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SILICON PLANAR EPITAXIAL TRANSISTOR

N-P-N transistor in a plastic TO-92 variant envelope.

The BF199 has a very low feedback capacitance and is intended for use in the output stage of a vision i.f. amplifier.

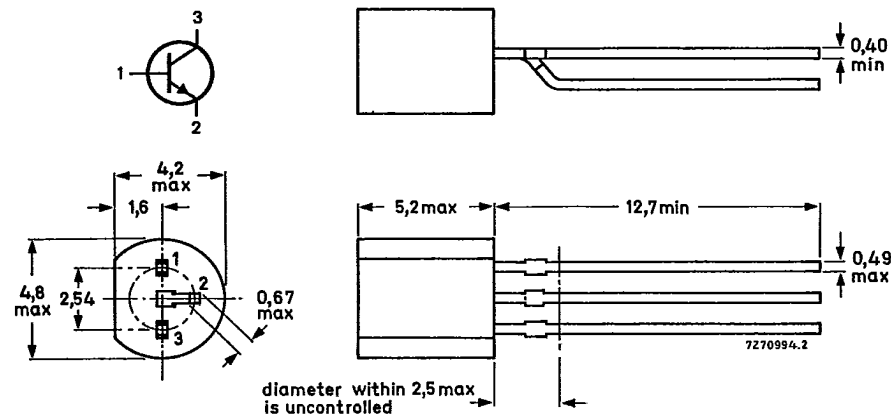
QUICK REFERENCE DATA

Collector-base voltage (open emitter)	V_{CBO}	max.	40 V
Collector-emitter voltage (open base)	V_{CEO}	max.	25 V
Collector current (d.c.)	I_C	max.	25 mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot}	max.	500 mW
Junction temperature	T_j	max.	150 $^\circ\text{C}$
Transition frequency at $f = 100\text{ MHz}$ $I_C = 5\text{ mA}$; $V_{CE} = 10\text{ V}$	f_T	typ.	550 MHz
Feedback capacitance at $f = 10,7\text{ MHz}$ $I_C = 1\text{ mA}$; $V_{CE} = 10\text{ V}$	C_{re}	typ.	340 fF
Maximum unilateral power gain $I_C = 7\text{ mA}$; $V_{CE} = 10\text{ V}$; $f = 35\text{ MHz}$	G_{UM}	typ.	44,4 dB
Video detector output voltage	V_O	typ.	7,7 V

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92 variant.



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RATINGS

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

Collector-base voltage (open emitter)	V_{CBO}	max.	40 V
Collector-emitter voltage (open base)	V_{CEO}	max.	25 V
Emitter-base voltage (open collector)	V_{EBO}	max.	4 V
Collector current (d.c.)	I_C	max.	25 mA
Collector current (peak value)	I_{CM}	max.	25 mA
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.	500 mW
Storage temperature range	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_{thj-a}	=	0,25 K/mW
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CHARACTERISTICS

 $T_{amb} = 25^{\circ}C$

Base current

 $I_C = 7 \text{ mA}; V_{CE} = 10 \text{ V}$

I_B	typ.	60 μA
	<	185 μA

Base-emitter voltage *

 $I_C = 7 \text{ mA}; V_{CE} = 10 \text{ V}$

V_{BE}	typ.	775 mV
	<	925 mV

Transition frequency at $f = 100 \text{ MHz}$ $I_C = 5 \text{ mA}; V_{CE} = 10 \text{ V}$

f_T	typ.	550 MHz
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Feedback capacitance at $f = 10,7 \text{ MHz}$ $I_C = 1 \text{ mA}; V_{CE} = 10 \text{ V}$

C_{re}	typ.	340 fF
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y-parameters (common emitter)

 $I_C = 7 \text{ mA}; V_{CE} = 10 \text{ V}; f = 35 \text{ MHz}$

input conductance

g_{ie}	typ.	5,5 mS
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input capacitance

C_{ie}	typ.	55 pF
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feedback admittance

$ Y_{re} $	typ.	75 μS
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phase angle of feedback admittance

φ_{re}	typ.	268°
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transfer admittance

$ Y_{fe} $	typ.	220 mS
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phase angle of transfer admittance

φ_{fe}	typ.	338°
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output conductance

g_{oe}	typ.	80 μS
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output capacitance

C_{oe}	typ.	2,0 pF
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Maximum unilateral power gain

$$G_{UM} = 10 \log \frac{|Y_{fe}|^2}{4g_{ie}g_{oe}}$$

 $I_C = 7 \text{ mA}; V_{CE} = 10 \text{ V}$

GUM	typ.	44,4 dB
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* V_{BE} decreases by about 1,7 mV/K with increasing temperature.

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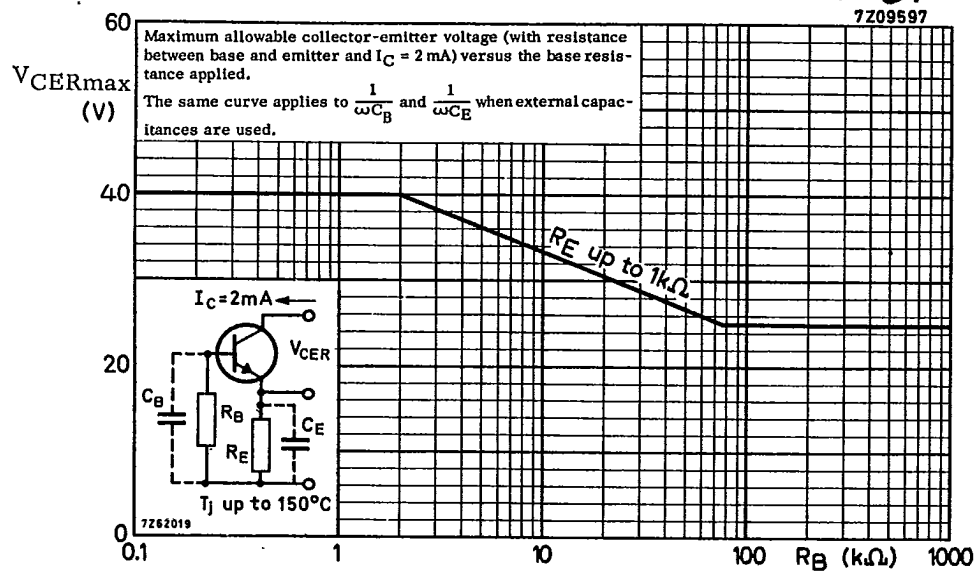
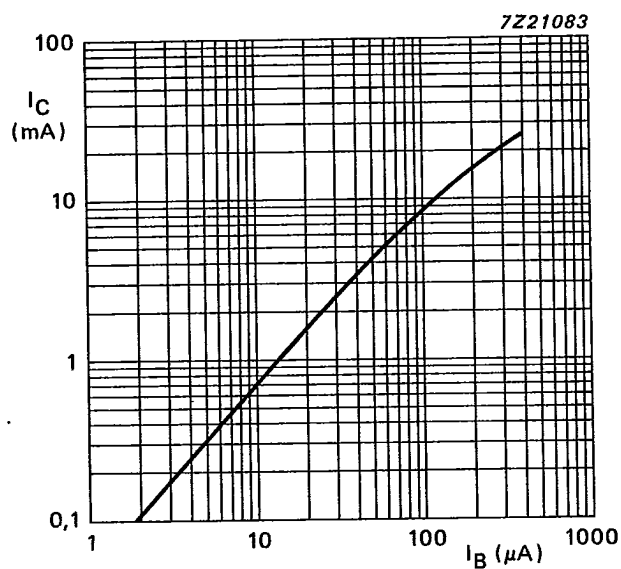
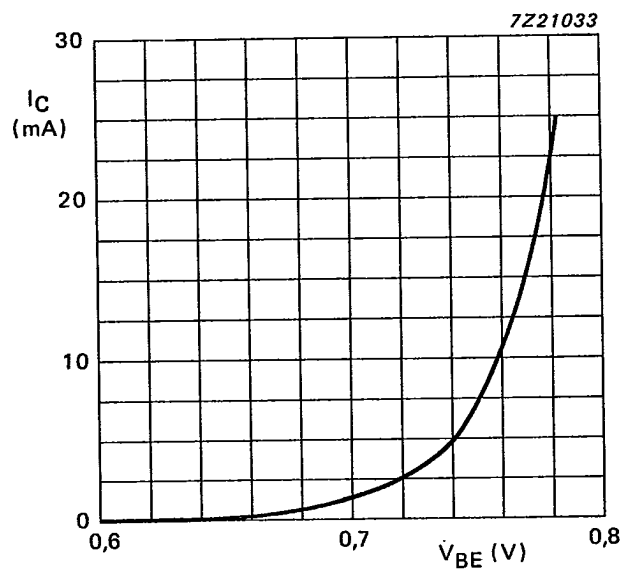


Fig. 2.

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Fig. 3 $V_{CE} = 10$ V; $T_j = 25$ °C; typical values.Fig. 4 $V_{CE} = 10$ V; $T_j = 25$ °C; typical values.

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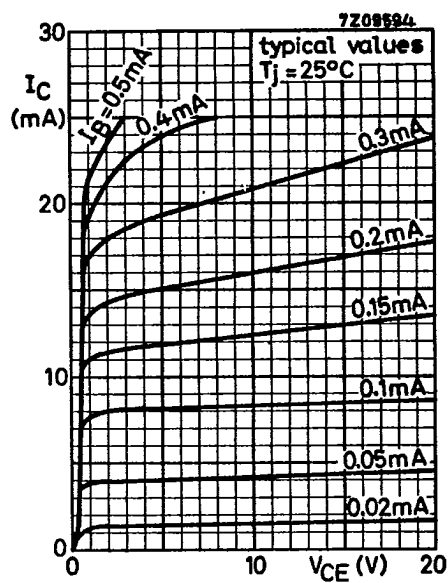


Fig. 5.

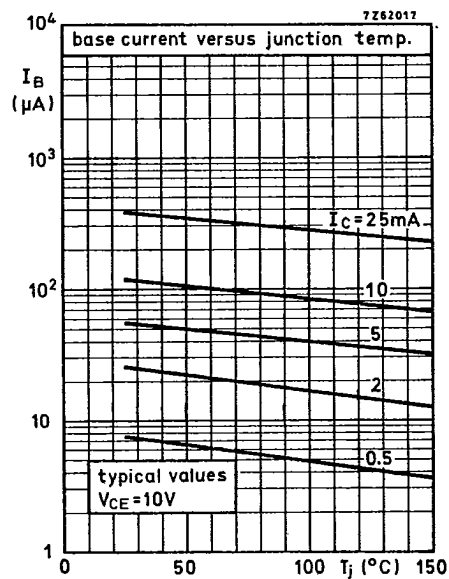


Fig. 6.

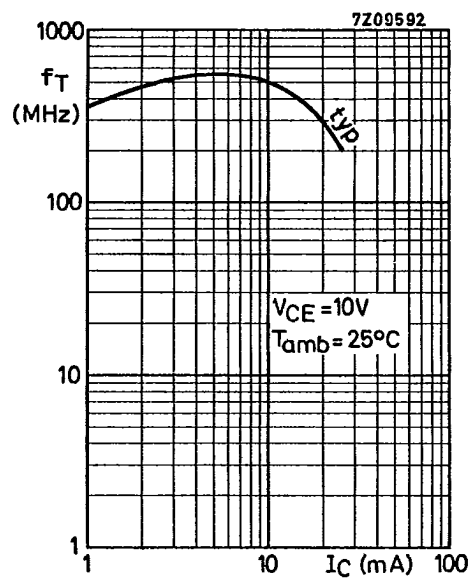


Fig. 7.