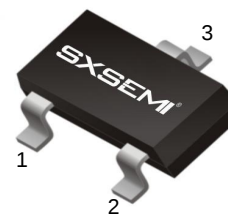


## SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

## FEATURES

- | High voltage and high current
- | Excellent  $h_{FE}$  Linearity
- | Complementary to C1815

## MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

MARKING: BA

| Symbol          | Parameter                                   | Value    | Unit                        |
|-----------------|---------------------------------------------|----------|-----------------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | -50      | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                   | -50      | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                        | -5       | V                           |
| $I_C$           | Collector Current -Continuous               | -150     | mA                          |
| $P_C$           | Collector Power Dissipation                 | 200      | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 625      | $^{\circ}\text{C}/\text{W}$ |
| $T_J, T_{stg}$  | Junction Temperature                        | -55~+150 | $^{\circ}\text{C}$          |

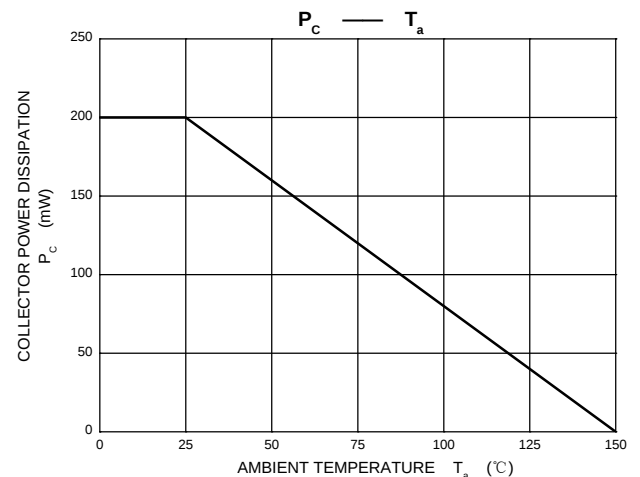
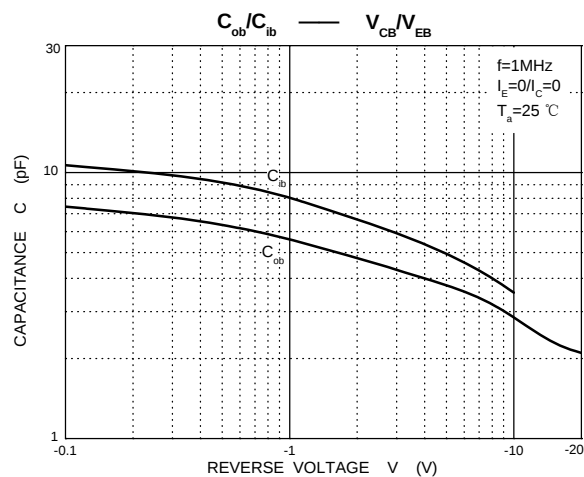
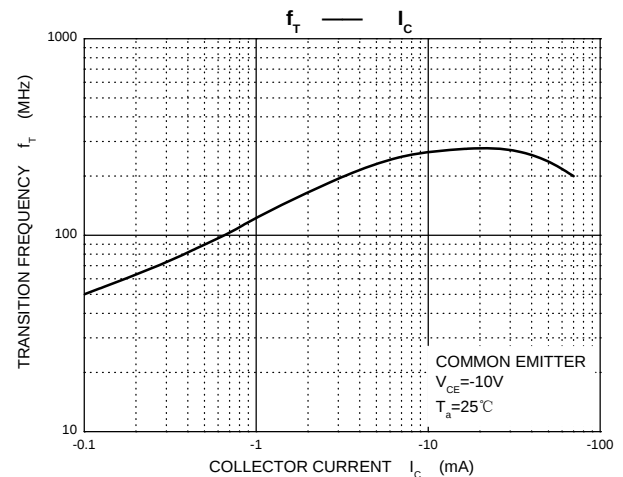
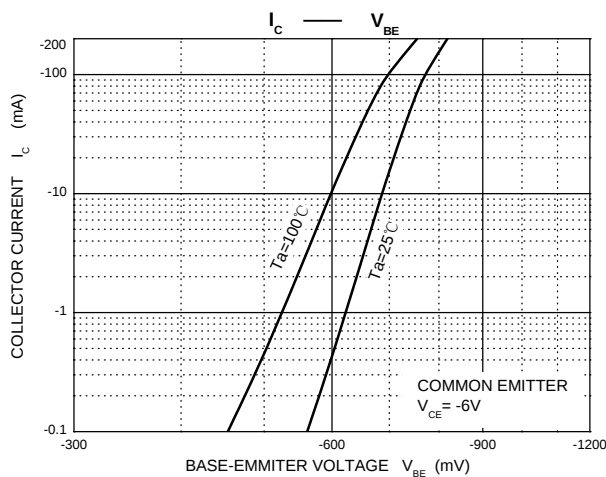
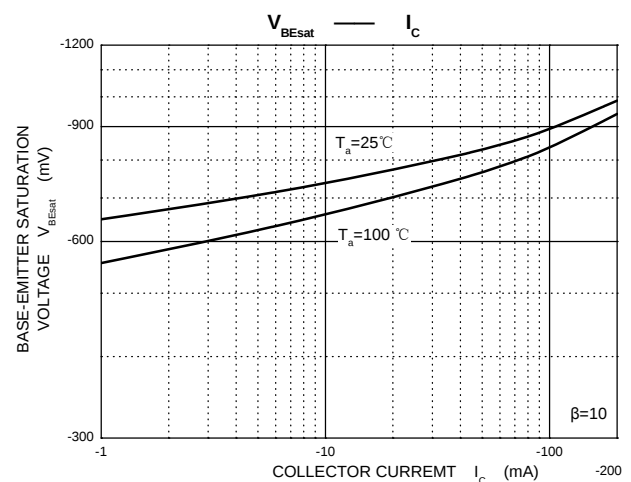
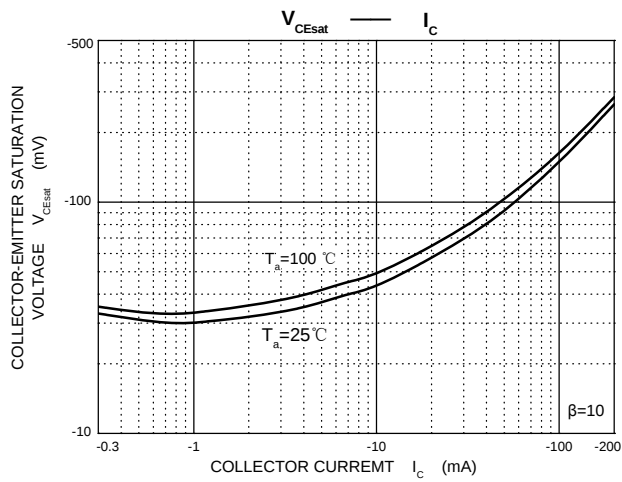
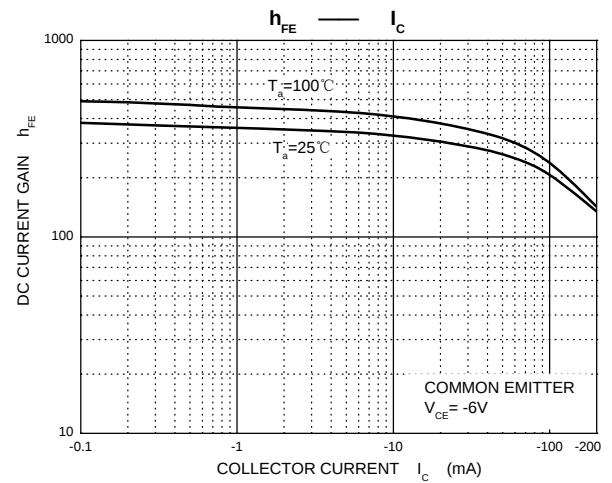
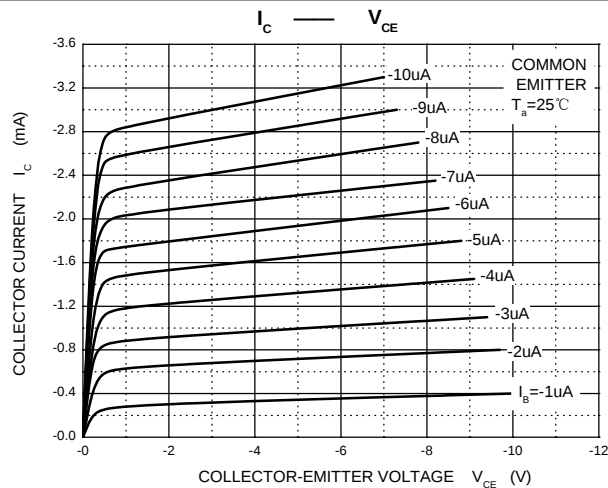
## ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                                                 | Min | Typ | Max  | Unit          |
|--------------------------------------|---------------|-----------------------------------------------------------------|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C = -100\mu\text{A}, I_E = 0$                                | -50 |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = -0.1\text{mA}, I_B = 0$                                  | -50 |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E = -100\mu\text{A}, I_C = 0$                                | -5  |     |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = -50\text{V}, I_E = 0$                                 |     |     | -0.1 | $\mu\text{A}$ |
| Collector cut-off current            | $I_{CEO}$     | $V_{CE} = -50\text{V}, I_B = 0$                                 |     |     | -1   | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = -5\text{V}, I_C = 0$                                  |     |     | -0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE}$      | $V_{CE} = -6\text{V}, I_C = -2\text{mA}$                        | 120 |     | 400  |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -100\text{mA}, I_B = -10\text{mA}$                       |     |     | -0.3 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -100\text{mA}, I_B = -10\text{mA}$                       |     |     | -1.1 | V             |
| Transition frequency                 | $f_T$         | $V_{CE} = -10\text{V}, I_C = -1\text{mA}$<br>$f = 30\text{MHz}$ | 80  |     |      | MHz           |

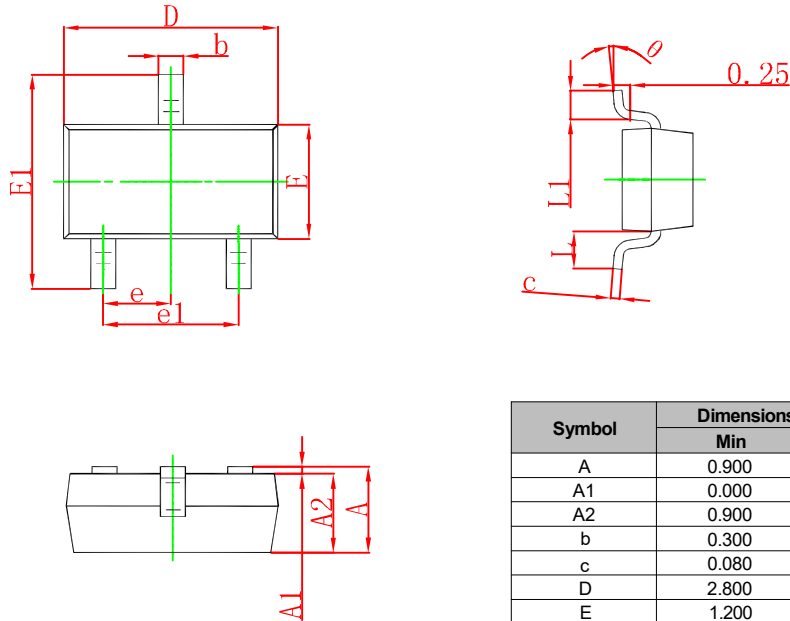
## CLASSIFICATION OF $h_{FE}$

| Rank  | L       | H        |
|-------|---------|----------|
| Range | 120-240 | 200- 400 |

# Typical Characteristics

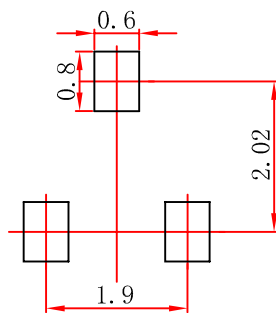


## SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOT-23 Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.