

SILICON PLANAR EPITAXIAL TRANSISTORS

P-N-P transistors, in a microminiature plastic envelope, intended for low level, low noise applications in thick and thin-film circuits.

QUICK REFERENCE DATA

D.C. current gain at $T_j = 25^\circ\text{C}$

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

h_{FE}	$>$	215
	$<$	500

Collector-base voltage (open emitter)

$-V_{CBO}$	max.	50 V
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Collector-emitter voltage (open base)

$-V_{CEO}$	max.	45 V
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Collector current (peak value)

$-I_{CM}$	max.	200 mA
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Total power dissipation up to $T_{amb} = 25^\circ\text{C}$

P_{tot}	max.	250 mW
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Junction temperature

T_j	max.	150 $^\circ\text{C}$
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Transition frequency at $f = 35\text{ MHz}$

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

f_T	typ.	150 MHz
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Noise figure at $R_S = 2\text{ k}\Omega$

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

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

F	$<$	4 dB
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MECHANICAL DATA

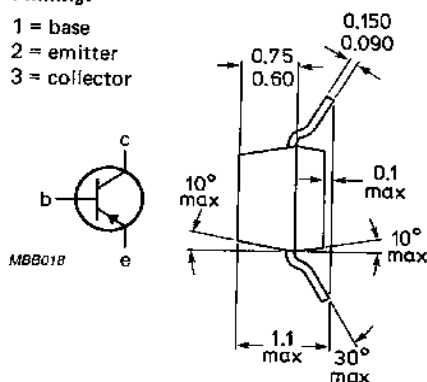
Fig. 1 SOT-23.

Pinning:

1 = base

2 = emitter

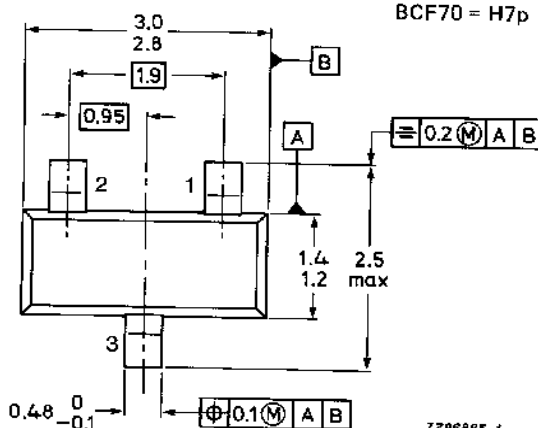
3 = collector



Dimensions in mm

Marking code

BCF70 = H7p



TOP VIEW

Reverse pinning types are available on request.

See also *Soldering recommendations*.

BCF70

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RATINGS

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

Collector-base voltage (open emitter)	$-V_{CB0}$	max.	50 V
Collector-emitter voltage ($V_{BE} = 0$)	$-V_{CES}$	max.	50 V
Collector-emitter voltage (open base)			
$-I_C = 2$ mA	$-V_{CEO}$	max.	45 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5 V
Collector current (d.c.)	$-I_C$	max.	100 mA
Collector current (peak value)	$-I_{CM}$	max.	200 mA
Total power dissipation up to $T_{amb} = 25$ °C	P_{tot}	max.	250 mW
Storage temperature	T_{stg}		-65 to + 150 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to ambient*

$$R_{th\ j-a} = 500\ K/W$$

CHARACTERISTICS

$T_j = 25$ °C unless otherwise specified

$I_E = 0$; $-V_{CB} = 20$ V; $T_j = 25$ °C
 $T_j = 100$ °C

$-I_{CBO}$	<	100 nA
$-I_{CBO}$	<	10 μ A

Base-emitter voltage

$-I_C = 2$ mA; $-V_{CE} = 5$ V; $T_j = 25$ °C

$-V_{BE}$ 600 to 750 mV

Saturation voltages

$-I_C = 10$ mA; $-I_B = 0,5$ mA

$-V_{CEsat}$	typ.	80 mV
$-V_{CEsat}$	<	300 mV

$-I_C = 50$ mA; $-I_B = 2,5$ mA

$-V_{BEsat}$	typ.	720 mV
$-V_{CEsat}$	typ.	150 mV
$-V_{BEsat}$	typ.	810 mV

* Mounted on a ceramic substrate of 8 mm x 10 mm x 0,7 mm.

D.C. current gain

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

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

Collector capacitance at $f = 1 MHz$

$I_E = I_B = 0; -V_{CB} = 10 V$

Transition frequency at $f = 35 MHz$

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

Noise figure at $R_S = 2 k\Omega$

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

$f = 1 kHz; B = 200 Hz$

h_{FE} typ. 150

$h_{FE} > 215$

$h_{FE} < 500$

C_c typ. 4,5 pF

f_T typ. 150 MHz

$F < 4 dB$

typ. 1 dB

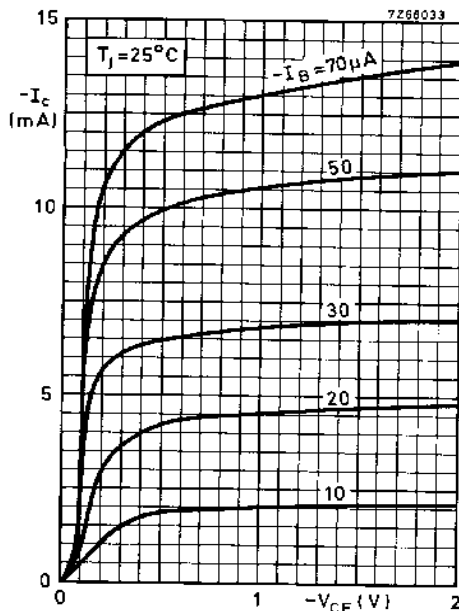


Fig. 2

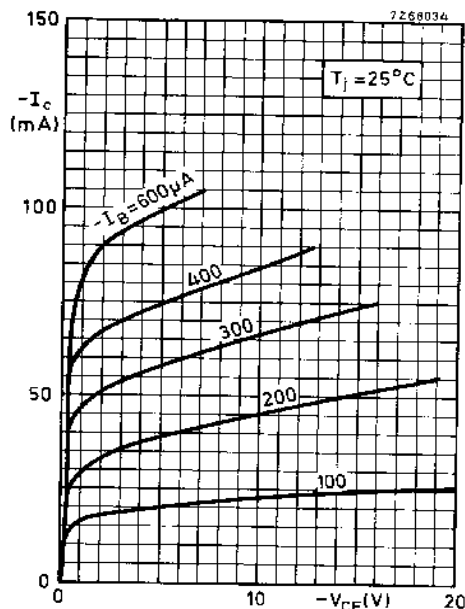


Fig. 3

BCF70

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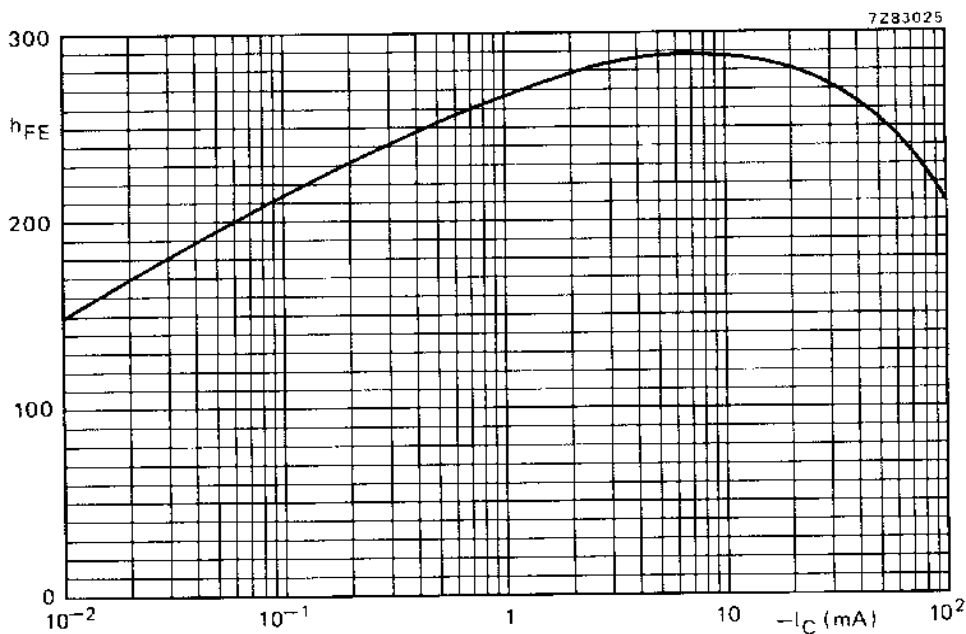


Fig. 4 Typical values of d.c. current gain. $-V_{CE} = 5$ V; $T_j = 25^\circ\text{C}$.

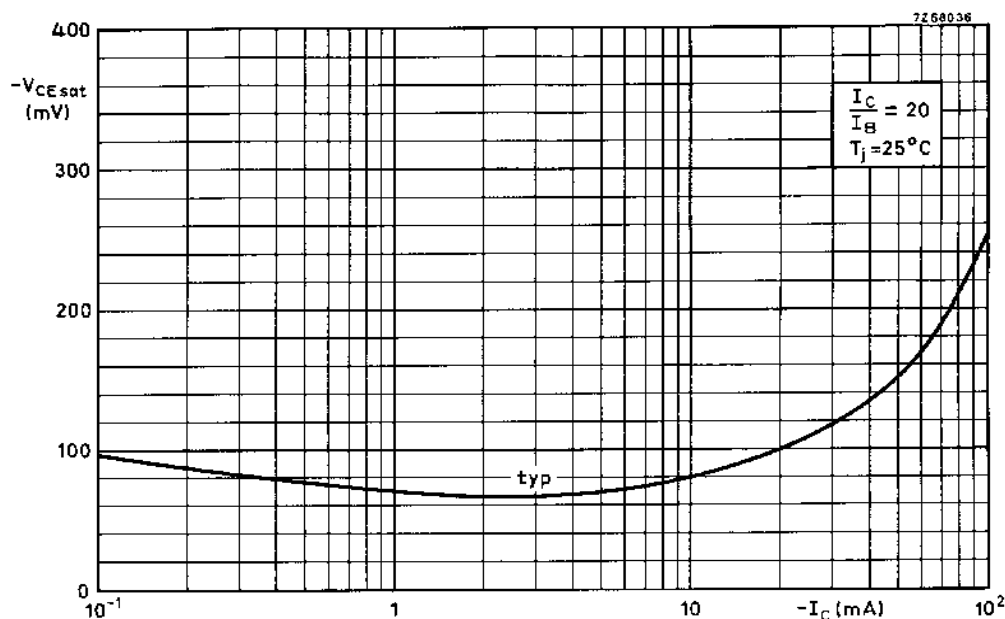


Fig. 5

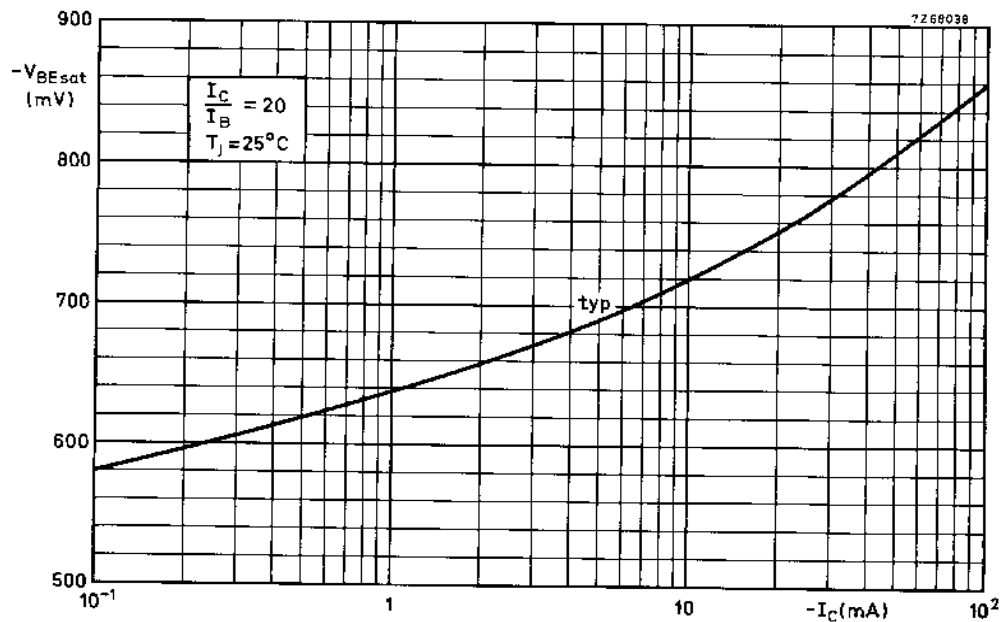


Fig. 6

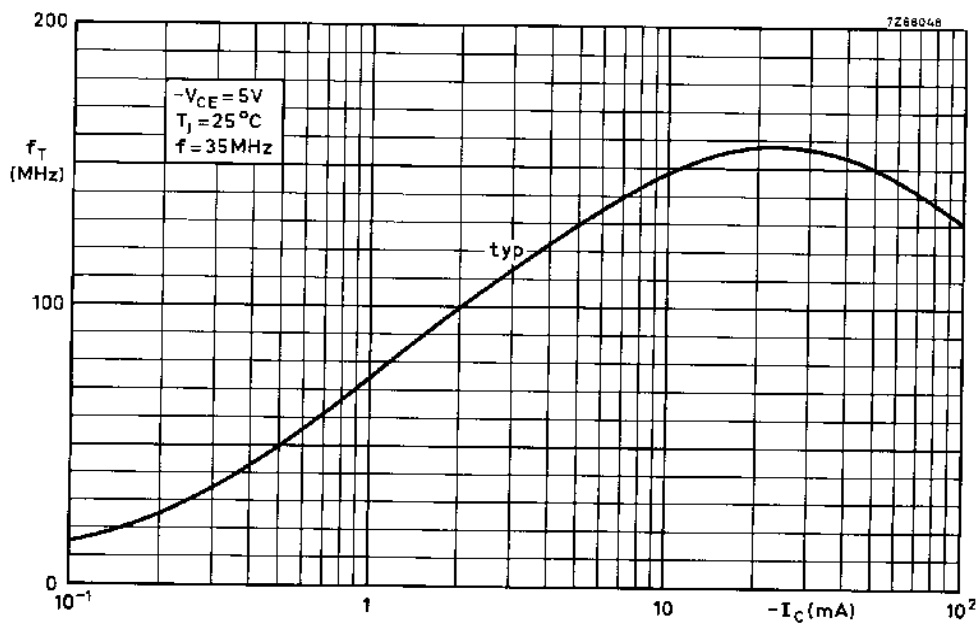


Fig. 7

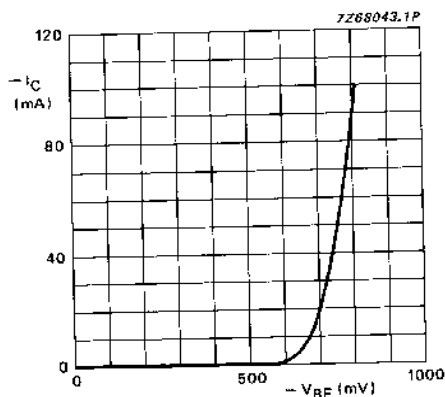


Fig. 8 $-V_{CE} = 5 \text{ V}$; $T_j = 25^\circ\text{C}$; typical values.

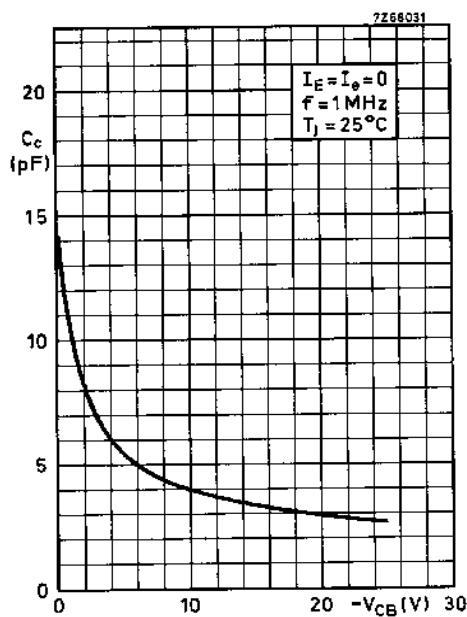


Fig. 9

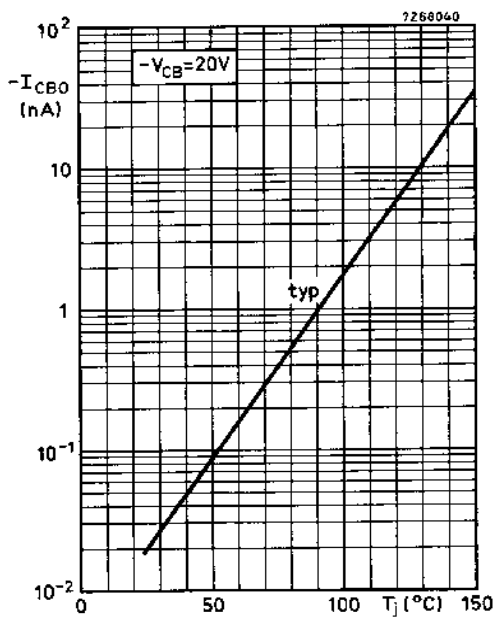


Fig. 10