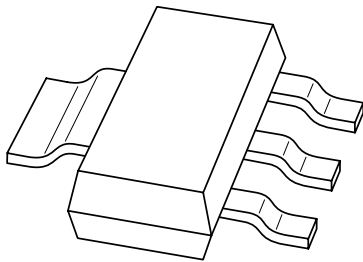


# DATA SHEET



**PBSS4350Z**

50 V low  $V_{CEsat}$  NPN transistor

Product data sheet  
Supersedes data of 2003 Jan 20

2003 May 13

# 50 V low $V_{CEsat}$ NPN transistor

# PBSS4350Z

### FEATURES

- Low collector-emitter saturation voltage
- High collector current capability:  $I_C$  and  $I_{CM}$
- High collector current gain ( $h_{FE}$ ) at high  $I_C$
- Higher efficiency leading to less heat generation
- Reduced PCB area requirements compared to DPAK.

### APPLICATIONS

- Power management
  - DC/DC converters
  - Supply line switching
  - Battery charger
  - Linear voltage regulation (LDO).
- Peripheral drivers
  - Driver in low supply voltage applications, e.g. lamps, LEDs
  - Inductive load driver, e.g. relays, buzzers, motors.

### DESCRIPTION

NPN low  $V_{CEsat}$  transistor in a SOT223 plastic package.  
PNP complement: PBSS5350Z.

### MARKING

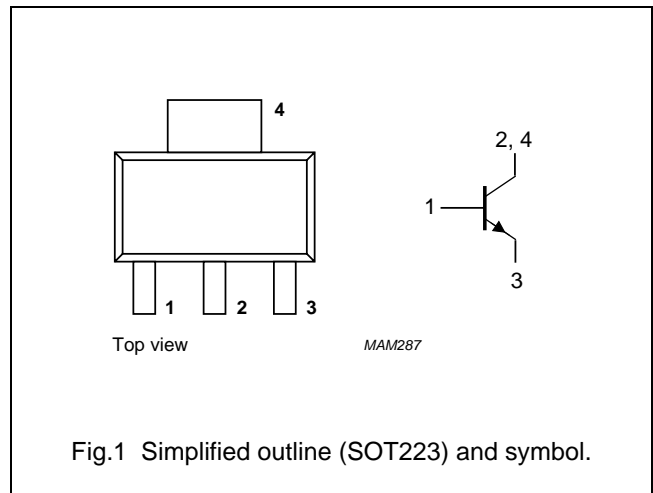
TYPE NUMBER	MARKING CODE
PBSS4350Z	PB4350

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
$V_{CEO}$	collector-emitter voltage	50	V
$I_{CM}$	peak collector current	5	A
$R_{CEsat}$	equivalent on-resistance	<145	$m\Omega$

### PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter
4	collector



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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	open emitter	–	60	V
$V_{CEO}$	collector-emitter voltage	open base	–	50	V
$V_{EBO}$	emitter-base voltage	open collector	–	6	V
$I_C$	collector current (DC)		–	3	A
$I_{CM}$	peak collector current		–	5	A
$I_{BM}$	peak base current		–	1	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; notes 1 and 3	–	1.35	W
		$T_{amb} \leq 25\text{ °C}$ ; notes 2 and 3	–	2	W
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Notes**

1. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm<sup>2</sup>.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm<sup>2</sup>.
3. 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	in free air; notes 1 and 3	92	K/W
		in free air; notes 2 and 3	62.5	K/W

**Notes**

1. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm<sup>2</sup>.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm<sup>2</sup>.
3. 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.

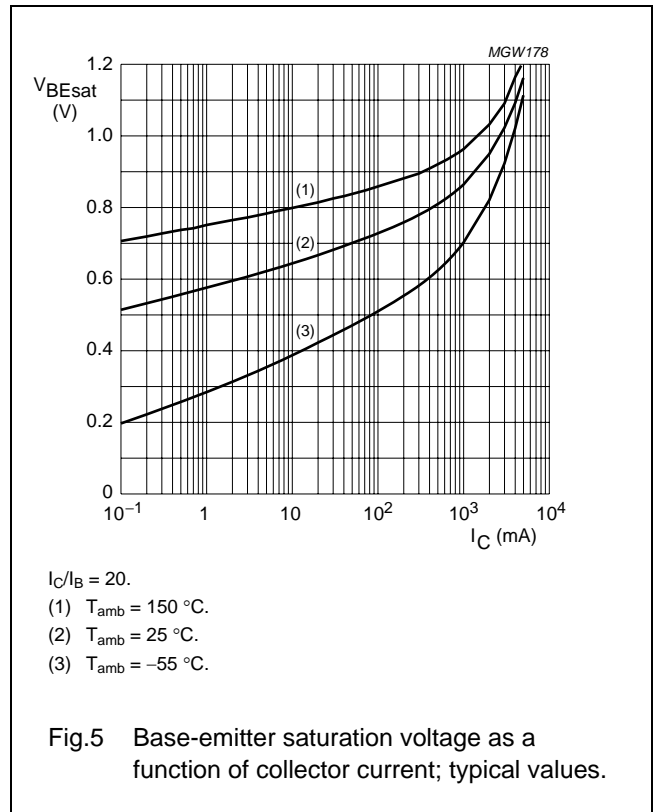
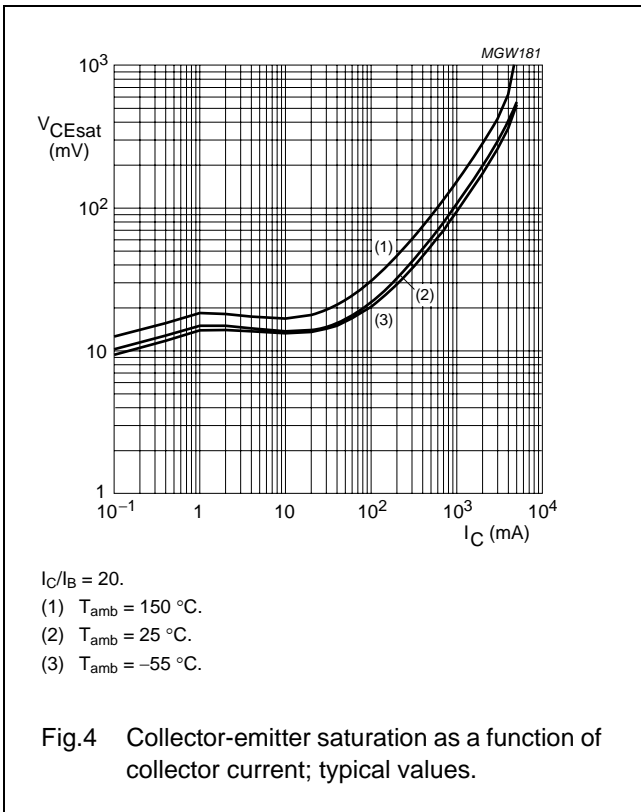
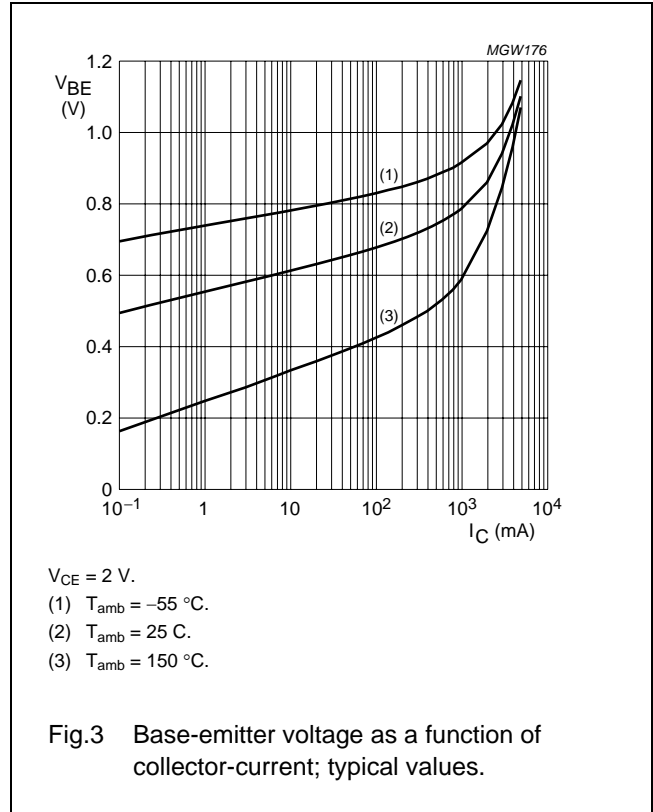
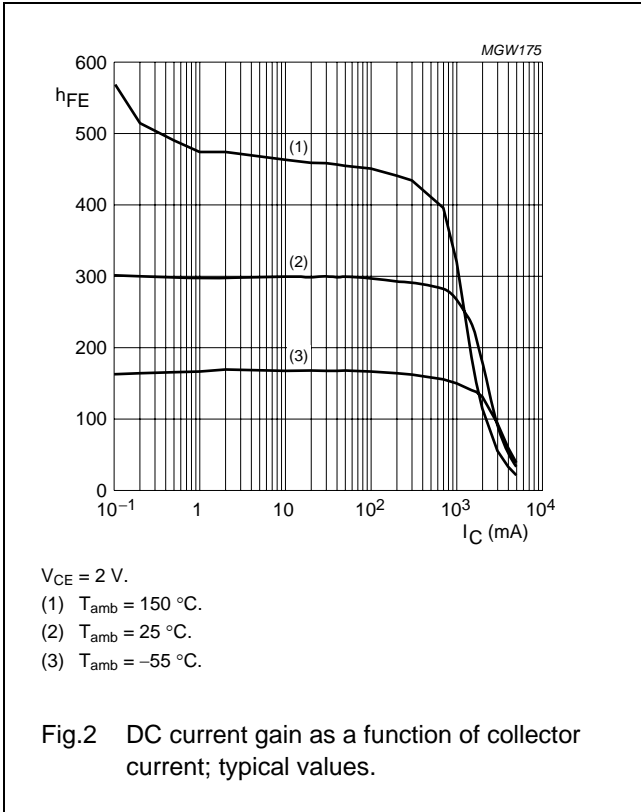
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 50\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 50\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	50	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 2\text{ V}; I_C = 500\text{ mA}$	200	–	–	
		$V_{CE} = 2\text{ V}; I_C = 1\text{ A}; \text{note 1}$	200	–	–	
		$V_{CE} = 2\text{ V}; I_C = 2\text{ A}; \text{note 1}$	100	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	90	mV
		$I_C = 1\text{ A}; I_B = 50\text{ mA}$	–	–	170	mV
		$I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$	–	–	290	mV
$R_{CEsat}$	equivalent on-resistance	$I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$	–	110	<145	$\text{m}\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$	–	–	1.2	V
$V_{BEon}$	base-emitter turn-on voltage	$V_{CE} = 2\text{ V}; I_C = 1\text{ A}; \text{note 1}$	–	–	1.1	V
$f_T$	transition frequency	$I_C = 100\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
$C_c$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	30	pF

**Note**

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

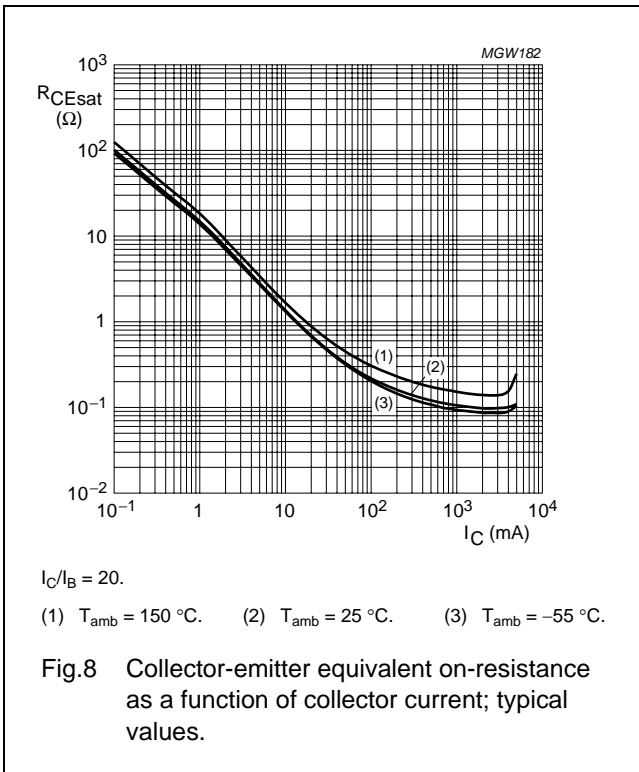
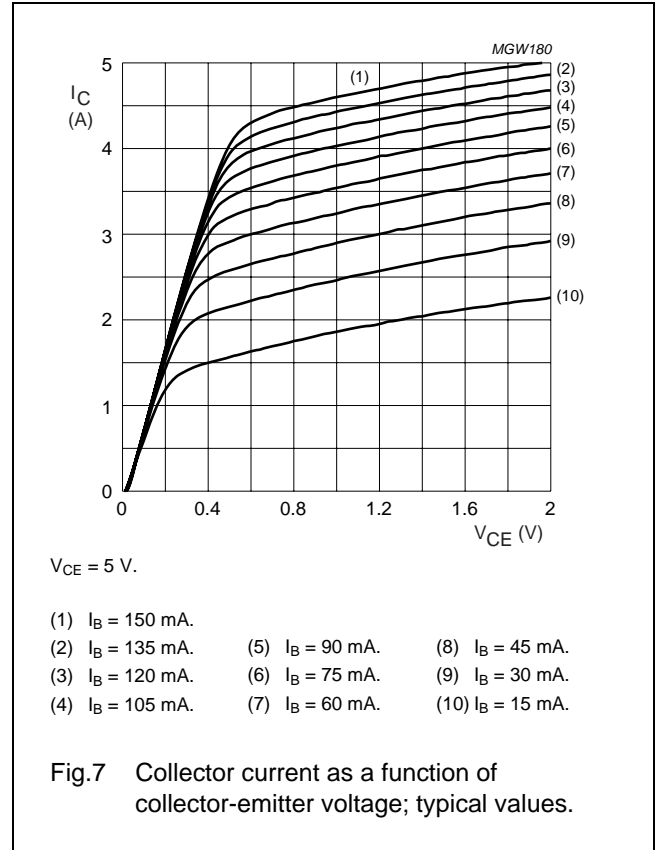
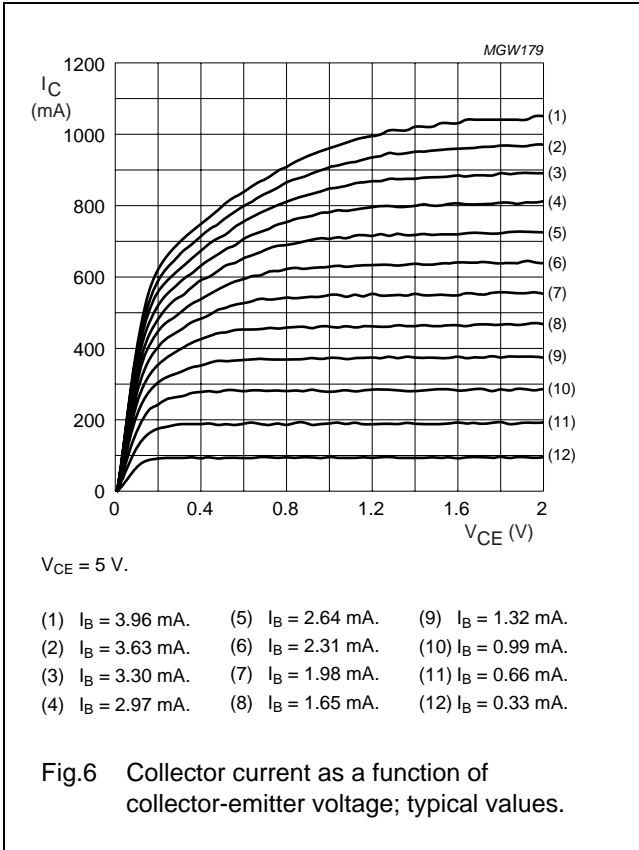
50 V low  $V_{CEsat}$  NPN transistor

PBSS4350Z



50 V low  $V_{CEsat}$  NPN transistor

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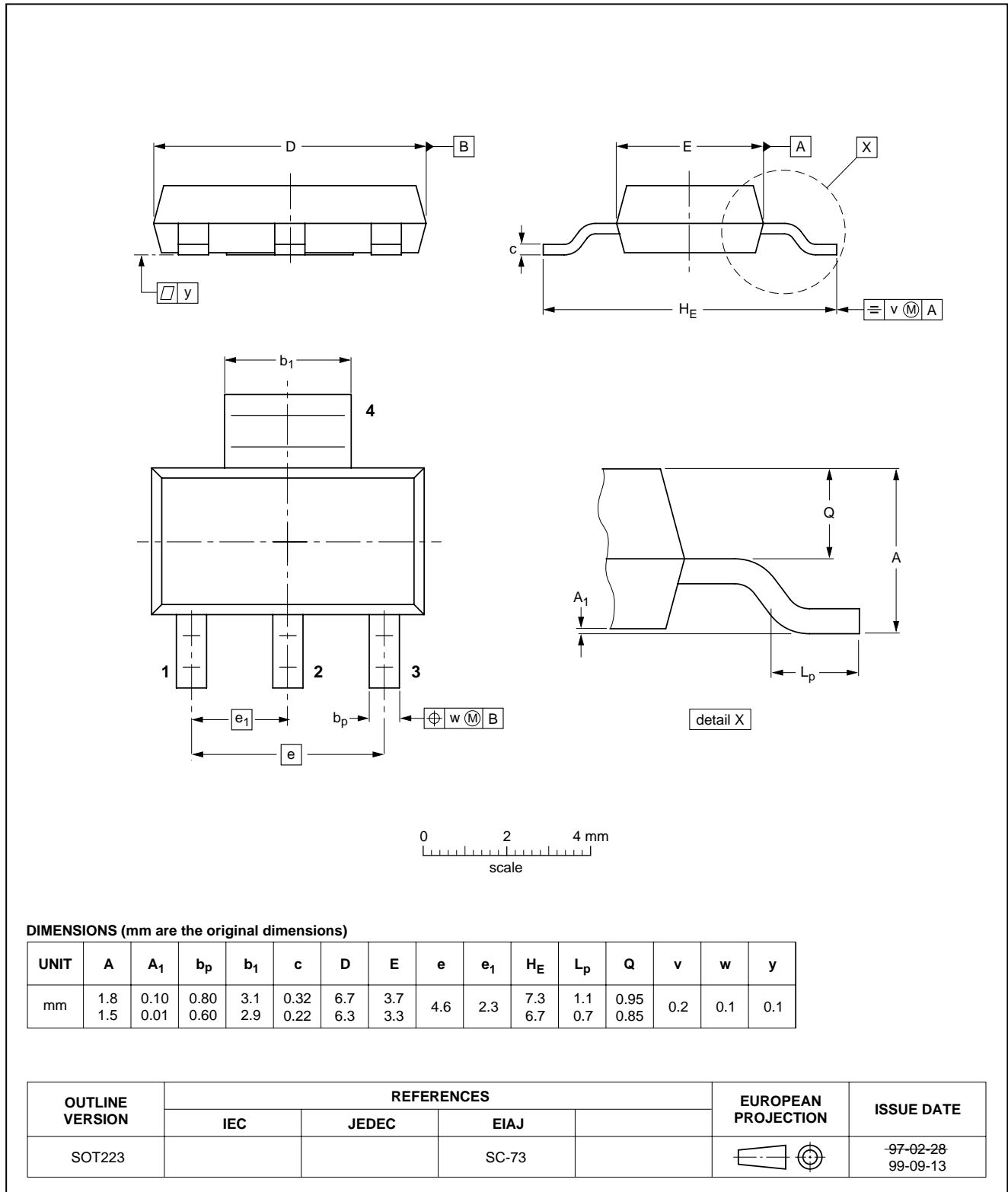
50 V low  $V_{CEsat}$  NPN transistor

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PACKAGE OUTLINE

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

SOT223



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PBSS4350Z

**DATA SHEET STATUS**

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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Printed in The Netherlands

613514/03/pp9

Date of release: 2003 May 13

Document order number: 9397 750 11057

