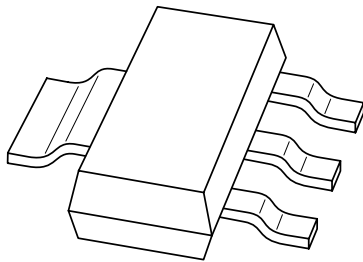


DATA SHEET



PBSS4540Z

40 V low V_{CEsat} NPN transistor

Product specification
Supersedes data of 2001 Jul 24

2001 Nov 14

40 V low V_{CEsat} NPN transistor

PBSS4540Z

FEATURES

- Low collector-emitter saturation voltage
- High current capabilities
- Improved device reliability due to reduced heat generation.

APPLICATIONS

- Supply line switching circuits
- Battery management applications
- DC/DC converter applications
- Strobe flash units
- Heavy duty battery powered equipment (motor and lamp drivers)
- MOSFET driver applications.

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT223 plastic package.
PNP complement: PBSS5540Z.

MARKING

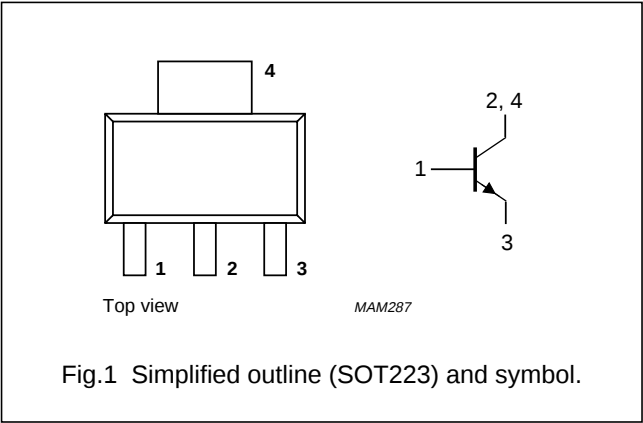
TYPE NUMBER	MARKING CODE
PBSS4540Z	PB4540

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX	UNIT
V_{CEO}	emitter-collector voltage	40	V
I_C	collector current (DC)	5	A
I_{CM}	peak collector current	10	A
R_{CEsat}	equivalent on-resistance	<71	mΩ

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	–	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	$T_{amb} \leq 25\text{ °C}$; 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 cm².
2. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm².
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	note 1	92	K/W
		note 2	62.5	K/W

Notes

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm².
2. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm².

40 V low V_{CEsat} NPN transistor

PBSS4540Z

CHARACTERISTICS

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

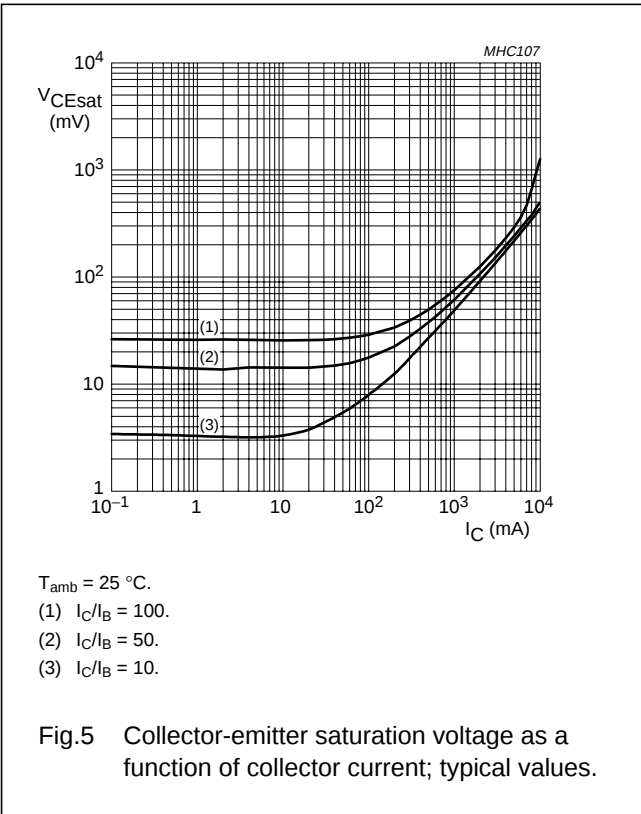
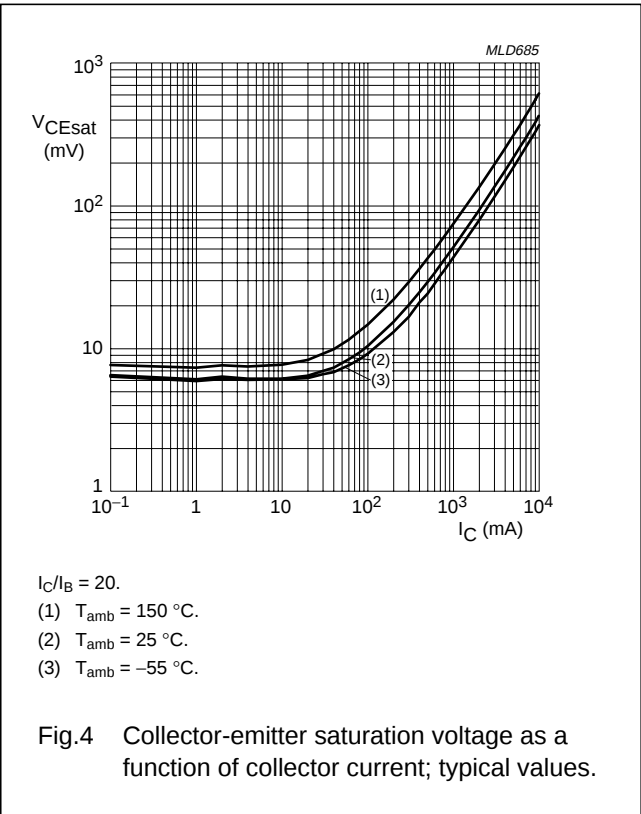
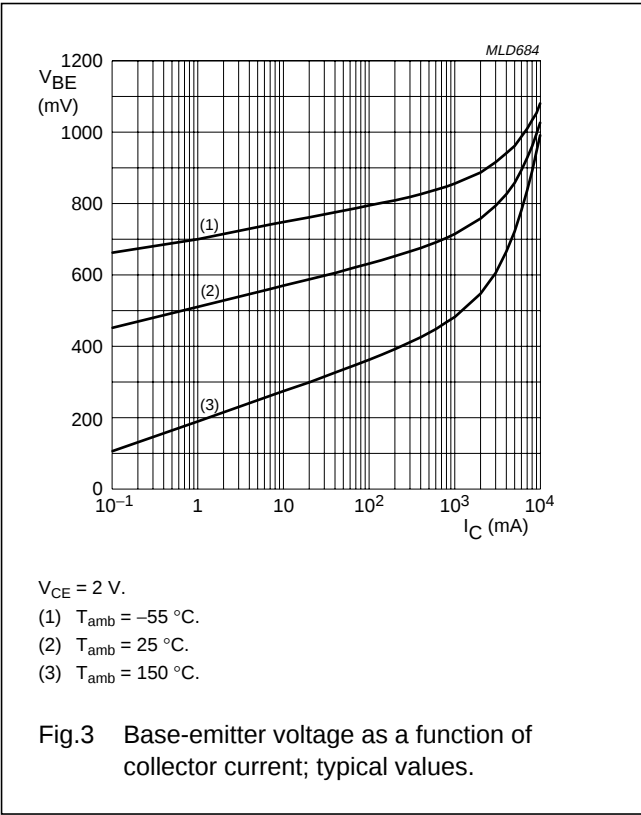
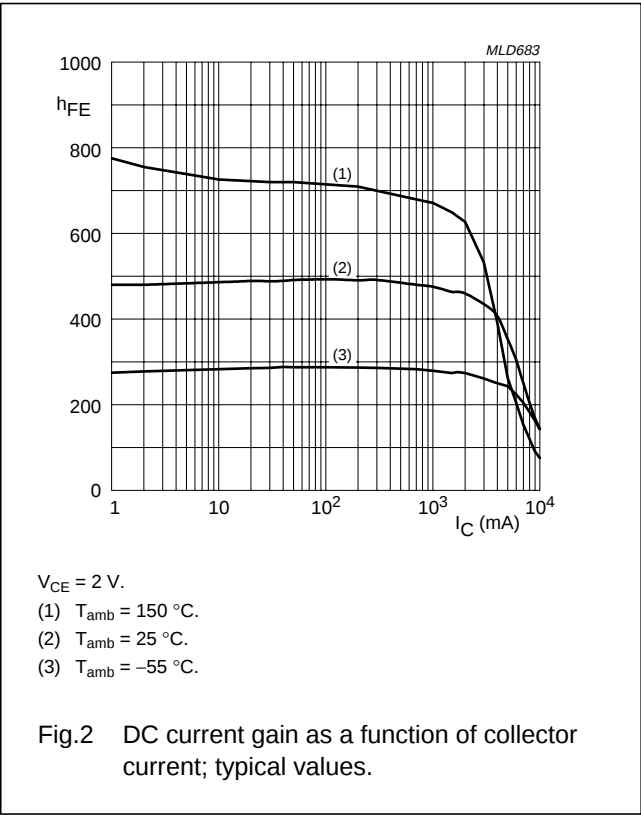
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = 30\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 30\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
h_{FE}	DC current gain	$V_{CE} = 2\text{ V}; I_C = 500\text{ mA}$	300	500	–	
		$V_{CE} = 2\text{ V}; I_C = 1\text{ A}; \text{note 1}$	300	500	–	
		$V_{CE} = 2\text{ V}; I_C = 2\text{ A}; \text{note 1}$	250	450	–	
		$V_{CE} = 2\text{ V}; I_C = 5\text{ A}; \text{note 1}$	100	300	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 5\text{ mA}$	–	50	90	mV
		$I_C = 1\text{ A}; I_B = 10\text{ mA}$	–	75	120	mV
		$I_C = 2\text{ A}; I_B = 200\text{ mA}$	–	90	150	mV
		$I_C = 5\text{ A}; I_B = 500\text{ mA}$	–	210	355	mV
R_{CEsat}	equivalent on-resistance	$I_C = 5\text{ A}; I_B = 500\text{ mA}; \text{note 1}$	–	42	71	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = 5\text{ A}; I_B = 500\text{ mA}$	–	1.1	1.3	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = 2\text{ V}; I_C = 2\text{ A}$	–	0.8	1.1	V
f_T	transition frequency	$I_C = 100\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	70	130	–	MHz
C_c	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	60	75	pF

Note

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

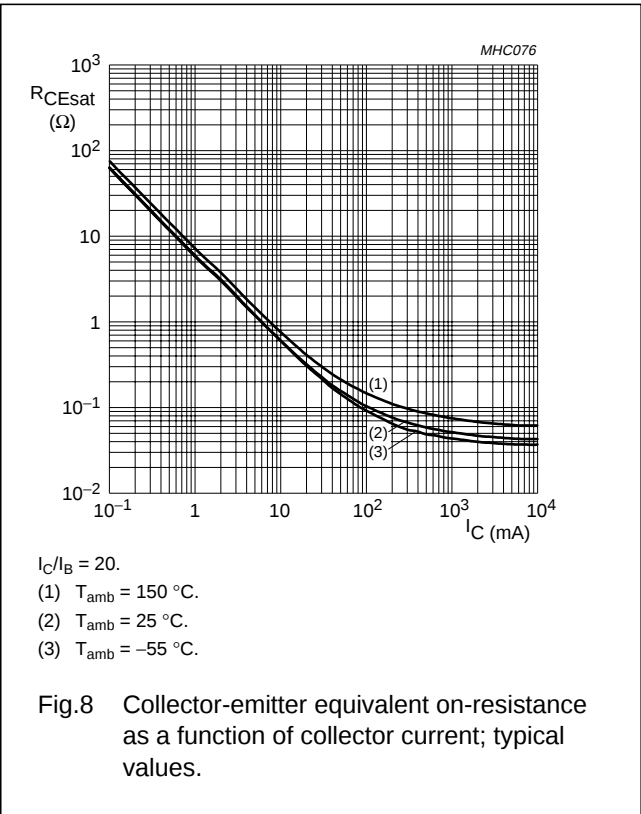
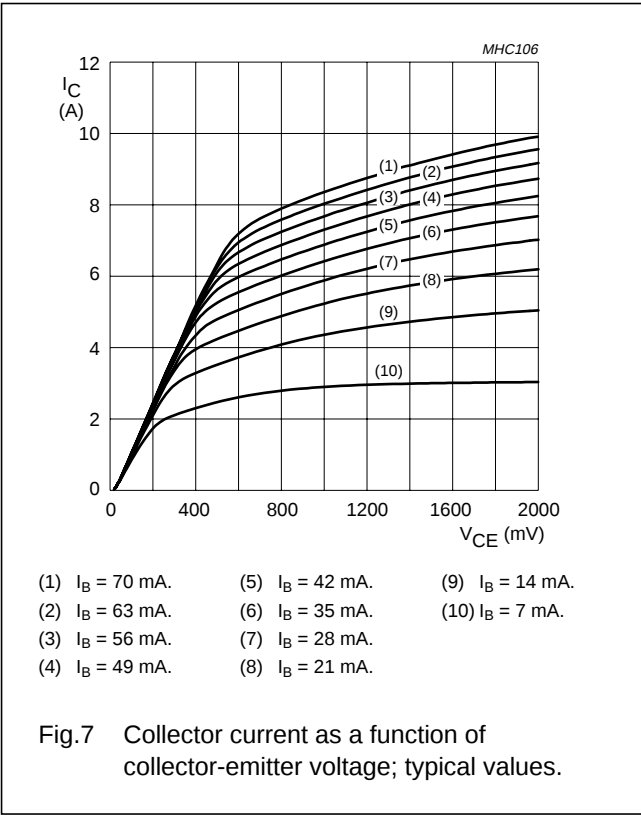
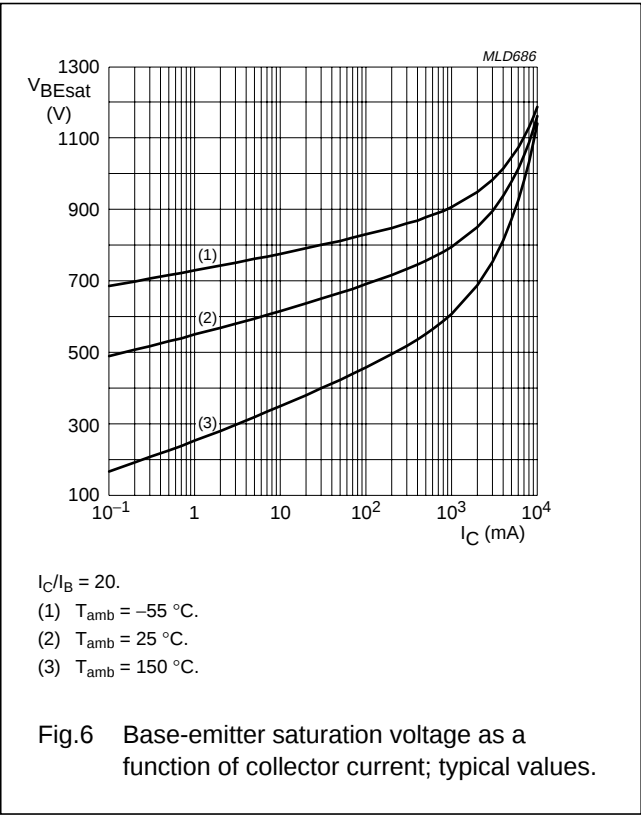
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40 V low V_{CEsat} NPN transistor

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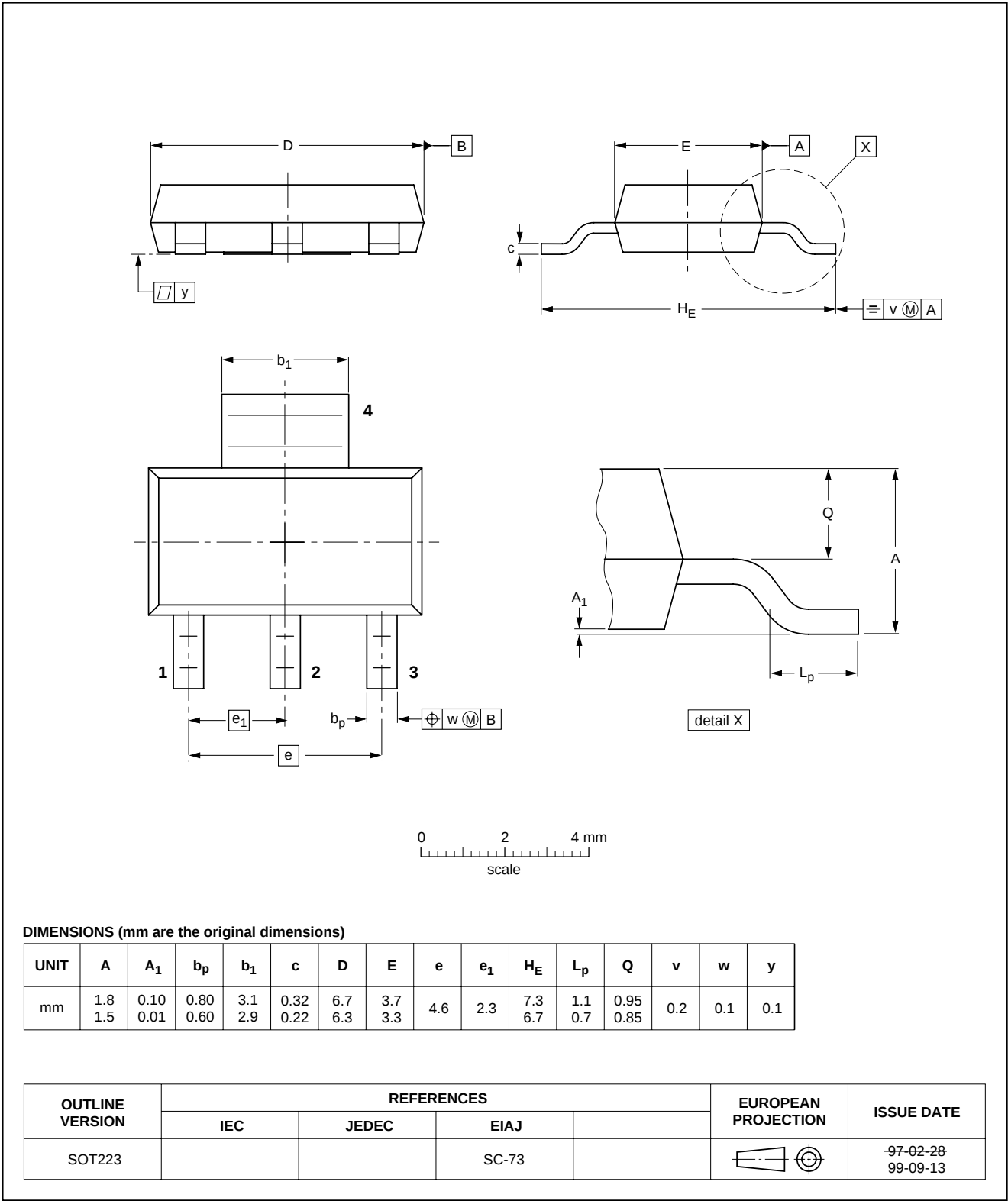
40 V low V_{CEsat} NPN transistor

PBSS4540Z

PACKAGE OUTLINE

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

SOT223



40 V low V_{CEsat} NPN transistor

PBSS4540Z

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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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NOTES

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NOTES

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NOTES

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