

SILICON PLANAR EPITAXIAL TRANSISTORS

Medium power pnp transistors in a miniature plastic envelope intended for applications in thick and thin-film circuits. They are general purpose transistors, primarily designed for audio amplifier output stages.

NPN complements are BCP54, BCP55 and BCP56 respectively.

QUICK REFERENCE DATA

		BCP51	BCP52	BCP53
Collector-base voltage (open emitter)	$-V_{CBO}$ max.	45	60	100 V
Collector-emitter voltage (open base)	$-V_{CEO}$ max.	45	60	80 V
Collector-emitter voltage ($R_{BE} = 1 \text{ k}\Omega$)	$-V_{CER}$ max.	45	60	100 V
Collector current (peak value)	$-I_{CM}$ max.		1,5	A
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot} max.		1,5	W
Junction temperature	T_j max.		150	$^\circ\text{C}$
DC current gain			40 to 250	
$-I_C = 150 \text{ mA}; -V_{CE} = 2 \text{ V}$	h_{FE}			
Transition frequency at $f = 35 \text{ MHz}$			50	MHz
$-I_C = 10 \text{ mA}; -V_{CE} = 5 \text{ V}$	f_T typ.			

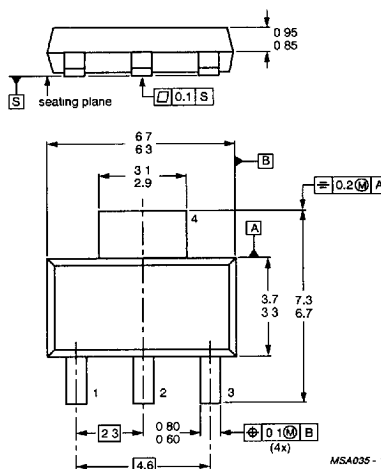
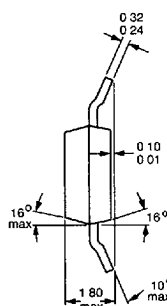
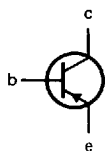
MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-223

Pinning

- 1 = Base
- 2 = Collector
- 3 = Emitter
- 4 = Collector



MSA0035 - 1

RATINGS

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

			BCP51	BCP52	BCP53
Collector-base voltage (open emitter)	$-V_{CBO}$	max.	45	60	100 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	45	60	80 V
Collector-emitter voltage ($R_{BE} = 1 \text{ k}\Omega$)	$-V_{CER}$	max.	45	60	100 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5	5	5 V
Collector current (DC)	$-I_C$	max.		1,0	A
Collector current (peak value)	$-I_{CM}$	max.		1,5	A
Base current (DC)	$-I_B$	max.		0,1	A
Base current (peak value)	$-I_{BM}$	max.		0,2	A
Total power dissipation up to $T_{amb} = 25^\circ\text{C}^*$	P_{tot}	max.		1,5	W
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 collector tab	$R_{th j-tab}$	=	10	K/W
From junction to ambient*	$R_{th j-a}$	=	83,3	K/W

CHARACTERISTICS

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

Collector cut-off current				
$I_E = 0; -V_{CB} = 30 \text{ V}$	$-I_{CBO}$	<	100	nA
$I_E = 0; -V_{CB} = 30 \text{ V}; T_j = 125^\circ\text{C}$	$-I_{CBO}$	<	10	μA
Emitter cut-off current				
$I_C = 0; -V_{EB} = 5 \text{ V}$	$-I_{EBO}$	<	10	μA
Base-emitter voltage				
$-I_C = 500 \text{ mA}; -V_{CE} = 2 \text{ V}$	$-V_{BE}$	<	1	V
Saturation voltage				
$-I_C = 500 \text{ mA}; -I_B = 50 \text{ mA}$	$-V_{CEsat}$	<	0,5	V
DC current gain				
$-I_C = 5 \text{ mA}; -V_{CE} = 2 \text{ V}$	h_{FE}	>	25	
$-I_C = 150 \text{ mA}; -V_{CE} = 2 \text{ V}$	h_{FE}		40 to 250	
$-I_C = 500 \text{ mA}; -V_{CE} = 2 \text{ V}$	h_{FE}	>	25	
Transition frequency at $f = 35 \text{ MHz}$				
$-I_C = 10 \text{ mA}; -V_{CE} = 5 \text{ V}$	f_T	typ.	50	MHz

* Device mounted on an epoxy printed circuit board 40 mm x 40 mm x 1,5 mm;
 mounting pad for the collector lead min. 6 cm².

CHARACTERISTICS (continued)

DC current gain

$I_C = 150 \text{ mA}; -V_{CE} = 2 \text{ V}$

$h_{FE} >$

$h_{FE} <$

BCP51-10	BCP51-16
52-10	52-16
53-10	53-16
63	100
160	250

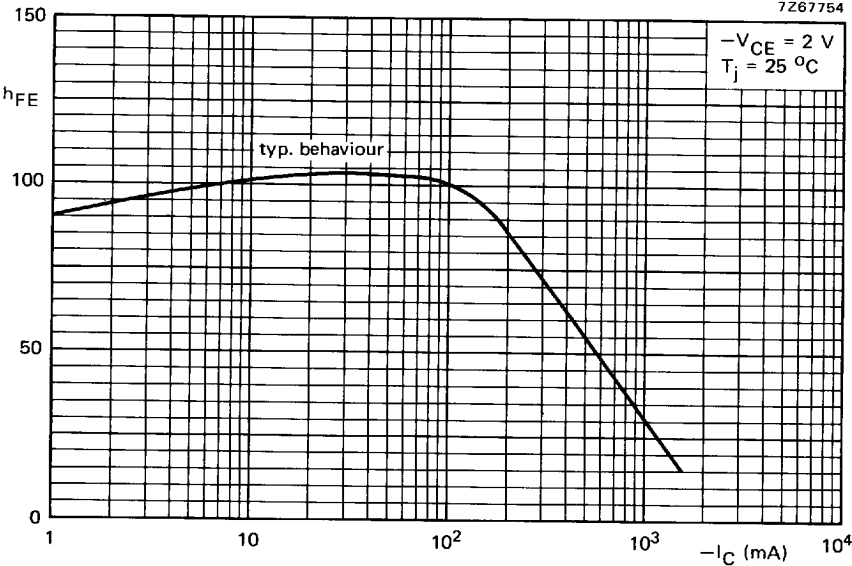


Fig. 2.

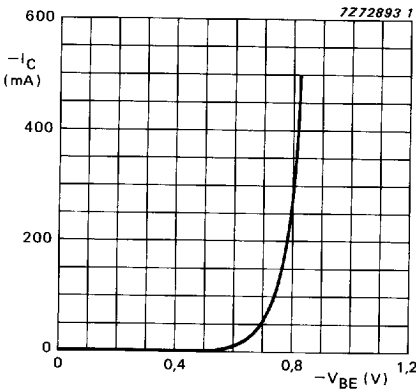


Fig. 3 $-V_{CE} = 2 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$; typical values.

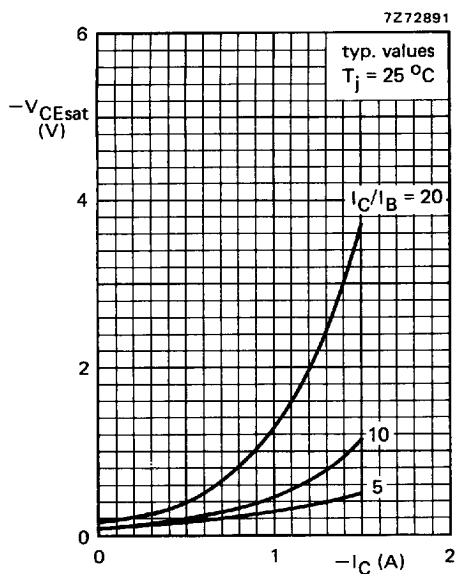


Fig. 4.

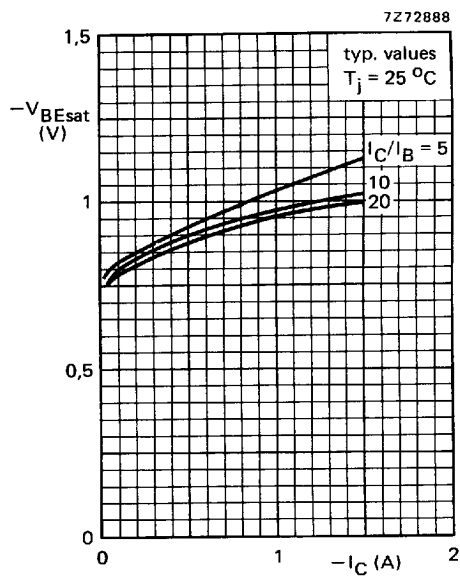


Fig. 5.

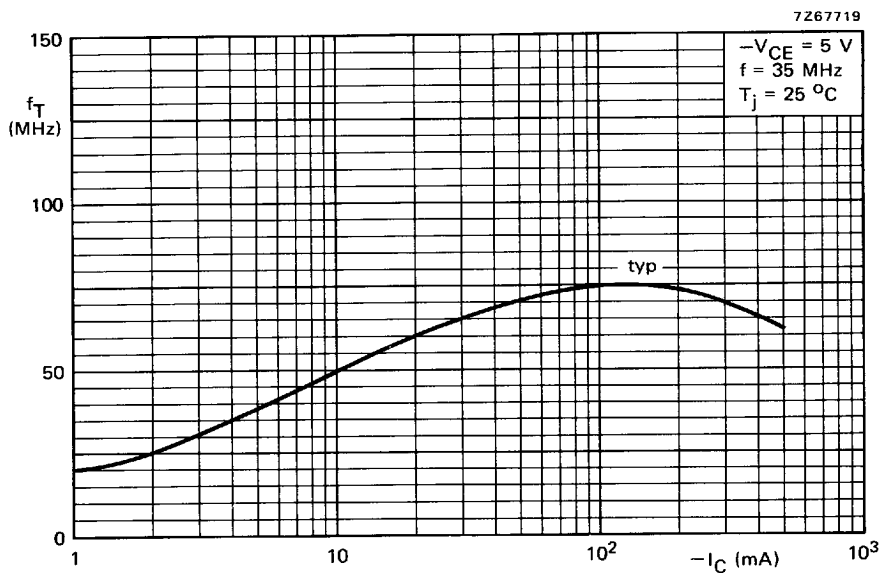


Fig. 6.