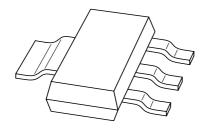
## **DISCRETE SEMICONDUCTORS**

# DATA SHEET



## BCP54; BCP55; BCP56 NPN medium power transistors

Product specification Supersedes data of 1997 Apr 08 1999 Apr 08





## NPN medium power transistors

## **BCP54**; **BCP55**; **BCP56**

#### **FEATURES**

- High current (max. 1 A)
- Low voltage (max. 80 V).

#### **APPLICATIONS**

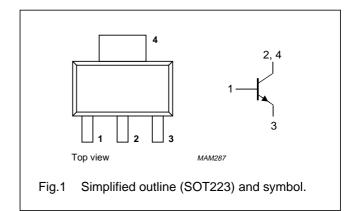
• Switching.

#### **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



#### **LIMITING VALUES**

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

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	Α
I <sub>CM</sub>	peak collector current		_	1.5	А
I <sub>BM</sub>	peak base current		_	0.2	А
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
Tj	junction temperature		_	150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+150	°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".

## NPN medium power transistors

BCP54; BCP55; BCP56

#### 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

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".

#### **CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I <sub>CBO</sub>	collector cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V	_	_	100	nA
		I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V; T <sub>j</sub> = 125 °C	_	_	10	μΑ
I <sub>EBO</sub>	emitter cut-off current	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V	_	_	100	nA
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 5 mA; V <sub>CE</sub> = 2 V	25	_	_	
		I <sub>C</sub> = 150 mA; V <sub>CE</sub> = 2 V	63	_	250	
		I <sub>C</sub> = 500 mA; V <sub>CE</sub> = 2 V	25	_	_	
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 150 mA; V <sub>CE</sub> = 2 V		_		
	BCP55-10; 56-10		63	-	160	
	BCP54-16; 55-16; 56-16		100	-	250	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 0.5 A; I <sub>B</sub> = 50 mA	_	_	500	mV
V <sub>BE</sub>	base-emitter voltage	I <sub>C</sub> = 0.5 A; V <sub>CE</sub> = 2 V	_	_	1	V
f <sub>T</sub>	transition frequency	$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}; f = 100 \text{ MHz}$	_	130	_	MHz
h <sub>FE1</sub> h <sub>FE2</sub>	DC current gain ratio of the complementary pairs	$ I_C  = 150 \text{ mA};  V_{CE}  = 2 \text{ V}$	_	_	1.6	

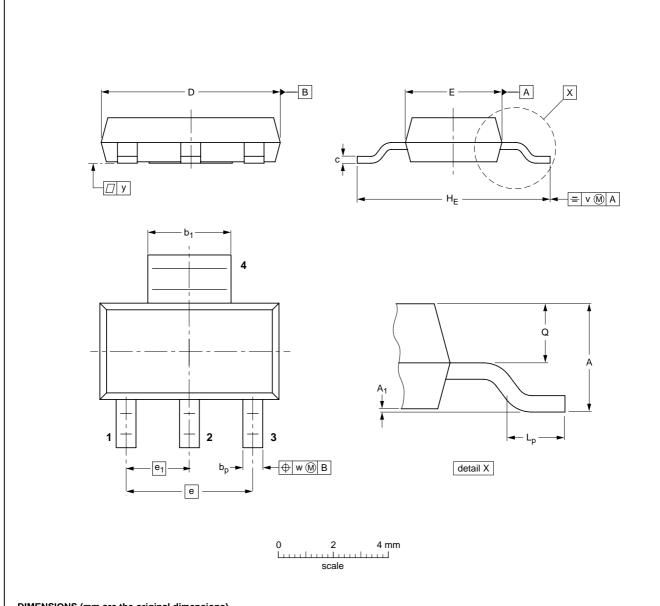
## NPN medium power transistors

BCP54; BCP55; BCP56

#### **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>	bp	b <sub>1</sub>	С	D	E	е	e <sub>1</sub>	HE	Lp	Q	v	w	у	
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		REFER	ENCES	EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	EIAJ	PROJECTION		
SOT223					<del>96-11-11</del> 97-02-28	

### NPN medium power transistors

BCP54; BCP55; BCP56

#### **DEFINITIONS**

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	

#### **Limiting values**

Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

#### **Application information**

Where application information is given, it is advisory and does not form part of the specification.

#### LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

## NPN medium power transistors

BCP54; BCP55; BCP56

**NOTES** 

## NPN medium power transistors

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**NOTES** 

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Printed in The Netherlands

115002/00/03/pp8

Date of release: 1999 Apr 08

Document order number: 9397 750 05534

SCA63

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