

SuperTransistor – V_{CBO} 40V, I_C 800mA SOT-23 Plastic-Encapsulate NPN Transistors

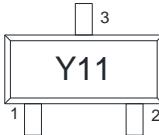
1. Features

- Power dissipation of 200mW
- High stability and high reliability

2. Mechanical Data

- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

3. Pin configuration

| Pin | Function | Outline |
|-----|-----------|---|
| 1 | Base |  |
| 2 | Emitter | |
| 3 | Collector | |

4. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

| Parameters | Symbol | Value | Unit |
|---|-----------------|---------|------|
| Collector-Base Voltage | V_{CBO} | 40 | V |
| Collector-Emitter Voltage | V_{CEO} | 25 | V |
| Emitter-Base Voltage | V_{EBO} | 6 | V |
| Collector Current-Continuous | I_C | 800 | mA |
| Collector Power Dissipation | P_C | 200 | mW |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature | T_{STG} | -55~150 | °C |
| Thermal resistance From junction to ambient | $R_{\theta JA}$ | 625 | °C/W |

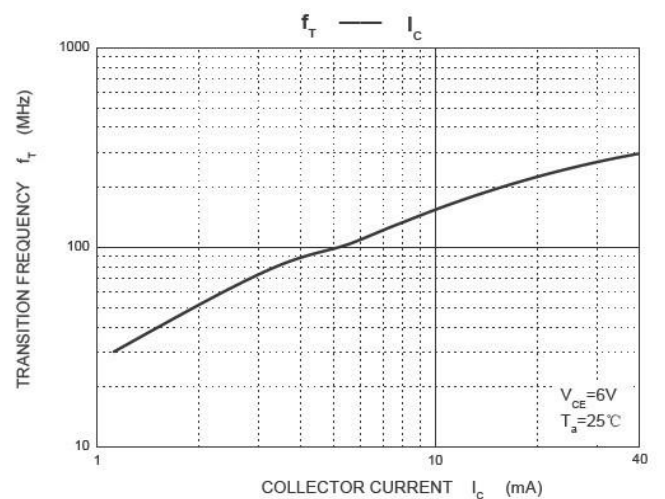
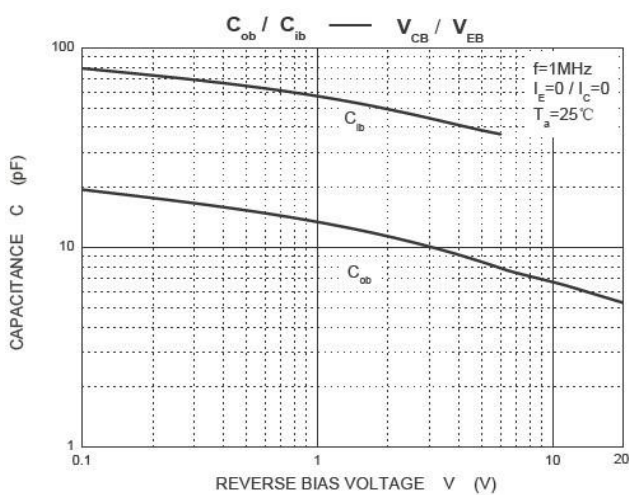
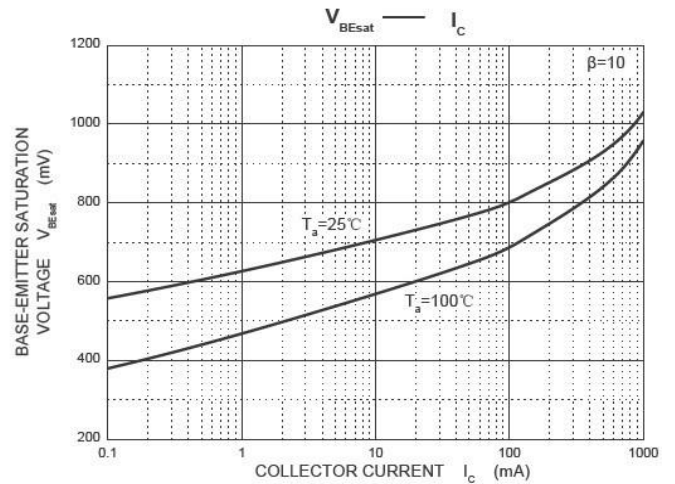
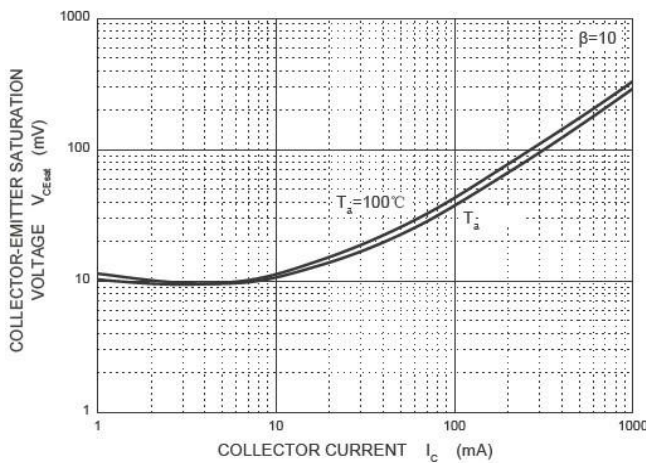
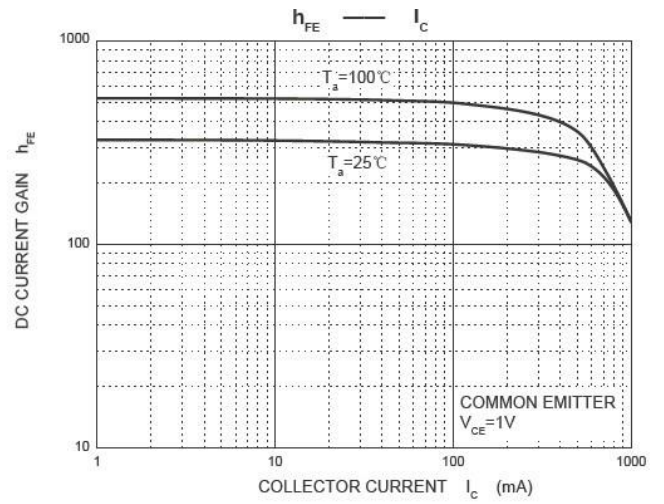
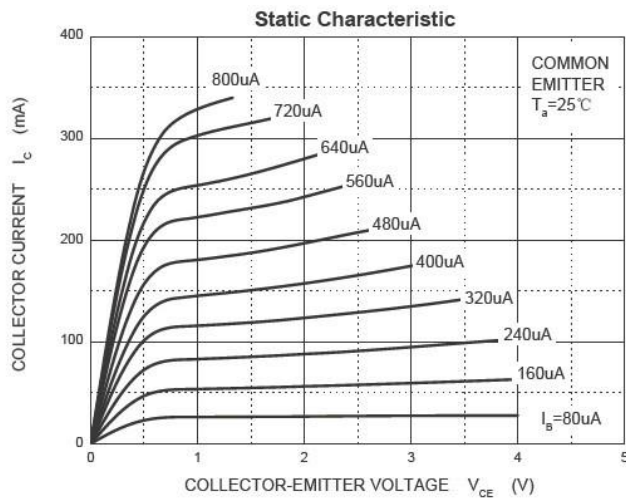
Electrical Characteristics (At $T_A = 25^\circ\text{C}$ unless otherwise specified)

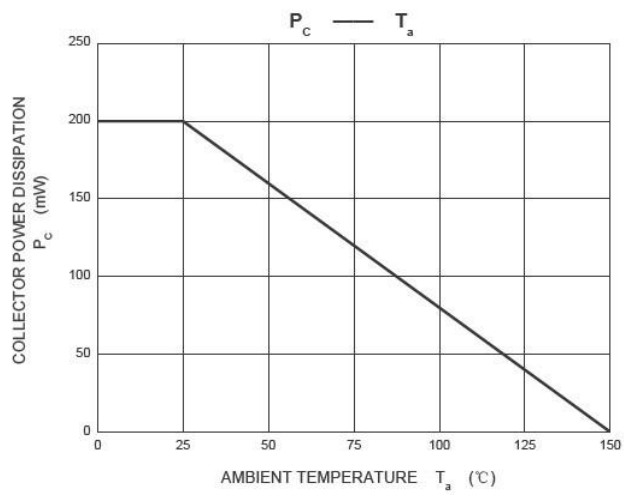
| Parameters | Symbols | Test Condition | Limits | | | |
|--------------------------------------|---------------|---|--------|-----|------|------|
| | | | Min | Typ | Max | Unit |
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}, I_E=0$ | 40 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$ | 25 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=100\mu\text{A}, I_C=0$ | 6 | | | V |
| Collector cut-off current | I_{CEO} | $V_{CE}=20\text{V}, I_B=0$ | | | 100 | nA |
| | I_{CBO} | $V_{CB}=35\text{V}, I_E=0$ | | | 100 | nA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=1\text{V}, I_C=5\text{mA}$ | 45 | | | |
| | $h_{FE(2)}$ | $V_{CE}=1\text{V}, I_C=100\text{mA}$ | 80 | | 400 | |
| | $h_{FE(3)}$ | $V_{CE}=1\text{V}, I_C=800\text{mA}$ | 40 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=800\text{mA}, I_B=80\text{mA}$ | | | 0.50 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=800\text{mA}, I_B=80\text{mA}$ | | | 1.20 | V |
| Transition frequency | f_T | $V_{CE}=6\text{V}, I_C=20\text{mA}, f=30\text{MHz}$ | | 150 | | MHz |

Classification of h_{FE}

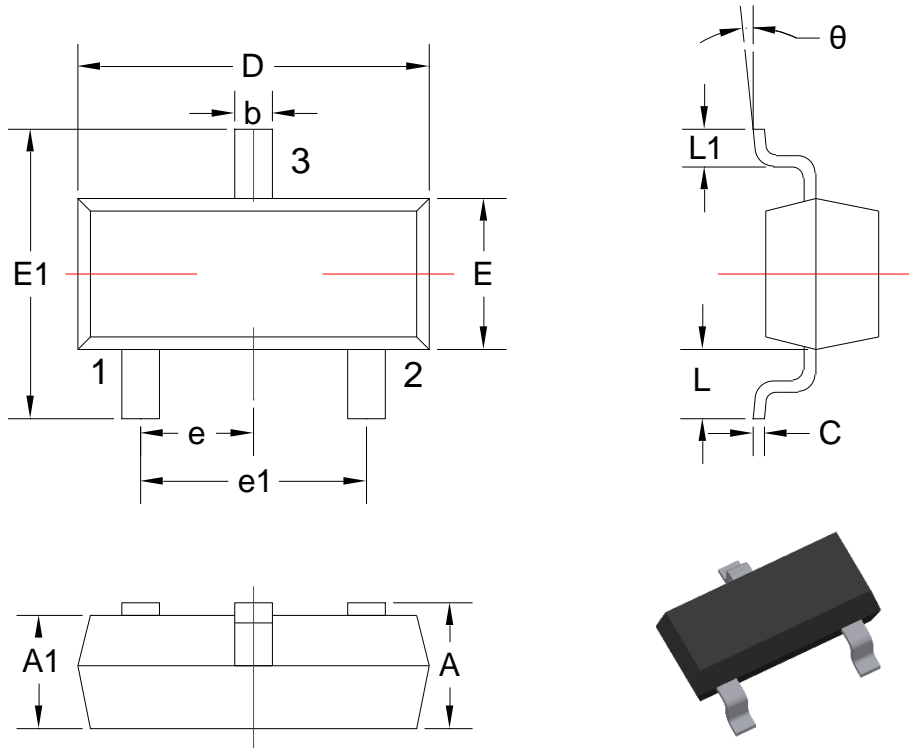
| Rank | L | H |
|-------|--------|---------|
| Range | 80~300 | 300~400 |

5. Typical Characteristic



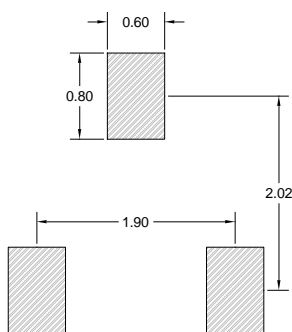


6. Dimension and Patterns (SOT-23)



Units: mm

| Symbol | Dimensions | | Symbol | Dimensions | |
|--------|------------|-------|--------|------------|-------|
| | Min. | Max. | | Min. | Max. |
| A | 0.900 | 1.150 | E1 | 2.250 | 2.550 |
| A1 | 0.900 | 1.050 | e | 0.950TYP | |
| b | 0.300 | 0.500 | e1 | 1.800 | 2.000 |
| c | 0.080 | 0.150 | L | 0.550REF | |
| D | 2.800 | 3.00 | L1 | 0.300 | 0.500 |
| E | 1.200 | 1.400 | θ | 0° | 8° |



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm

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