

SILICON PLANAR EPITAXIAL TRANSISTORS

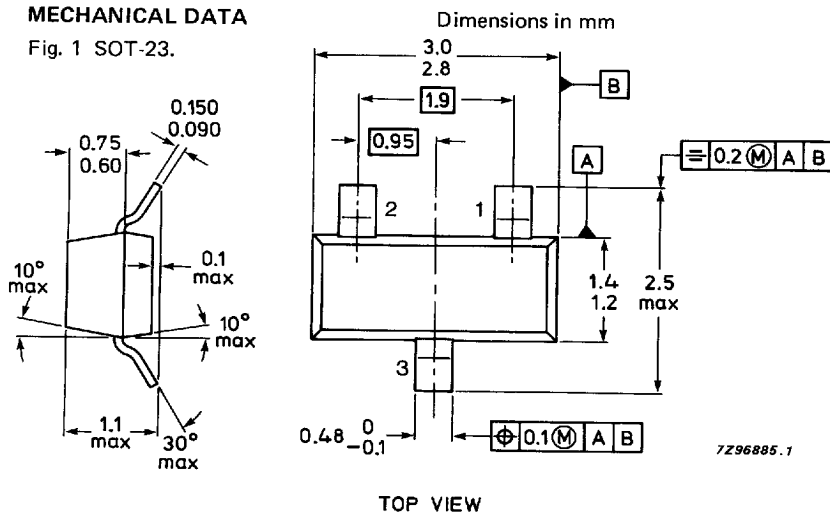
General purpose n-p-n transistors in a plastic SOT-23 package.

QUICK REFERENCE DATA

			BC846	BC847	BC848	
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES}	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.	250	250	250	mW
Junction temperature	T_j	max.	150	150	150	$^\circ\text{C}$
Small-signal current gain	h_{fe}	$>$	125	125	125	
$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; f = 1\text{ kHz}$		$<$	500	900	900	
Transition frequency at $f = 100\text{ MHz}$	f_T	$>$	100	> 100	> 100	MHz
Noise figure at $R_S = 2\text{ k}\Omega$	F	typ.	2	2	2	dB
$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$						
$f = 1\text{ kHz}; B = 200\text{ Hz}$						

MECHANICAL DATA

Fig. 1 SOT-23.

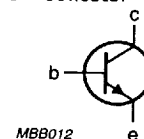


Marking code:

BC846 = 1Dp
BC846A = 1Ap
BC846B = 1Bp
BC847 = 1Hp
BC847A = 1Ep
BC847B = 1Fp
BC847C = 1Gp
BC848 = 1Mp
BC848A = 1Jp
BC848B = 1Kp
BC848C = 1Lp

Pinning:

1 = base
2 = emitter
3 = collector



Reverse pinning types are available on request.
See also *Soldering recommendations*.

RATINGS

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

			BC846	BC847	BC848	
Collector-base voltage (open emitter)	V_{CBO}	max.	80	50	30	V
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES}	max.	80	50	30	V
Collector-emitter voltage (open base)	V_{CEO}	max.	65	45	30	V
Emitter-base voltage (open collector)	V_{EBO}	max.	6	6	5	V
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
Total power dissipation* up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.		250		mW
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*

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

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

CHARACTERISTICS

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

Collector cut-off current

$I_E = 0; V_{CB} = 30\text{ V}$

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

Base-emitter voltage*

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

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

Saturation voltage**

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

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

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

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

Transition frequency at $f = 100\text{ MHz}$

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

$I_{CBO} < 15\text{ nA}$

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

V_{BE} typ. 660 mV
580 to 700 mV

$V_{BE} < 770\text{ mV}$

V_{CEsat} typ. 90 mV
< 250 mV

V_{BEsat} typ. 700 mV

V_{CEsat} typ. 200 mV
< 600 mV

V_{BEsat} typ. 900 mV

C_c typ. 2,5 pF

$f_T > 100\text{ MHz}$

* V_{BE} decreases by about 2 mV/K with increasing temperature.

** V_{BEsat} decreases by about 1,7 mV/K with increasing temperature.

BC846
BC847
BC848

6653931 0024456 158 APX
N AMER PHILIPS/DISCRETE 67E D

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

$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$ h_{fe} 110 – 800

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 typ. 2 dB
< 10 dB

DC current gain

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

h_{FE} typ.
>

	BC847 BC848	BC846A BC847A BC848A	BC846B BC847B BC848B	BC847C BC848C
BC846				
		90	150	270
	110	110	200	420
		180	290	520
	450	800	450	800

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

h_{FE} typ.
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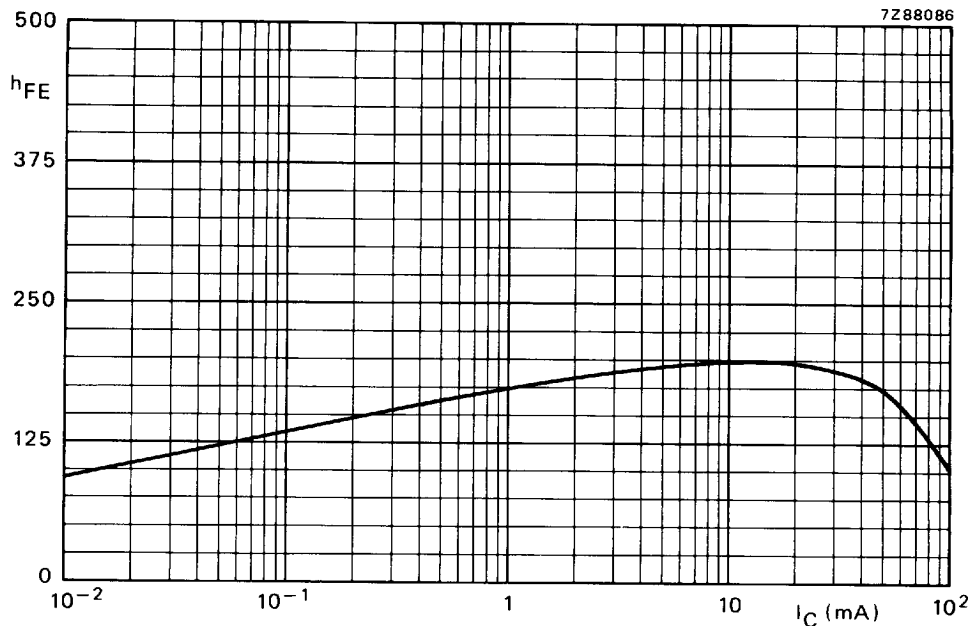


Fig. 2 Typical D.C. current gain for A-selections. $V_{CE} = 5$ V; $T_j = 25$ °C.

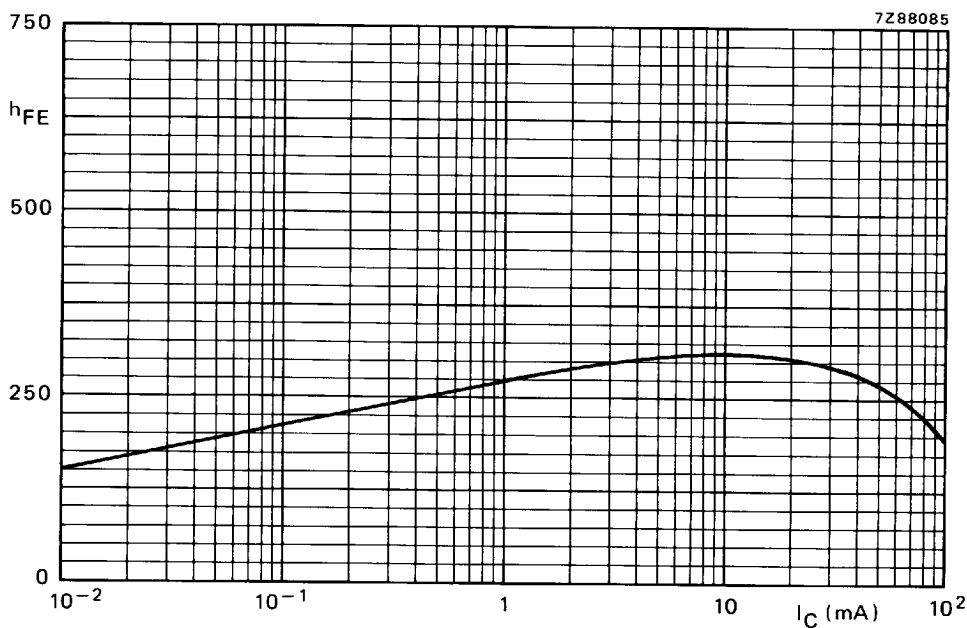


Fig. 3 Typical D.C. current gain for B-selections. $V_{CE} = 5$ V; $T_j = 25$ °C.

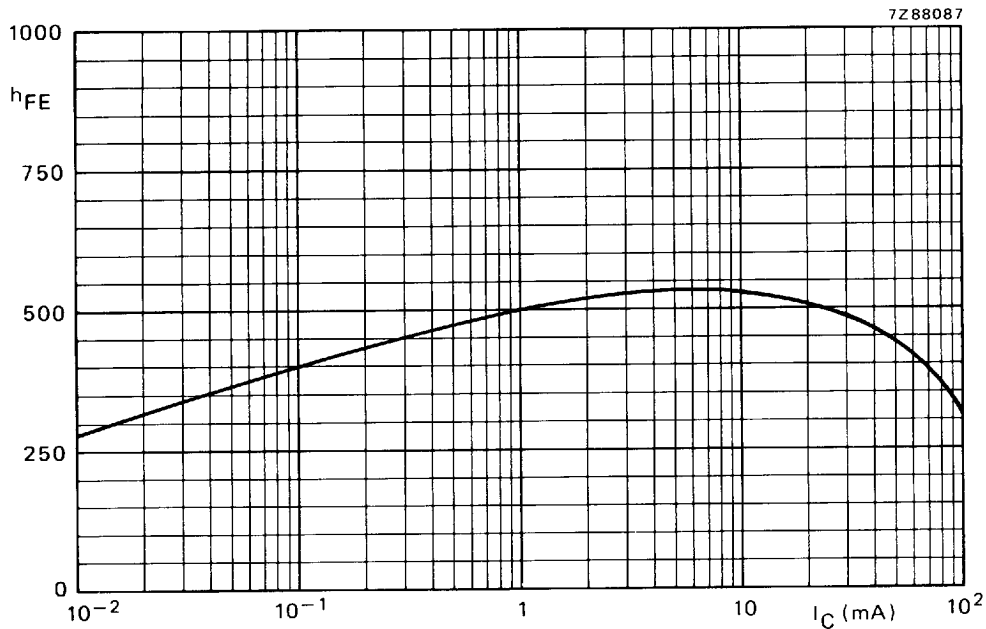


Fig. 4 Typical D.C. current gain for C-selections. $V_{CE} = 5$ V; $T_J = 25$ °C.

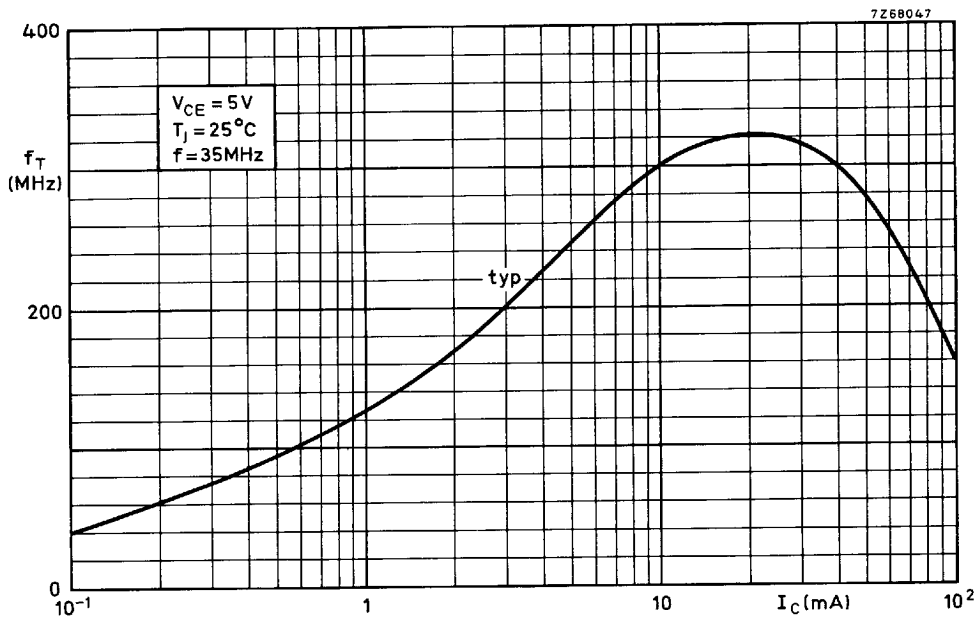


Fig. 5 Typical values transition frequency.