

**NEC****SILICON TRANSISTOR**  
**2SA1385-Z****PNP SILICON EPITAXIAL TRANSISTOR**  
**MP-3****DESCRIPTION**

2SA1385-Z is designed for Audio Frequency Amplifier and Switching, especially in Hybrid Integrated Circuits.

**FEATURES**

- Low  $V_{CE(sat)}$  :  $V_{CE(sat)} = -0.18$  V TYP.
- Complement to 2SC3518-Z

**QUALITY GRADE**

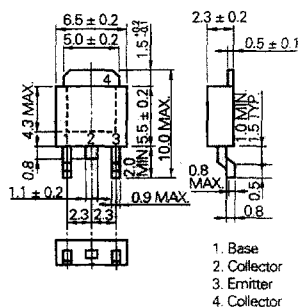
Standard

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

|                                                      |           |             |                  |
|------------------------------------------------------|-----------|-------------|------------------|
| Collector to Base Voltage                            | $V_{CB0}$ | -60         | V                |
| Collector to Emitter Voltage                         | $V_{CE0}$ | -60         | V                |
| Emitter to Base Voltage                              | $V_{EB0}$ | -7          | V                |
| Collector Current (DC)                               | $I_C$     | -5          | A                |
| Collector Current (Pulse)*                           | $I_C$     | -7          | A                |
| Total Power Dissipation ( $T_c = 25^\circ\text{C}$ ) | $P_T$     | 10          | W                |
| Junction Temperature                                 | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage Temperature                                  | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

\*  $PW \leq 10$  ms, Duty Cycle  $\leq 50$  %

**PACKAGE DIMENSIONS**  
(in millimeters)

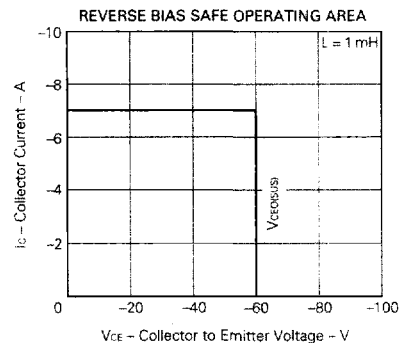
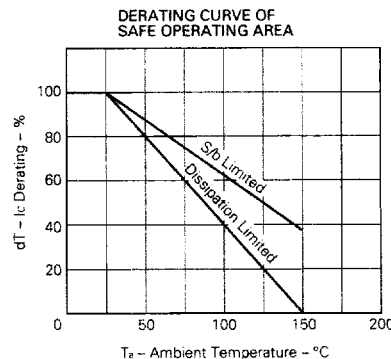
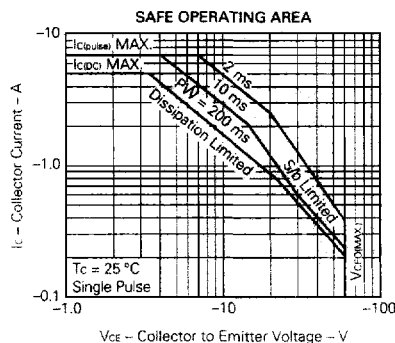
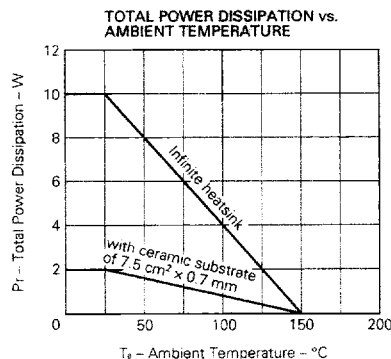
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

| CHARACTERISTIC               | SYMBOL          | MIN. | TYP.  | MAX. | UNIT          | TEST CONDITIONS                               |
|------------------------------|-----------------|------|-------|------|---------------|-----------------------------------------------|
| Collector Cutoff Current     | $I_{CBO}$       |      |       | -10  | $\mu\text{A}$ | $V_{CB} = -50\text{ V}, I_E = 0$              |
| Emitter Cutoff Current       | $I_{EBO}$       |      |       | -10  | $\mu\text{A}$ | $V_{EB} = -7.0\text{ V}, I_C = 0$             |
| DC Current Gain              | $h_{FE1}^*$     | 100  | 200   | 400  |               | $V_{CE} = -1.0\text{ V}, I_C = -2.0\text{ A}$ |
| DC Current Gain              | $h_{FE2}^*$     | 50   | 100   |      |               | $V_{CE} = -1.0\text{ V}, I_C = -5.0\text{ A}$ |
| Collector Saturation Voltage | $V_{CE(sat)}^*$ |      | -0.18 | -0.3 | V             | $I_C = -2.0\text{ A}, I_B = -0.2\text{ A}$    |
| Base Saturation Voltage      | $V_{BE(sat)}^*$ |      |       | -1.2 | V             | $I_C = -2.0\text{ A}, I_B = -0.2\text{ A}$    |
| Gain Bandwidth Product       | $f_T$           |      | 140   |      | MHz           | $V_{CE} = -10\text{ V}, I_C = -0.5\text{ A}$  |
| Turn-on Time                 | $t_{on}$        |      | 0.08  | 1.0  | $\mu\text{s}$ | $I_C = -2.0\text{ A}, V_{CE} = -10\text{ V}$  |
| Storage Time                 | $t_{stg}$       |      | 0.55  | 2.5  | $\mu\text{s}$ | $R_L = 50\ \Omega$                            |
| Fall time                    | $t_f$           |      | 0.18  | 1.0  | $\mu\text{s}$ | $I_{B1} = -I_{B2} = -0.2\text{ A}$            |

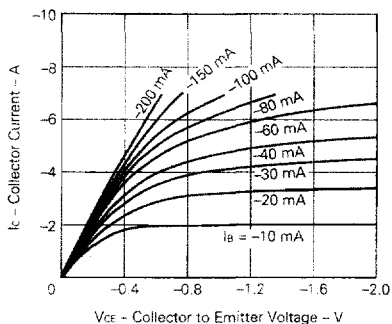
\* Pulsed:  $PW \leq 350\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$

## hFE Classification

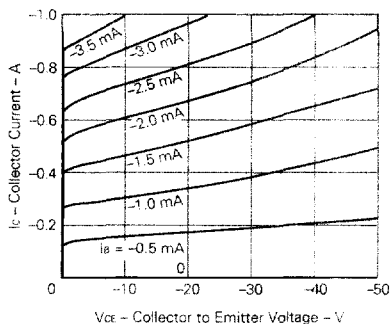
| MARKING   | M          | L          | K          |
|-----------|------------|------------|------------|
| $h_{FE1}$ | 100 to 200 | 160 to 320 | 200 to 400 |

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

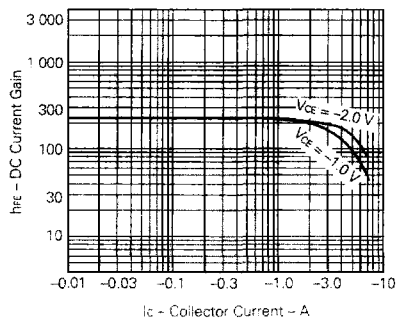
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



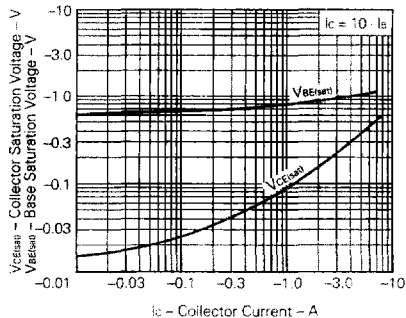
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



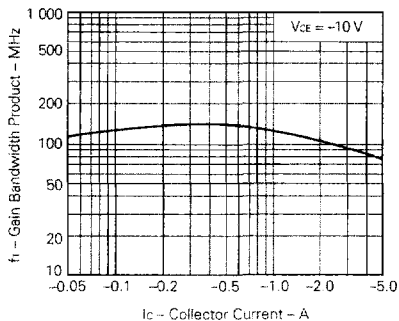
DC CURRENT GAIN vs. COLLECTOR CURRENT



COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



SWITCHING TIME vs. COLLECTOR CURRENT

