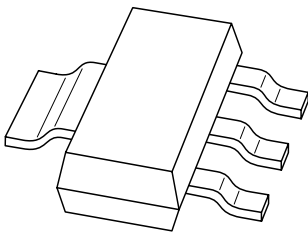


# DATA SHEET



## **PBSS5540Z** PNP medium power transistor

Preliminary specification

1999 Aug 04

# PNP medium power transistor

# PBSS5540Z

### FEATURES

- High current (max. 10 A)
- Low voltage (max. 40 V)
- Low  $V_{CEsat}$ .

### APPLICATIONS

- Heavy duty battery powered equipment (Automotive, Telecom and Audio/Video) such as motor and lamp drivers
- $V_{CEsat}$  critical applications such as the latest low supply voltage IC applications
- All battery driven equipment to save battery power.

### DESCRIPTION

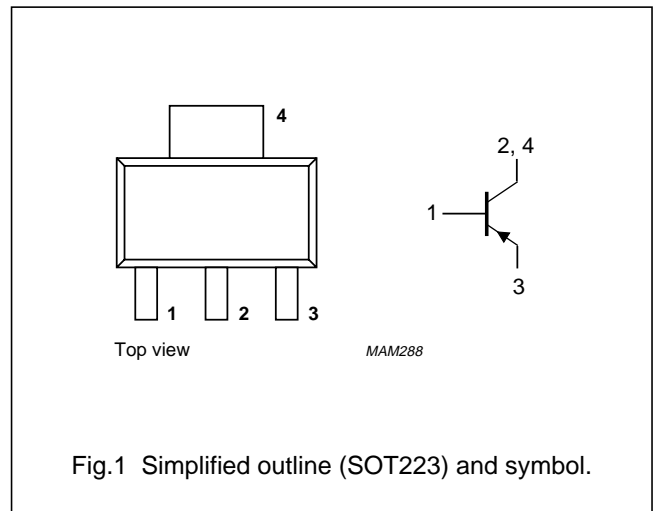
PNP low  $V_{CEsat}$  transistor in a SOT223 plastic package.  
NPN complement: PBSS4540Z.

### MARKING CODE

TYPE NUMBER	MARKING CODE
PBSS5540Z	PB5540

### PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter
4	collector



### 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	–	–40	V
$V_{CEO}$	collector-emitter voltage	open base	–	–40	V
$V_{EBO}$	emitter-base voltage	open collector	–	–6	V
$I_C$	collector current (DC)		–	–5	A
$I_{CM}$	peak collector current		–	–10	A
$I_{BM}$	peak base current		–	–2	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	1.35	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 a 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”.

## PNP medium power transistor

PBSS5540Z

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	92	K/W

## Note

1. Device mounted on a 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

$T_j = 25\text{ °C}$  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
		$I_E = 0; V_{CB} = -30\text{ V}; T_j = 150\text{ °C}$	–	–	–50	μA
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–	–100	nA
$h_{FE}$	DC current gain	$V_{CE} = -2\text{ V};$ $I_C = -500\text{ mA}$	250	350	–	
		$I_C = -1\text{ A};$ note 1	200	300	–	
		$I_C = -2\text{ A};$ note 1	–	225	–	
		$I_C = -5\text{ A};$ note 1	50	100	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -5\text{ mA}$	–	–85	–130	mV
		$I_C = -1\text{ A}; I_B = -10\text{ mA}$	–	–130	–180	mV
		$I_C = -2\text{ A}; I_B = -200\text{ mA}$	–	–150	–210	mV
		$I_C = -5\text{ A}; I_B = -500\text{ mA}$	–	340	460	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -5\text{ A}; I_B = -500\text{ mA}$	–	–	–1.3	V
$V_{BEon}$	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -2\text{ A}$	–1.25	–0.81	–	V
$C_c$	collector capacitance	$I_E = I_E = 0; V_{CB} = -10\text{ V};$ $f = 1\text{ MHz}$	–	92	105	pF
$f_T$	transition frequency	$I_C = -500\text{ mA}; V_{CE} = -5\text{ V};$ $f = 100\text{ MHz}$	50	100	–	MHz

## Note

1. Pulse test:  $t_p \leq 300\text{ μs}; \delta \leq 0.02$ .

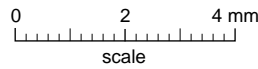
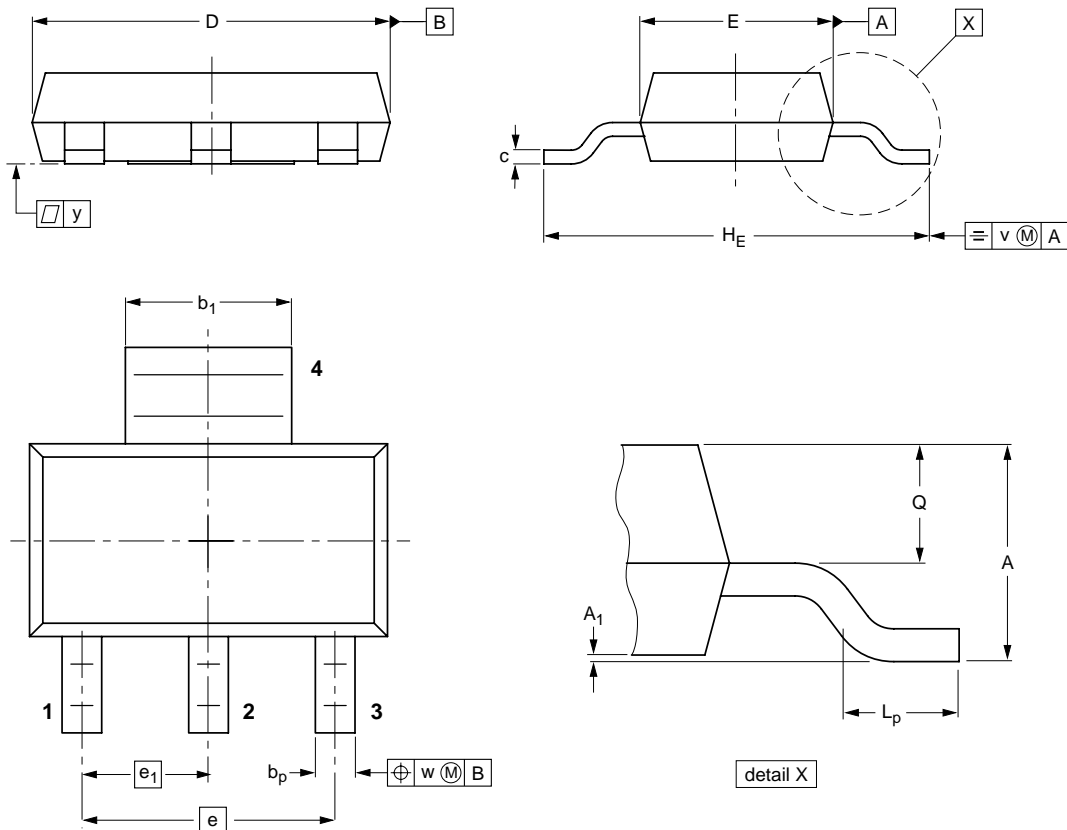
PNP medium power transistor

PBSS5540Z

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			
SOT223						96-11-11 97-02-28

## PNP medium power transistor

PBSS5540Z

**DEFINITIONS**

<b>Data sheet status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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**NOTES**

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**NOTES**

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