

# 2SB1253

## Silicon PNP Epitaxial Planar Darlington Type

Power Amplifier

Complementary Pair with 2SD1893

### ■ Features

- Optimum for 40W hi-fi output
- High DC current gain ( $h_{FE}$ ): 5000~30000
- Low collector-emitter saturation voltage ( $V_{CE(sat)}$ ):  $< -2.5V$
- "Full Pack" package for simplified mounting on a heat sink with one screw

### ■ Absolute Maximum Ratings ( $T_c=25^\circ C$ )

| Item                        | Symbol             | Value      | Unit       |
|-----------------------------|--------------------|------------|------------|
| Collector-base voltage      | $V_{CBO}$          | -130       | V          |
| Collector-emitter voltage   | $V_{CEO}$          | -110       | V          |
| Emitter-base voltage        | $V_{EBO}$          | -5         | V          |
| Collector current           | $I_C$              | -6         | A          |
| Peak collector current      | $I_{CP}$           | -10        | A          |
| Collector power dissipation | $T_C = 25^\circ C$ | 50         | W          |
|                             | $T_a = 25^\circ C$ | 3          |            |
| Junction temperature        | $T_j$              | 150        | $^\circ C$ |
| Storage temperature         | $T_{stg}$          | -55 ~ +150 | $^\circ C$ |

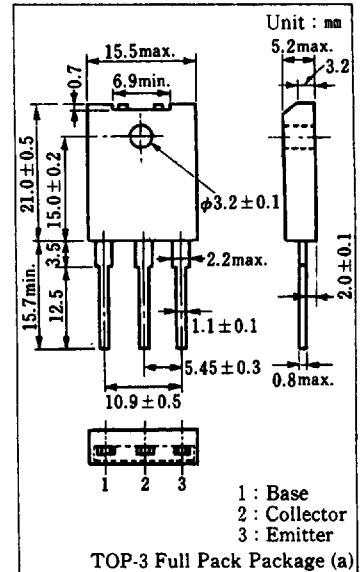
### ■ Electrical Characteristics ( $T_c=25^\circ C$ )

| Item                                 | Symbol        | Condition                              | min. | typ. | max.  | Unit    |
|--------------------------------------|---------------|----------------------------------------|------|------|-------|---------|
| Collector cutoff current             | $I_{CBO}$     | $V_{CB} = -130V, I_E = 0$              |      |      | -100  | $\mu A$ |
| Collector cutoff current             | $I_{CEO}$     | $V_{CE} = -110V, I_B = 0$              |      |      | -100  | $\mu A$ |
| Emitter cutoff current               | $I_{EBO}$     | $V_{EB} = -5V, I_C = 0$                |      |      | -100  | $\mu A$ |
| DC current gain                      | $h_{FE1}$     | $V_{CE} = -5V, I_C = -1A$              | 2000 |      |       |         |
|                                      | $h_{FE2}^*$   | $V_{CE} = -5V, I_C = -5A$              | 5000 |      | 30000 |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -5A, I_B = -5mA$                |      |      | -2.5  | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -5A, I_B = -5A$                 |      |      | -3.0  | V       |
| Transition frequency                 | $f_T$         | $V_{CE} = -10V, I_C = -0.5A, f = 1MHz$ |      | 20   |       | MHz     |
| Turn-on time                         | $t_{on}$      | $I_C = -5A$                            |      | 0.9  |       | $\mu s$ |
| Storage time                         | $t_{stg}$     | $I_{B1} = -5mA, I_{B2} = 5mA$          |      | 2.5  |       | $\mu s$ |
| Collector current fall time          | $t_f$         | $V_{CC} = -50V$                        |      | 1.7  |       | $\mu s$ |

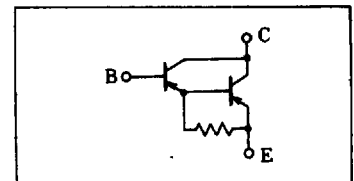
\* $h_{FE2}$  Classifications

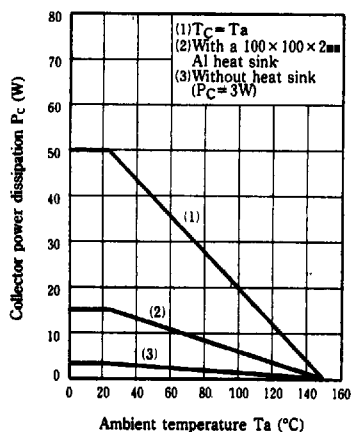
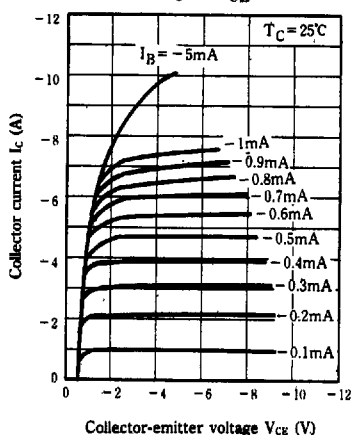
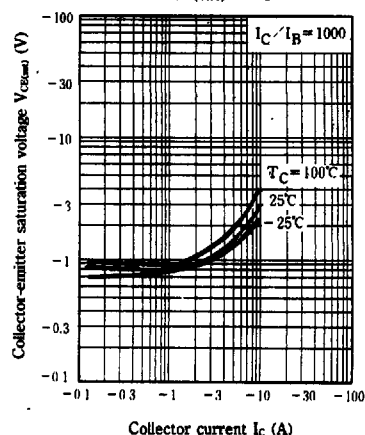
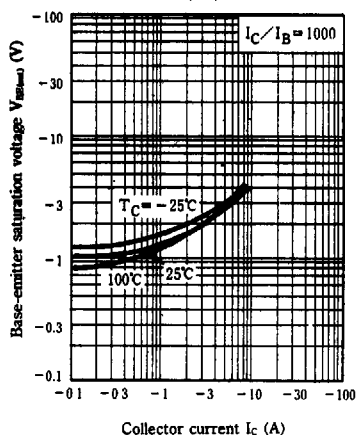
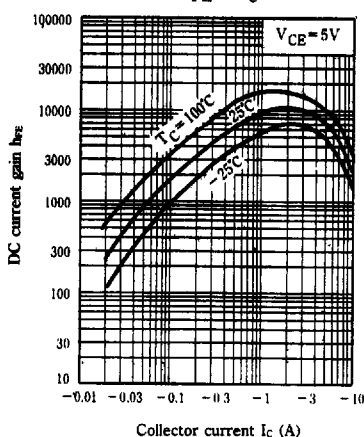
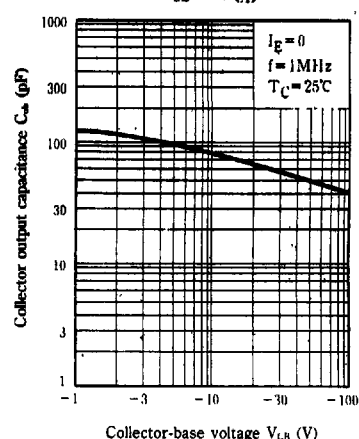
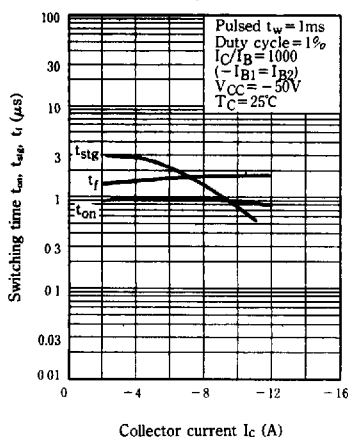
| Class     | Q          | P          |
|-----------|------------|------------|
| $h_{FE2}$ | 5000~15000 | 8000~30000 |

### ■ Package Dimensions



### ■ Inner Circuit



$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $C_{ob} - V_{CB}$  $t_{on}, t_{stg}, t_f - I_C$ 

Area of safe operation (ASO)

