

Power Transistor (−15V, −1A)

2SB1590K

●Features

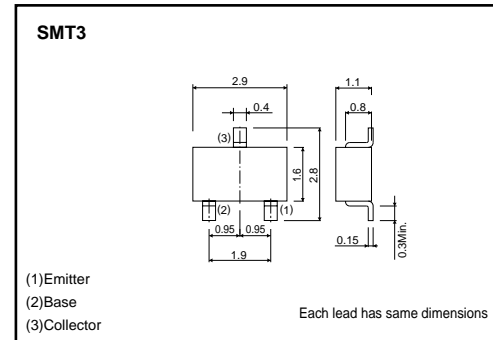
- 1) Low saturation voltage, $V_{CE(sat)} = -0.3V$ (Max.)
at $I_C / I_B = -0.4A / -20mA$.
- 2) $I_C = -1A$
- 3) Complements the 2SD2444K.

●Packaging specification and h_{FE}

| | |
|------------------------------|----------|
| Type | 2SB1590K |
| Package | SMT3 |
| h_{FE} | Q |
| Marking | BK* |
| Code | T146 |
| Basic ordering unit (pieces) | 3000 |

* Denotes h_{FE}

●External dimensions (Unit : mm)



●Absolute maximum ratings ($T_a=25^\circ C$)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|-------------|
| Collector-base voltage | V_{CBO} | -15 | V |
| Collector-emitter voltage | V_{CEO} | -15 | V |
| Emitter-base voltage | V_{EBO} | -6 | V |
| Collector current | I_C | -1 | A (DC) |
| | I_{CP} | -2 | A (pw=10ms) |
| Collector power dissipation | P_C | 0.2 | W |
| Junction temperature | T_J | 150 | $^\circ C$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ C$ |

●Electrical characteristics ($T_a=25^\circ C$)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|---------|--|
| Collector-base breakdown voltage | BV_{CBO} | -15 | - | - | V | $I_C = -50\mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | -15 | - | - | V | $I_C = -1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | -6 | - | - | V | $I_E = -50\mu A$ |
| Collector cutoff current | I_{CBO} | - | - | -0.5 | μA | $V_{CB} = -12V$ |
| Emitter cutoff current | I_{EBO} | - | - | -0.5 | μA | $V_{EB} = -5V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | - | -0.3 | V | $I_C = -0.4A, I_B = -20mA$ |
| DC current transfer ratio | h_{FE1} | 120 | - | 270 | - | $V_{CE}/I_C = -2V/-0.5A$ |
| | h_{FE2} | 80 | - | - | - | $V_{CE} = -2V, I_C = -800mA$ |
| Transition frequency | f_T | - | 200 | - | MHz | $V_{CE} = -2V, I_E = 50mA, f = 100MHz$ |
| Output capacitance | C_{ob} | - | 15 | - | pF | $V_{CB} = -10V, I_E = 0A, f = 1MHz$ |

Transistors

●Electrical characteristic curves

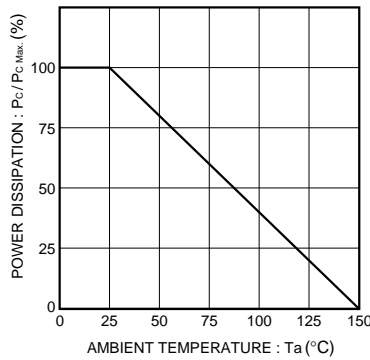


Fig.1 Grounded emitter output characteristics

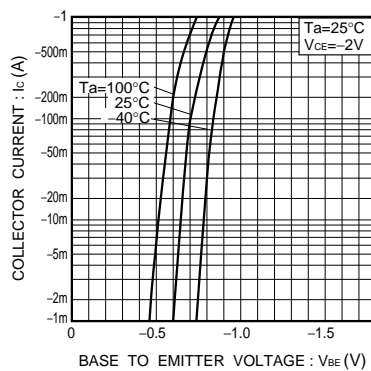


Fig.2 Grounded emitter propagation characteristics

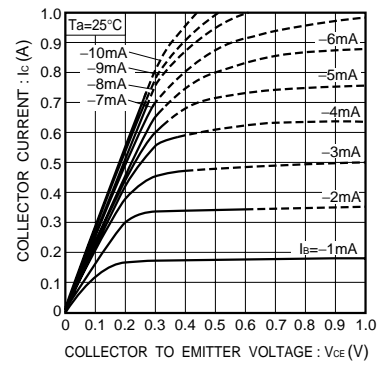


Fig.3 Grounded emitter output characteristics

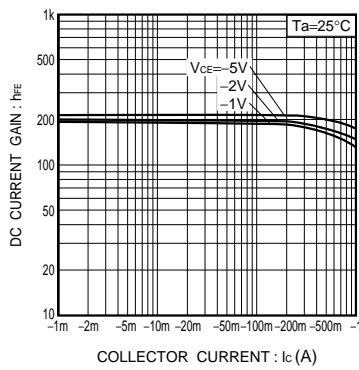


Fig.4 DC current gain vs. collector current (I)

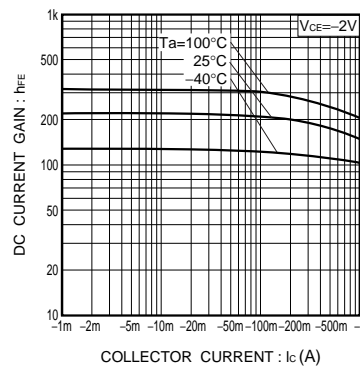


Fig.5 DC collector gain vs. collector current (II)

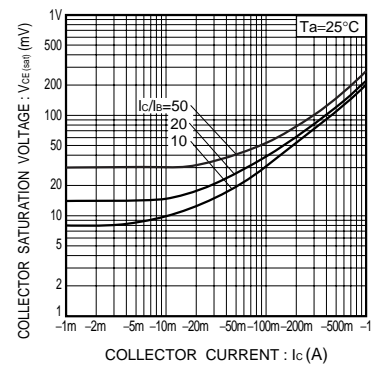


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

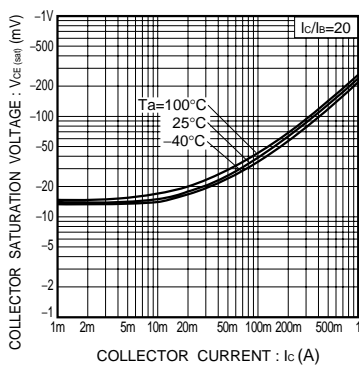


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

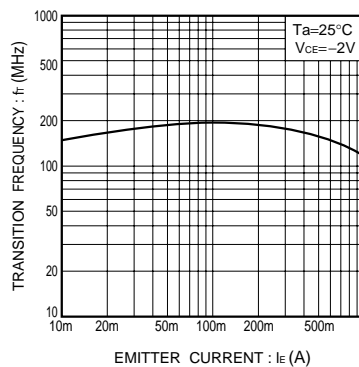


Fig.8 Transition frequency vs. emitter current

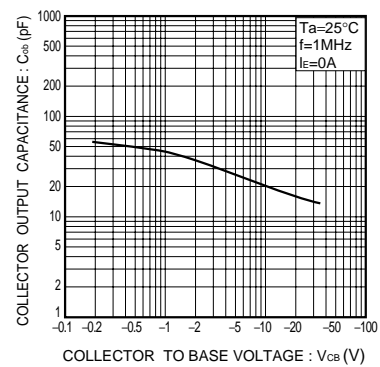


Fig.9 Collector output capacitance vs. collector-base voltage

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