



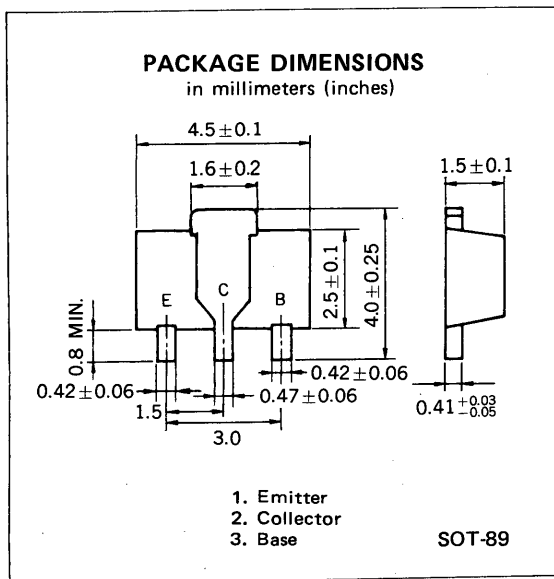
# SILICON TRANSISTORS

## 2SB805, 2SB806

### PNP SILICON EPITAXIAL TRANSISTOR POWER MINI MOLD

#### DESCRIPTION

The 2SB805 and 2SB806 are designed for audio frequency power amplifier application, especially in Hybrid Integrated Circuits.



#### FEATURES

- World Standard Miniature Package : SOT-89
- High Collector to Emitter Voltage :  $V_{CE0} > -120$  V (2SB806),  
:  $V_{CE0} > -100$  V (2SB805)
- Complement to NPN type 2SD1006 and 2SD1007 respectively

#### ABSOLUTE MAXIMUM RATINGS

| Maximum Voltages and Currents ( $T_a = 25^\circ\text{C}$ ) |           | 2SB805      | 2SB806 |                  |
|------------------------------------------------------------|-----------|-------------|--------|------------------|
| Collector to Base Voltage                                  | $V_{CBO}$ | -100        | -120   | V                |
| Collector to Emitter Voltage                               | $V_{CEO}$ | -100        | -120   | V                |
| Emitter to Base Voltage                                    | $V_{EBO}$ | -5.0        |        | V                |
| Collector Current (DC)                                     | $I_C$     | -0.7        |        | A                |
| Collector Current (Pulse)*                                 | $I_C$     | -1.2        |        | A                |
| Maximum Power Dissipation                                  |           |             |        |                  |
| Total Power Dissipation                                    |           |             |        |                  |
| at $25^\circ\text{C}$ Ambient Temperature**                | $P_T$     | 2.0         |        | W                |
| Maximum Temperatures                                       |           |             |        |                  |
| Junction Temperature                                       | $T_j$     | 150         |        | $^\circ\text{C}$ |
| Storage Temperature Range                                  | $T_{stg}$ | -55 to +150 |        | $^\circ\text{C}$ |

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

\*\*When mounted on ceramic substrate of  $16\text{ cm}^2 \times 0.7\text{ mm}$

#### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

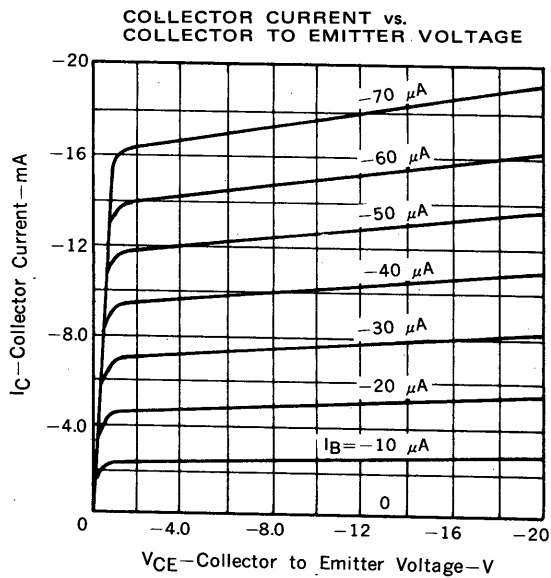
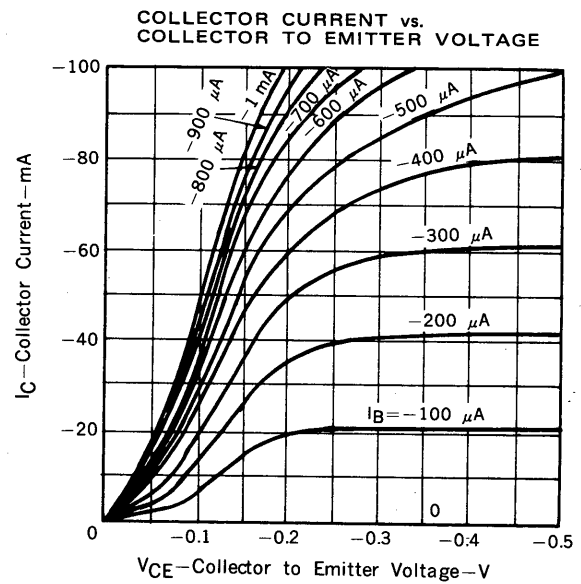
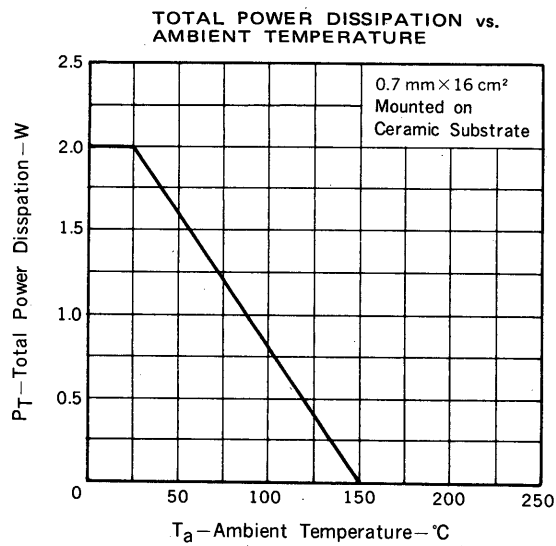
| CHARACTERISTIC               | SYMBOL        | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS                                      |                                   |
|------------------------------|---------------|------|------|------|------|------------------------------------------------------|-----------------------------------|
| Collector Cutoff Current     | $I_{CBO}$     |      |      | -100 | nA   | 2SB805                                               | $V_{CB} = -100\text{ V}, I_E = 0$ |
|                              |               |      |      | -100 | nA   | 2SB806                                               | $V_{CB} = -120\text{ V}, I_E = 0$ |
| Emitter Cutoff Current       | $I_{EBO}$     |      |      | -100 | nA   | $V_{EB} = -5.0\text{ V}, I_C = 0$                    |                                   |
| DC Current Gain              | $h_{FE1}$     | 45   | 200  |      |      | $V_{CE} = -1.0\text{ V}, I_C = -5.0\text{ mA}$       |                                   |
| DC Current Gain              | $h_{FE2}$     | 90   | 200  | 400  |      | $V_{CE} = -1.0\text{ V}, I_C = -100\text{ mA}$       |                                   |
| Collector Saturation Voltage | $V_{CE(sat)}$ |      | -0.4 | -0.6 | V    | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$          |                                   |
| Base Saturation Voltage      | $V_{BE(sat)}$ |      | -0.9 | -1.5 | V    | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$          |                                   |
| Base to Emitter Voltage      | $V_{BE}$      | -550 | -620 | -650 | mV   | $V_{CE} = -10\text{ V}, I_C = -10\text{ mA}$         |                                   |
| Gain Bandwidth Product       | $f_T$         |      | 75   |      | MHz  | $V_{CE} = -10\text{ V}, I_E = 10\text{ mA}$          |                                   |
| Output Capacitance           | $C_{ob}$      |      | 14   |      | pF   | $V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$ |                                   |

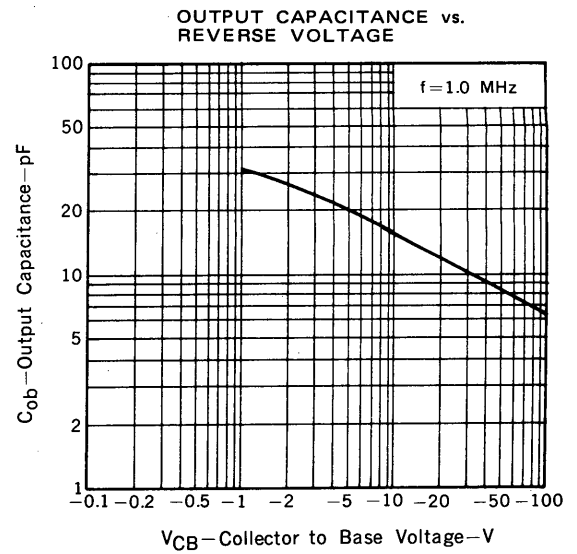
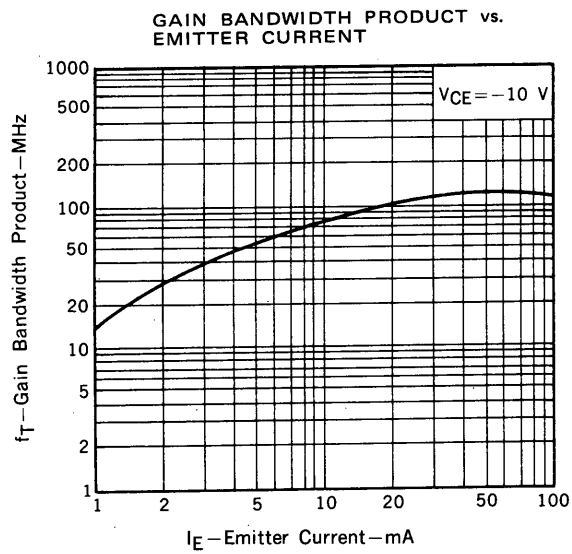
\*\*\*Pulsed : PW  $\leq 350\text{ }\mu\text{s}$ , duty cycle  $\leq 2$  %

#### $h_{FE}$ Classification

| MARKING  | 2SB805 | KM       | KL        | KK        |
|----------|--------|----------|-----------|-----------|
|          | 2SB806 | KR       | KQ        | KP        |
| $h_{FE}$ |        | 90 - 180 | 135 - 270 | 200 - 400 |

TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )





#### REFERENCE

| Document Name                                                | Document No. |
|--------------------------------------------------------------|--------------|
| NEC semiconductor device reliability/quality control system. | TEI-1202     |
| Quality grade on NEC semiconductor devices.                  | IEI-1209     |
| Semiconductor device mounting technology manual.             | IEI-1207     |
| Semiconductor device package manual.                         | IEI-1213     |
| Guide to quality assurance for semiconductor devices.        | MEI-1202     |
| Semiconductor selection guide.                               | MF-1134      |

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