

# SILICON TRANSISTOR

## 2SB1114

### PNP SILICON EPITAXIAL TRANSISTOR

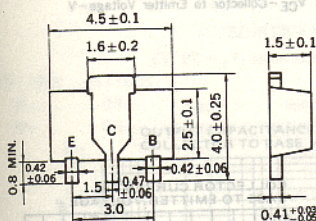
### POWER MINI MOLD

#### DESCRIPTION

2SB1114 is designed for audio frequency power amplifier and switching application, especially in Hybrid Integrated Circuits.

#### PACKAGE DIMENSIONS

in millimeters



1. Emitter
2. Collector
3. Base

#### FEATURES

- World Standard Miniature Package
- High DC Current Gain  $h_{FE} = 135$  to  $600$
- Low  $V_{CE(sat)}$  -  $V_{BE(sat)} = -0.3$  V at  $1.5$  A
- Complementary to 2SD1614

#### ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ( $T_A = 25^\circ\text{C}$ )

|                              |           |     |   |
|------------------------------|-----------|-----|---|
| Collector to Base Voltage    | $V_{CB0}$ | -20 | V |
| Collector to Emitter Voltage | $V_{CE0}$ | -20 | V |
| Emitter to Base Voltage      | $V_{EB0}$ | -6  | V |
| Collector Current (DC)       | $I_C$     | -2  | A |
| Collector Current (Pulse)*   | $I_C$     | -3  | 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  $2.5\text{ cm}^2 \times 0.7\text{ mm}$

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

| CHARACTERISTIC               | SYMBOL            | MIN.  | TYP.  | MAX.  | UNIT | TEST CONDITIONS                                      |
|------------------------------|-------------------|-------|-------|-------|------|--|
| Collector Cutoff Current     | $I_{CB0}$         |       |       | -100  | nA   | $V_{CB} = 16\text{ V}, I_E = 0$                      |
| Emitter Cutoff Current       | $I_{EB0}$         |       |       | -100  | nA   | $V_{EB} = -6.0\text{ V}, I_C = 0$                    |
| DC Current Gain              | $h_{FE1}$ ***     | 135   | 350   | 600   |      | $V_{CE} = -2.0\text{ V}, I_C = -100\text{ mA}$       |
| DC Current Gain              | $h_{FE2}$ ***     | 40    |       |       |      | $V_{CE} = -2.0\text{ V}, I_C = -2.0\text{ A}$        |
| Collector Saturation Voltage | $V_{CE(sat)}$ *** | -0.3  | -0.5  |       | V    | $I_C = -1.5\text{ A}, I_B = -50\text{ mA}$           |
| Base Saturation Voltage      | $V_{BE(sat)}$ *** | -1.05 | -1.2  |       | V    | $I_C = -1.5\text{ A}, I_B = -50\text{ mA}$           |
| Base to Emitter Voltage      | $V_{BE}$ ***      | -0.65 | -0.68 | -0.75 | V    | $V_{CE} = -6.0\text{ V}, I_C = -100\text{ mA}$       |
| Gain Bandwidth Product       | $f_T$             |       | 180   |       | MHz  | $V_{CE} = -10\text{ V}, I_E = 50\text{ mA}$          |
| Output Capacitance           | $C_{ob}$          |       | 60    |       | pF   | $V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$ |

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

#### $h_{FE}$ Classification

| MARKING  | ZM         | ZL         | ZK         |
|----------|------------|------------|------------|
| $h_{FE}$ | 135 to 270 | 200 to 400 | 300 to 600 |