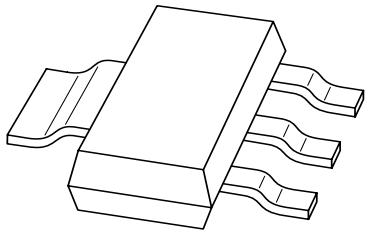


# DATA SHEET



## **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**

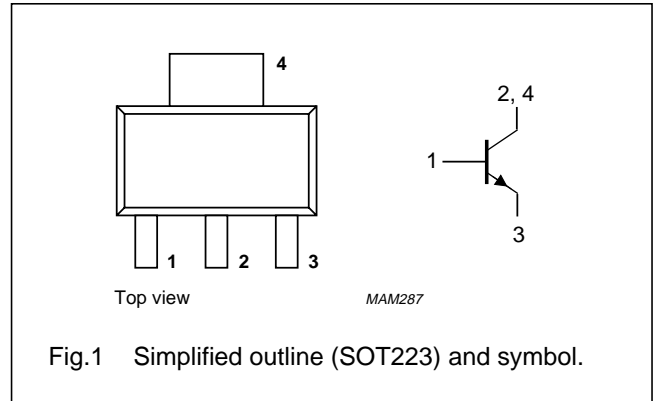
- General purpose medium power DC applications
- Low and medium frequency AC applications
- Peripheral drivers
- Linear voltage regulators and battery chargers.

**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 <sub>CBO</sub>	collector-base voltage	open emitter			
	BCP54		–	45	V
	BCP55		–	60	V
	BCP56		–	100	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BCP54		–	45	V
	BCP55		–	60	V
	BCP56		–	80	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	5	V
I <sub>C</sub>	collector current (DC)		–	1	A
I <sub>CM</sub>	peak collector current		–	1.5	A
I <sub>BM</sub>	peak base current		–	0.2	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	1.33	W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

**Note**

- Device mounted on printed-circuit board, single sided copper, tinned, 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 <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	94	K/W
R <sub>th j-s</sub>	thermal resistance from junction to soldering point		13	K/W

**Note**

- Device mounted on printed-circuit board, single sided copper, tinned, 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**

$T_{amb} = 25\text{ °C}$  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
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 125\text{ °C}$	–	–	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	

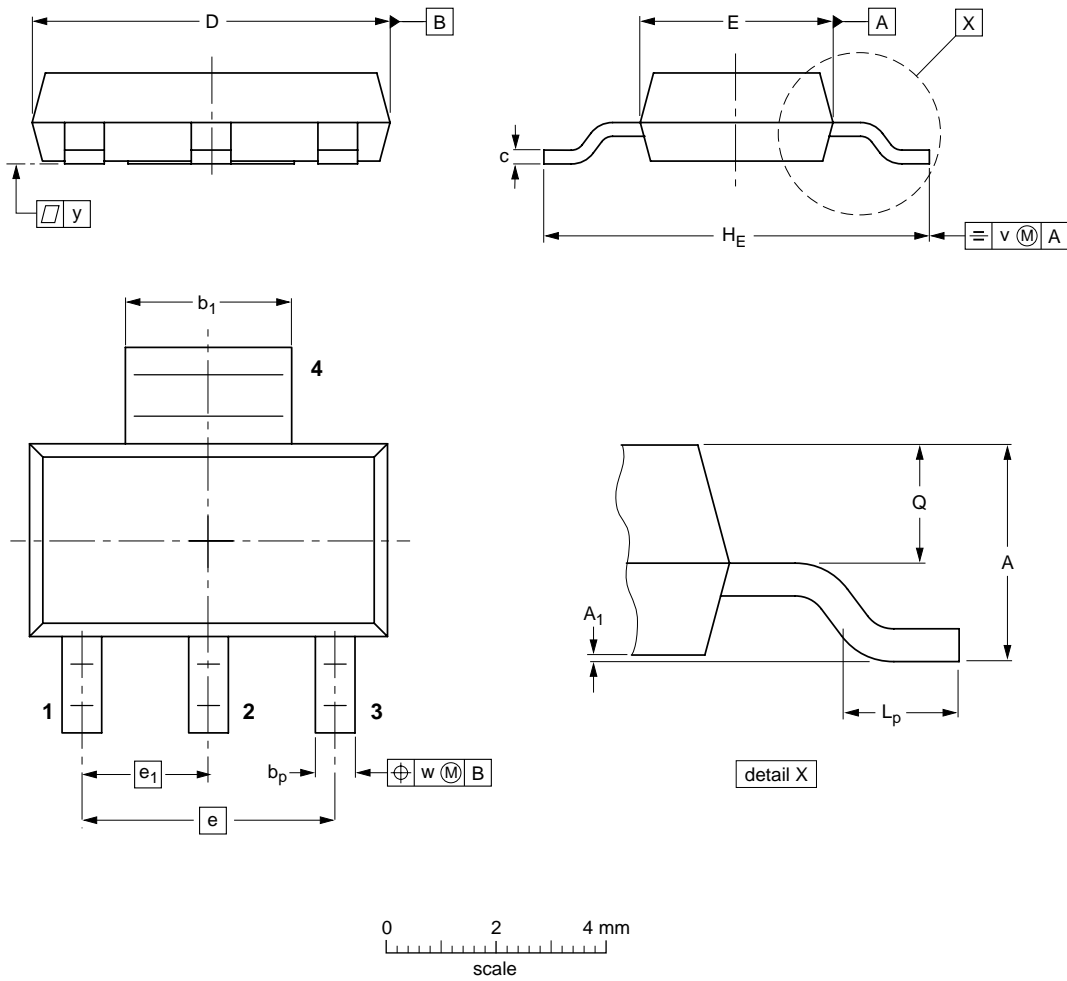
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PACKAGE OUTLINE

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	0.10	0.80	3.1	0.32	6.7	3.7	4.6	2.3	7.3	1.1	0.95	0.2	0.1	0.1
	1.5	0.01	0.60	2.9	0.22	6.3	3.3			6.7	0.7	0.85			

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223			SC-73			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
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**NOTES**

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