

General purpose amplification(−12V, −2A)

2SB1690K

●Applications

Low frequency amplifier
Driver

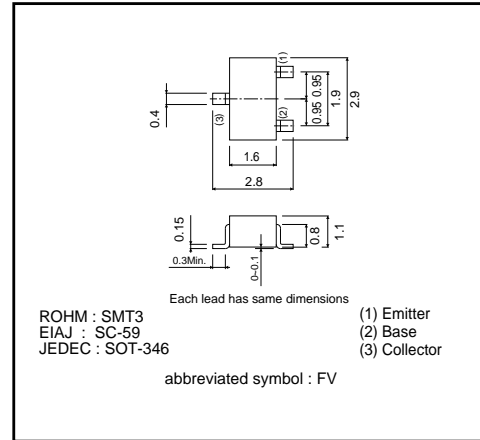
●Features

- 1) A collector current is large.
- 2) Collector saturation voltage is low.

$$V_{CE(sat)} \leq -180\text{mV}$$

at $I_C = -1\text{A} / I_B = -50\text{mA}$

●External dimensions (Units : mm)



●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|------|
| Collector-base voltage | V_{CBO} | -15 | V |
| Collector-emitter voltage | V_{CEO} | -12 | V |
| Emitter-base voltage | V_{EBO} | -6 | V |
| Collector current | I_C | -2 | A |
| | | -4 | A* |
| Collector power dissipation | P_C | 200 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

* Single pulse $P_w=1\text{ms}$

●Packaging specifications

| Type | Package | Taping |
|------|------------------------------|--------|
| | Code | T146 |
| | Basic ordering unit (pieces) | 3000 |

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|------|---|
| Collector-base breakdown voltage | BV_{CBO} | -15 | - | - | V | $I_C = -10\mu\text{A}$ |
| Collector-emitter breakdown voltage | BV_{CEO} | -12 | - | - | V | $I_C = -1\text{mA}$ |
| Emitter-base breakdown voltage | BV_{EBO} | -6 | - | - | V | $I_E = -10\mu\text{A}$ |
| Collector cutoff current | I_{CBO} | - | - | -100 | nA | $V_{CB} = -15\text{V}$ |
| Emitter cutoff current | I_{EBO} | - | - | -100 | nA | $V_{EB} = -6\text{V}$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | -120 | -180 | mV | $I_C = -1\text{A}, I_B = -50\text{mA}$ |
| DC current transfer ratio | h_{FE} | 270 | - | 680 | - | $V_{CE} = -2\text{V}, I_C = -200\text{mA}^*$ |
| Transition frequency | f_T | - | 360 | - | MHz | $V_{CE} = -2\text{V}, I_E = -200\text{mA}, f = 100\text{MHz}^*$ |
| Output capacitance | C_{ob} | - | 15 | - | pF | $V_{CB} = -10\text{V}, I_E = 0\text{mA}, f = 1\text{MHz}$ |

* Pulsed

Transistors

●Electrical characteristic curves

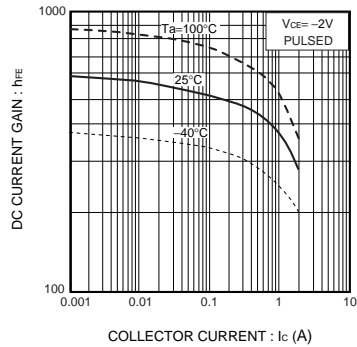


Fig.1 DC current gain vs. collector current

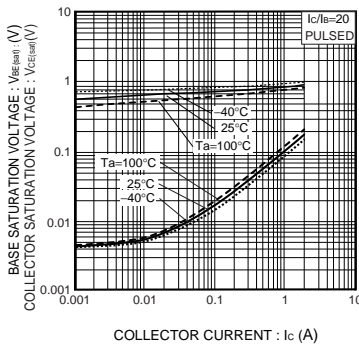


Fig.2 Collector-emitter saturation voltage vs. collector current

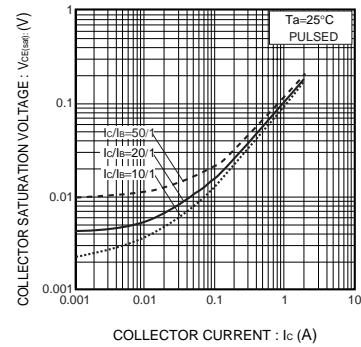


Fig.3 Collector-emitter saturation voltage vs. collector current

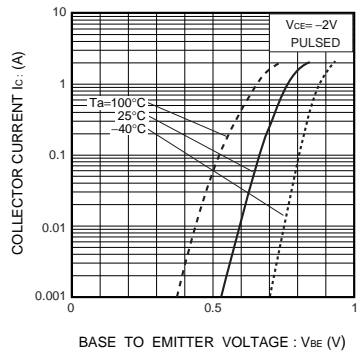


Fig.4 Grounded emitter propagation characteristics

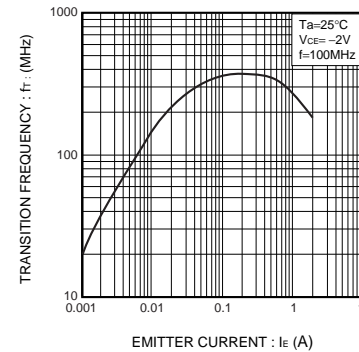


Fig.5 Gain bandwidth product vs. emitter current

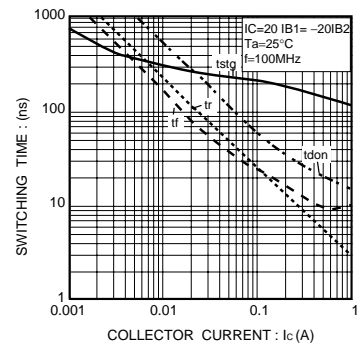


Fig.6 Switching time

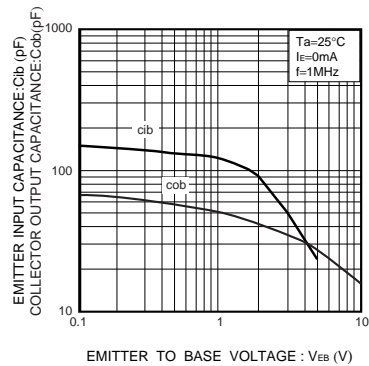


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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