

SILICON POWER TRANSISTOR 2SB1094

PNP SILICON EPITAXIAL TRANSISTOR FOR LOW-FREQUENCY POWER AMPLIFIER

FEATURES

- The 2SB1094 features ratings covering a wide range of applications and is ideal for power supplies or a variety of drives in audio and other equipment.:
- $V_{CEO} \geq -60\text{ V}$, $V_{EBO} \geq -7.0\text{ V}$, $I_{C(DC)} \leq -3.0\text{ A}$
- Mold package that does not require an insulating board or insulation bushing
- Complementary transistor with 2SD1585

QUALITY GRADES

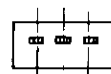
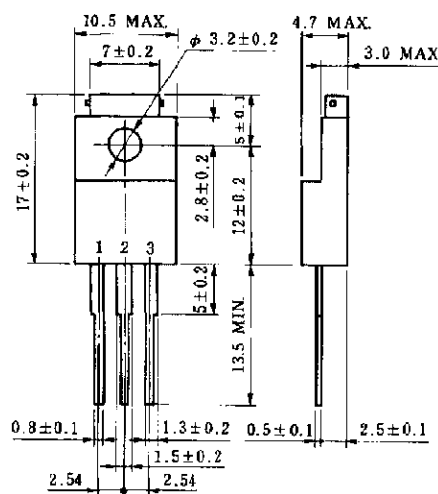
- Standard
- Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Ratings | Unit |
|------------------------------|------------------------------------|-------------|------------------|
| Collector to base voltage | V_{CBO} | -60 | V |
| Collector to emitter voltage | V_{CEO} | -60 | V |
| Emitter to base voltage | V_{EBO} | -7.0 | V |
| Collector current (DC) | $I_{C(DC)}$ | -3.0 | A |
| Collector current (pulse) | $I_{C(pulse)}^*$ | -5.0 | A |
| Base current (DC) | $I_{B(DC)}$ | -0.6 | A |
| Total power dissipation | P_T ($T_c = 25^\circ\text{C}$) | 15 | W |
| Total power dissipation | P_T ($T_a = 25^\circ\text{C}$) | 2.0 | W |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

* $PW \leq 10\text{ ms}$, duty cycle $\leq 50\%$

PACKAGE DRAWING (UNIT: mm)



Electrode Connection

1. Base
2. Collector
3. Emitter

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|------------------------------|--------------------|--|------|------|------|---------------|
| Collector cutoff current | I_{CBO} | $V_{CB} = -60\text{ V}, I_E = 0$ | | | -10 | μA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = -7.0\text{ V}, I_C = 0$ | | | -10 | μA |
| DC current gain | h_{FE1}^{**} | $V_{CE} = -5.0\text{ V}, I_C = -50\text{ mA}$ | 20 | | | |
| DC current gain | h_{FE2}^{**} | $V_{CE} = -5.0\text{ V}, I_C = -0.5\text{ A}$ | 40 | 100 | 200 | |
| Collector saturation voltage | $V_{CE(sat)}^{**}$ | $I_C = -2.0\text{ A}, I_B = -0.2\text{ A}$ | | -0.5 | -1.5 | V |
| Base saturation voltage | $V_{BE(sat)}^{**}$ | $I_C = -2.0\text{ A}, I_B = -0.2\text{ A}$ | | -1.1 | -2.0 | V |
| Collector capacitance | C_{ob} | $V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$ | | 70 | | pF |
| Gain bandwidth product | f_T | $V_{CE} = -5.0\text{ V}, I_C = -0.1\text{ A}$ | | 20 | | MHz |

h_{FE} CLASSIFICATION

| Marking | M | L | K |
|---------|----------|-----------|------------|
| hFE2 | 40 to 80 | 60 to 120 | 100 to 200 |

TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE

2-mm thick aluminum silicon grease

With infinite heatsink ($T_c = 25^\circ\text{C}$)

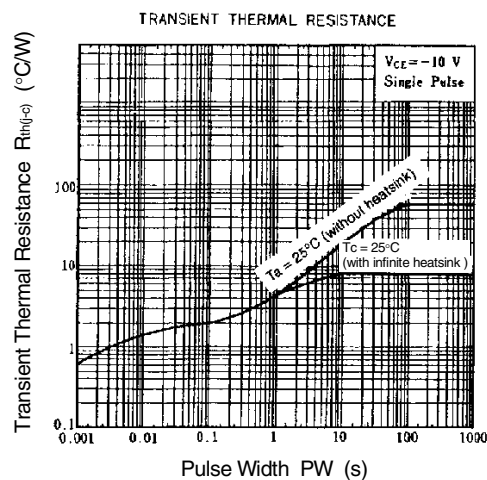
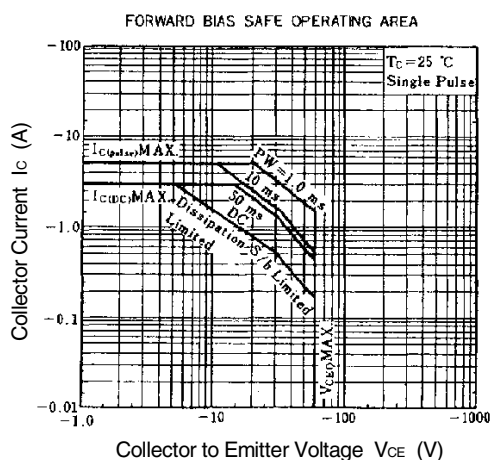
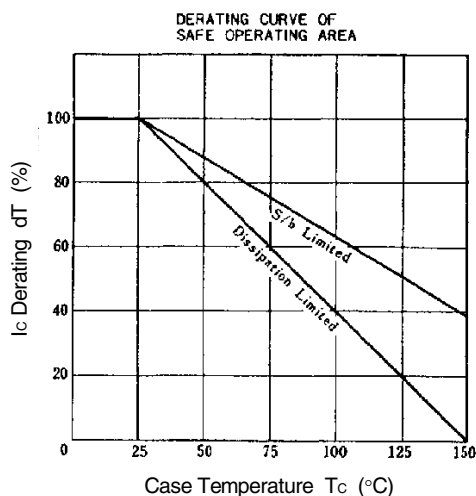
200 cm^2
100 cm^2
50 cm^2
20 cm^2

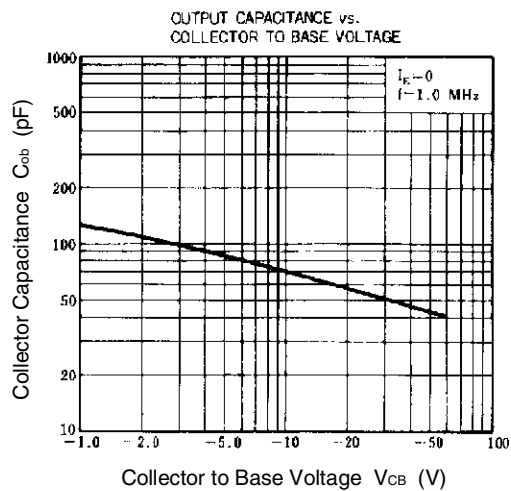
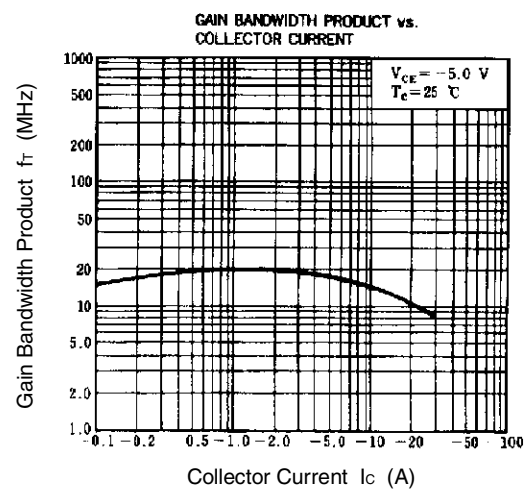
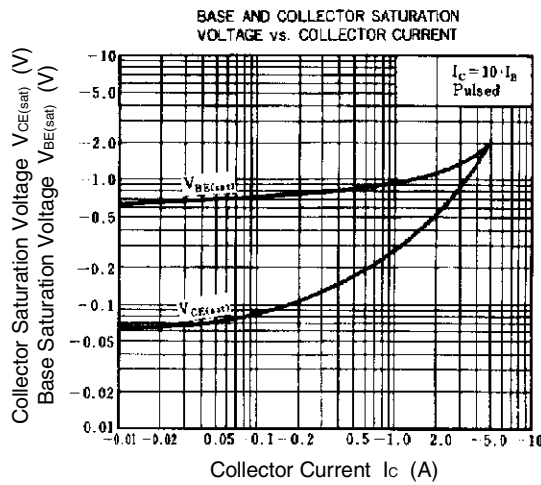
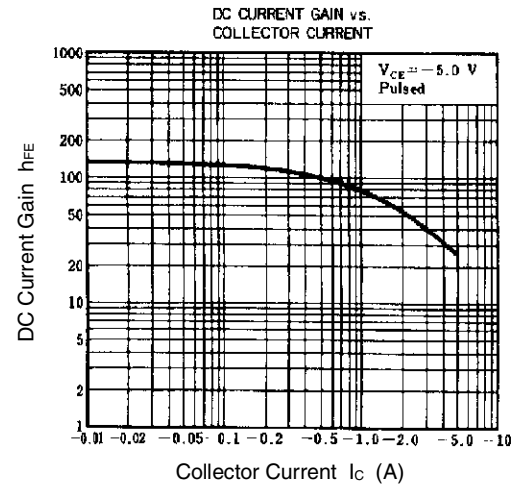
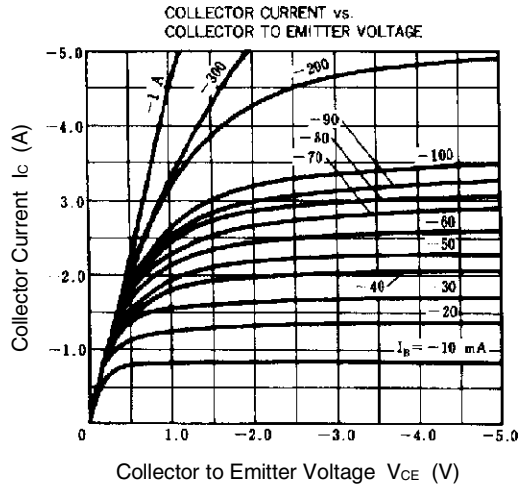
Without heatsink

Total Power Dissipation P_T (W)

Ambient Temperature T_a ($^\circ\text{C}$)

Detailed description: This is a line graph showing the relationship between total power dissipation and ambient temperature for a 2-mm thick aluminum silicon grease. The y-axis represents Total Power Dissipation P_T in Watts (W), ranging from 0 to 30 with major grid lines every 5 units. The x-axis represents Ambient Temperature T_a in degrees Celsius ($^\circ\text{C}$), ranging from 0 to 175 with major grid lines every 25 units. The graph features several downward-sloping lines that converge at a point of approximately 140 $^\circ\text{C}$ and 0 W. The lines are labeled as follows: 'Without heatsink' (the lowest line, starting at ~1.5 W at 25 $^\circ\text{C}$), '20 cm^2 ', '50 cm^2 ', '100 cm^2 ', and '200 cm^2 ' (the highest line, starting at ~15 W at 25 $^\circ\text{C}$). A note 'With infinite heatsink ($T_c = 25^\circ\text{C}$)' is placed near the lines. A legend in the top right corner identifies the material as '2-mm thick aluminum silicon grease'.





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