

## Features

- Epoxy meets UL-94 V-0 flammability rating.
- Moisture sensitivity Level 1.
- Surface mount package ideally suited for automatic insertion.

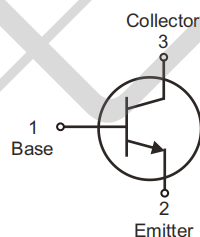
## Mechanical data

- Case: SOT-23, molded plastic.
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102.

SOT23



## Circuit Diagram



## Absolute Maximum Ratings (T<sub>amb</sub>=25°C unless otherwise specified)

| Parameter                                   | Symbol           | Value       | Unit |
|---------------------------------------------|------------------|-------------|------|
| Collector-base voltage                      | V <sub>CB0</sub> | 60          | V    |
| Collector-emitter voltage                   | V <sub>CEO</sub> | 60          | V    |
| Emitter-base voltage                        | V <sub>EB0</sub> | 4           | V    |
| Collector current                           | I <sub>C</sub>   | 500         | mA   |
| Collector power dissipation                 | P <sub>C</sub>   | 300         | mW   |
| Operation junction temperature range        | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature range                   | T <sub>STG</sub> | -55 to +150 | °C   |
| Thermal resistance from junction to ambient | R <sub>θJA</sub> | 417         | °C/W |

### Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter                            | Conditions                            | Symbol        | Min | Max  | Unit |
|--------------------------------------|---------------------------------------|---------------|-----|------|------|
| Collector-base breakdown voltage     | $I_C = 100\mu A, I_E = 0$             | $V_{CBO}$     | 60  |      | V    |
| Collector-emitter breakdown voltage  | $I_C = 1mA, I_B = 0$                  | $V_{CEO}$     | 60  |      | V    |
| Emitter-base breakdown voltage       | $I_E = 100\mu A, I_C = 0$             | $V_{EBO}$     | 4   |      | V    |
| Collector-base cut-off current       | $V_{CB} = 60V, I_E = 0$               | $I_{CBO}$     |     | 100  | nA   |
| Collector-emitter cut-off current    | $V_{CE} = 60V, I_B = 0$               | $I_{CEO}$     |     | 100  | nA   |
| Emitter-base cut-off current         | $V_{EB} = 3V, I_C = 0$                | $I_{EBO}$     |     | 100  | nA   |
| DC current gain                      | $V_{CE} = 1V, I_C = 10mA$             | $h_{FE(1)}$   | 100 | 400  |      |
|                                      | $V_{CE} = 1V, I_C = 100mA$            | $h_{FE(2)}$   | 100 |      |      |
| Collector-emitter saturation voltage | $I_C = 100mA, I_B = 10mA$             | $V_{CE(sat)}$ |     | 0.25 | V    |
| Base-emitter saturation voltage      | $I_C = 100mA, I_B = 10mA$             | $V_{BE(sat)}$ |     | 1.20 | V    |
| Transition frequency                 | $V_{CE} = 2V, I_C = 10mA, f = 100MHz$ | $f_T$         | 100 |      | MHz  |

**Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)**

Fig.1 - Static Characteristic

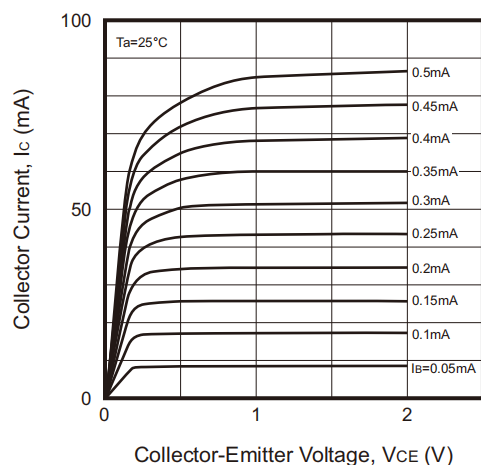


Fig.2 - DC Current Gain

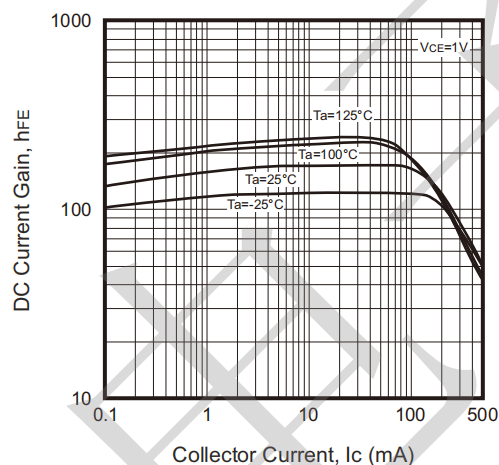


Fig.3 - Collector-Emitter Saturation Voltage

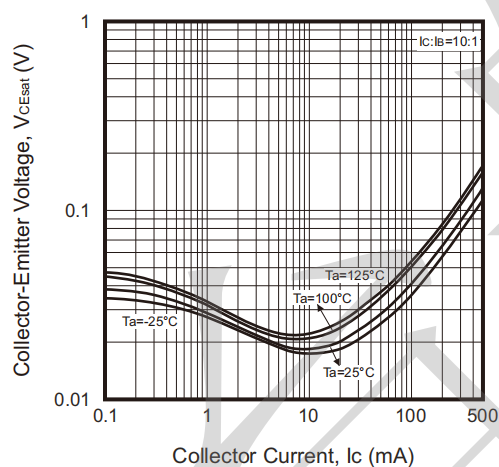
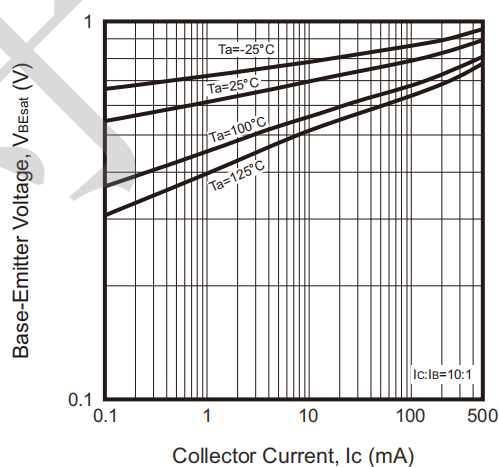


Fig.4 - Base-Emitter Saturation Voltage



**Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)**

Fig.5 - Base-Emitter on Voltage

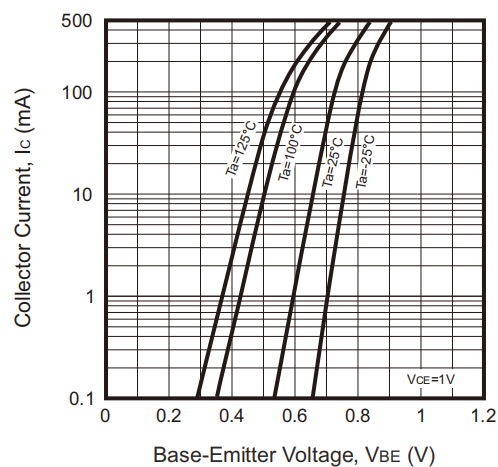


Fig.6 -  $C_{ob}/C_{ib}$  —  $V_{CB}/V_{EB}$

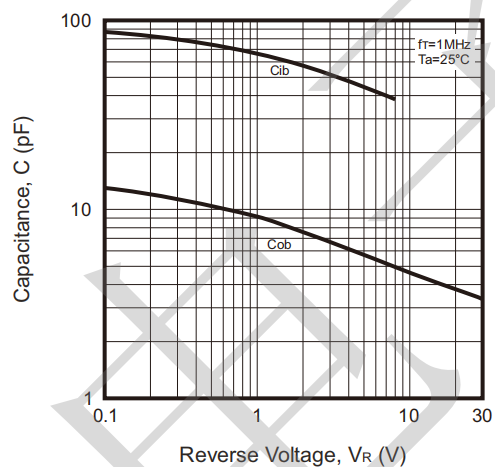
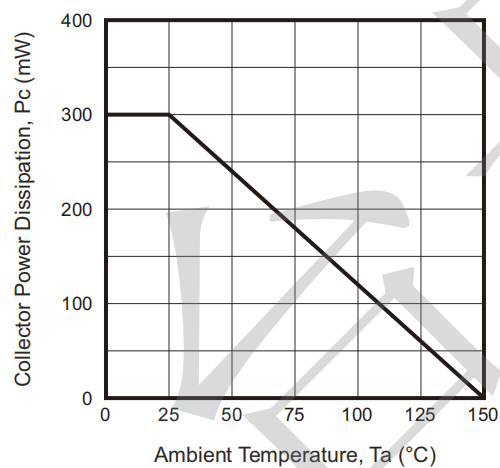
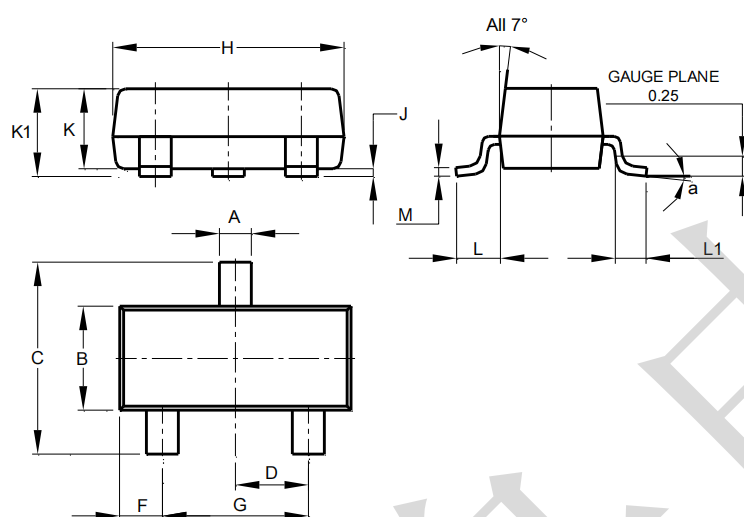


Fig.7 - Collector Power Derating Curve

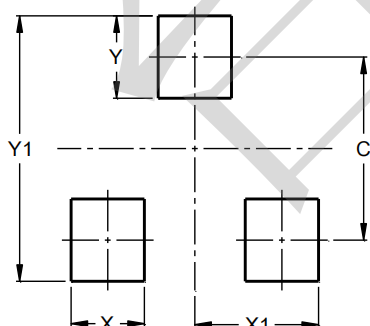


## Outline Drawing - SOT23



| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 0.89  | 1.03  | 0.915 |
| F                    | 0.45  | 0.60  | 0.535 |
| G                    | 1.78  | 2.05  | 1.83  |
| H                    | 2.80  | 3.00  | 2.90  |
| J                    | 0.013 | 0.10  | 0.05  |
| K                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| a                    | 0°    | 8°    | --    |
| All Dimensions in mm |       |       |       |

## Land Pattern - SOT23



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.0           |
| X          | 0.8           |
| X1         | 1.35          |
| Y          | 0.9           |
| Y1         | 2.9           |