

# Low-frequency Transistor

## ( -80V, -0.5A)

### 2SB1198K

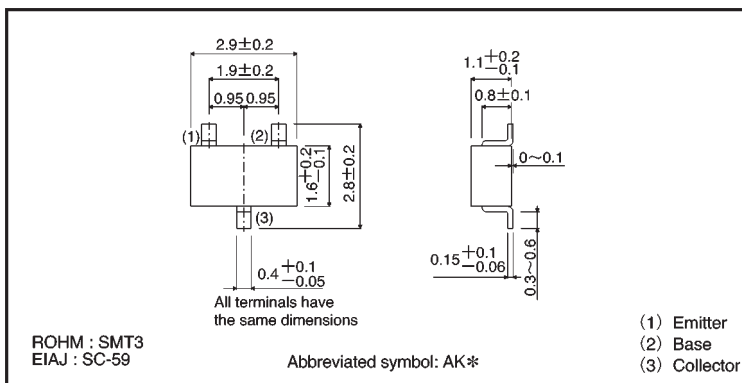
●Features

- 1) Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} = -0.2V$  (Typ.)  
 $(I_c / I_B = -0.5A / -50mA)$
- 2) High breakdown voltage.  
 $BV_{CEO} = -80V$
- 3) Complements the 2SD1782K.

●Structure

Epitaxial planar type  
 PNP silicon transistor

●External dimensions (Unit:s mm)



●Absolute maximum ratings ( $T_a = 25^\circ C$ )

| Parameter                   | Symbol    | Limits   | Unit       |
|-----------------------------|-----------|----------|------------|
| Collector-base voltage      | $V_{CBO}$ | -80      | V          |
| Collector-emitter voltage   | $V_{CEO}$ | -80      | V          |
| Emitter-base voltage        | $V_{EBO}$ | -5       | V          |
| Collector current           | $I_c$     | -0.5     | A          |
| Collector power dissipation | $P_C$     | 0.2      | W          |
| Junction temperature        | $T_j$     | 150      | $^\circ C$ |
| Storage temperature         | $T_{stg}$ | -55~+150 | $^\circ C$ |

●Electrical characteristics ( $T_a = 25^\circ C$ )

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                              |
|--------------------------------------|---------------|------|------|------|---------|---|
| Collector-base breakdown voltage     | $BV_{CBO}$    | -80  | —    | —    | V       | $I_c = -50 \mu A$                       |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | -80  | —    | —    | V       | $I_c = -2mA$                            |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | -5   | —    | —    | V       | $I_E = -50 \mu A$                       |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | -0.5 | $\mu A$ | $V_{CB} = -50V$                         |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | -0.5 | $\mu A$ | $V_{EB} = -4V$                          |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | -0.2 | -0.5 | V       | $I_c/I_B = -0.5A/-50mA$                 |
| DC current transfer ratio            | $h_{FE}$      | 120  | —    | 390  | —       | $V_{CE} = -3V, I_c = -0.1A$             |
| Transition frequency                 | $f_T$         | —    | 180  | —    | MHz     | $V_{CE} = -10V, I_E = 50mA, f = 100MHz$ |
| Output capacitance                   | $C_{ob}$      | —    | 11   | —    | pF      | $V_{CB} = -10V, I_E = 0A, f = 1MHz$     |

● Packaging specifications and  $h_{FE}$

|          |          |                              |        |
|----------|----------|------------------------------|--------|
| Type     | $h_{FE}$ | Package                      | Taping |
|          |          | Code                         | T146   |
|          |          | Basic ordering unit (pieces) | 3000   |
| 2SB1198K | QR       |                              | ○      |

$h_{FE}$  values are classified as follows :

|          |         |         |
|----------|---------|---------|
| Item     | Q       | R       |
| $h_{FE}$ | 120~270 | 180~390 |

● Electrical characteristic curves

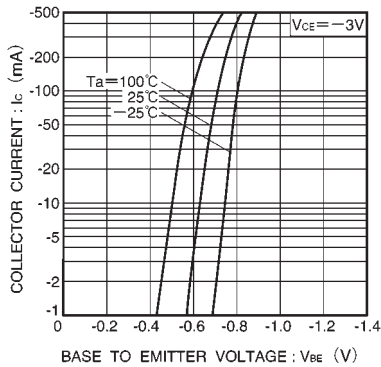


Fig.1 Grounded emitter propagation characteristics

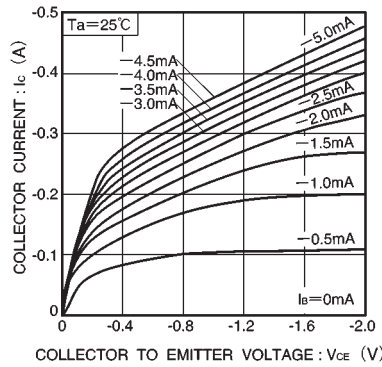


Fig.2 Grounded emitter output characteristics

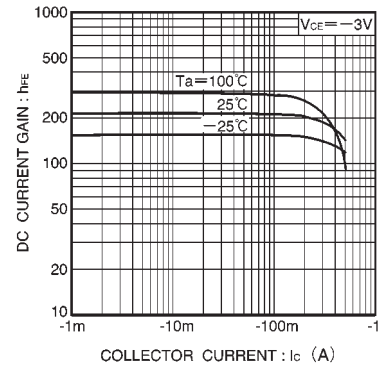


Fig.3 DC current gain vs. collector current

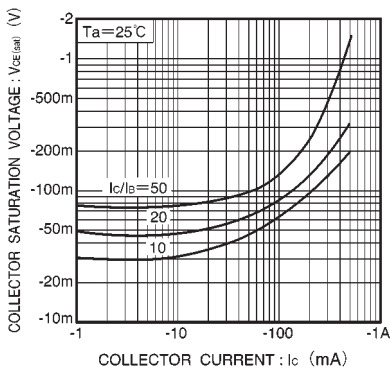


Fig.4 Collector-emitter saturation voltage vs. collector current ( I )

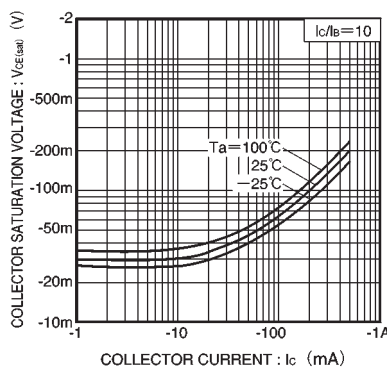


Fig.5 Collector-emitter saturation voltage vs. collector current ( II )

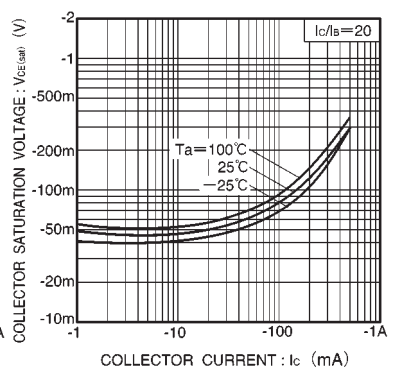


Fig.6 Collector-emitter saturation voltage vs. collector current ( III )

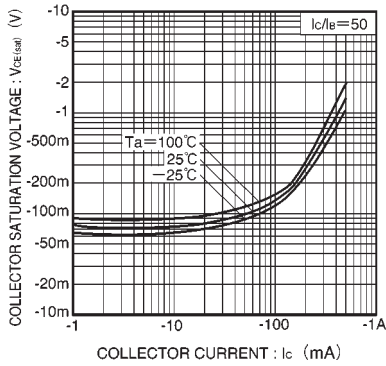


Fig.7 Collector-emitter saturation voltage vs. collector current ( $I_V$ )

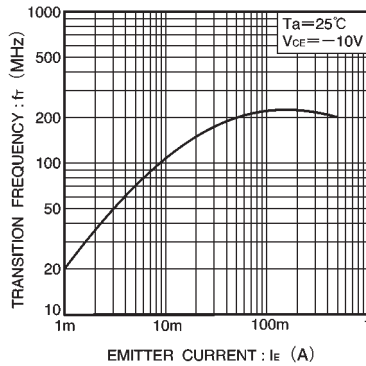


Fig.8 Gain bandwidth product vs. emitter current

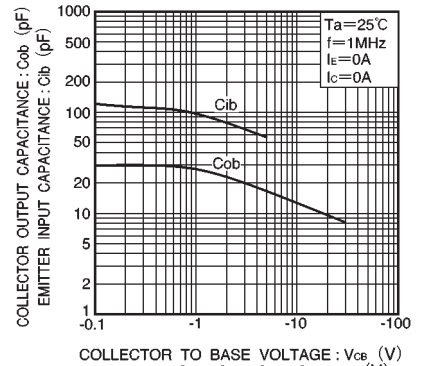


Fig.9 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage