

### Features

- Low saturation

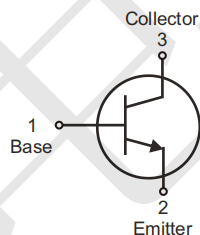
### Mechanical data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

SOT23



### Circuit Diagram



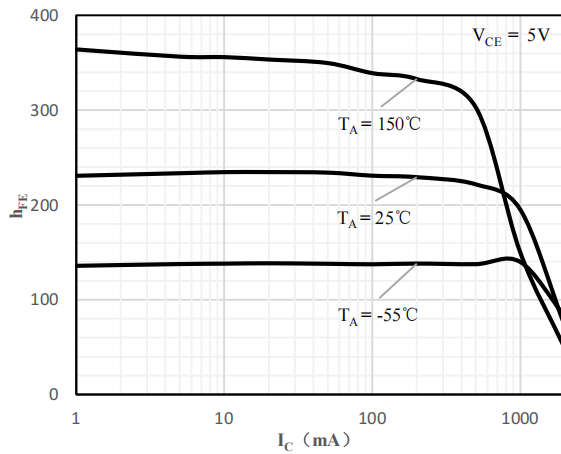
### Absolute Maximum Ratings (T<sub>amb</sub>=25°C unless otherwise specified)

| Parameter                           | Symbol           | Value | Unit |
|-------------------------------------|------------------|-------|------|
| Collector-Base Voltage              | V <sub>CBO</sub> | 80    | V    |
| Collector-Emitter Breakdown Voltage | V <sub>CEO</sub> | 60    | V    |
| Emitter-Base Breakdown Voltage      | V <sub>EBO</sub> | 5     | V    |
| Collector Current (Continuous)      | I <sub>C</sub>   | 1     | A    |

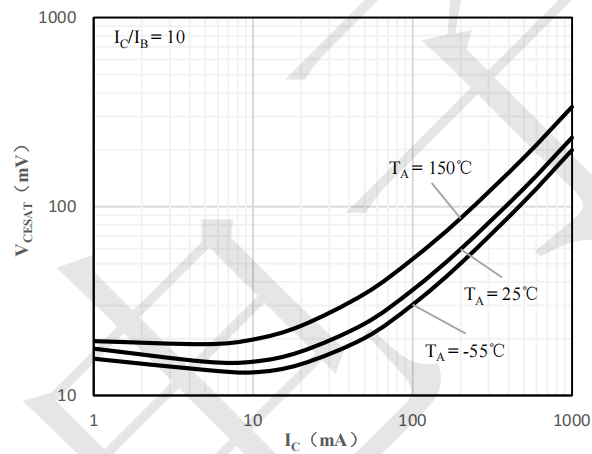
### Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter                            | Symbol        | Test Condition                              | Min. | Typ. | Max. | Unit    |
|--------------------------------------|---------------|---------------------------------------------|------|------|------|---------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu A, I_E = 0$                   | 80   | -    | -    | V       |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 10mA, I_B = 0$                       | 60   | -    | -    | V       |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = 100\mu A, I_C = 0$                   | 5    | -    | -    | V       |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = 60V, I_E = 0$                     | -    | -    | 0.1  | $\mu A$ |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = 4V, I_C = 0$                      | -    | -    | 0.1  | $\mu A$ |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 5V, I_C = 1mA$                    | 100  | -    | -    | -       |
|                                      |               | $V_{CE} = 5V, I_C = 500mA$                  | 100  | -    | 300  | -       |
|                                      |               | $V_{CE} = 5V, I_C = 1A$                     | 80   | -    | -    | -       |
|                                      |               | $V_{CE} = 5V, I_C = 2A$                     | 30   | -    | -    | -       |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 0.5A, I_B = 0.05A$                   | -    | -    | 0.25 | V       |
|                                      |               | $I_C = 1A, I_B = 0.1A$                      | -    | -    | 0.5  | V       |
| Base-emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 1A, I_B = 0.1A$                      | -    | -    | 1.1  | V       |
| Base-emitter On Voltage              | $V_{BE(on)}$  | $I_C = 1A, V_{CE} = 5V$                     | -    | -    | 1.0  | V       |
| Output Capacity                      | $C_{ob}$      | $V_{CB} = 10V, f = 1MHz$                    | -    | -    | 10   | pF      |
| Current-Gain—Bandwidth Product       | $f_T$         | $I_C = 0.05A, V_{CE} = 10V$<br>$f = 100MHz$ | 150  | -    | -    | MHz     |

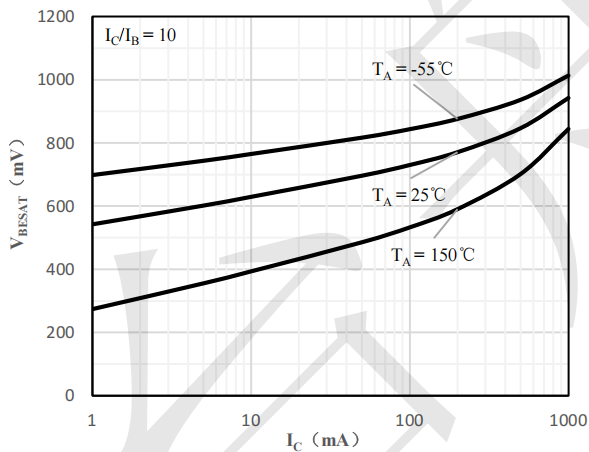
**Typical Performance Characteristics (T = 25°C unless otherwise Specified)**



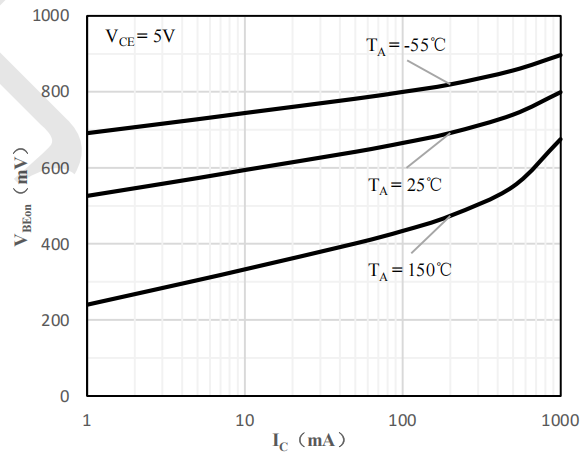
**Fig 1  $h_{FE}$  vs.  $I_C$**



**Fig 2  $V_{CE(sat)}$  vs.  $I_C$**

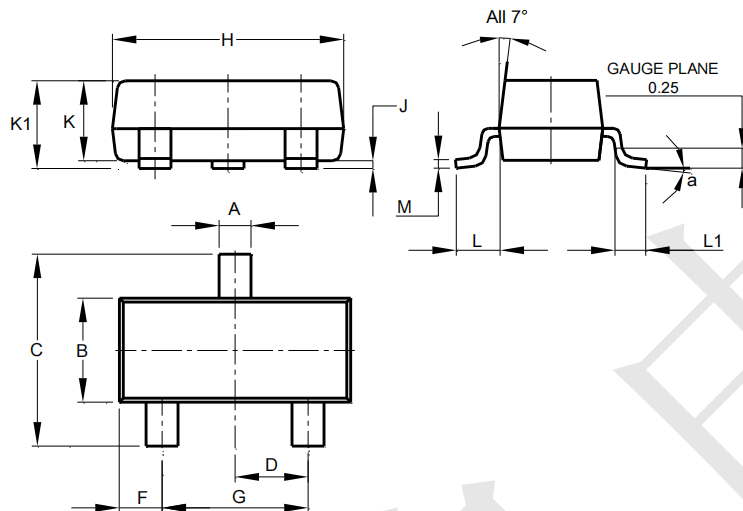


**Fig 3  $V_{BE(sat)}$  vs.  $I_C$**



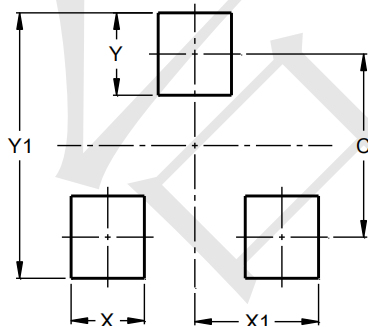
**Fig 4  $V_{BE(on)}$  vs.  $I_C$**

## 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           |