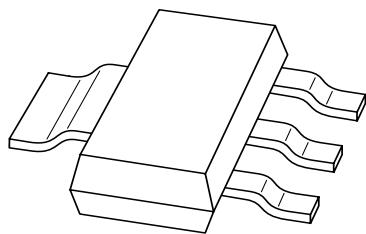


# DATA SHEET



## BCP54; BCP55; BCP56 NPN medium power transistors

Product specification  
Supersedes data of 2001 Oct 10

2003 Feb 06

**NPN medium power transistors****BCP54; BCP55; BCP56****FEATURES**

- High collector current
- 1.3 W power dissipation.

**APPLICATIONS**

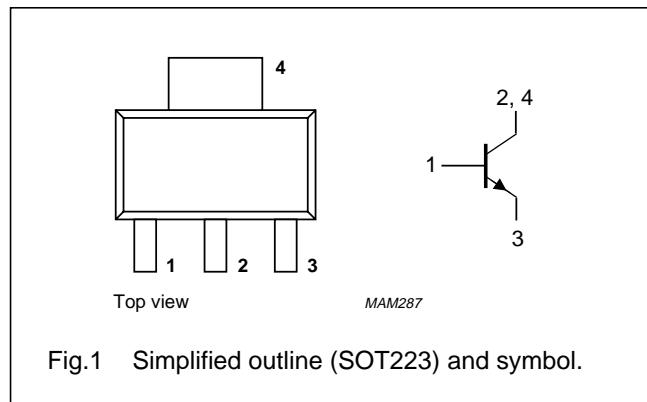
- General purpose medium power DC applications
- Low and medium frequency AC applications
- Peripheral drivers
- Linear voltage regulators and battery chargers.

**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

**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

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage BCP54 BCP55 BCP56	open emitter	— — —	45 60 100	V
$V_{CEO}$	collector-emitter voltage BCP54 BCP55 BCP56	open base	— — —	45 60 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	$T_{amb} \leq 25^\circ\text{C}$ ; note 1	—	1.33	W
$T_{stg}$	storage temperature		—65	+150	$^\circ\text{C}$
$T_j$	junction temperature		—	150	$^\circ\text{C}$
$T_{amb}$	operating ambient temperature		—65	+150	$^\circ\text{C}$

**Note**

1. Device mounted on printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>.  
For other mounting conditions, see "Thermal considerations for SOT223 in the General Part of associated Handbook".

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	94	K/W
$R_{th\ j-s}$	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<sup>2</sup>.  
For other mounting conditions, see "Thermal considerations for SOT223 in the General Part of associated Handbook".

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 30\text{ V}$	—	—	100	nA
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 125^\circ\text{C}$	—	—	10	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	—	—	100	nA
$h_{FE}$	DC current gain	$I_C = 5\text{ mA}; V_{CE} = 2\text{ V}$	63	—	—	
		$I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$	63	—	250	
		$I_C = 500\text{ mA}; V_{CE} = 2\text{ V}$	40	—	—	
$h_{FE}$	DC current gain BCP54-10; BCP55-10; BCP56-10 BCP54-16; BCP55-16; BCP56-16	$I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$		—		
			63	—	160	
			100	—	250	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 0.5\text{ A}; I_B = 50\text{ mA}$	—	—	500	mV
$V_{BE}$	base-emitter voltage	$I_C = 0.5\text{ A}; V_{CE} = 2\text{ V}$	—	—	1	V
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	—	130	—	MHz
$\frac{h_{FE1}}{h_{FE2}}$	DC current gain ratio of the complementary pairs	$ I_C  = 150\text{ mA};  V_{CE}  = 2\text{ V}$	—	—	1.6	

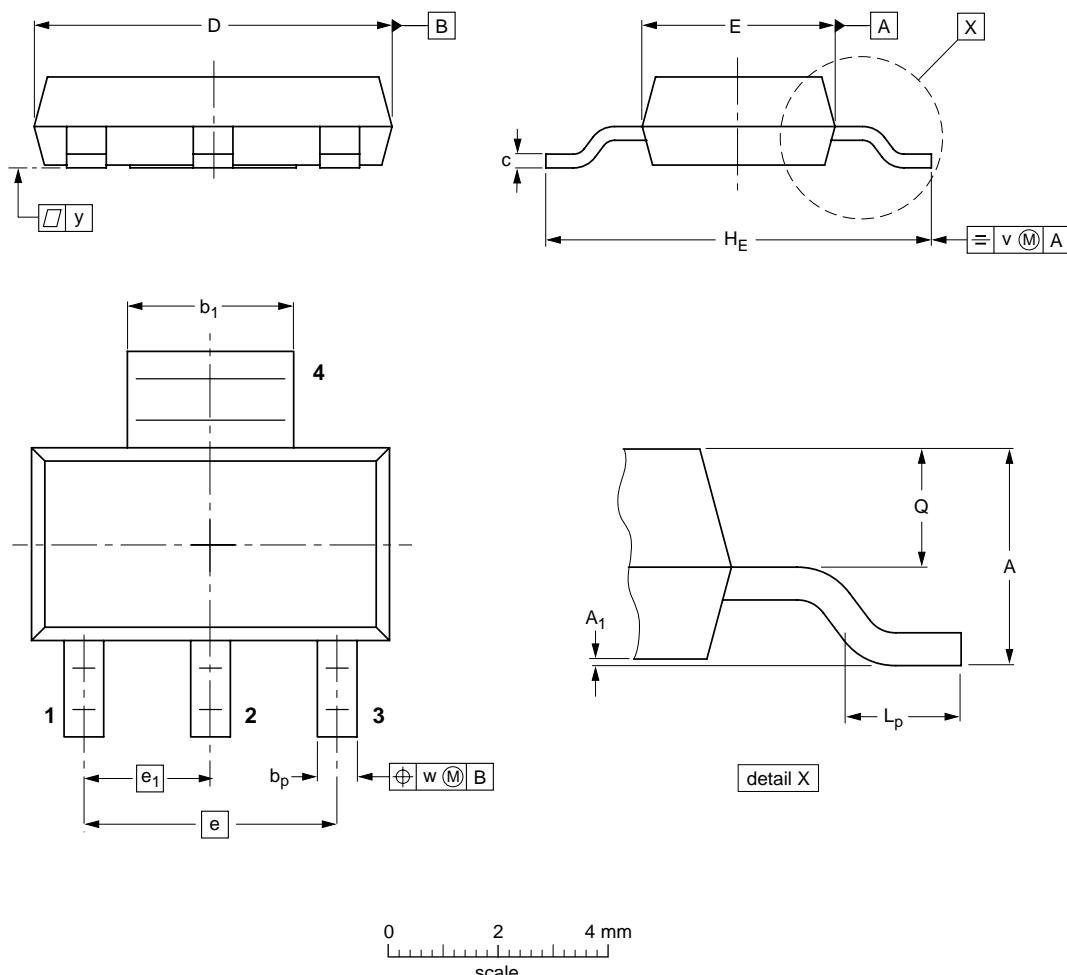
## NPN medium power transistors

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## PACKAGE OUTLINE

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

SOT223



## DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub>	b <sub>p</sub>	b <sub>1</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	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	SC-73			
SOT223							-97-02-28 99-09-13

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## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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NPN medium power transistors

BCP54; BCP55; BCP56

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**NOTES**

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