

DATA SHEET

BSP107

N-channel enhancement mode
vertical D-MOS transistor

Product specification
File under Discrete Semiconductors, SC13b

April 1995

N-channel enhancement mode vertical D-MOS transistor

BSP107

FEATURES

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

DESCRIPTION

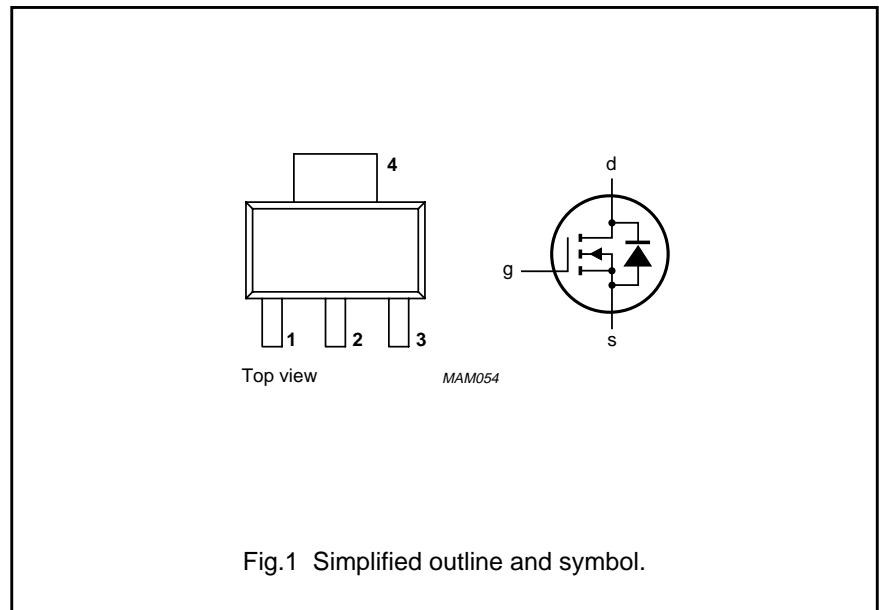
N-channel enhancement mode vertical D-MOS transistor in a miniature SOT223 envelope. Intended for use as a line current interruptor in telephone sets and for applications in relay, high-speed and line transformer driver switching.

PINNING - SOT223

PIN	DESCRIPTION
1	gate
2	drain
3	source
4	drain

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{DS}	drain-source voltage (DC)	200	V
$V_{GS(th)}$	gate-source threshold voltage	2.4	V
I_D	drain current (DC)	200	mA
$R_{DS(on)}$	drain-source on-state resistance	28	Ω



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LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	200	V
$\pm V_{GSO}$	gate-source voltage	open drain	–	20	V
I_D	drain current	DC	–	200	mA
I_{DM}	drain current	peak	–	350	mA
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ °C}$	–	1.5	W
T_{stg}	storage temperature range		–65	150	°C
T_j	operating junction temperature		–	150	°C

THERMAL RESISTANCE

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

Note

1. Device mounted on an epoxy printed circuit board, 40 mm × 40 mm × 1.5 mm. Mounting pad for the drain lead minimum 6 cm².

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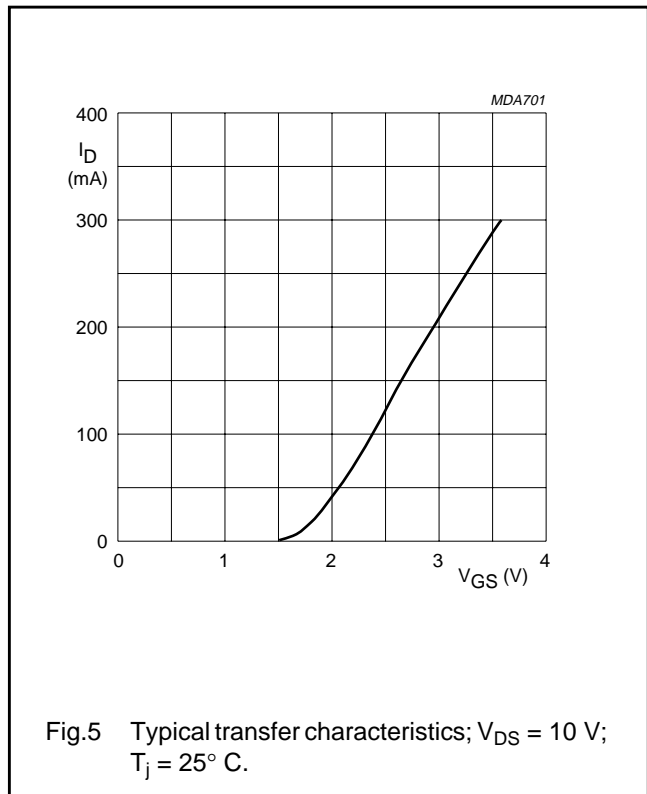
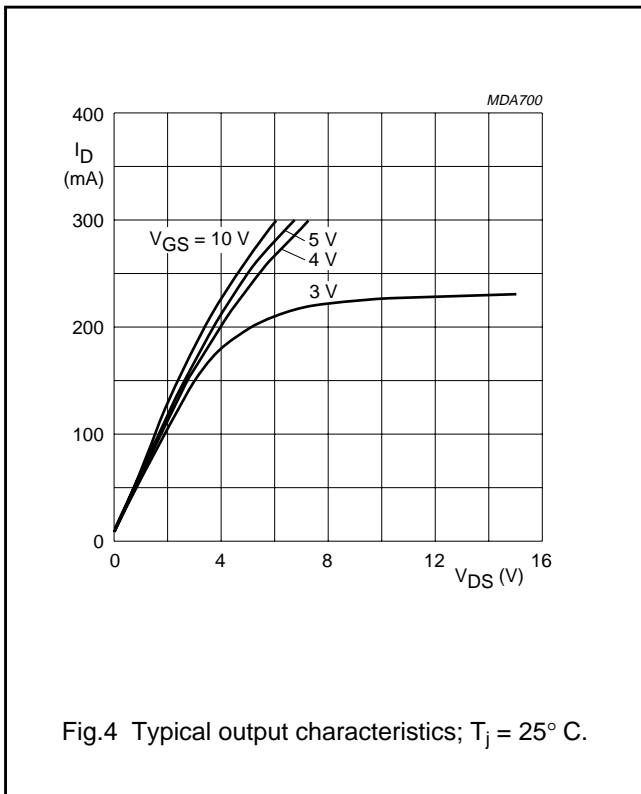
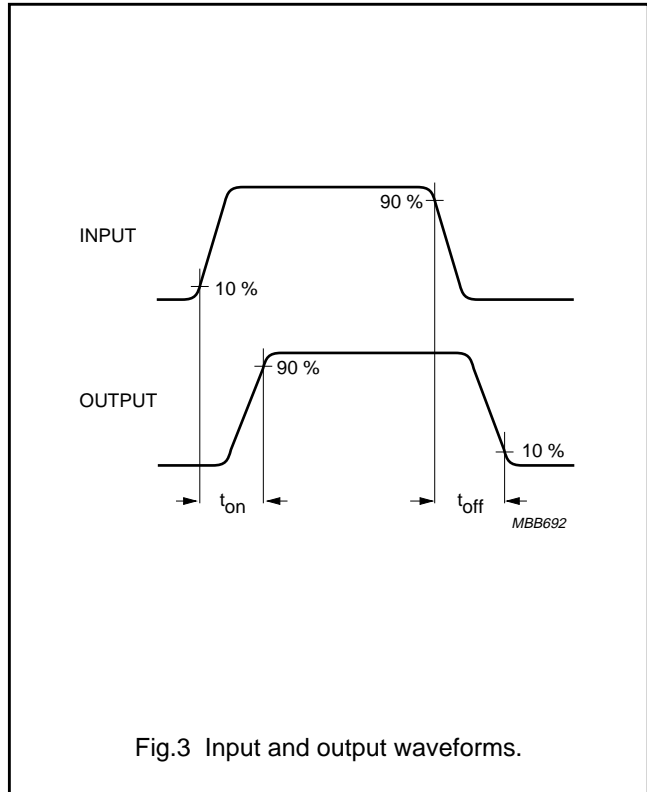
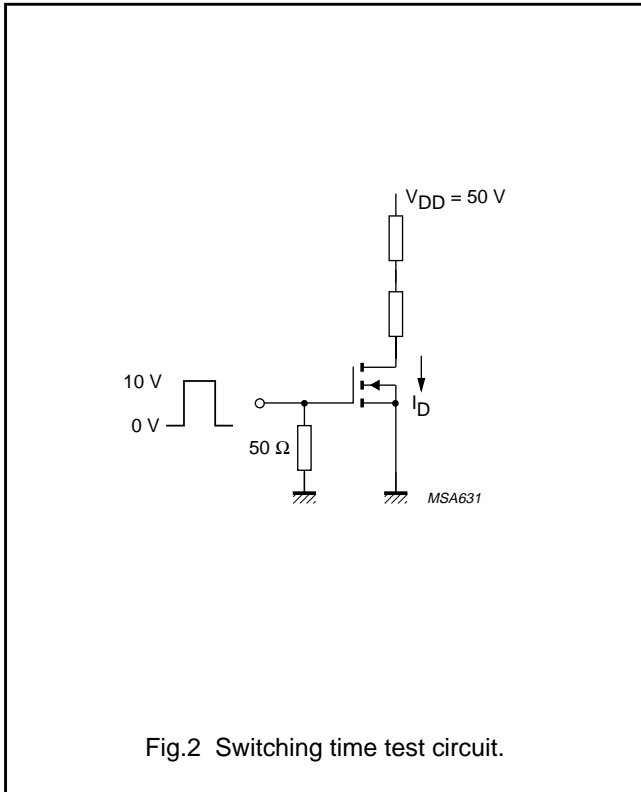
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CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$ $I_D = 10\ \mu\text{A}$	200	–	–	V
I_{DSS}	drain-source leakage current	$V_{DS} = 130\ \text{V}$ $V_{GS} = 0$	–	–	30	nA
I_{DSX}	drain-source leakage current	$V_{DS} = 70\ \text{V}$ $V_{GS} = 0.2\ \text{V}$	–	–	1	μA
$\pm I_{GSS}$	gate-source leakage current	$\pm V_{GS} = 15\ \text{V}$ $V_{DS} = 0$	–	–	10	nA
$V_{GS(th)}$	gate threshold voltage	$I_D = 1\ \text{mA}$ $V_{DS} = V_{GS}$	0.8	–	2.4	V
$R_{DS(on)}$	drain-source on-resistance	$I_D = 20\ \text{mA}$ $V_{GS} = 2.6\ \text{V}$	–	20	28	Ω
$R_{DS(on)}$	drain-source on-resistance	$I_D = 150\ \text{mA}$ $V_{GS} = 10\ \text{V}$	–	14	–	Ω
$ Y_{fs} $	transfer admittance	$I_D = 250\ \text{mA}$ $V_{DS} = 15\ \text{V}$	90	180	–	mS
C_{iss}	input capacitance	$V_{DS} = 10\ \text{V}$ $V_{GS} = 0$ $f = 1\ \text{MHz}$	–	50	65	pF
C_{oss}	output capacitance	$V_{DS} = 10\ \text{V}$ $V_{GS} = 0$ $f = 1\ \text{MHz}$	–	16	25	pF
C_{rss}	feedback capacitance	$V_{DS} = 10\ \text{V}$ $V_{GS} = 0$ $f = 1\ \text{MHz}$	–	4	10	pF
Switching times (see Figs 2 and 3)						
t_{on}	switching-on time	$I_D = 250\ \text{mA}$ $V_{DD} = 50\ \text{V}$ $V_{GS} = 0 - 10\ \text{V}$	–	2	10	ns
t_{off}	switching-off time	$I_D = 250\ \text{mA}$ $V_{DD} = 50\ \text{V}$ $V_{GS} = 0 - 10\ \text{V}$	–	5	20	ns

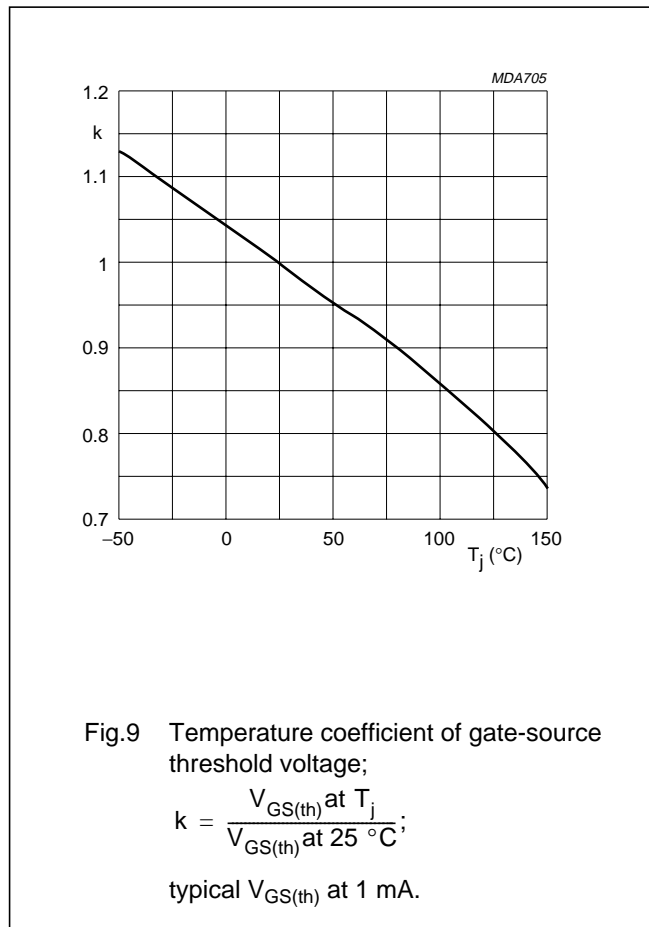
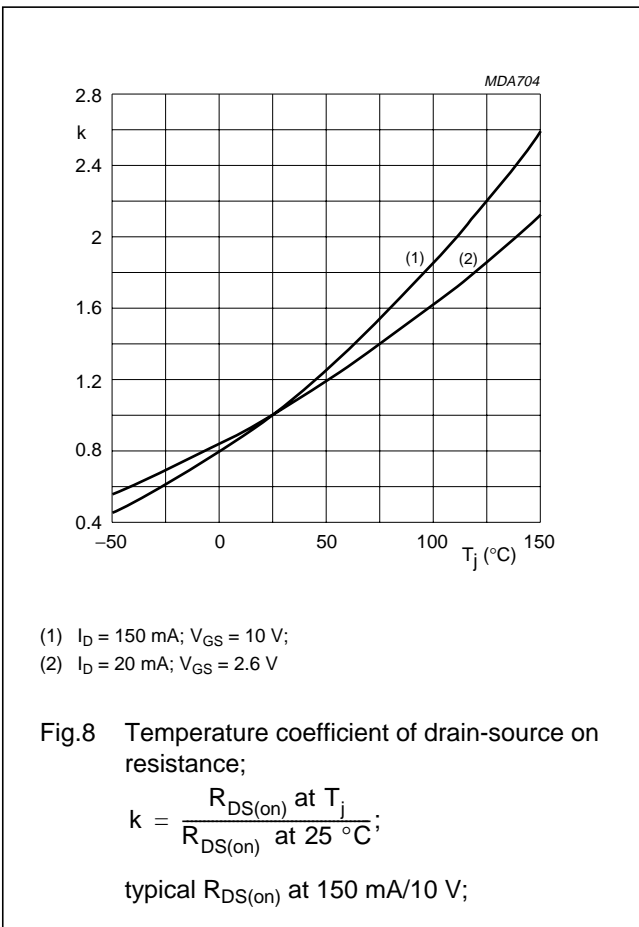
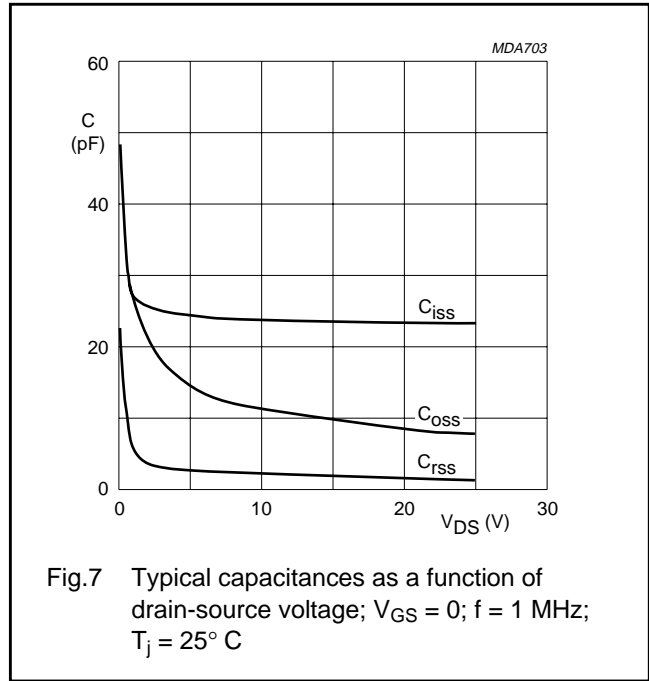
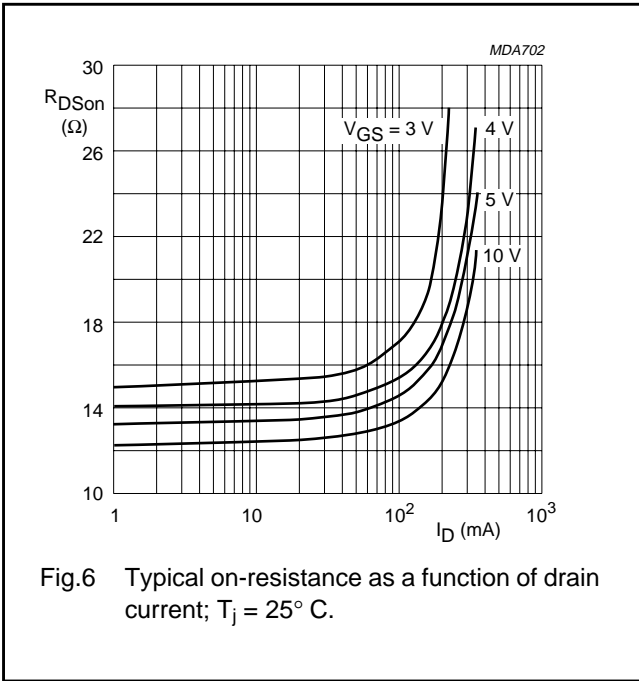
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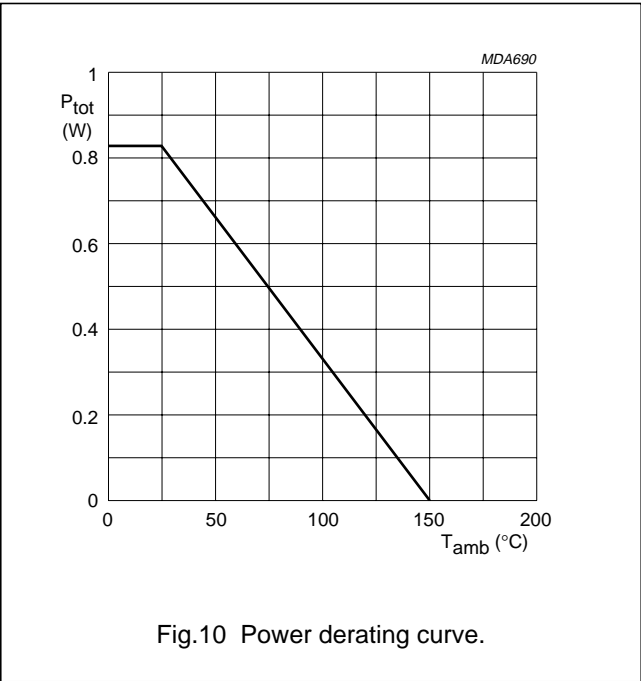
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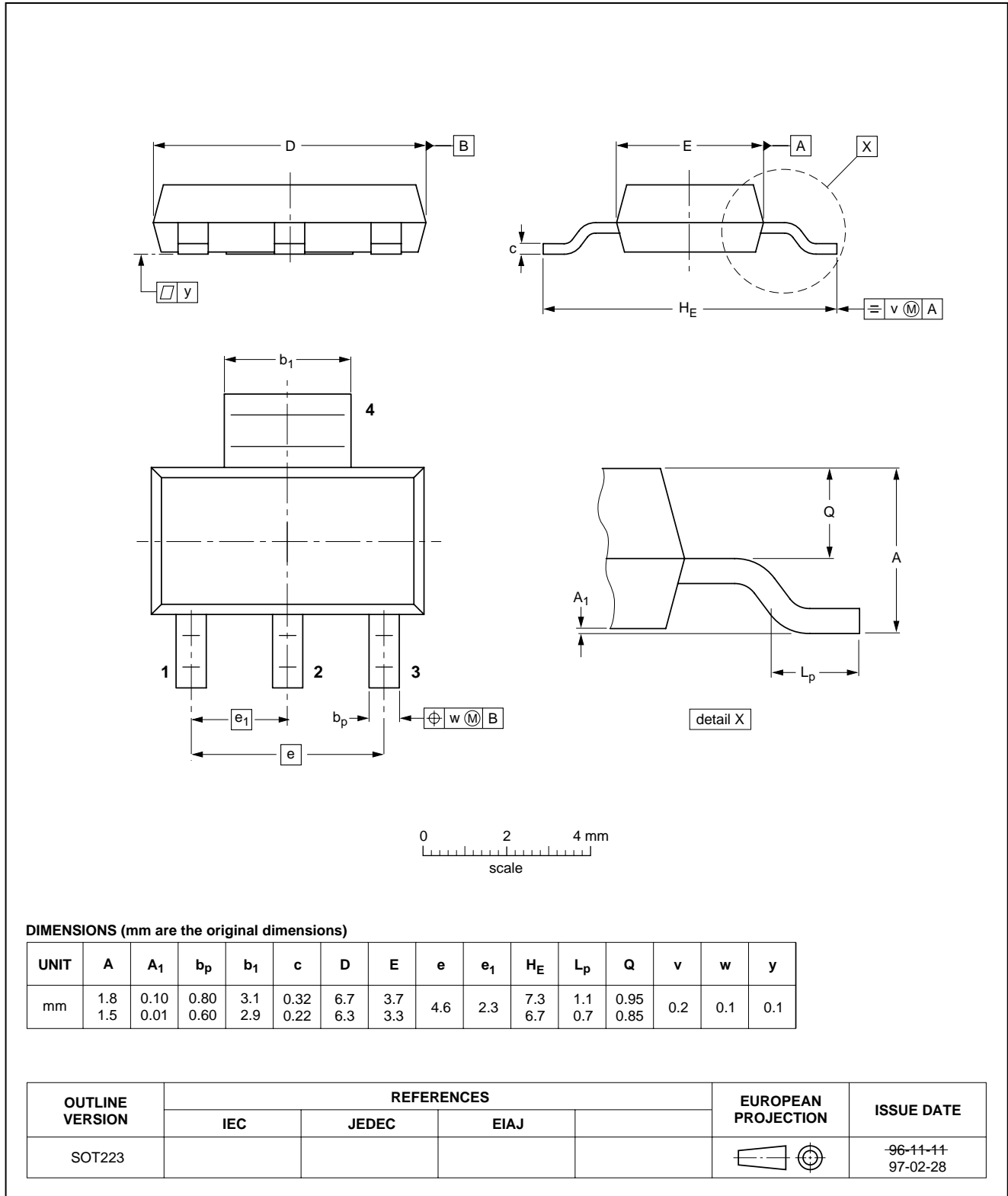
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PACKAGE OUTLINE

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

SOT223



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁	b _p	b ₁	c	D	E	e	e ₁	H _E	L _p	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

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BSP107**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.
Application information	
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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