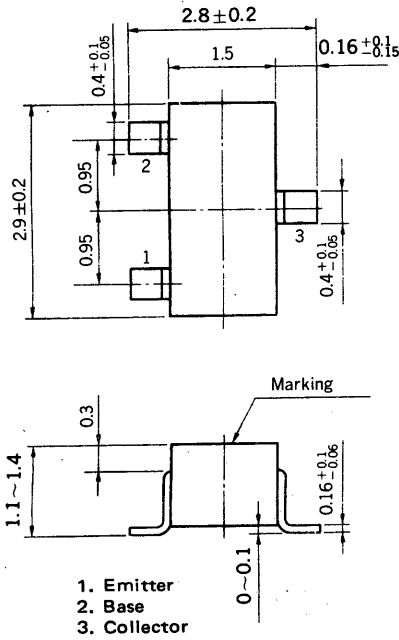


**2SD780, 2SD780A**

**AUDIO FREQUENCY POWER AMPLIFIER  
NPN SILICON EPITAXIAL TRANSISTOR  
MINI MOLD**

**PACKAGE DIMENSIONS**

in millimeters



**DESCRIPTION**

The 2SD780, 2SD780A are designed for use in small type equipments especially recommended for hybrid integrated circuit and other applications.

**FEATURES**

- Micro package.
- High DC current gain.  $h_{FE} : 200$  TYP. ( $V_{CE} = 1.0$  V,  $I_C = 50$  mA)
- Complimentary to NEC 2SB736, 2SB736A PNP Transistor.

**ABSOLUTE MAXIMUM RATINGS**

| Maximum Voltages and Current ( $T_a = 25^\circ\text{C}$ ) | 2SD780       | 2SD780A     |                  |
|-----------------------------------------------------------|--------------|-------------|------------------|
| Collector to Base Voltage                                 | $V_{CBO}$ 60 | 80          | V                |
| Collector to Emitter Voltage                              | $V_{CEO}$ 60 | 80          | V                |
| Emitter to Base Voltage                                   | $V_{EBO}$    | 5.0         | V                |
| Collector Current (DC)                                    | $I_C$        | 300         | mA               |
| Maximum Power Dissipation                                 |              |             |                  |
| Total Power Dissipation                                   |              |             |                  |
| at $25^\circ\text{C}$ Ambient Temperature                 | $P_T$        | 200         | mW               |
| Maximum Temperatures                                      |              |             |                  |
| Storage Temperature Range                                 | $T_{stg}$    | -55 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature                            | $T_j$        | 150         | $^\circ\text{C}$ |

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

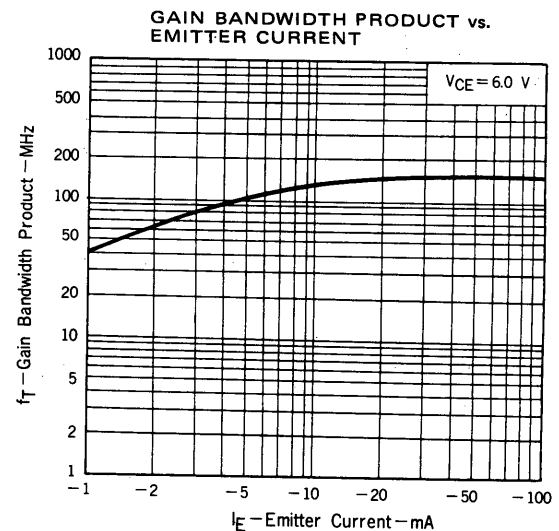
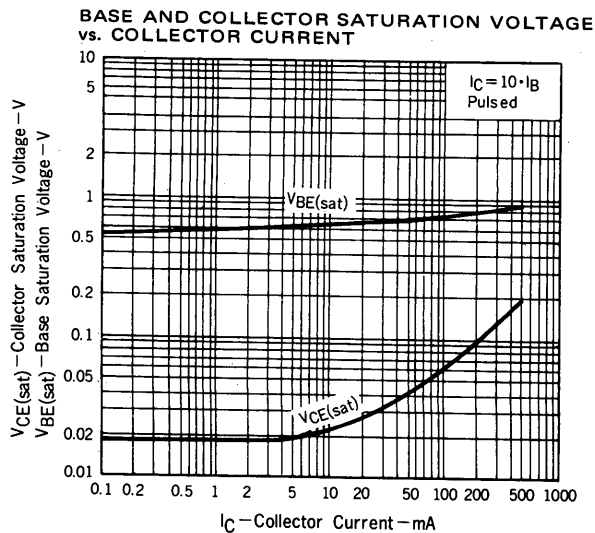
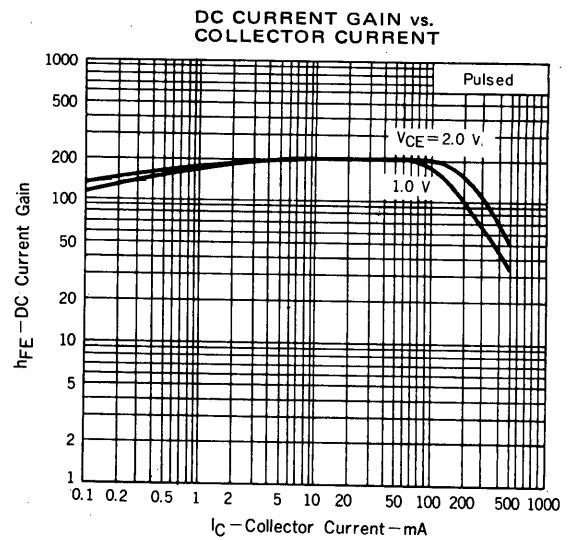
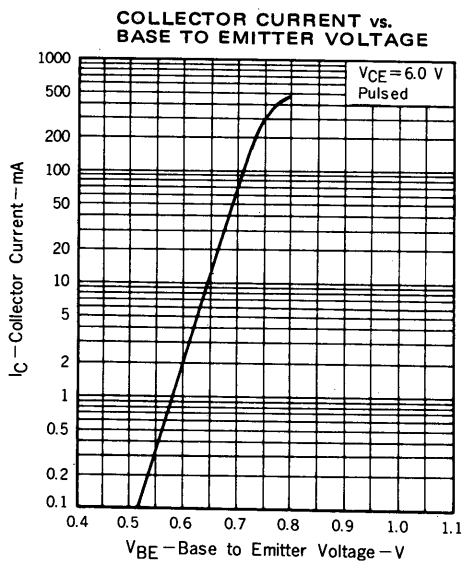
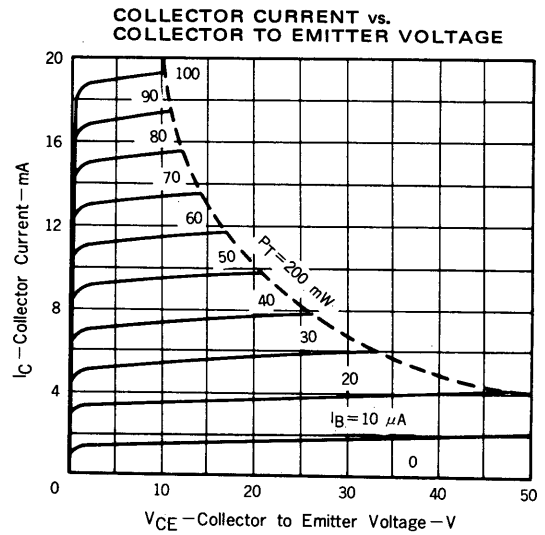
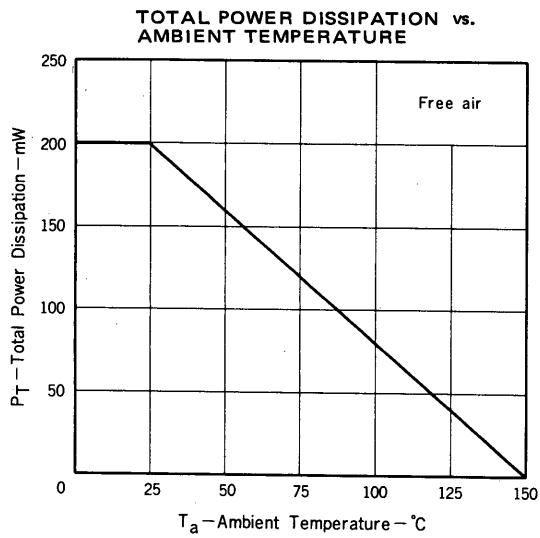
| CHARACTERISTIC               | SYMBOL        | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS                             |
|------------------------------|---------------|------|------|------|------|---------------------------------------------|
| Collector Cutoff Current     | $I_{CBO}$     |      |      | 100  | nA   | $V_{CB} = 50$ V, $I_E = 0$                  |
| Emitter Cutoff Current       | $I_{EBO}$     |      |      | 100  | nA   | $V_{EB} = 5.0$ V, $I_C = 0$                 |
| DC Current Gain              | $h_{FE1}$     | 110  | 200  | 400  |      | $V_{CE} = 1.0$ V, $I_C = 50$ mA *           |
| DC Current Gain              | $h_{FE2}$     | 30   |      |      |      | $V_{CE} = 2.0$ V, $I_C = 300$ mA *          |
| Base to Emitter Voltage      | $V_{BE}$      | 600  | 645  | 700  | mV   | $V_{CE} = 6.0$ V, $I_C = 10$ mA *           |
| Collector Saturation Voltage | $V_{CE(sat)}$ |      | 0.15 | 0.6  | V    | $I_C = 300$ mA, $I_B = 30$ mA *             |
| Output Capacitance           | $C_{ob}$      |      | 7.0  |      | pF   | $V_{CB} = 6.0$ V, $I_E = 0$ , $f = 1.0$ MHz |
| Gain Bandwidth Product       | $f_T$         |      | 140  |      | MHz  | $V_{CE} = 6.0$ V, $I_E = -10$ mA            |

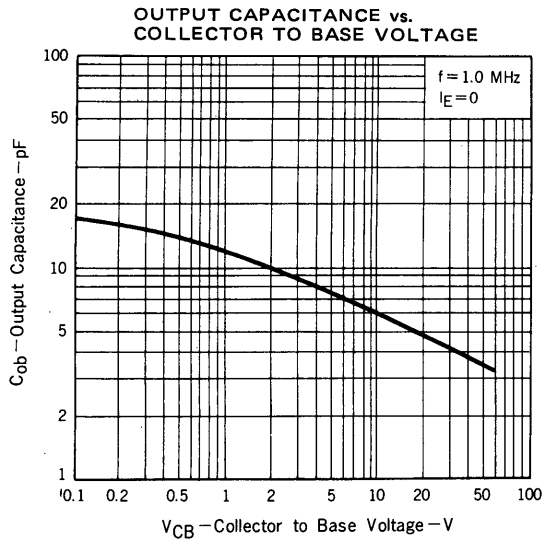
\* Pulsed PW  $\leq 350$   $\mu$ s, Duty Cycle  $\leq 2\%$

**$h_{FE1}$  Classification**

| Marking. | 2SD780     | DW1        | DW2        | DW3        | DW4        | DW5 |
|----------|------------|------------|------------|------------|------------|-----|
|          | 2SD780A    | D51        | D52        | D53        | D54        | D55 |
| $h_{FE}$ | 110 to 180 | 135 to 220 | 170 to 270 | 200 to 320 | 250 to 400 |     |

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





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