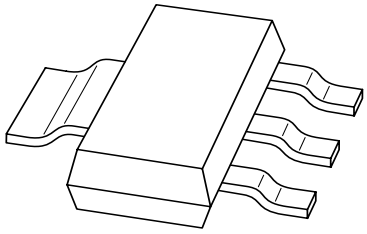
DATA SHEET



BCP54; BCP55; BCP56
NPN medium power transistors

Product specification
Supersedes data of 2001 Oct 10

2003 Feb 06

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NPN medium power transistors BCP54; BCP55; BCP56

FEATURES

- High collector current
- 1.3 W power dissipation.

APPLICATIONS

- General purpose medium power DC applications
- Low and medium frequency AC applications
- Peripheral drivers
- Linear voltage regulators and battery chargers.

DESCRIPTION

NPN medium power transistor in a SOT223 plastic package. PNP complements: BCP51, BCP52 and BCP53.

PINNING

PIN	DESCRIPTION
1	base
2, 4	collector
3	emitter

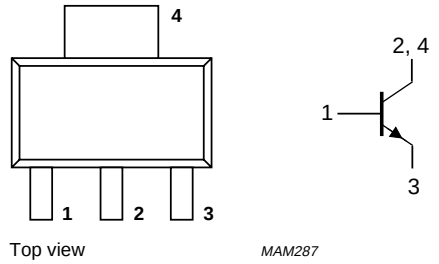


Fig.1 Simplified outline (SOT223) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	80	V
I_C	collector current (DC)	1	A
I_{CM}	peak collector current	1.5	A

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BCP54		–	45	V
	BCP55		–	60	V
	BCP56		–	100	V
V_{CEO}	collector-emitter voltage	open base			
	BCP54		–	45	V
	BCP55		–	60	V
	BCP56		–	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	–	1.33	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 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 associated Handbook”.*

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	94	K/W
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point		13	K/W

Note

1. Device mounted on 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 associated Handbook”.*

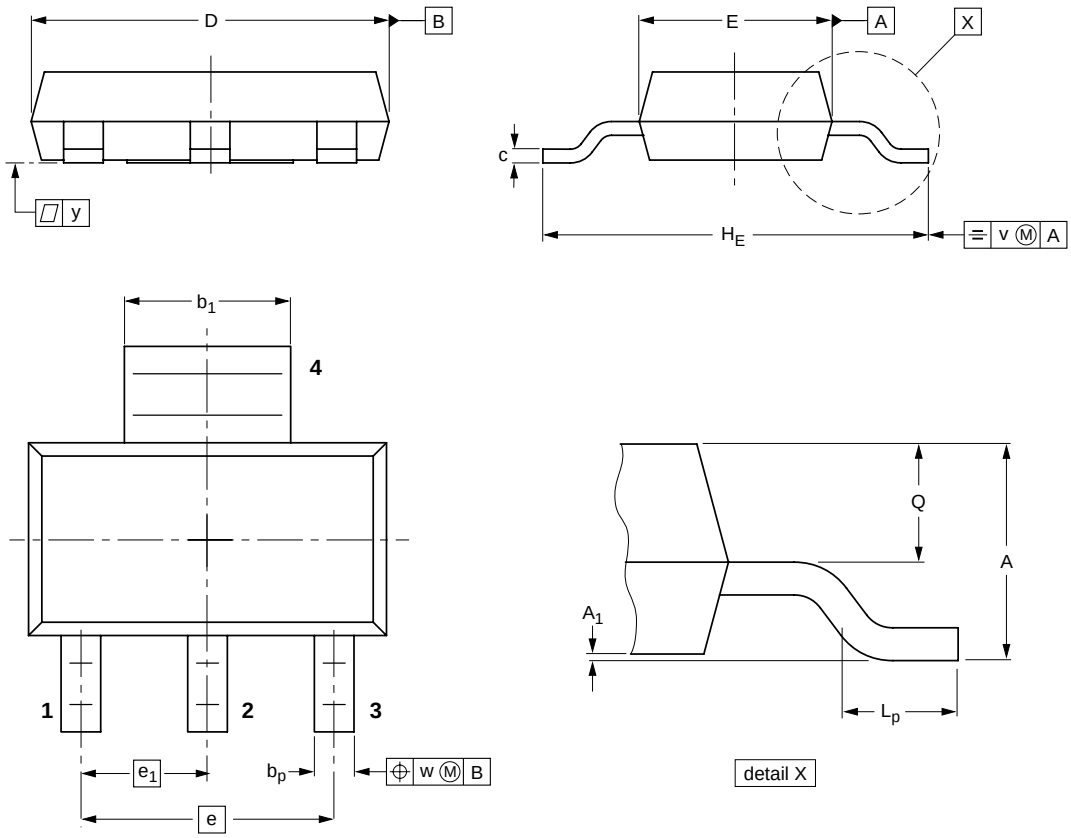
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	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	I_C = 5 mA; V_{CE} = 2 V	63	–	–	
		I_C = 150 mA; V_{CE} = 2 V	63	–	250	
		I_C = 500 mA; V_{CE} = 2 V	40	–	–	
h_{FE}	DC current gain	I_C = 150 mA; V_{CE} = 2 V		–		
	BCP54-10; BCP55-10; BCP56-10		63	–	160	
	BCP54-16; BCP55-16; BCP56-16		100	–	250	
V_{CEsat}	collector-emitter saturation voltage	I_C = 0.5 A; I_B = 50 mA	–	–	500	mV
V_{BE}	base-emitter voltage	I_C = 0.5 A; V_{CE} = 2 V	–	–	1	V
f_T	transition frequency	I_C = 10 mA; V_{CE} = 5 V; f = 100 MHz	–	130	–	MHz
$\frac{h_{FE1}}{h_{FE2}}$	DC current gain ratio of the complementary pairs	$\lvert I_C \rvert$ = 150 mA; $\lvert V_{CE} \rvert$ = 2 V	–	–	1.6	

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads **SOT223**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223			SC-73			~~97-02-28~~ 99-09-13

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Contact information

For additional information please visit **http://www.semiconductors.philips.com**. Fax: **+31 40 27 24825**
For sales offices addresses send e-mail to: **sales.addresses@www.semiconductors.philips.com**.

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