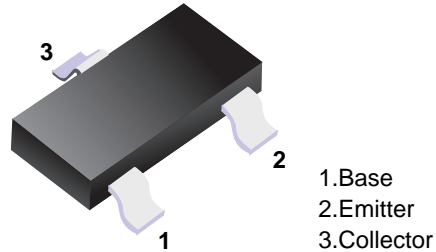


■ NPN Transistors

■ Features

- Low current (max. 100 mA)
- Low voltage (max. 45 V).



■ Simplified outline(SOT-23)

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|---|---------------|------------|------------------|
| collector-base voltage | V_{CB0} | 30 | V |
| | | 50 | V |
| collector-emitter voltage | V_{CE0} | 30 | V |
| | | 45 | V |
| emitter-base voltage | V_{EB0} | 5 | V |
| collector current (DC) | I_C | 100 | mA |
| peak collector current | I_{CM} | 200 | mA |
| peak base current | I_{BM} | 200 | mA |
| total power dissipation $T_{amb} \leq 25^\circ\text{C}^*$ | P_{tot} | 250 | mW |
| storage temperature | T_{stg} | -65 to 150 | $^\circ\text{C}$ |
| junction temperature | T_j | 150 | $^\circ\text{C}$ |
| operating ambient temperature | T_{amb} | -65 to 150 | $^\circ\text{C}$ |
| thermal resistance from junction to ambient * | $R_{th(j-a)}$ | 500 | K/W |

* Transistor mounted on an FR4 printed-circuit board.

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Testconditions | Min | Typ | Max | Unit |
|--|--------------------|--|-----|-----|-----|------|
| collector cut-off current | I _{CBO} | I _E = 0; V _{CB} = 30 V | | | 15 | nA |
| | | I _E = 0; V _{CB} = 30 V; T _j = 150 °C | | | 5 | μA |
| emitter cut-off current | I _{EBO} | I _C = 0; V _{EB} = 5 V | | | 100 | nA |
| DC current gain BC849B; BC850B BC849C; BC850C | h _{FE} | I _C = 10 μA; V _{CE} = 5 V; | | 240 | | |
| | | I _C = 2 mA; V _{CE} = 5 V; | 200 | 290 | 450 | |
| DC current gain BC849B; BC850B BC849C; BC850C | h _{FE} | I _C = 10 μA; V _{CE} = 5 V; | 420 | 520 | 800 | |
| | | I _C = 2 mA; V _{CE} = 5 V; | | | | |
| collector-emitter saturation voltage | V _{CEsat} | I _C = 10 mA; I _B = 0.5 mA | | 90 | 250 | mV |
| | | I _C = 100 mA; I _B = 5 mA | | 200 | 600 | mV |
| base-emitter saturation voltage | V _{BEsat} | I _C = 10 mA; I _B = 0.5 mA; *1 | | 700 | | mV |
| | | I _C = 100 mA; I _B = 5 mA; *1 | | 900 | | mV |
| base-emitter voltage | V _{BE} | I _C = 2 mA; V _{CE} = 5 V; *2 | 580 | 660 | 700 | mV |
| | | I _C = 10 mA; V _{CE} = 5 V; *2 | | | 770 | mV |
| collector capacitance | C _c | I _E = I _e = 0; V _{CB} = 10 V; f = 1 MHz | | 2.5 | | pF |
| emitter capacitance | C _e | I _C = I _c = 0; V _{EB} = 500 mV; f = 1 MHz | | 11 | | pF |
| transition frequency | f _T | I _C = 10 mA; V _{CE} = 5 V; f = 100 MHz | 100 | | | MHz |
| noise figure | F | I _C = 200 μA; V _{CE} = 5 V; R _S = 2 kΩ, f = 10 Hz to 15.7 kHz | | | 4 | dB |
| | | I _C = 200 μA; V _{CE} = 5 V; R _S = 2 kΩ, f = 1 kHz; B = 200 Hz | | | 4 | dB |

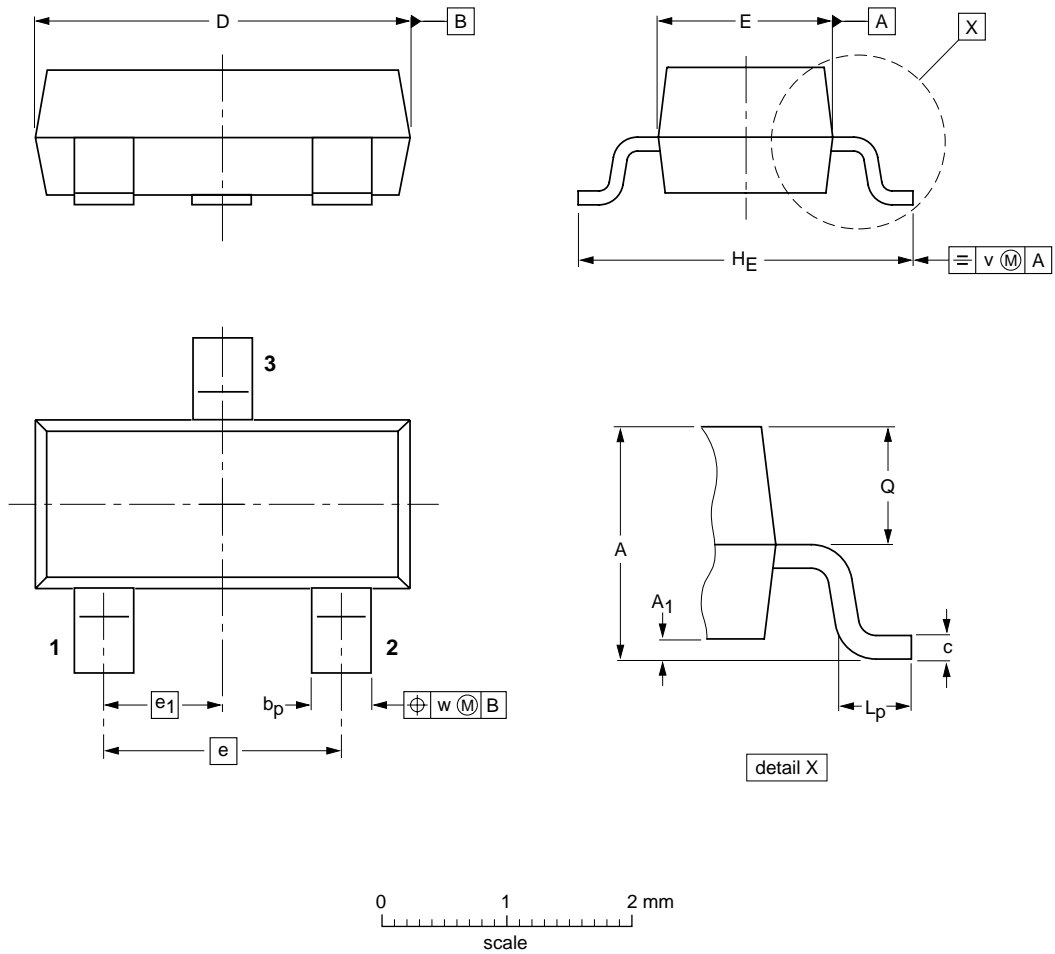
*1 V_{BEsat} decreases by about 1.7 mV/K with increasing temperature.

*2 V_{BE} decreases by about 2 mV/K with increasing temperature.

■ hFE Classification

| TYPE | BC849B | BC849C | BC850B | BC850C |
|---------|--------|--------|--------|--------|
| Marking | 2B | 2C | 2F | 2G |

■ SOT-23



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max. | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.9 | 0.1 | 0.48 0.38 | 0.15 0.09 | 3.0 2.8 | 1.4 1.2 | 1.9 | 0.95 | 2.5 2.1 | 0.45 0.15 | 0.55 0.45 | 0.2 | 0.1 |

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