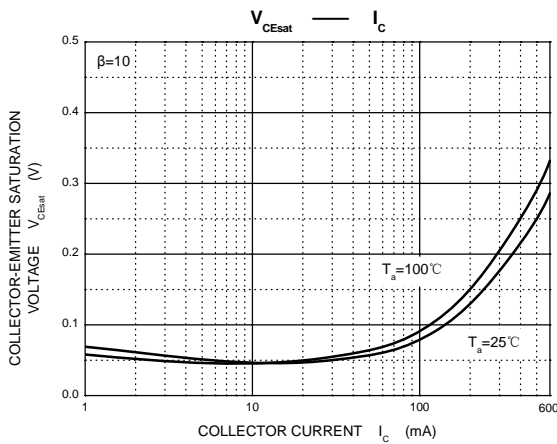
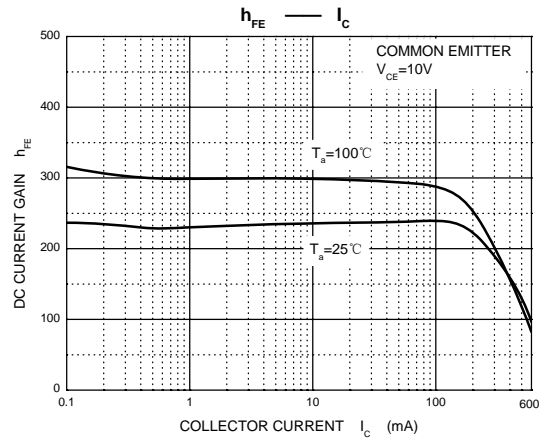
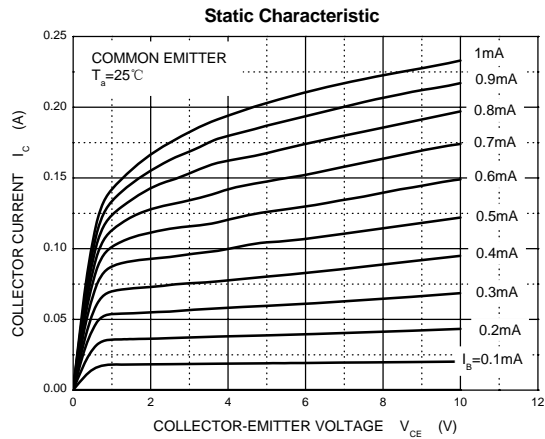
### ■ Simplified outline(SOT-523)

### ■ Absolute Maximum Ratings Ta = 25°C

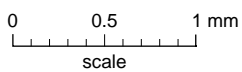
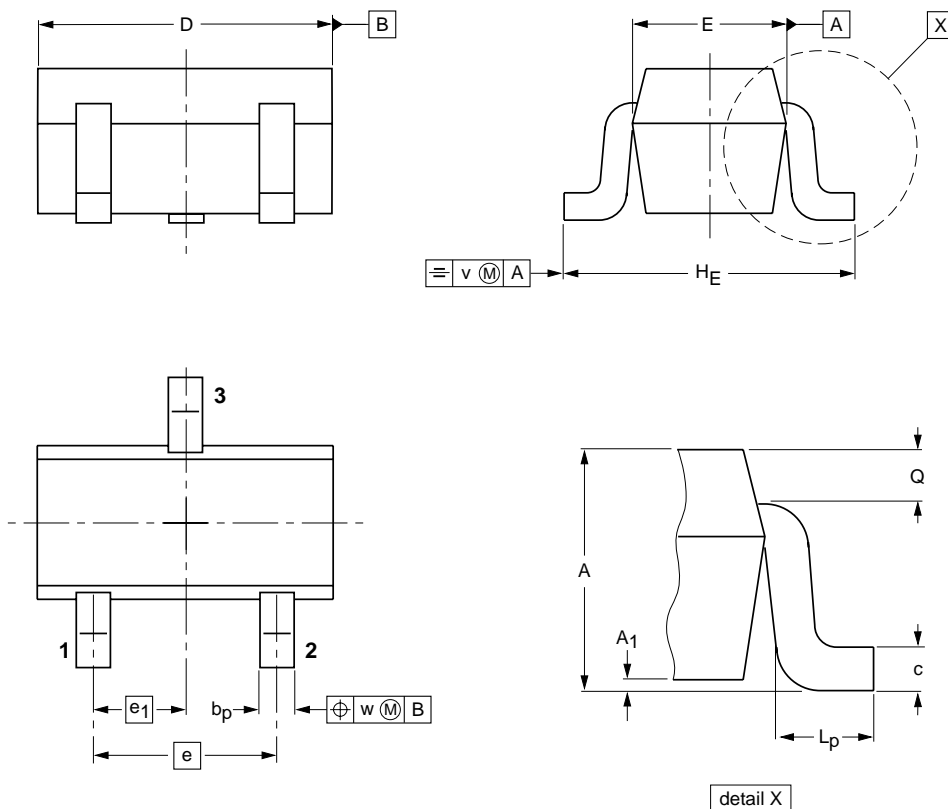
| Parameter                               | Symbol           | Rating     | Unit |
|---|------------------|------------|------|
| Collector - Base Voltage                | V <sub>CB0</sub> | 75         | V    |
| Collector - Emitter Voltage             | V <sub>CE0</sub> | 40         |      |
| Emitter - Base Voltage                  | V <sub>EB0</sub> | 6          |      |
| Collector Current - Continuous          | I <sub>c</sub>   | 600        | mA   |
| Collector Power Dissipation             | P <sub>c</sub>   | 150        | mW   |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub> | 833        | °C/W |
| Junction Temperature                    | T <sub>J</sub>   | 150        | °C   |
| Storage Temperature Range               | T <sub>stg</sub> | -55 to 150 |      |

### ■ Electrical Characteristics Ta = 25°C

| Parameter                            | Symbol               | Test Conditions   | Min | Typ | Max | Unit |
|--------------------------------------|----------------------|---|-----|-----|-----|------|
| Collector- base breakdown voltage    | V <sub>CB0</sub>     | I <sub>c</sub> = 100 μA, I <sub>E</sub> = 0   | 75  |     |     | V    |
| Collector- emitter breakdown voltage | V <sub>CE0</sub>     | I <sub>c</sub> = 10 mA, I <sub>B</sub> = 0  | 40  |     |     |      |
| Emitter - base breakdown voltage     | V <sub>EB0</sub>     | I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0   | 6   |     |     |      |
| Collector-base cut-off current       | I <sub>CB0</sub>     | V <sub>CB</sub> = 75 V, I <sub>E</sub> = 0  |     |     | 100 | nA   |
| Collector cut-off current            | I <sub>CEx</sub>     | V <sub>CE</sub> = 60 V, V <sub>EB(off)</sub> =3V  |     |     | 100 |      |
| Emitter cut-off current              | I <sub>EBO</sub>     | V <sub>EB</sub> = 6V, I <sub>C</sub> =0   |     |     | 100 |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =150 mA, I <sub>B</sub> =15mA  |     |     | 0.3 | V    |
|                                      |                      | I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50mA  |     |     | 1   |      |
| Base - emitter saturation voltage    | V <sub>BE(sat)</sub> | I <sub>C</sub> =150 mA, I <sub>B</sub> =15mA  |     |     | 1.2 | V    |
|                                      |                      | I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50mA  |     |     | 2   |      |
| DC current gain                      | h <sub>FE(1)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.1mA   | 35  |     |     |      |
|                                      | h <sub>FE(2)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> = 1mA   | 50  |     |     |      |
|                                      | h <sub>FE(3)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA  | 75  |     |     |      |
|                                      | h <sub>FE(4)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA   | 100 |     | 300 |      |
|                                      | h <sub>FE(5)</sub>   | V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA   | 40  |     |     |      |
| Delay time                           | t <sub>d</sub>       | V <sub>CC</sub> =30V, V <sub>BE(off)</sub> =-0.5V<br>I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA |     |     | 10  | nS   |
| Rise time                            | t <sub>r</sub>       |   |     |     | 25  |      |
| Storage time                         | t <sub>s</sub>       | V <sub>CC</sub> =30V, I <sub>C</sub> =150mA, I <sub>B1</sub> =I <sub>B2</sub> =15mA               |     |     | 225 |      |
| Fall time                            | t <sub>f</sub>       |   |     |     | 60  |      |
| Collector output capacitance         | C <sub>ob</sub>      | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f=1MHz   |     |     | 8   |      |
| Transition frequency                 | f <sub>T</sub>       | V <sub>CE</sub> = 20V, I <sub>C</sub> = 20mA, f=100MHz  | 300 |     |     | MHz  |



## ■ SOT-523



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

| UNIT | A            | A <sub>1</sub><br>max | b <sub>p</sub> | c            | D          | E          | e | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   |
|------|--------------|-----------------------|----------------|--------------|------------|------------|---|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 0.95<br>0.60 | 0.1                   | 0.30<br>0.15   | 0.25<br>0.10 | 1.8<br>1.4 | 0.9<br>0.7 | 1 | 0.5            | 1.75<br>1.45   | 0.45<br>0.15   | 0.23<br>0.13 | 0.2 | 0.2 |

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