

**RATINGS** Limiting values in accordance with the Absolute Maximum System (IEC 134)

| RATINGS Limiting values in recommended operating conditions  |               |       |             |       |                              |
|--|---------------|-------|-------------|-------|------------------------------|
| Voltage  |               | BC549 |             | BC550 |                              |
| Collector-base voltage (open emitter)                        | $V_{CB0}$     | max.  | 30          | 50    | V                            |
| Collector-emitter voltage ( $V_{BE} = 0$ )                   | $V_{CES}$     | max.  | 30          | 50    | V                            |
| Collector-emitter voltage (open base)                        | $V_{CEO}$     | max.  | 30          | 45    | V                            |
| Emitter-base voltage (open collector)                        | $V_{EBO}$     | max.  | 5           | 5     | V                            |
| Current  |               |       |             |       |                              |
| Collector current (d. c.)                                    | $I_C$         | max.  | 100         |       | mA                           |
| Collector current (peak value)                               | $I_{CM}$      | max.  | 200         |       | mA                           |
| Emitter current (peak value)                                 | $-I_{EM}$     | max.  | 200         |       | mA                           |
| Base current (peak value)                                    | $I_{BM}$      | max.  | 200         |       | mA                           |
| Power dissipation  |               |       |             |       |                              |
| Total power dissipation up to $T_{amb} = 25^{\circ}\text{C}$ | $P_{tot}$     | max.  | 500         |       | mW                           |
| Temperature  |               |       |             |       |                              |
| Storage temperature  | $T_{stg}$     |       | -65 to +150 |       | $^{\circ}\text{C}$           |
| Junction temperature   | $T_j$         | max.  | 150         |       | $^{\circ}\text{C}$           |
| THERMAL RESISTANCE   |               |       |             |       |                              |
| From junction to ambient in free air                         | $R_{th\ j-a}$ | =     | 0,25        |       | $^{\circ}\text{C}/\text{mW}$ |
| From junction to case  | $R_{th\ j-c}$ | =     | 0,15        |       | $^{\circ}\text{C}/\text{mW}$ |

**CHARACTERISTICS**

$T_j = 25^\circ\text{C}$  unless otherwise specified

Collector cut-off current

$I_E = 0$ ;  $V_{CB} = 30\text{ V}$   
 $I_E = 0$ ;  $V_{CB} = 30\text{ V}$ ;  $T_j = 150^\circ\text{C}$

$I_{CBO}$  < 15 nA

$I_{CBO}$  < 5  $\mu\text{A}$

Base emitter voltage

$I_C = 2\text{ mA}$ ;  $V_{CE} = 5\text{ V}$

$V_{BE}$  typ. 660 mV

$V_{BE}$  580 to 700 mV

$I_C = 10\text{ mA}$ ;  $V_{CE} = 5\text{ V}$

$V_{BE}$  < 770 mV

Saturation voltages 2)

$I_C = 10\text{ mA}$ ;  $I_B = 0,5\text{ mA}$

$V_{CEsat}$  typ. 90 mV

$V_{CEsat}$  < 250 mV

$V_{BEsat}$  typ. 700 mV

$V_{BEsat}$  typ. 200 mV

$I_C = 100\text{ mA}$ ;  $I_B = 5\text{ mA}$

$V_{CEsat}$  < 600 mV

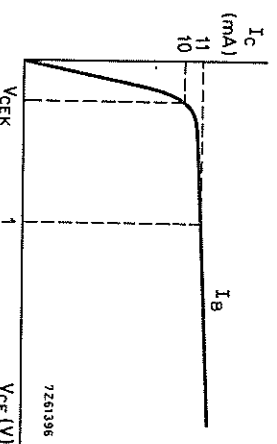
$V_{BEsat}$  typ. 900 mV

Knee voltage

$I_C = 10\text{ mA}$ ;  $I_B = \text{value for which}$   
 $I_C = 11\text{ mA}$  at  $V_{CE} = 1\text{ V}$

$V_{CEK}$  typ. 300 mV

$V_{CEK}$  < 600 mV



Collector capacitance at  $f = 1\text{ MHz}$

$I_E = I_C = 0$ ;  $V_{CB} = 10\text{ V}$

$C_c$  typ. 2,5 pF

$C_c$  < 4,5 pF

Emitter capacitance at  $f = 1\text{ MHz}$

$I_C = I_E = 0$ ;  $V_{EB} = 0,5\text{ V}$

$C_e$  typ. 9 pF

Transition frequency at  $f = 35\text{ MHz}$

$I_C = 10\text{ mA}$ ;  $V_{CE} = 5\text{ V}$

$f_T$  typ. 300 MHz

1)  $V_{BE}$  decreases by about 2 mV/ $^\circ\text{C}$  with increasing temperature.

2)  $V_{BEsat}$  decreases by about 1,7 mV/ $^\circ\text{C}$  with increasing temperature.

CHARACTERISTICS (continued)

$T_J = 25^\circ\text{C}$  unless otherwise specified

Small signal current gain at  $f = 1\text{ kHz}$

$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$

|          | BC549              | BC550          |
|----------|--------------------|----------------|
| $h_{FE}$ | $> 240$<br>$< 900$ | $240$<br>$900$ |

Noise figure at  $R_S = 2\text{ k}\Omega$

$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$

$f = 30\text{ Hz to }15\text{ kHz}$

$f = 1\text{ kHz}; B = 200\text{ Hz}$

|  | $F$  | $F$                         |
|--|--|-----------------------------|
|  | typ. $1, 4$<br>$< 4$<br>typ. $1, 2$<br>$< 4$ | $1, 4$<br>$3$<br>$1$<br>$4$ |
|  | dB   | dB                          |

Equivalent noise voltage at  $R_S = 2\text{ k}\Omega$

$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$

$f = 10\text{ Hz to }50\text{ Hz}; T_{amb} = 25^\circ\text{C}$

|  | $V_n$    | $V_n$         |
|--|----------|---------------|
|  | max. $-$ | $0, 135$      |
|  |          | $\mu\text{V}$ |

|        |        |
|--------|--------|
| BC549B | BC549C |
| BC550B | BC550C |

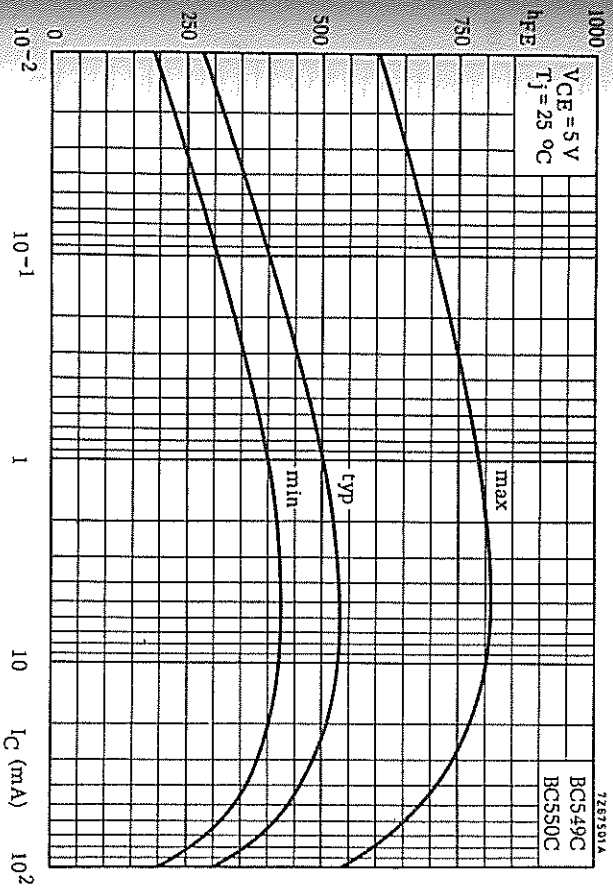
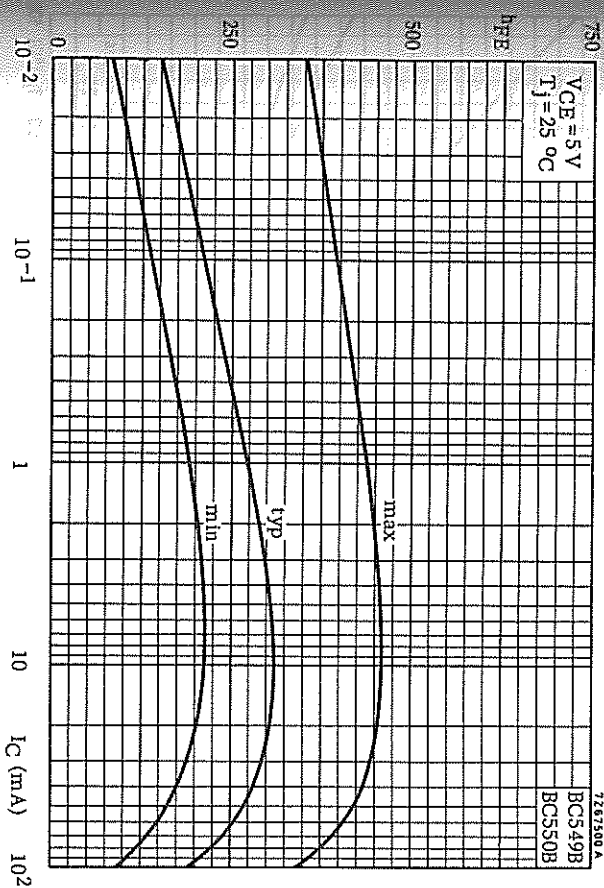
D. C. current gain

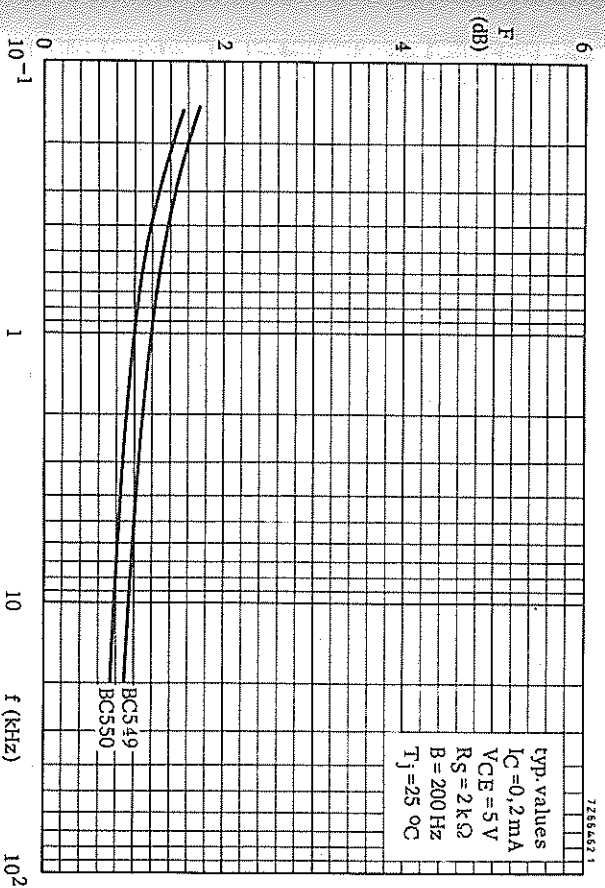
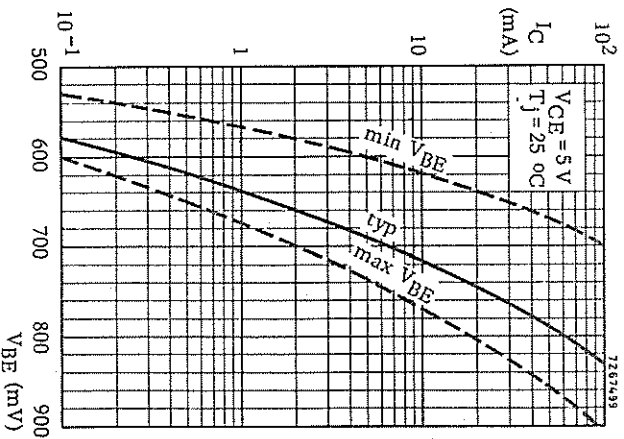
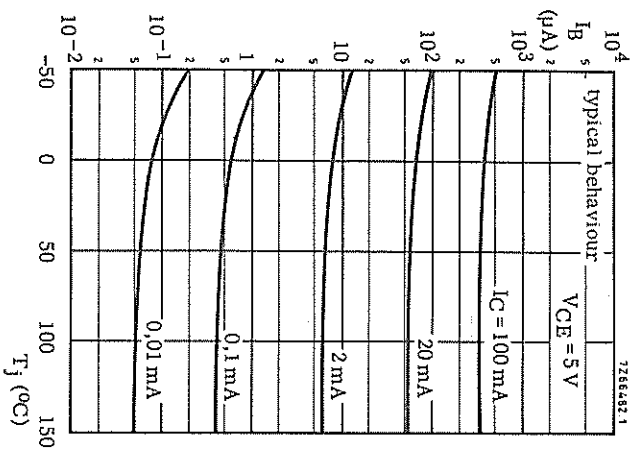
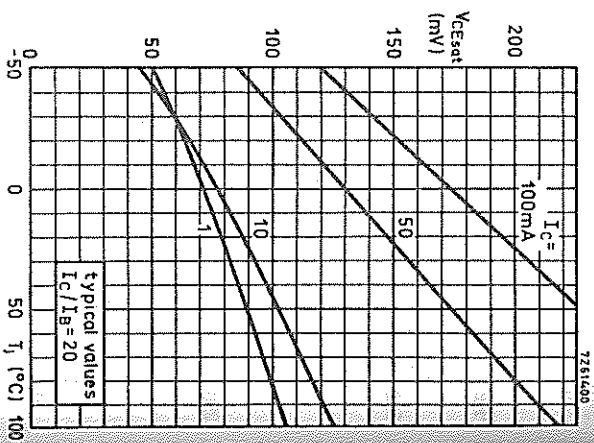
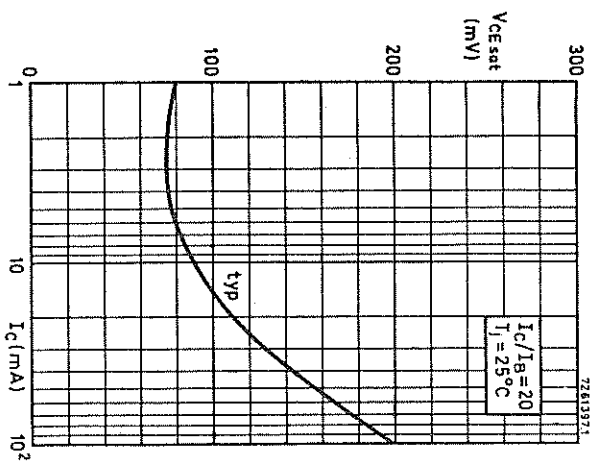
$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$

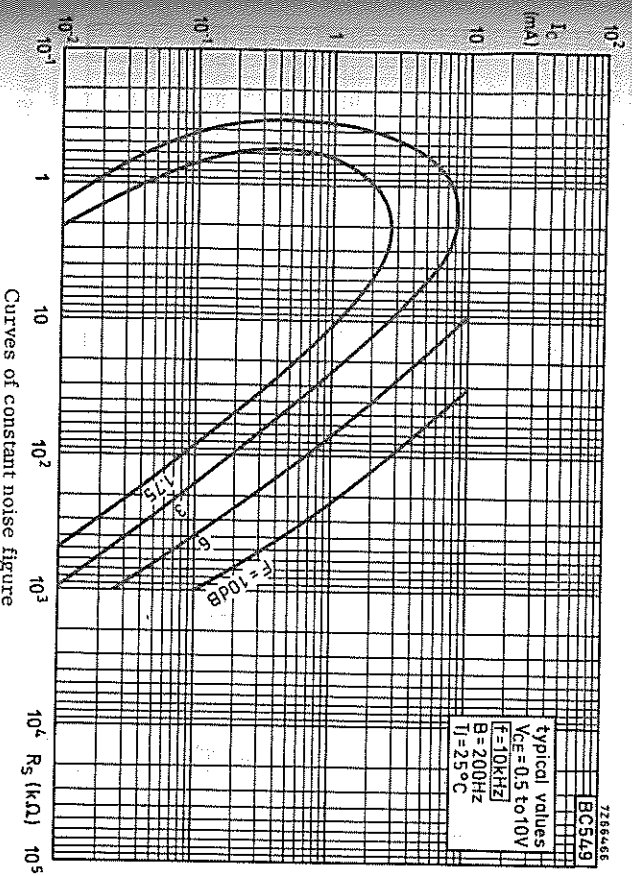
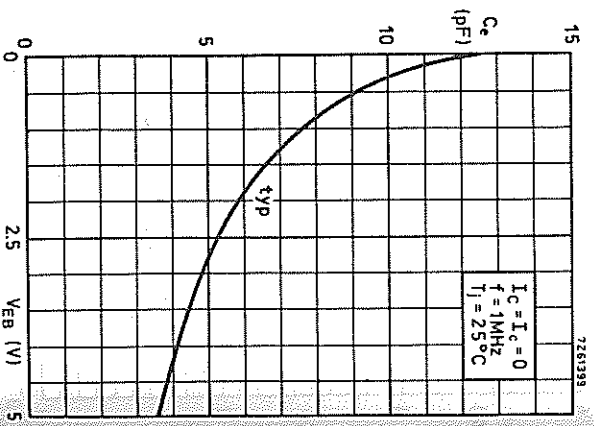
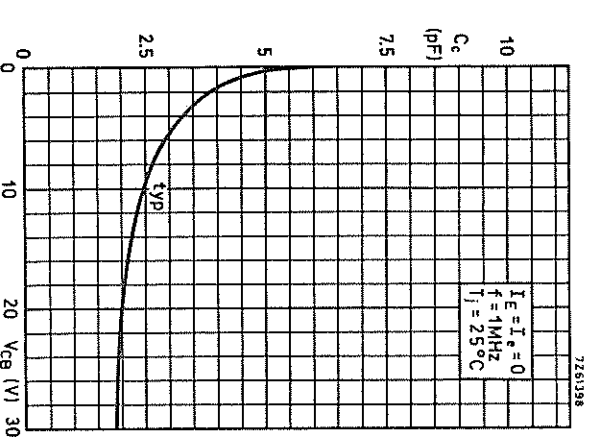
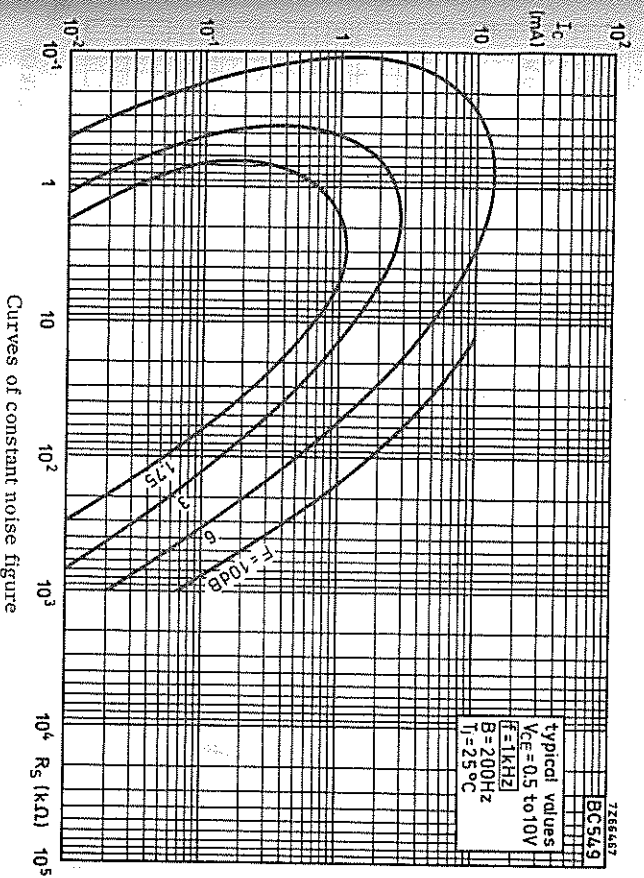
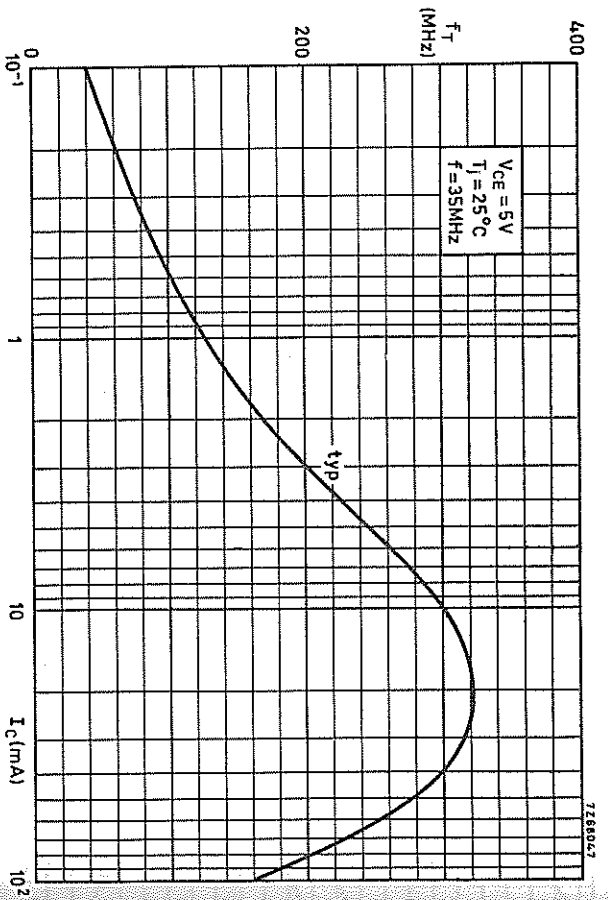
|          |            |       |
|----------|------------|-------|
| $h_{FE}$ | typ. $150$ | $270$ |
|----------|------------|-------|

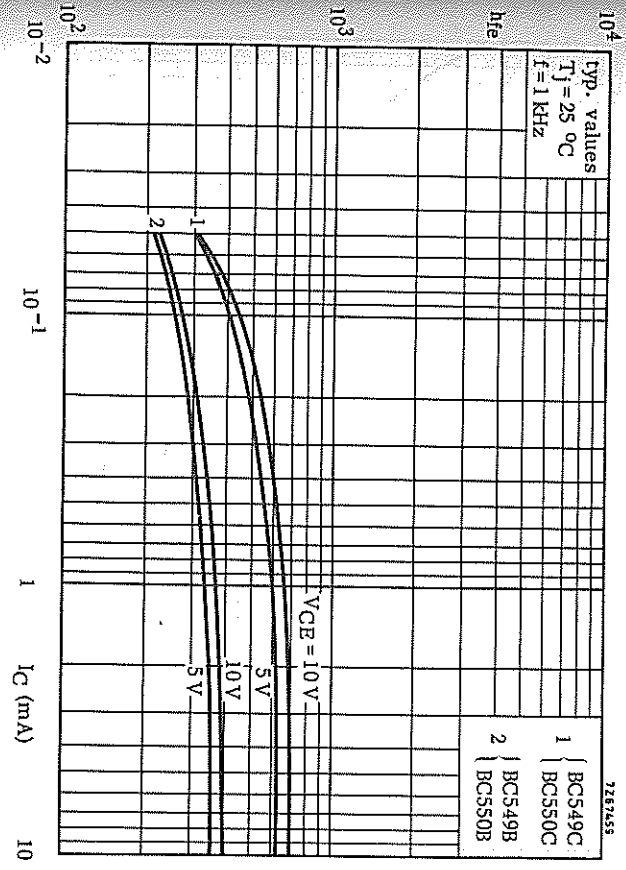
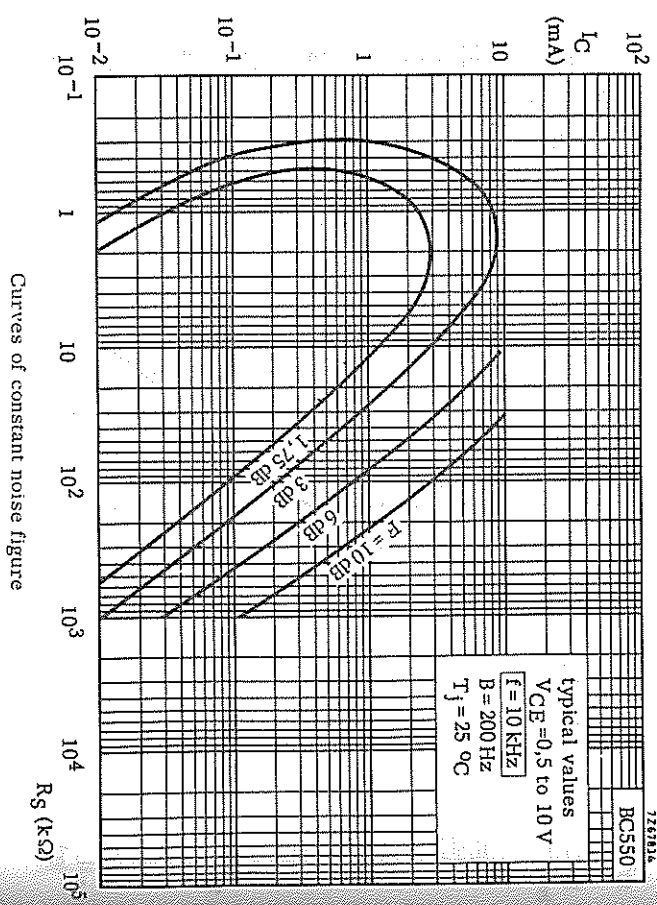
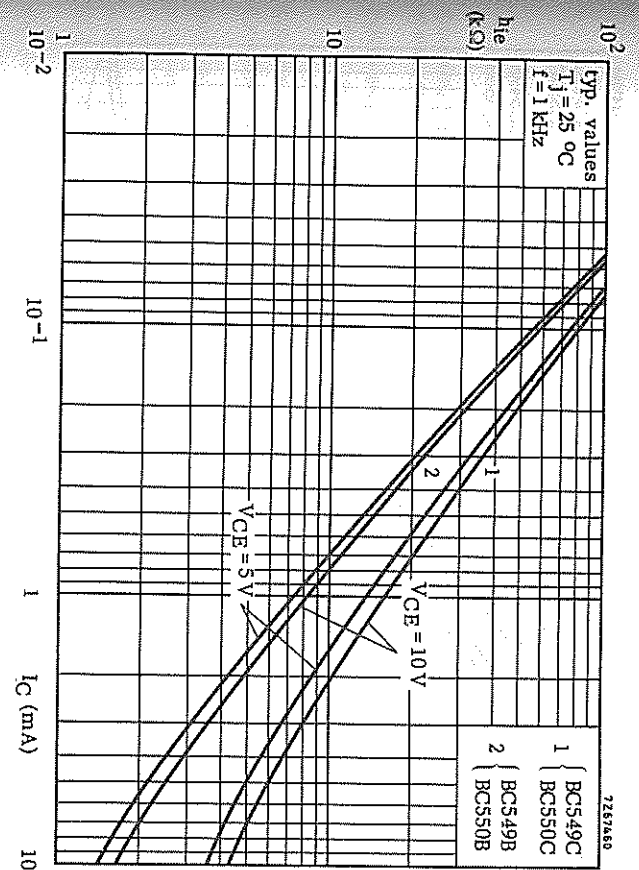
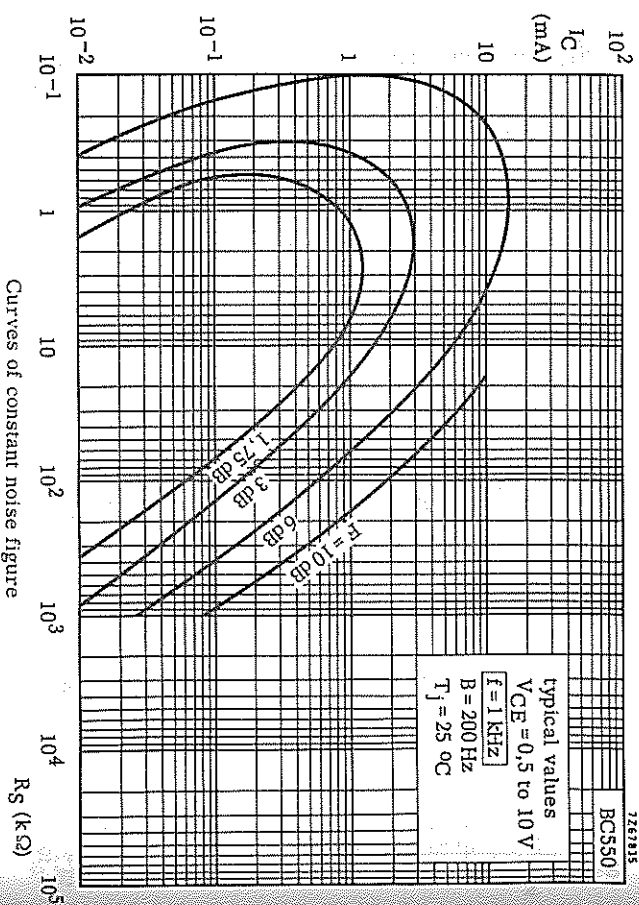
$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$

|          |                                  |                         |
|----------|----------------------------------|-------------------------|
| $h_{FE}$ | $> 200$<br>typ. $290$<br>$< 450$ | $420$<br>$520$<br>$800$ |
|----------|----------------------------------|-------------------------|

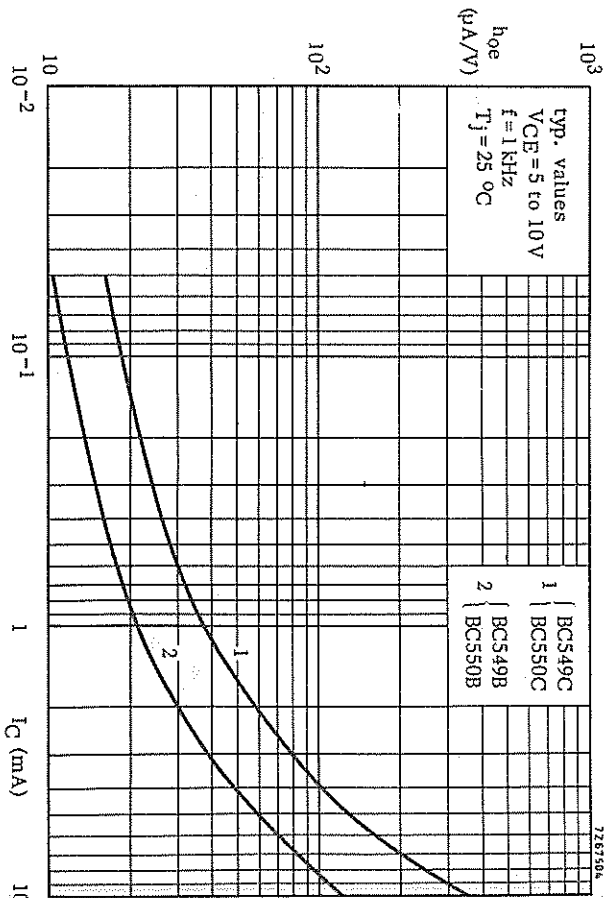
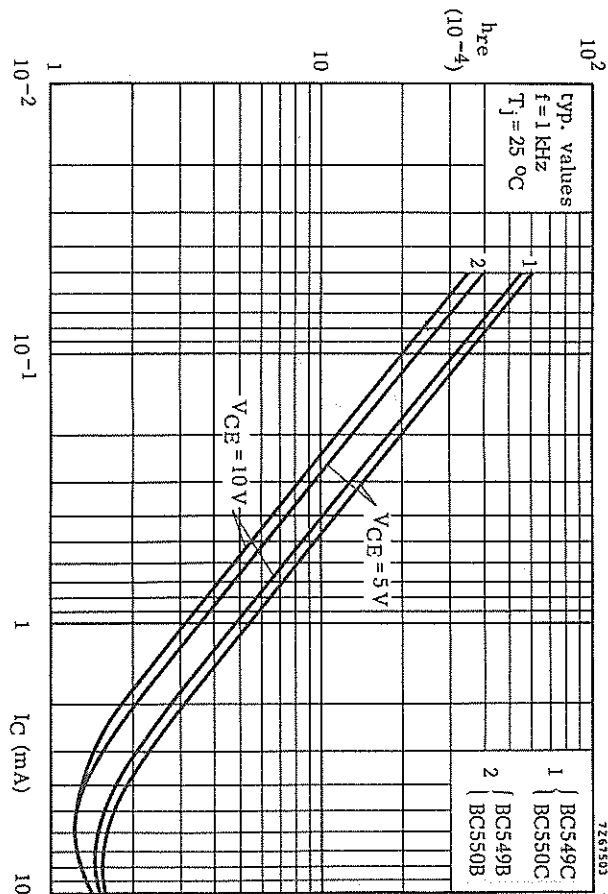








Curves of constant noise figure



## SILICON PLANAR EPITAXIAL TRANSISTORS

General purpose p-n-p transistors in plastic TO-92 envelopes, especially suitable for use in driver stages of audio amplifiers.

### QUICK REFERENCE DATA

|   |            |      |           |     |     |                  |
|---|------------|------|-----------|-----|-----|------------------|
| Collector-emitter voltage (+ $V_{BE} = 1 \text{ V}$ )                 | $-V_{CEX}$ | max. | 80        | 50  | 30  | V                |
| Collector-emitter voltage (open base)                                 | $-V_{CEO}$ | max. | 65        | 45  | 30  | V                |
| Collector current (peak value)  | $-I_{CM}$  | max. | 200       | 200 | 200 | mA               |
| Total power dissipation up to $T_{amb} = 25^\circ\text{C}$            | $P_{tot}$  | max. | 500       | 500 | 500 | mW               |
| Junction temperature  | $T_J$      | max. | 150       | 150 | 150 | $^\circ\text{C}$ |
| Small-signal current gain   | $h_{fe}$   |      | 75 to 900 |     |     |                  |
| $-I_C = 2 \text{ mA}$ ; $-V_{CE} = 5 \text{ V}$ ; $f = 1 \text{ kHz}$ |            |      |           |     |     |                  |
| Transition frequency at $f = 35 \text{ MHz}$                          | $f_T$      | typ. | 200       | 200 | 200 | MHz              |
| $-I_C = 10 \text{ mA}$ ; $-V_{CE} = 5 \text{ V}$                      |            |      |           |     |     |                  |
| Noise figure at $R_S = 2 \text{ k}\Omega$                             |            |      |           |     |     |                  |
| $-I_C = 200 \mu\text{A}$ ; $-V_{CE} = 5 \text{ V}$                    |            |      |           |     |     |                  |
| $f = 1 \text{ kHz}$ ; $B = 200 \text{ Hz}$                            | $F$        | <    | 10        |     |     | dB               |

### MECHANICAL DATA

Fig. 1 TO-92 variant.

