

PNP SILICON EPITAXIAL TRANSISTOR
MP-3

DESCRIPTION

2SB1261-Z is designed for Audio Frequency Amplifier and Switching, especially in Hybrid Integrated Circuits.

FEATURES

- High h_{FE} $h_{FE} = 100$ to 400
- LOW $V_{CE(sat)}$ $V_{CE(sat)} \leq 0.3$ V

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

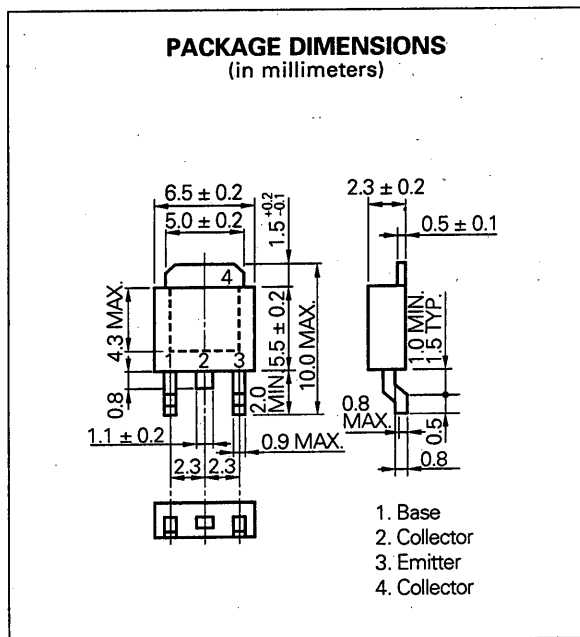
ABSOLUTE MAXIMUM RATINGS ($T_a = 25$ °C)

| | | | |
|--|---------------|-------------|----|
| Collector to Base Voltage | V_{CBO} | -60 | V |
| Collector to Emitter Voltage | V_{CEO} | -60 | V |
| Emitter to Base Voltage | V_{EBO} | -7.0 | V |
| Collector Current (DC) | I_c | -3.0 | A |
| Collector Current (Pulse) | I_{c^*} | -5.0 | A |
| Base Current (DC) | I_B | -0.5 | A |
| Total Power Dissipation ($T_a = 25$ °C) | P_{T1}^{**} | 2.0 | W |
| Total Power Dissipation ($T_c = 25$ °C) | P_{T2} | 10 | W |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature | T_{stg} | -55 to +150 | °C |

* $PW \leq 10$ ms, Duty Cycle ≤ 50 %

** When mounted on ceramic substrate of 7.5 cm² \times 0.7 mm

PACKAGE DIMENSIONS
(in millimeters)



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

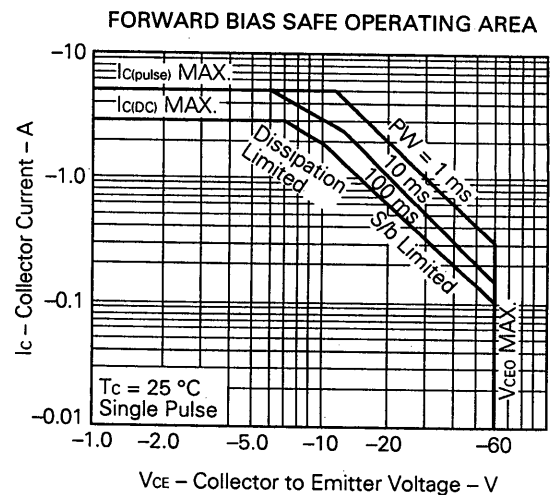
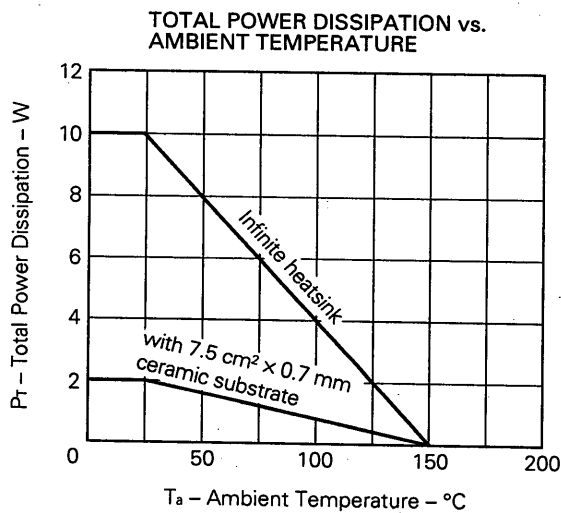
| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|------------------------------|------------------------|------|-------|------|------|---|
| Collector Cutoff Current | I _{cBO} | | | -10 | μA | V _{CB} = -60 V, I _E = 0 |
| Emitter Cutoff Current | I _{EBO} | | | -10 | μA | V _{EB} = -7.0 V, I _C = 0 |
| DC Current Gain | h _{FE1} * | 60 | | | | V _{CE} = -2.0 V, I _C = -0.2 A |
| DC Current Gain | h _{FE2} * | 100 | | 400 | | V _{CE} = -2.0 V, I _C = -0.6 A |
| DC Current Gain | h _{FE3} * | 50 | | | | V _{CE} = -2.0 V, I _C = -2.0 A |
| Collector Saturation Voltage | V _{CE(sat)} * | | -0.2 | -0.3 | V | I _C = -1.5 A, I _B = -0.15 A |
| Base Saturation Voltage | V _{BE(sat)} * | | -0.94 | -1.2 | V | I _C = -1.5 A, I _B = -0.15 A |
| Gain Bandwidth Product | f _T | | 50 | | MHz | V _{CE} = -5.0 V, I _E = 1.5 A |
| Output Capacitance | C _{ob} | | 40 | | pF | V _{CB} = -10 V, I _E = 0, f = 1.0 MHz |
| Turn-on Time | t _{on} | | 0.15 | 0.5 | μs | I _C = -1.0 A, V _{CC} = -10 V, R _L = 10 Ω, I _{B1} = -I _{B2} = -0.1 A |
| Storage Time | t _{stg} | | 0.5 | 2.0 | μs | |
| Fall time | t _f | | 0.1 | 0.5 | μs | |

* Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

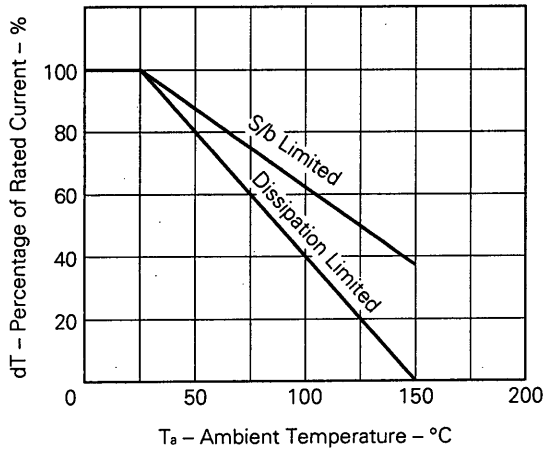
h_{FE} Classification

| MARKING | M | L | K |
|------------------|------------|------------|------------|
| h _{FE2} | 100 to 200 | 160 to 320 | 200 to 400 |

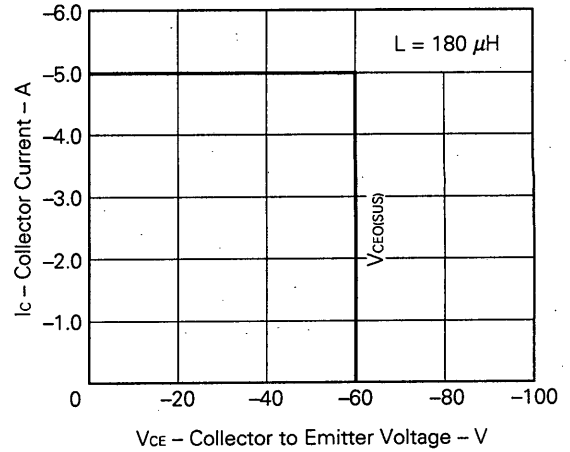
TYPICAL CHARACTERISTICS (T_a = 25 °C)



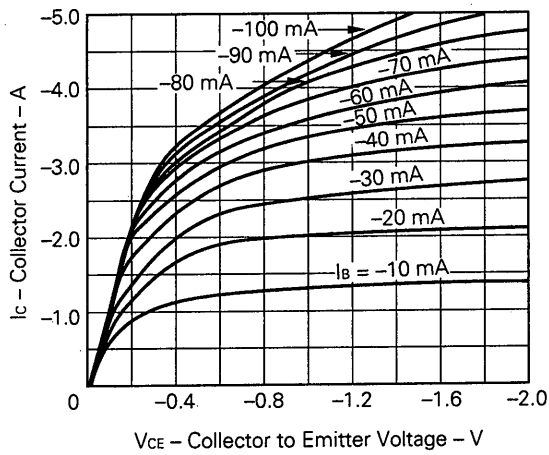
DERATING CURVE OF SAFE OPERATING AREA



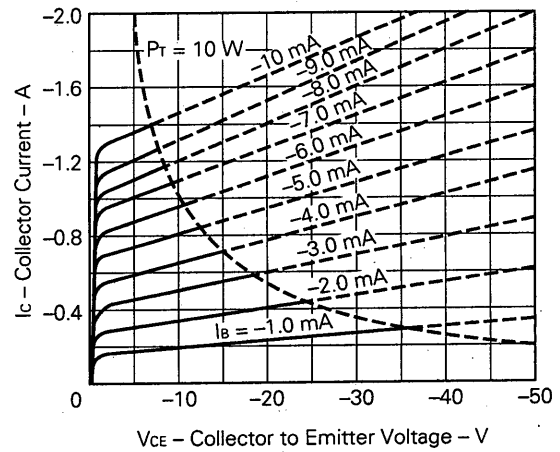
RESERVE BIAS SAFE OPERATING AREA



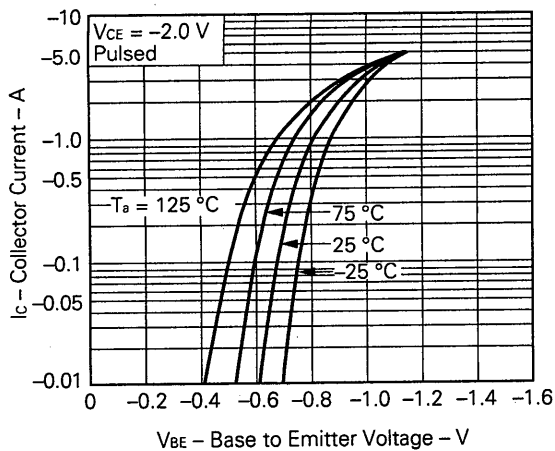
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



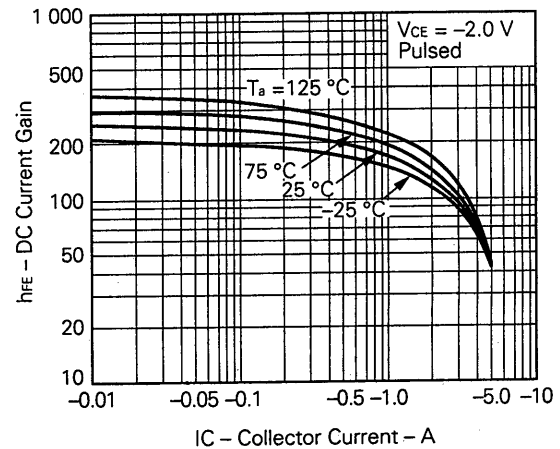
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



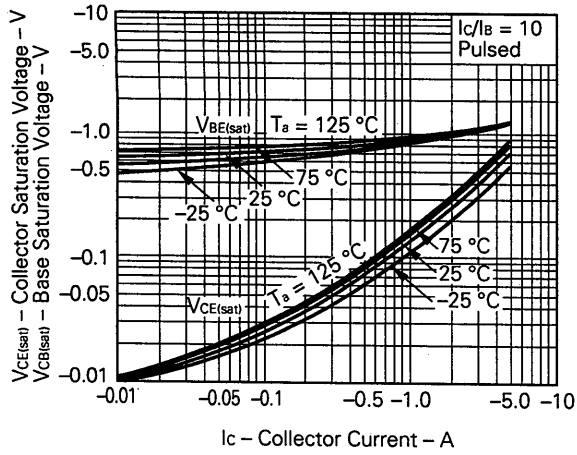
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



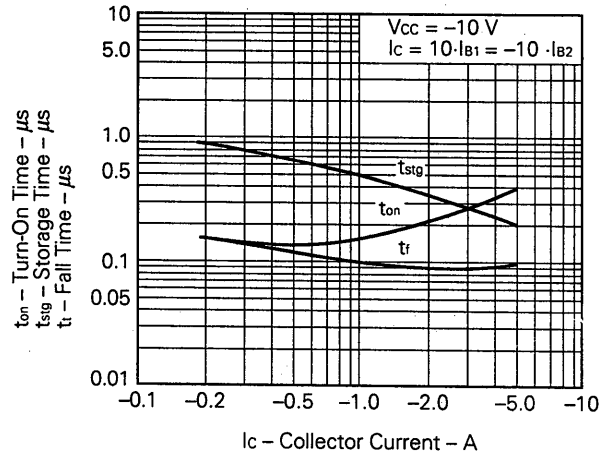
DC CURRENT GAIN vs. COLLECTOR CURRENT



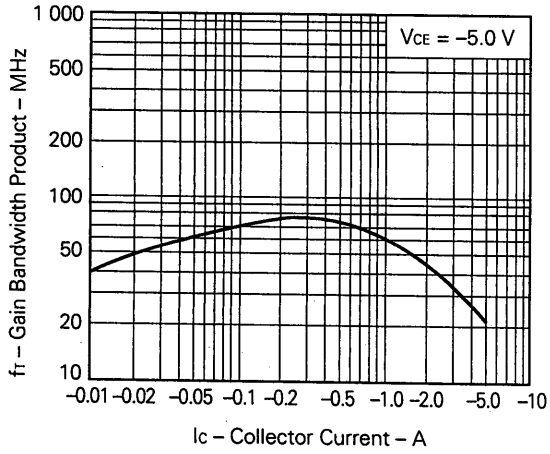
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



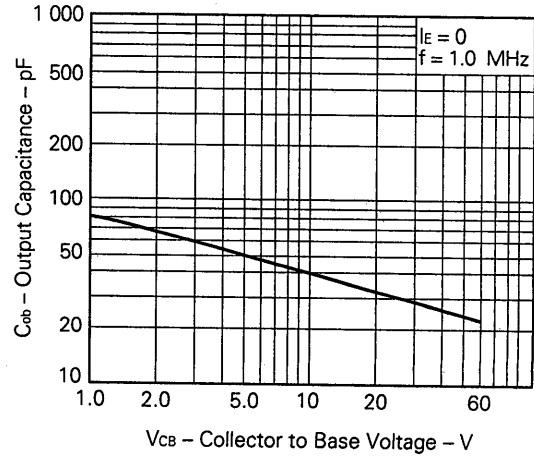
FALL, STORAGE AND TURN-ON TIME vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



[MEMO]

Reference

| Application note name | No. |
|---|----------|
| Quality control of NEC semiconductors devices. | TEI-1202 |
| Quality control guide of semiconductors devices. | MEI-1202 |
| Assembly manual of semiconductors devices. | IEI-1207 |
| Design of Push-Pull Type Switching Regulators (Basic). | TEB-1002 |
| Design of Push-Pull Type Switching Regulators (Applications). | TEB-1003 |
| Optimum Base Drive Conditions of Switching Power Transistors. | TEB-1014 |

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Application examples recommended by NEC Corporation.

Standard: Computer, Office equipment, Communication equipment, Test and Measurement equipment, Machine tools, Industrial robots, Audio and Visual equipment, Other consumer products, etc.

Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.