

DATA SHEET

BSP89

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

BSP89

FEATURES

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

DESCRIPTION

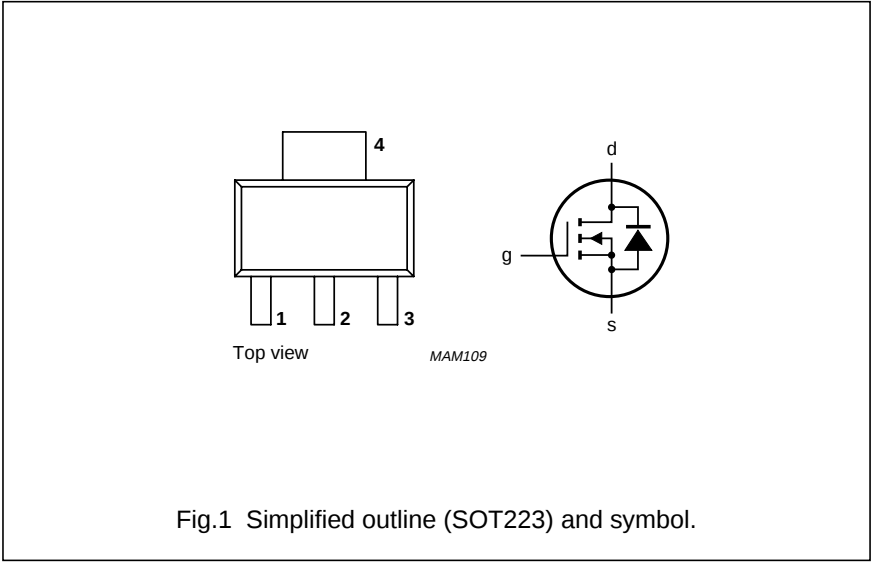
N-channel enhancement mode vertical D-MOS transistor in a SOT223 envelope, intended for use as a surface-mounted device in line current interrupters in telephone sets and for application in relay, high speed and line transformer drivers.

PINNING - SOT223

PIN	DESCRIPTION
Code: BSP89	
1	gate
2	drain
3	source
4	drain

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{DS}	drain-source voltage	240	V
I_D	DC drain current	350	mA
$R_{DS(on)}$	drain-source on-resistance	6	Ω
$V_{GS(th)}$	gate-source threshold voltage	2	V



LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	240	V
$\pm V_{GSO}$	gate-source voltage	open drain	–	20	V
I_D	DC drain current		–	350	mA
I_{DM}	peak drain current		–	1.4	A
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ }^{\circ}\text{C}$ (note 1)	–	1.5	W
T_{stg}	storage temperature range		–65	150	$^{\circ}\text{C}$
T_j	junction temperature		–	150	$^{\circ}\text{C}$

THERMAL RESISTANCE

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

Note

1. Transistor mounted on an epoxy printed circuit board, 40 x 40 x 1.5 mm, mounting pad for the drain tab minimum 6 cm².

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CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{(BR)DSS}	drain-source breakdown voltage	I _D = 10 μA; V _{GS} = 0	240	–	–	V
I _{DSS}	drain-source leakage current	V _{DS} = 60 V; V _{GS} = 0	–	–	200	nA
±I _{GSS}	gate-source leakage current	±V _{GS} = 20 V; V _{DS} = 0	–	–	100	nA
V _{GS(th)}	gate-source threshold voltage	I _D = 1 mA; V _{GS} = V _{DS}	0.8	–	2	V
R _{DS(on)}	drain-source on-resistance	I _D = 340 mA; V _{GS} = 10 V	–	4	6	Ω
		I _D = 340 mA; V _{GS} = 4.5 V	–	–	10	Ω
Y _{fs}	transfer admittance	I _D = 340 mA; V _{DS} = 25 V	140	350	–	mS
C _{iss}	input capacitance	V _{DS} = 25 V; V _{GS} = 0; f = 1 MHz	–	65	140	pF
C _{oss}	output capacitance	V _{DS} = 25 V; V _{GS} = 0; f = 1 MHz	–	20	30	pF
C _{rss}	feedback capacitance	V _{DS} = 25 V; V _{GS} = 0; f = 1 MHz	–	5	9	pF
Switching times (see Figs 3 and 4)						
t _{on}	turn-on time	I _D = 250 mA; V _{DD} = 50 V; V _{GS} = 0 to 10 V	–	5	10	ns
t _{off}	turn-off time	I _D = 250 mA; V _{DD} = 50 V; V _{GS} = 0 to 10 V	–	20	30	ns

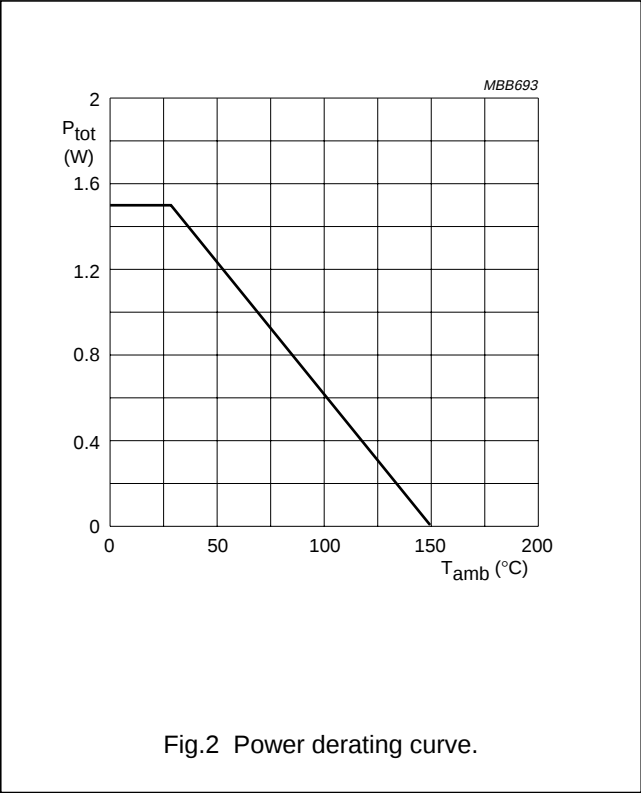


Fig.2 Power derating curve.

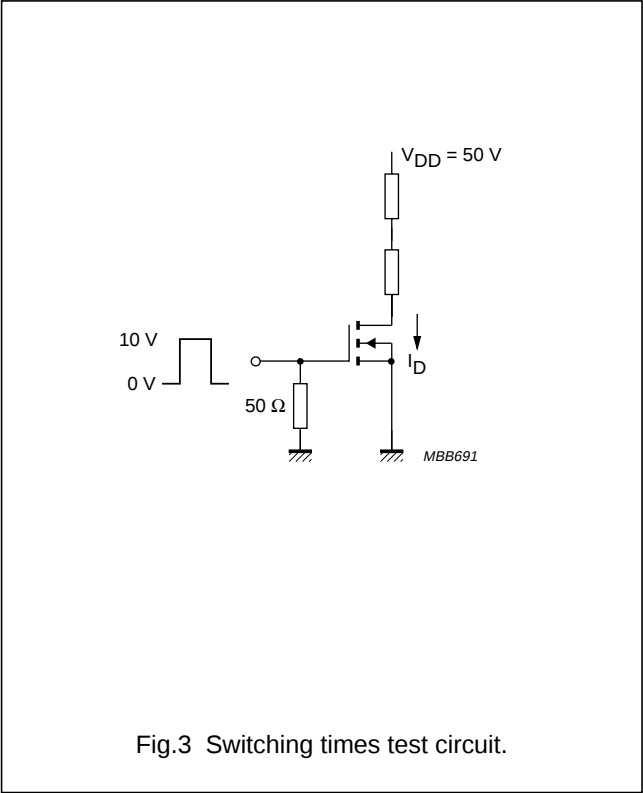


Fig.3 Switching times test circuit.

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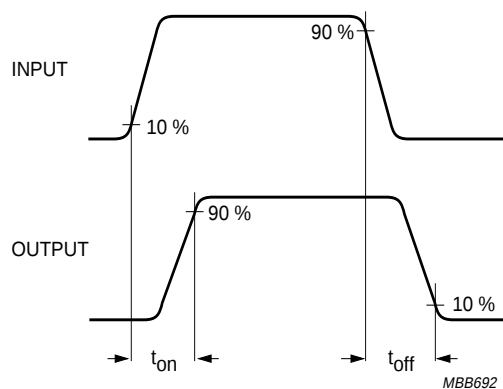
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Fig.4 Input and output waveforms.

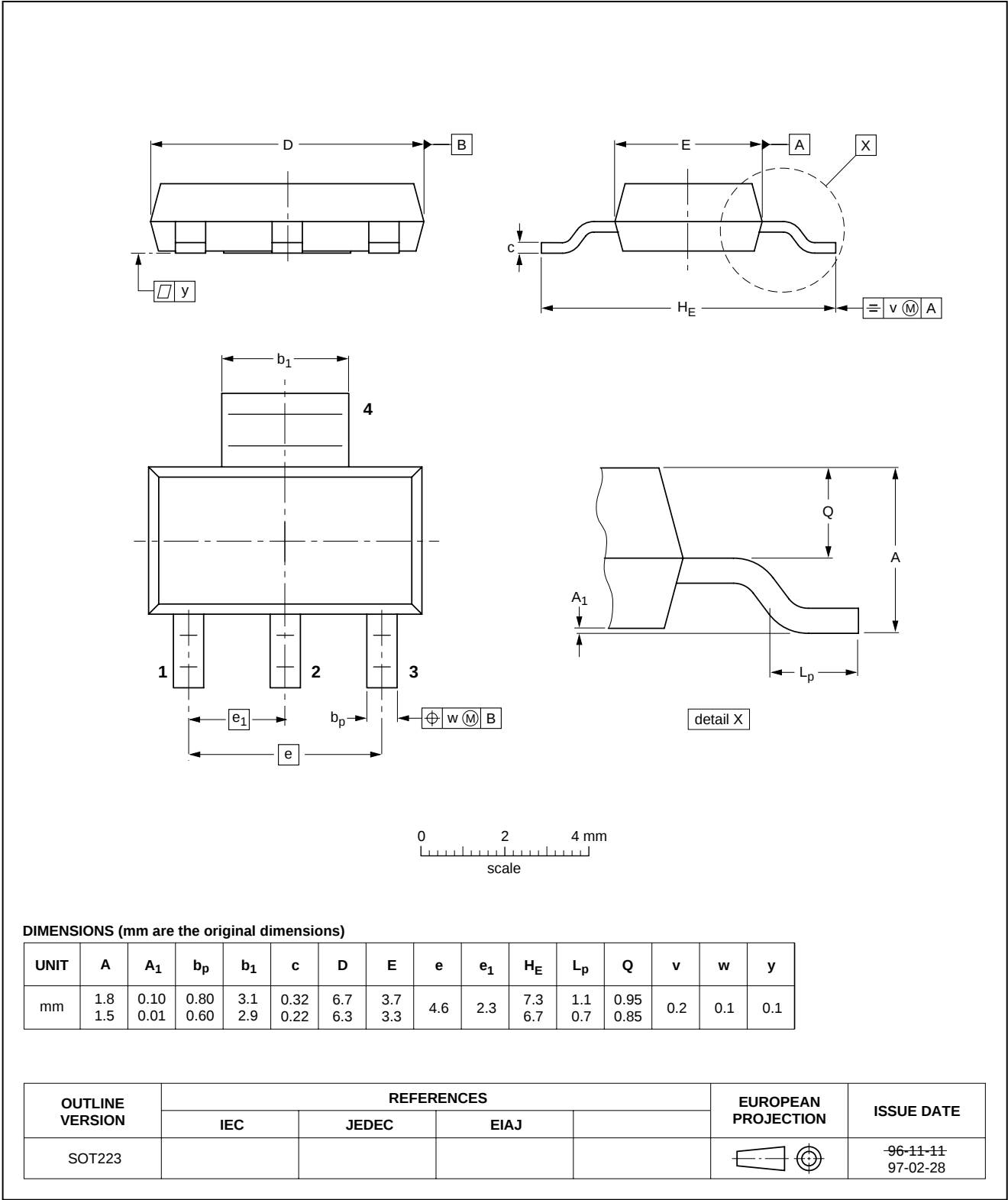
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PACKAGE OUTLINES

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

SOT223



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BSP89**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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