

DESCRIPTION The 2SB1300 is designed for use in driver and output stages of audio frequency amplifiers.

- FEATURES**
- Low Collector Saturation Voltage
 $V_{CE(sat)} : -0.42 \text{ V TYP. } (I_C = -3.0 \text{ A, } I_B = -0.15 \text{ A})$
 - High DC Current Gain
 $h_{FE} : 300 \text{ TYP. } (V_{CE} = -2.0 \text{ V, } I_C = -100 \text{ mA})$
 - High Total Power Dissipation $P_T : 0.75 \text{ W } (T_a = 25^\circ \text{C})$
 - Complementary to The NEC 2SD1951 NPN Transistor

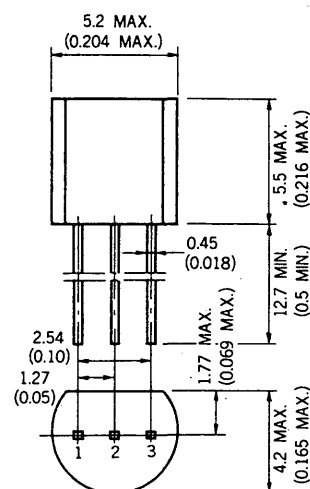
ABSOLUTE MAXIMUM RATINGS

| | |
|---|-----------------|
| Maximum Temperatures | |
| Storage Temperature | -55 to +150 °C |
| Junction Temperature | +150 °C Maximum |
| Maximum Power Dissipation ($T_a = 25^\circ \text{C}$) | |
| Total Power Dissipation | 0.75 W |
| Maximum Voltages and Currents ($T_a = 25^\circ \text{C}$) | |
| V_{CBO} Collector to Base Voltage | -20 V |
| V_{CEO} Collector to Emitter Voltage | -16 V |
| V_{EBO} Emitter to Base Voltage | -6.0 V |
| $I_{C(DC)}$ Collector Current | -3.0 A |
| $I_{C(pulse)}$ *Collector Current | -5.0 A |

*PW ≤ 10 ms, Duty Cycle ≤ 50 %

PACKAGE DIMENSIONS

in millimeters (inches)



1. EMITTER EIAJ : SC-43A
 2. COLLECTOR JEDEC : TO-92
 3. BASE IEC : PA33

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

| SYMBOL | CHARACTERISTIC | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|----------------|------------------------------|------|-------|-------|------|---|
| h_{FE1} | DC Current Gain | 135 | 300 | 600 | — | $V_{CE} = -2.0 \text{ V, } I_C = -100 \text{ mA}$ |
| h_{FE2} | DC Current Gain | 90 | | | — | $V_{CE} = -2.0 \text{ V, } I_C = -2.0 \text{ A}$ |
| f_T | Gain Bandwidth Product | 100 | 140 | | MHz | $V_{CE} = -10 \text{ V, } I_E = 50 \text{ mA}$ |
| C_{ob} | Output Capacitance | | 60 | | pF | $V_{CB} = -10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz}$ |
| I_{CBO} | Collector Cutoff Current | | | -100 | nA | $V_{CB} = -20 \text{ V, } I_E = 0$ |
| I_{EBO} | Emitter Cutoff Current | | | -100 | nA | $V_{EB} = -6.0 \text{ V, } I_C = 0$ |
| V_{BE} | Base to Emitter Voltage | -600 | -660 | -700 | mV | $V_{CE} = -2.0 \text{ V, } I_C = -100 \text{ mA}$ |
| $V_{CE(sat)1}$ | Collector Saturation Voltage | | -0.15 | -0.20 | V | $I_C = -1.0 \text{ A, } I_B = -0.05 \text{ A}$ |
| $V_{CE(sat)2}$ | Collector Saturation Voltage | | -0.28 | -0.35 | V | $I_C = -2.0 \text{ A, } I_B = -0.1 \text{ A}$ |
| $V_{CE(sat)3}$ | Collector Saturation Voltage | | -0.42 | -0.50 | V | $I_C = -3.0 \text{ A, } I_B = -0.15 \text{ A}$ |
| $V_{BE(sat)}$ | Base Saturation Voltage | | -0.95 | -1.2 | V | $I_C = -2.0 \text{ A, } I_B = -0.1 \text{ A}$ |

Classification of h_{FE}

| Rank | L | K | U |
|-------|------------|------------|------------|
| Range | 135 to 270 | 200 to 400 | 300 to 600 |

Test Conditions: $V_{CE} = -2.0 \text{ V, } I_C = -100 \text{ mA}$

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

