PNP medium power transistors BCP51; BCP52; BCP53

FEATURES

- High current (max. 1 A)
- Low voltage (max. 80 V)
- Medium power (max. 1.3 W).

APPLICATIONS

- Audio, telephony and automotive applications
- Thick and thin-film circuits.

DESCRIPTION

PNP medium power transistor in a SOT223 plastic package. NPN complements: BCP54, BCP55 and BCP56.

PINNING

PIN	DESCRIPTION
1	base
2, 4	collector
3	emitter

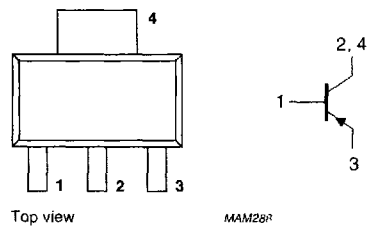

Fig.1 Simplified outline (SOT223) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	BCP51		–	–	−45	V
	BCP52		–	–	−60	V
	BCP53		–	–	−100	V
V_{CEO}	collector-emitter voltage	open base				
	BCP51		–	–	−45	V
	BCP52		–	–	−60	V
	BCP53		–	–	−80	V
I_{CM}	peak collector current		–	–	−1.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	–	1.3	W
h_{FE}	DC current gain	$I_C = -150$ mA; $V_{CE} = -2$ V	40	–	250	
f_T	transition frequency	$I_C = -10$ mA; $V_{CE} = -5$ V; f = 100 MHz	–	115	–	MHz

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BCP51		–	–45	V
	BCP52		–	–60	V
	BCP53		–	–100	V
V_{CEO}	collector-emitter voltage	open base			
	BCP51		–	–45	V
	BCP52		–	–60	V
	BCP53		–	–80	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–1	A
I_{CM}	peak collector current		–	–1.5	A
I_{BM}	peak base current		–	–0.2	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	1.3	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2. For other mounting conditions, see *"Thermal considerations for SOT223 in the General part of handbook SC04"*.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	95	K/W
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point		14	K/W

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2. For other mounting conditions, see *"Thermal considerations for SOT223 in the General part of handbook SC04"*.

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBC}	collector cut-off current	I_E = 0; V_{CB} = −30 V	–	–	−100	nA
		I_E = 0; V_{CB} = −30 V; T_j = 125 °C	–	–	−10	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = −5 V	–	–	−100	nA
h_{FE}	DC current gain	V_{CE} = −2 V; see Fig.2				
		I_C = −5 mA	40	–	–	
		I_C = −150 mA	40	–	250	
		I_C = −500 mA	25	–	–	
h_{FE}	DC current gain	I_C = 150 mA; V_{CE} = −2 V; see Fig.2				
	BCP51-10; BCP52-10; BCP53-10		63	–	160	
	BCP51-16; BCP52-16; BCP53-16		100	–	250	
V_{CEsat}	collector-emitter saturation voltage	I_C = −500 mA; I_B = −50 mA	–	–	−0.5	V
V_{BE}	base-emitter voltage	I_C = −500 mA; V_{CE} = −2 V	–	–	−1	V
f_T	transition frequency	I_C = −10 mA; V_{CE} = −5 V; f = 100 MHz	–	115	–	MHz

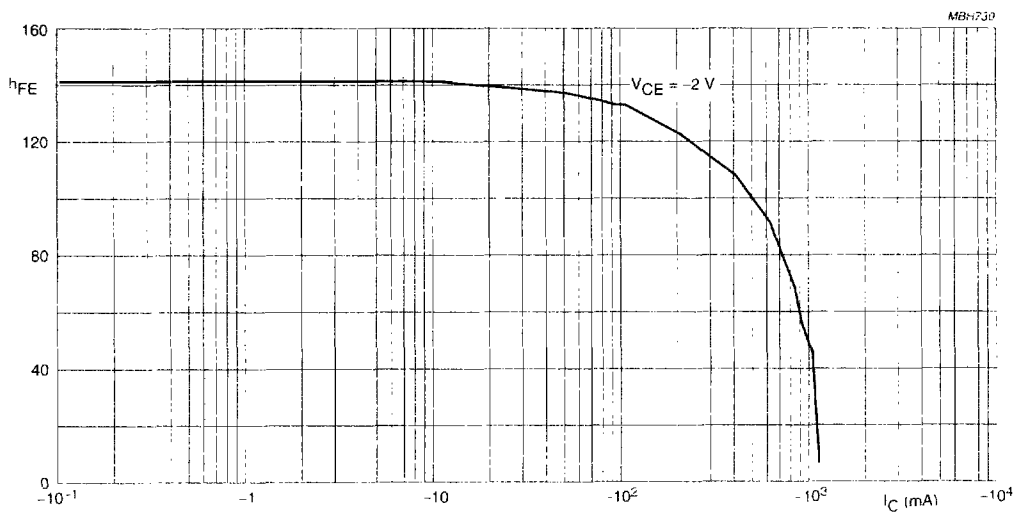

Fig.2 DC current gain; typical values.