

**KSB1151**

**PNP EPITAXIAL SILICON TRANSISTOR**

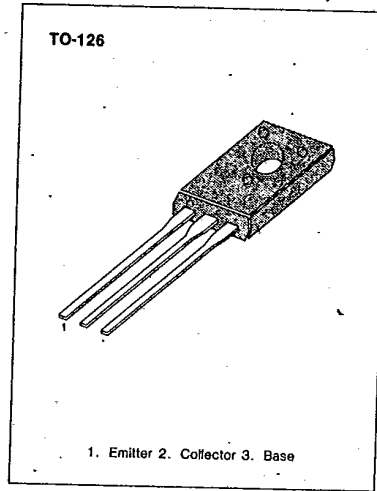
**LOW COLLECTOR SATURATION VOLTAGE  
LARGE CURRENT**

HIGH POWER DISSIPATION:  $P_T=1.3W$  ( $T_a=25^\circ C$ )  
Complementary to KSD1691

**ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ C$ )**

| Characteristic                             | Symbol    | Rating  | Unit       |
|--|-----------|---------|------------|
| Collector-Base Voltage                     | $V_{CB0}$ | -60     | V          |
| Collector-Emitter Voltage                  | $V_{CE0}$ | -60     | V          |
| Emitter-Base Voltage                       | $V_{EB0}$ | -7      | V          |
| Collector Current (DC)                     | $I_C$     | -5      | A          |
| *Collector Current (Pulse)                 | $I_C$     | -8      | A          |
| Base Current (DC)                          | $I_B$     | -1      | A          |
| Collector Dissipation ( $T_a=25^\circ C$ ) | $P_C$     | 1.3     | W          |
| Collector Dissipation ( $T_c=25^\circ C$ ) | $P_C$     | 20      | W          |
| Junction Temperature                       | TJ        | 150     | $^\circ C$ |
| Storage Temperature                        | Tstg      | -55~150 | $^\circ C$ |

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



3

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

| Characteristic                        | Symbol        | Test Condition                       | Min | Typ   | Max  | Unit    |
|---------------------------------------|---------------|--------------------------------------|-----|-------|------|---------|
| Collector Cutoff Current              | $I_{CBO}$     | $V_{CB} = -50V, I_E = 0$             |     |       | -10  | $\mu A$ |
| Emitter Cutoff Current                | $I_{EBO}$     | $V_{EB} = -7V, I_C = 0$              |     |       | -10  | $\mu A$ |
| *DC Current Gain                      | $h_{FE1}$     | $V_{CE} = -1V, I_C = -0.1A$          | 60  |       |      |         |
|                                       | $h_{FE2}$     | $V_{CE} = -1V, I_C = -2A$            | 100 | 200   | 400  |         |
|                                       | $h_{FE3}$     | $V_{CE} = -2V, I_C = -5A$            | 50  |       |      |         |
| *Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -2A, I_B = -0.2A$             |     | -0.14 | -0.3 | V       |
| *Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = -2A, I_B = -0.2A$             |     | -0.9  | -1.2 | V       |
| Turn On Time                          | $t_{on}$      | $I_C = -2A, I_{B1} = -I_{B2} = 0.2A$ |     | 0.15  | 1    | $\mu S$ |
| Storage Time                          | $t_{stg}$     | $RL = 5\Omega, V_{CC} = -10V$        |     | 0.78  | 2.5  | $\mu S$ |
| Fall Time                             | $t_f$         |                                      |     | 0.18  | 1    | $\mu S$ |

\* Pulse test:  $PW < 350\mu s$ , Duty Cycle  $< 2\%$  Pulsed

**$h_{FE}(2)$  CLASSIFICATION**

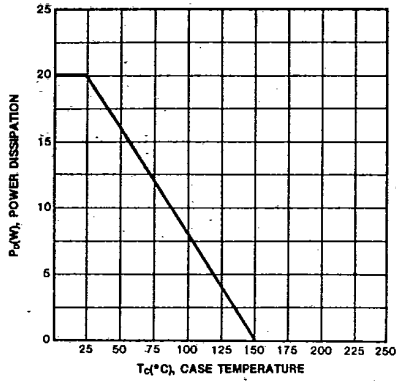
| Classification | O       | Y       | G       |
|----------------|---------|---------|---------|
| $h_{FE2}$      | 100-200 | 160-320 | 200-400 |

KSB1151

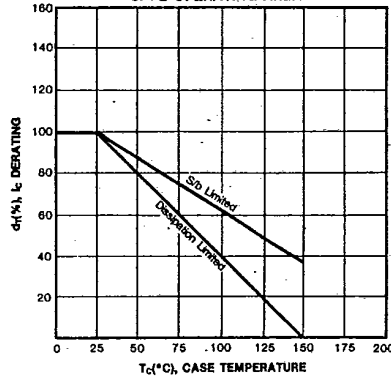
PNP EPITAXIAL SILICON TRANSISTOR

1-33-19

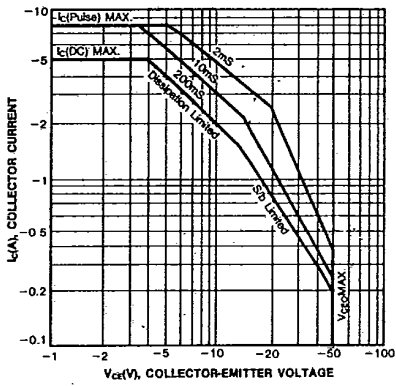
POWER DERATING



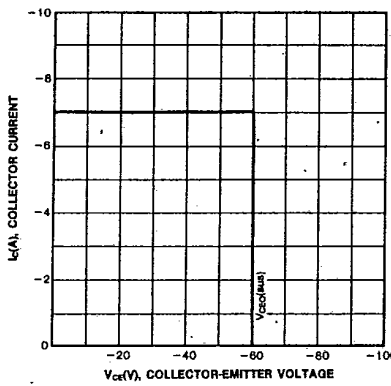
DERATING CURVE OF SAFE OPERATING AREAS



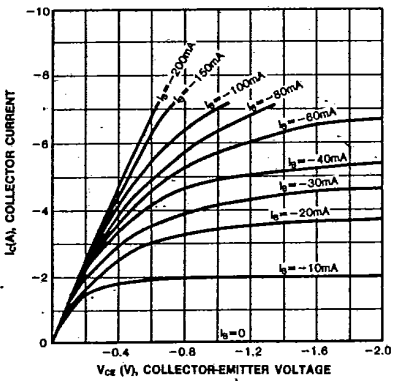
FORWARD BIAS OPERATING AREA



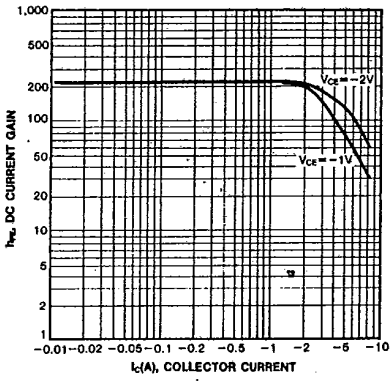
REVERSE BIAS SAFE OPERATING AREA



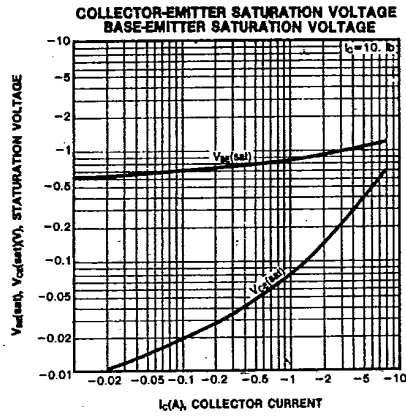
STATIC CHARACTERISTIC



DC CURRENT GAIN



T-33-19



3

**KSC1096****NPN EPITAXIAL SILICON TRANSISTOR**

T-33-07

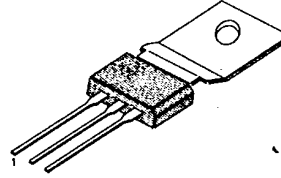
**LOW FREQUENCY POWER AMPLIFIER**

- Complement to KSA634
- Collector Current  $I_C=2.0A$
- Collector Dissipation  $P_C=10W$  ( $T_a=25^\circ C$ )

**ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ C$ )**

| Characteristic                             | Symbol    | Rating     | Unit       |
|--|-----------|------------|------------|
| Collector-Base Voltage                     | $V_{CB0}$ | 40         | V          |
| Collector-Emitter Voltage                  | $V_{CE0}$ | 30         | V          |
| Emitter-Base Voltage                       | $V_{EB0}$ | 5          | V          |
| Collector Current                          | $I_C$     | 2.0        | A          |
| Collector Dissipation ( $T_C=25^\circ C$ ) | $P_C$     | 10         | W          |
| Junction Temperature                       | $T_J$     | 150        | $^\circ C$ |
| Storage Temperature                        | $T_{stg}$ | -55 ~ +150 | $^\circ C$ |

TO-202



1. Base 2. Collector 3. Emitter

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

| Characteristic                       | Symbol        | Test Conditions        | Min | Typ | Max | Unit    |
|--------------------------------------|---------------|------------------------|-----|-----|-----|---------|
| Collector-Base Breakdown Voltage     | $BV_{CB0}$    | $I_C=500\mu A, I_E=0$  | 40  |     |     | V       |
| Collector-Emitter Breakdown Voltage  | $BV_{CE0}$    | $I_C=10mA, I_B=0$      | 30  |     |     | V       |
| Emitter-Base Breakdown Voltage       | $BV_{EB0}$    | $I_E=-500\mu A, I_C=0$ | 5   |     |     | V       |
| Collector Cut-off Current            | $I_{CB0}$     | $V_{CB}=30V, I_E=0$    |     |     | 1   | $\mu A$ |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}=5V, I_C=1.0A$  | 40  |     | 240 |         |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=2A, I_B=0.2A$     |     |     | 1.0 | V       |

 **$h_{FE}$  CLASSIFICATION**

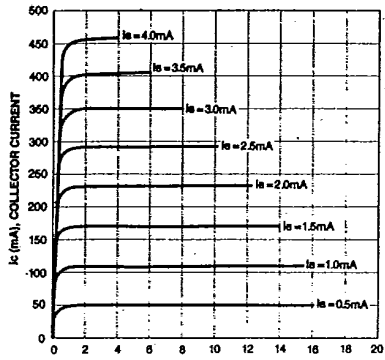
| Classification | R     | O      | Y       |
|----------------|-------|--------|---------|
| $h_{FE}$       | 40-80 | 70-140 | 120-240 |

KSC1096

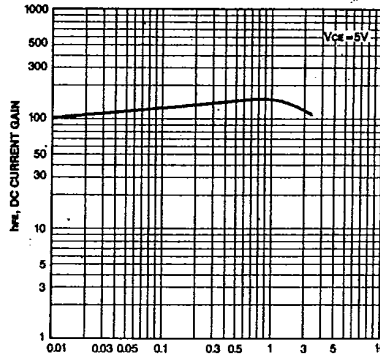
NPN EPITAXIAL SILICON TRANSISTOR

T-33-07

STATIC CHARACTERISTIC

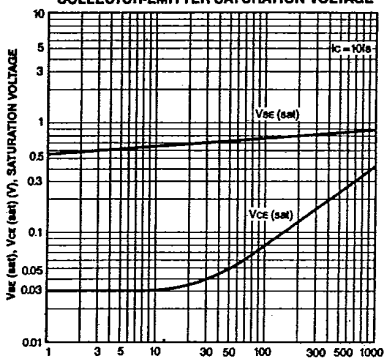


DC CURRENT GAIN

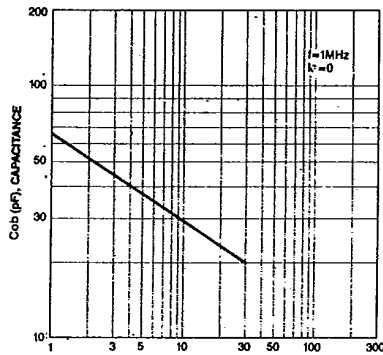


BASE-EMITTER SATURATION VOLTAGE

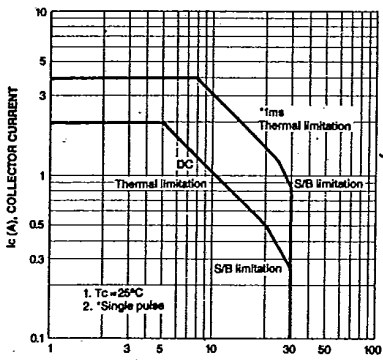
COLLECTOR-EMITTER SATURATION VOLTAGE



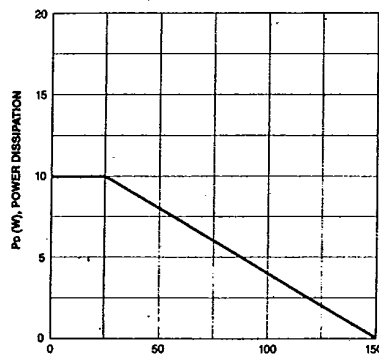
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



3

