

|   |  |  |
|---|--|--|
| <b>NPN General Purpose Transistor</b>   |  |  |
| <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>• Ideal for Medium Power Amplification and Switching</li> <li>• Complementary PNP Type available(MMBT2907A)</li> </ul> <p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li>• Case: SOT-23 Plastic</li> <li>• Case material: “Green” molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)</li> <li>• Lead Free in RoHS 2002/95/EC Compliant</li> </ul> |  |  |

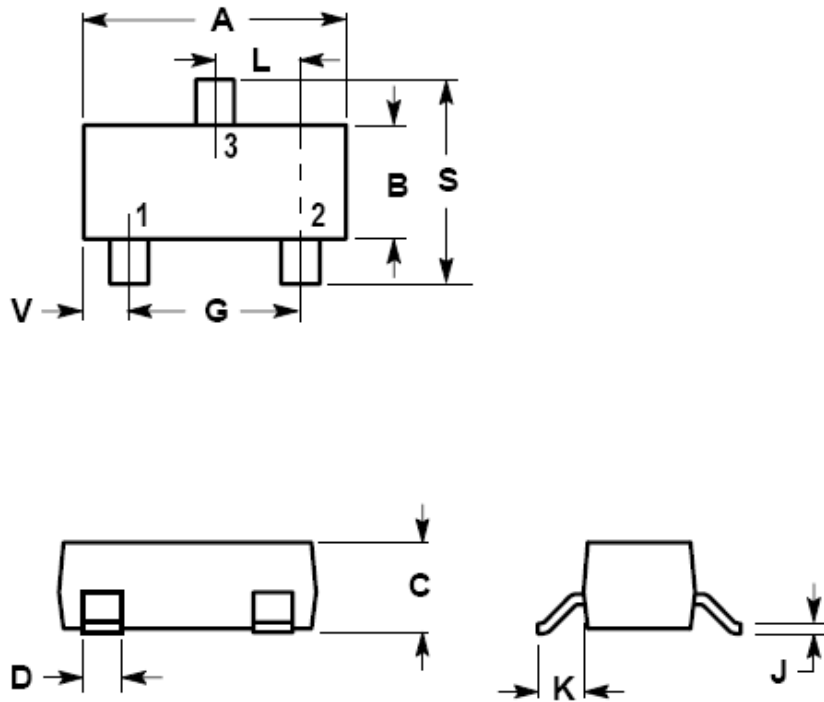
**Maximum Ratings @ T<sub>A</sub> = 25°C**

| Characteristic                          | Symbol           | Value    | Unit |
|---|------------------|----------|------|
| Collector-Base Voltage                  | V <sub>CB0</sub> | 75       | V    |
| Collector-Emitter Voltage               | V <sub>CEO</sub> | 40       | V    |
| Emitter-Base Voltage                    | V <sub>EBO</sub> | 6        | V    |
| Collector Current -Continuous           | I <sub>C</sub>   | 600      | mA   |
| Collector Power Dissipation             | P <sub>C</sub>   | 250      | mW   |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub> | 500      | °C/W |
| Junction Temperature                    | T <sub>J</sub>   | 150      | °C   |
| Storage Temperature Range               | T <sub>STG</sub> | -55~+150 | °C   |

**Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified**

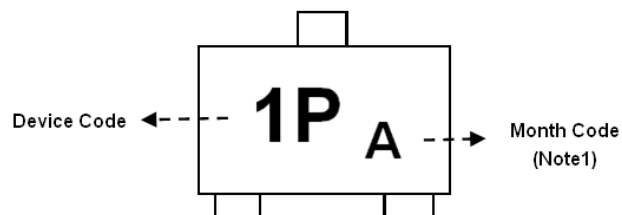
| Characteristic                       | Test Condition                                      | Symbol                | Min. | Typ. | Max. | Unit |
|--------------------------------------|---|-----------------------|------|------|------|------|
| Collector-base breakdown voltage     | I <sub>C</sub> =10μA, I <sub>E</sub> =0             | V <sub>CB0</sub>      | 75   |      |      | V    |
| Collector-emitter breakdown voltage  | I <sub>C</sub> =10mA, I <sub>B</sub> =0             | V <sub>CEO</sub>      | 40   |      |      | V    |
| Emitter-base breakdown voltage       | I <sub>E</sub> =10μA, I <sub>C</sub> =0             | V <sub>EBO</sub>      | 6    |      |      | V    |
| Collector-base cut-off current       | V <sub>CB</sub> =60V, I <sub>E</sub> =0             | I <sub>CB0</sub>      |      |      | 0.01 | uA   |
| Collector-emitter cut-off current    | V <sub>CE</sub> =30V, V <sub>BE(off)</sub> =3V      | I <sub>CEX</sub>      |      |      | 0.01 | uA   |
| Emitter-base cut-off current         | V <sub>EB</sub> =3V, I <sub>C</sub> =0              | I <sub>EBO</sub>      |      |      | 0.1  | uA   |
| DC current gain                      | V <sub>CE</sub> =10V, I <sub>C</sub> =150mA         | h <sub>FE1</sub>      | 100  |      | 300  |      |
|                                      | V <sub>CE</sub> =10V, I <sub>C</sub> =0.1mA         | h <sub>FE2</sub>      | 40   |      |      |      |
|                                      | V <sub>CE</sub> =10V, I <sub>C</sub> =500mA         | h <sub>FE3</sub>      | 42   |      |      |      |
| Collector-emitter saturation voltage | I <sub>C</sub> =500mA, I <sub>B</sub> =50mA         | V <sub>CE(sat)1</sub> |      |      | 1    | V    |
|                                      | I <sub>C</sub> =150mA, I <sub>B</sub> =15mA         | V <sub>CE(sat)2</sub> |      |      | 0.3  | V    |
| Base-emitter saturation voltage      | I <sub>C</sub> =500mA, I <sub>B</sub> =50mA         | V <sub>BE(sat)1</sub> |      |      | 2    | V    |
|                                      | I <sub>C</sub> =150mA, I <sub>B</sub> =15mA         | V <sub>BE(sat)2</sub> |      |      | 1.2  | V    |
| Transition frequency                 | V <sub>CE</sub> =2V, I <sub>C</sub> =20mA, f=100MHz | f <sub>T</sub>        | 300  |      |      | MHz  |
| Delay time                           | V <sub>CC</sub> =30V, V <sub>BE(off)</sub> =-0.5V   | T <sub>d</sub>        |      |      | 10   | nS   |
| Rise time                            | I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA        | T <sub>r</sub>        |      |      | 25   | nS   |
| Storage time                         | V <sub>CC</sub> =30V, I <sub>C</sub> =150mA         | T <sub>s</sub>        |      |      | 225  | nS   |
| Fall time                            | I <sub>B1</sub> =-I <sub>B2</sub> =15mA             | T <sub>f</sub>        |      |      | 60   | nS   |

### SOT-23 Outline Dimension



| Symbol | Dimension In Millimeters |       |
|--------|--------------------------|-------|
|        | Min                      | Max.  |
| A      | 2.80                     | 3.04  |
| B      | 1.20                     | 1.40  |
| C      | 0.89                     | 1.11  |
| D      | 0.37                     | 0.50  |
| G      | 1.78                     | 2.04  |
| J      | 0.085                    | 0.177 |
| K      | 0.35                     | 0.69  |
| L      | 0.89                     | 1.02  |
| S      | 2.10                     | 2.64  |
| V      | 0.45                     | 0.60  |

### Device Marking:



### Note1:

|           |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|
| Odd Year  | J | O | L | C | K | B | P | D | M | E | G | F |
| Even Year | W | N | Y | T | R | H | A | I | U | X | Z | S |

## Electrical characteristic curves

Fig.1 DC Current Gain vs. Collector Current

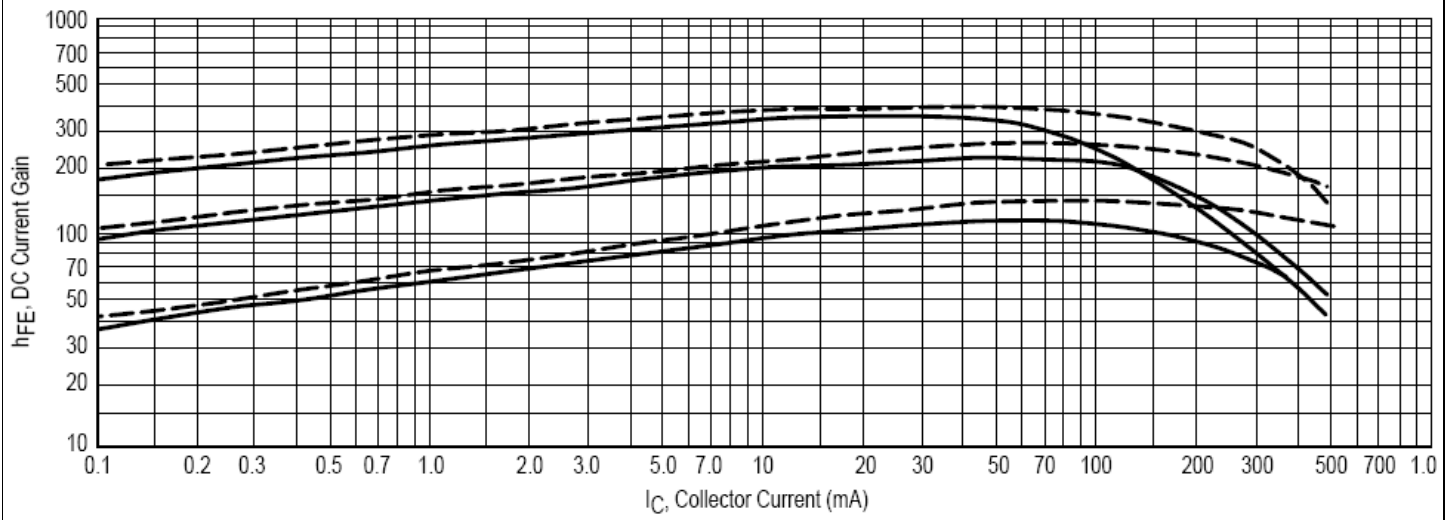
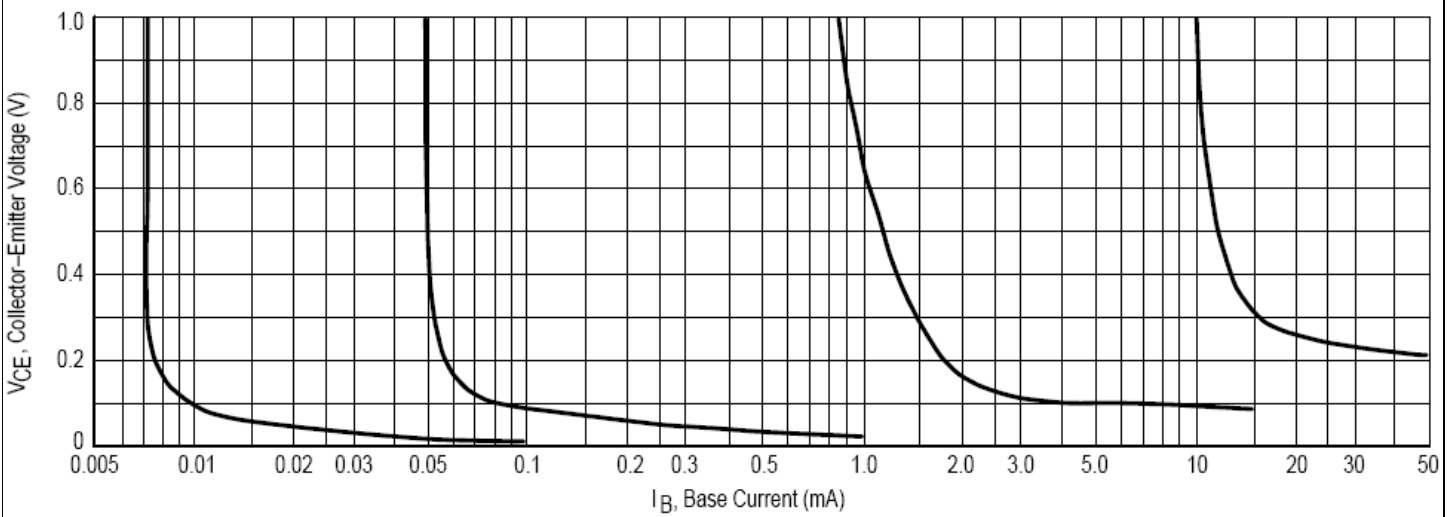


Fig.2 Collector Saturation Region



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