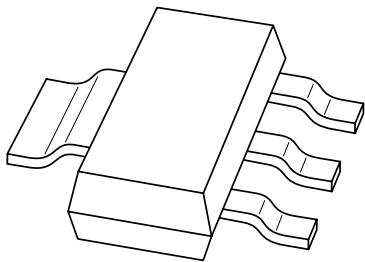


DATA SHEET



BSP126

**N-channel enhancement mode
vertical D-MOS transistor**

Product specification
Supersedes data of 1997 Jun 23

2002 Feb 19

N-channel enhancement mode vertical D-MOS transistor

BSP126

FEATURES

- Direct interface to C-MOS, TTL, etc.
- High-speed switching
- No secondary breakdown.

APPLICATIONS

- Line current interruptor in telephone sets
- Relay, high-speed and line transformer drivers.

DESCRIPTION

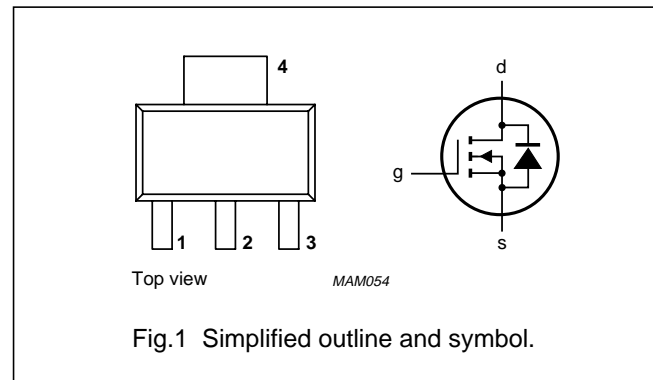
N-channel enhancement mode vertical D-MOS transistor in a miniature SOT223 package.

MARKING

TYPE NUMBER	MARKING CODE
BSP126	BSP126

PINNING - SOT223

PIN	DESCRIPTION
1	gate
2	drain
3	source
4	drain



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	250	V
I_D	drain current (DC)		–	375	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	1.5	W
R_{DSon}	drain-source on-state resistance	$I_D = 300\text{ mA}; V_{GS} = 10\text{ V}$	2.8	5	Ω
V_{GSth}	gate-source threshold voltage	$I_D = 1\text{ mA}; V_{DS} = V_{GS}$	–	2	V

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	250	V
V_{GSO}	gate-source voltage (DC)	open drain	–	± 20	V
I_D	drain current (DC)		–	375	mA
I_{DM}	peak drain current		–	1.3	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}; \text{note 1}$	–	1.5	W
T_{stg}	storage temperature		–55	+150	$^{\circ}\text{C}$
T_j	junction temperature		–	150	$^{\circ}\text{C}$

Note

1. Device mounted on a $40 \times 40 \times 1.5\text{ mm}$ epoxy printed-circuit board; mounting pad for the drain tab minimum 6 cm^2 .

N-channel enhancement mode vertical D-MOS transistor

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient; note 1	83.3	K/W

Note

1. Device mounted on a 40 × 40 × 1.5 mm epoxy printed-circuit board; mounting pad for the drain tab minimum 6 cm².

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$I_D = 10\ \mu\text{A}; V_{GS} = 0$	250	–	–	V
I_{GSS}	gate-source leakage current	$V_{GS} = \pm 20\ \text{V}; V_{DS} = 0$	–	–	±100	nA
V_{GSth}	gate-source threshold voltage	$I_D = 1\ \text{mA}; V_{DS} = V_{GS}$	0.8	–	2	V
R_{DSon}	drain-source on-state resistance	$I_D = 20\ \text{mA}; V_{GS} = 2.4\ \text{V}$	–	–	7.5	Ω
		$I_D = 300\ \text{mA}; V_{GS} = 10\ \text{V}$	–	2.8	5	Ω
I_{DSS}	drain-source leakage current	$V_{DS} = 200\ \text{V}; V_{GS} = 0$	–	–	1	μA
$ Y_{fs} $	transfer admittance	$I_D = 300\ \text{mA}; V_{DS} = 25\ \text{V}$	200	600	–	mS
C_{iss}	input capacitance	$V_{DS} = 25\ \text{V}; V_{GS} = 0; f = 1\ \text{MHz}$	–	100	120	pF
C_{oss}	output capacitance	$V_{DS} = 25\ \text{V}; V_{GS} = 0; f = 1\ \text{MHz}$	–	21	30	pF
C_{rss}	feedback capacitance	$V_{DS} = 25\ \text{V}; V_{GS} = 0; f = 1\ \text{MHz}$	–	10	15	pF
Switching times (see Figs 2 and 3)						
t_{on}	turn-on time	$I_D = 250\ \text{mA}; V_{DD} = 50\ \text{V}; V_{GS} = 0\ \text{to}\ 10\ \text{V}$	–	6	10	ns
t_{off}	turn-off time	$I_D = 250\ \text{mA}; V_{DD} = 50\ \text{V}; V_{GS} = 10\ \text{to}\ 0\ \text{V}$	–	47	60	ns

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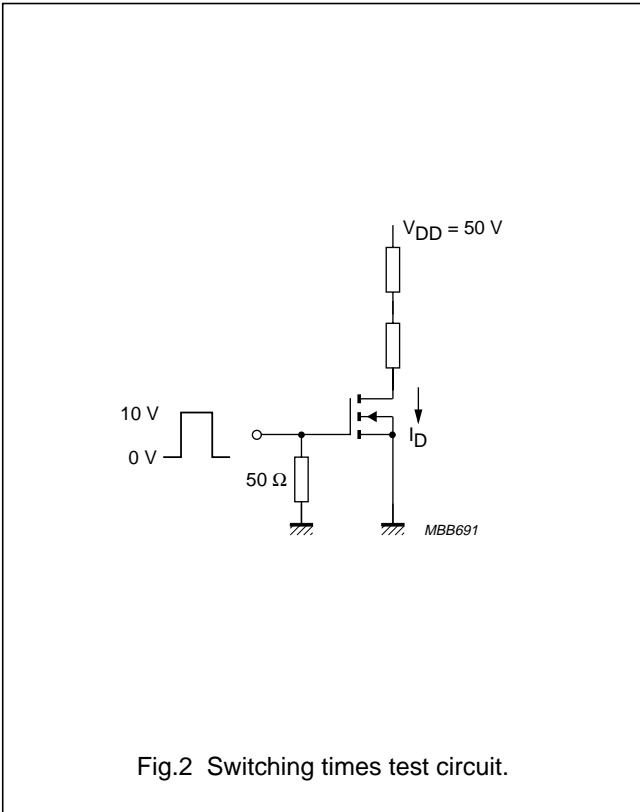


Fig.2 Switching times test circuit.

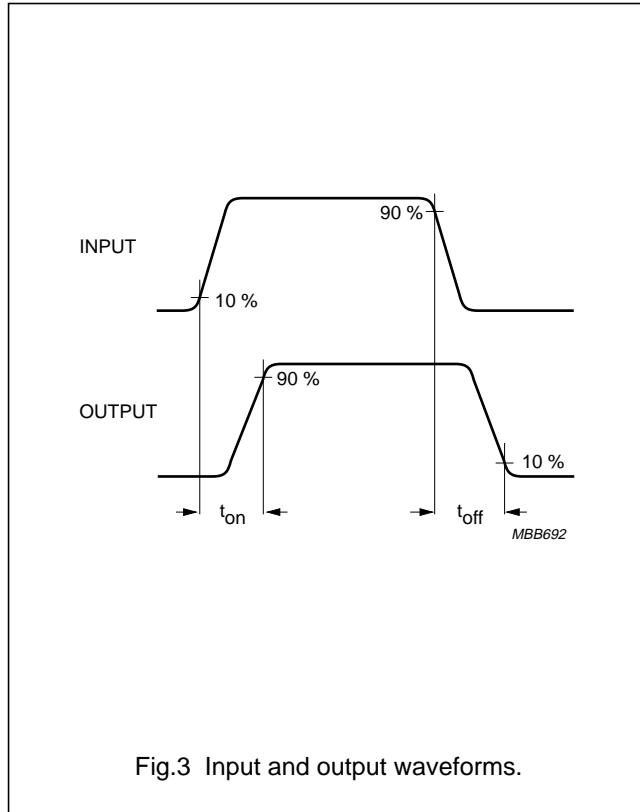


Fig.3 Input and output waveforms.

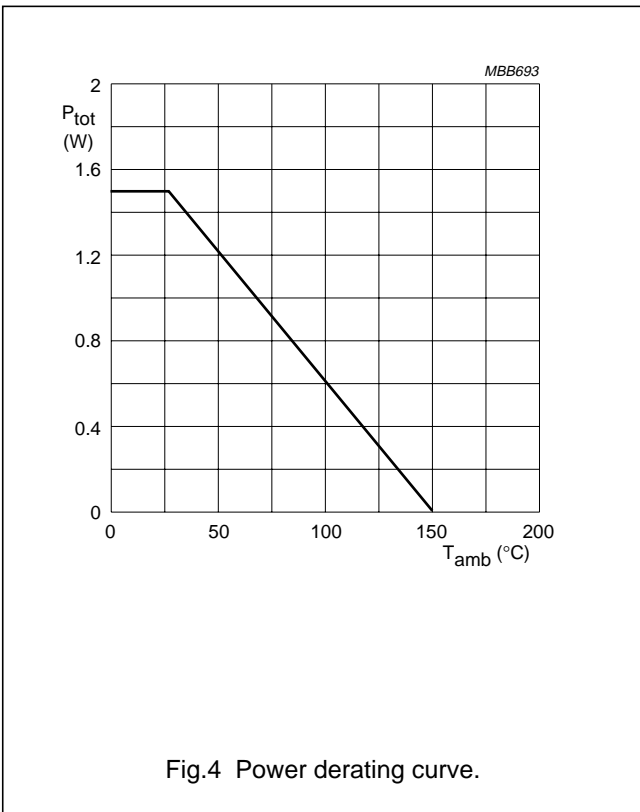
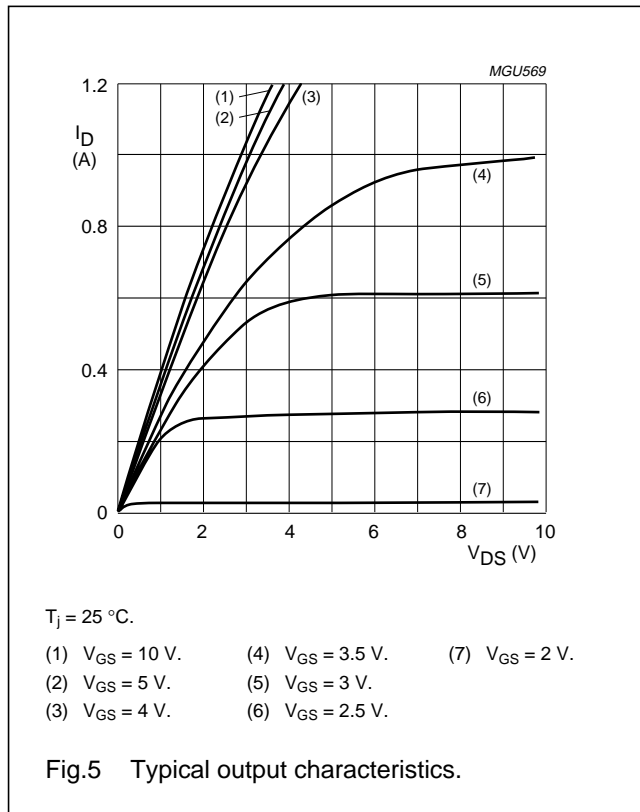


Fig.4 Power derating curve.



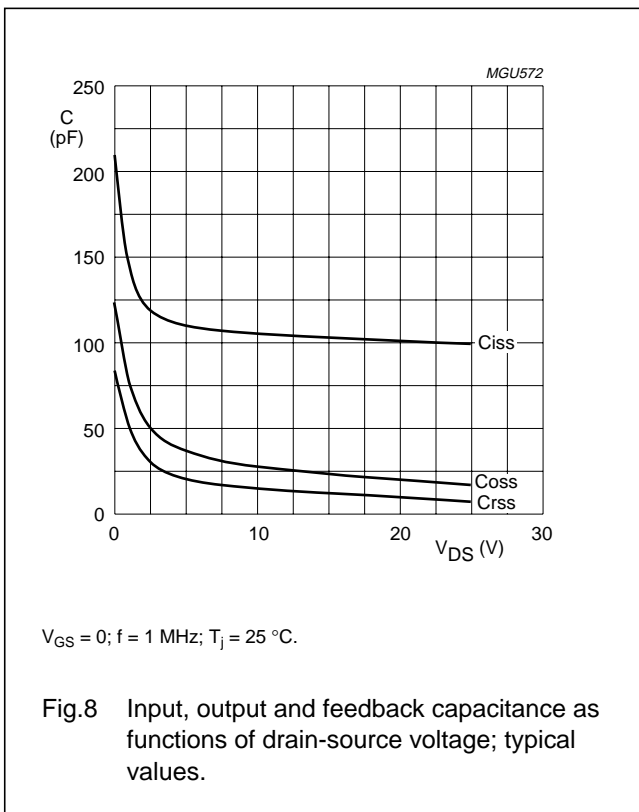
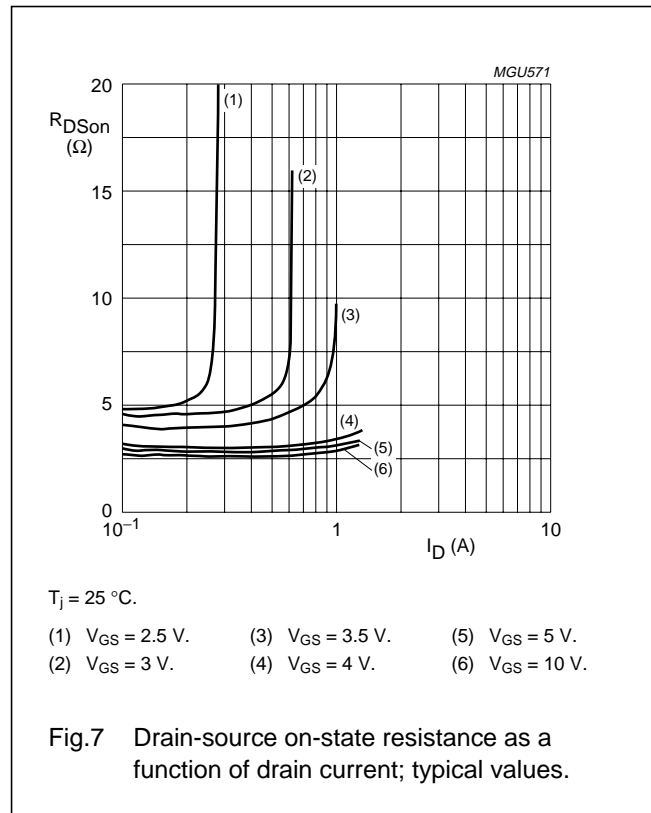
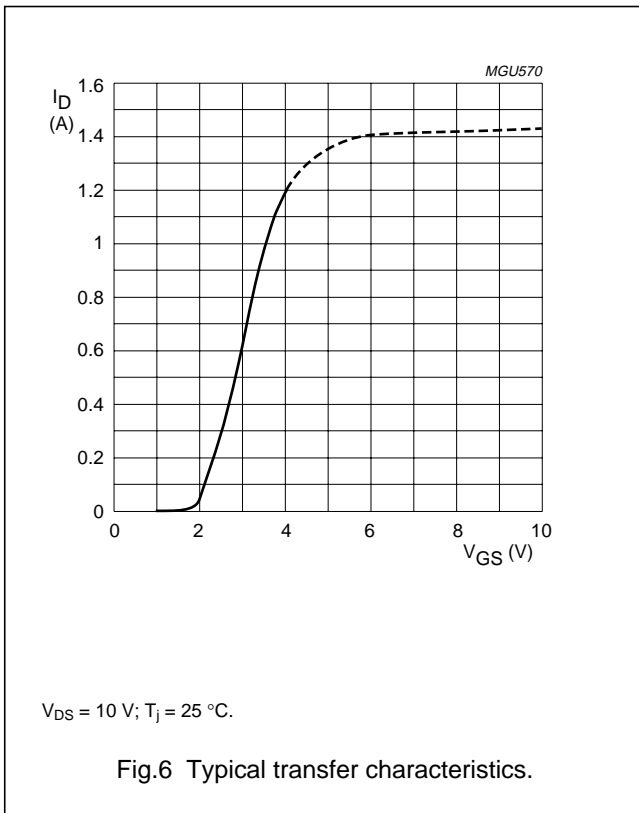
T_j = 25 °C.

- (1) V_{GS} = 10 V. (4) V_{GS} = 3.5 V. (7) V_{GS} = 2 V.
- (2) V_{GS} = 5 V. (5) V_{GS} = 3 V.
- (3) V_{GS} = 4 V. (6) V_{GS} = 2.5 V.

Fig.5 Typical output characteristics.

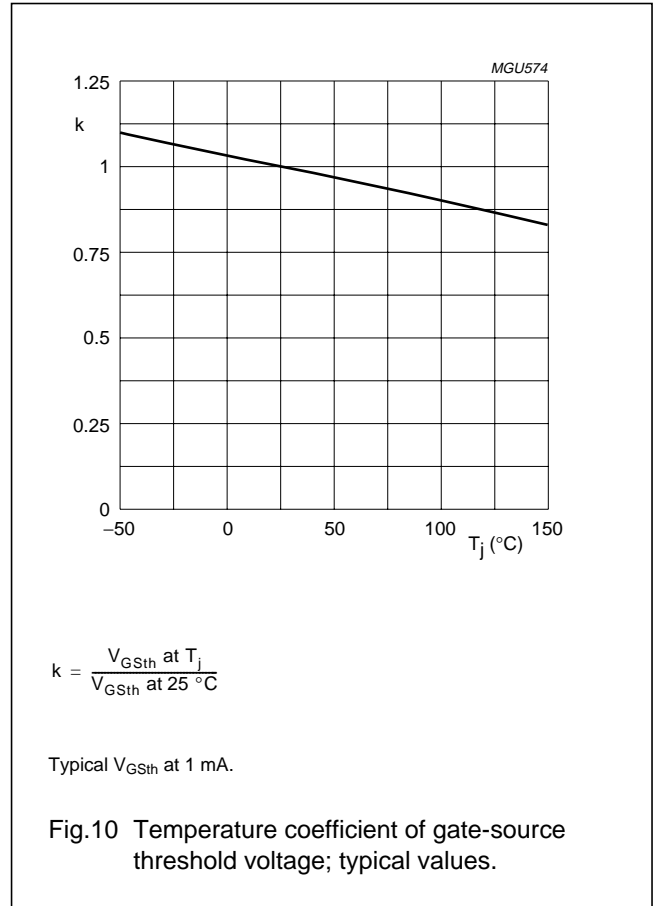
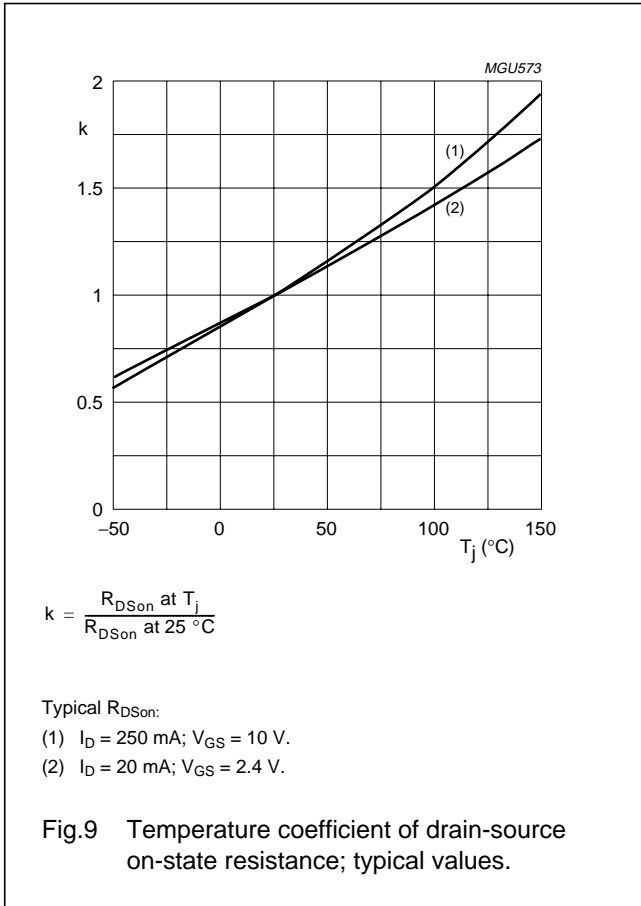
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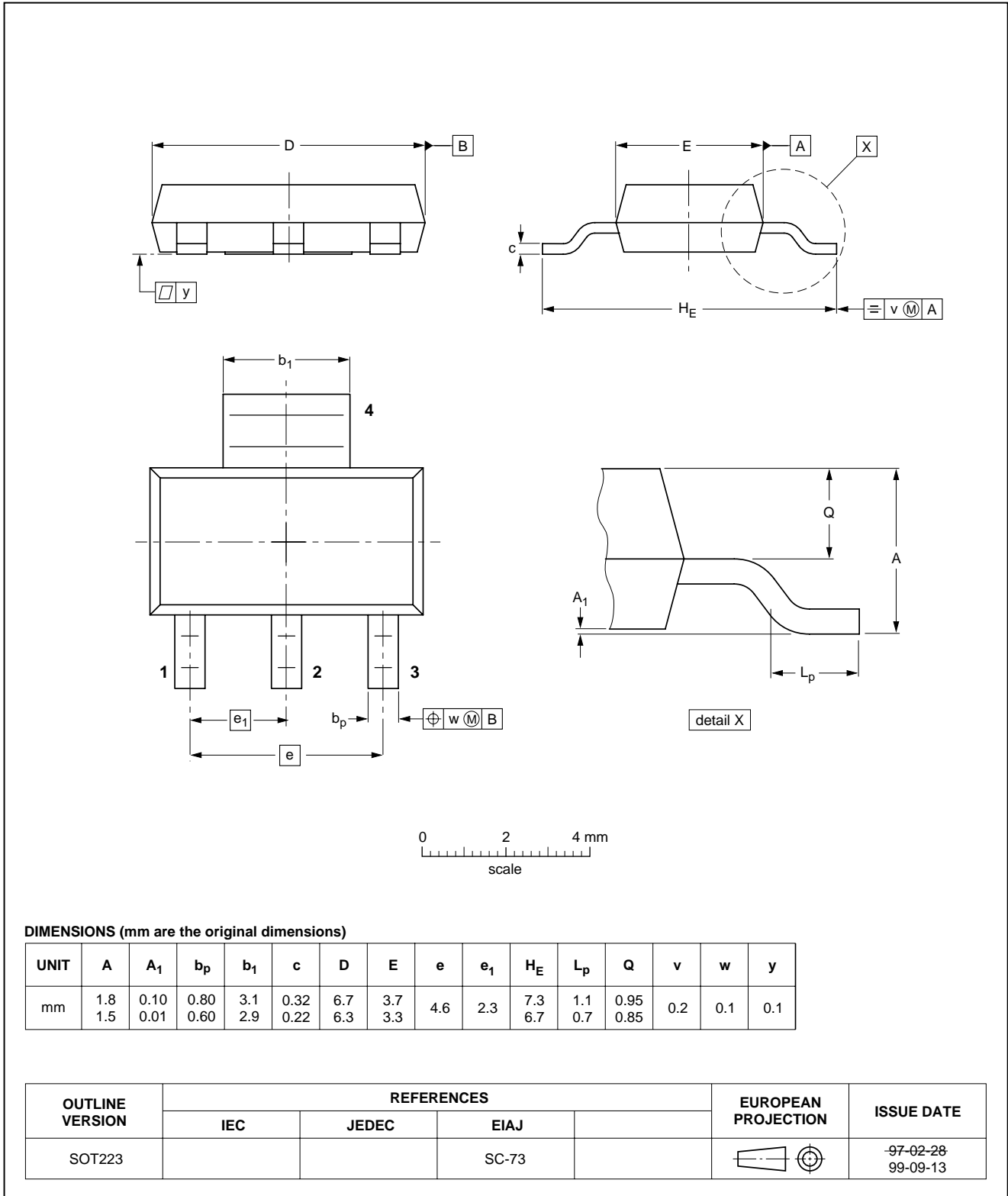
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PACKAGE OUTLINE

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

SOT223



N-channel enhancement mode vertical D-MOS transistor

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DATA SHEET STATUS

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

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NOTES

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Printed in The Netherlands

613510/03/pp12

Date of release: 2002 Feb 19

Document order number: 9397 750 09311

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