

# DATA SHEET

## **BST120**

P-channel enhancement mode  
vertical D-MOS transistor

Product specification  
File under Discrete Semiconductors, SC13b

April 1995

# P-channel enhancement mode vertical D-MOS transistor

**BST120**

**DESCRIPTION**

P-channel vertical D-MOS transistor in SOT89 envelope and intended for use in relay, high-speed and line-transformer drivers, using SMD technology.

**FEATURES**

- Very low  $R_{DS(on)}$
- Direct interface to C-MOS
- High-speed switching
- No second breakdown

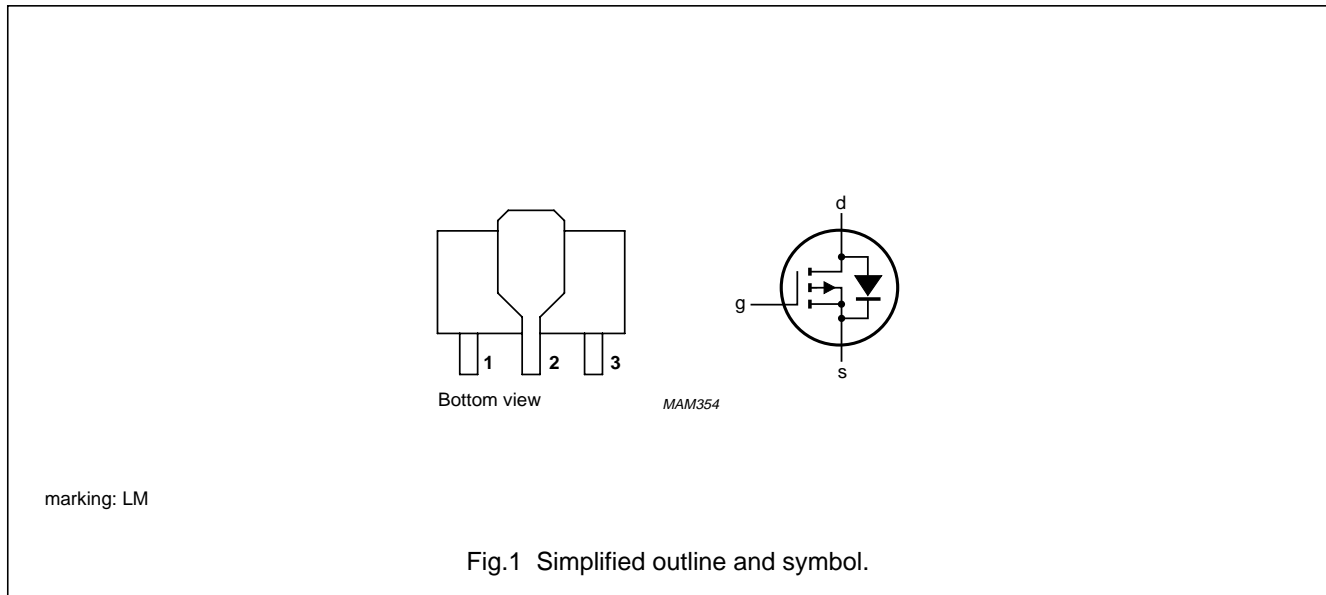
**QUICK REFERENCE DATA**

Drain-source voltage	$-V_{DS}$	max.	60 V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
Drain current (DC)	$-I_D$	max.	0,3 A
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	$P_{tot}$	max.	1 W
Drain-source ON-resistance $-I_D = 200\text{ mA}; -V_{GS} = 10\text{ V}$	$R_{DS(on)}$	typ.	4,5 $\Omega$
		max.	6 $\Omega$
Transfer admittance $-I_D = 200\text{ mA}; -V_{DS} = 15\text{ V}$	$ Y_{fs} $	typ.	200 mS

**PINNING - SOT89**

- 1 = source
- 2 = drain
- 3 = gate

**PIN CONFIGURATION**



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### RATINGS

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

Drain-source voltage	$-V_{DS}$	max.	60 V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
Drain current (DC)	$-I_D$	max.	0.3 A
Drain current (peak)	$-I_{DM}$	max.	0.8 A
Total power dissipation up to $T_{amb} = 25\text{ °C}$ (note 1)	$P_{tot}$	max.	1 W
Storage temperature range	$T_{stg}$		-65 to + 150 °C
Junction temperature	$T_j$	max.	150 °C

### THERMAL RESISTANCE

From junction to ambient (note 1)	$R_{th\ j-a}$	=	125 K/W
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### Note

1. Transistor mounted on ceramic substrate: area = 2,5 cm<sup>2</sup> and thickness = 0,7 mm.

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#### CHARACTERISTICS

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified

Drain-source breakdown voltage

$-I_D = 10\text{ }\mu\text{A}; V_{GS} = 0$   $-V_{(BR)DSS}$  min. 60 V

Drain-source leakage current

$-V_{DS} = 48\text{ V}; V_{GS} = 0$   $-I_{DSS}$  max. 1  $\mu\text{A}$

Gate-source leakage current

$-V_{GS} = 20\text{ V}; V_{DS} = 0$   $-I_{GSS}$  max. 100 nA

Gate threshold voltage

$-I_D = 1\text{ mA}; V_{DS} = V_{GS}$   $-V_{GS(th)}$  min. 1.5 V  
max. 3.5 V

Drain-source ON-resistance

$-I_D = 200\text{ mA}; -V_{GS} = 10\text{ V}$   $R_{DS(on)}$  typ. 4.5  $\Omega$   
max. 6  $\Omega$

Transfer admittance

$-I_D = 200\text{ mA}; -V_{DS} = 15\text{ V}$   $|Y_{fs}|$  typ. 200 mS

Input capacitance at  $f = 1\text{ MHz}$

$-V_{DS} = 10\text{ V}; V_{GS} = 0$   $C_{iss}$  typ. 55 pF  
max. 70 pF

Output capacitance at  $f = 1\text{ MHz}$

$-V_{DS} = 10\text{ V}; V_{GS} = 0$   $C_{oss}$  typ. 30 pF  
max. 45 pF

Feedback capacitance at  $f = 1\text{ MHz}$

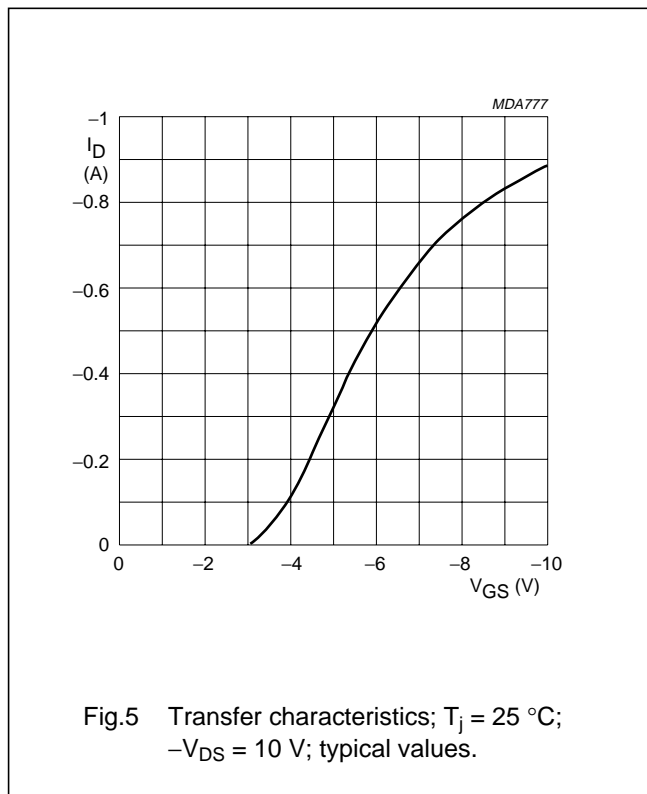
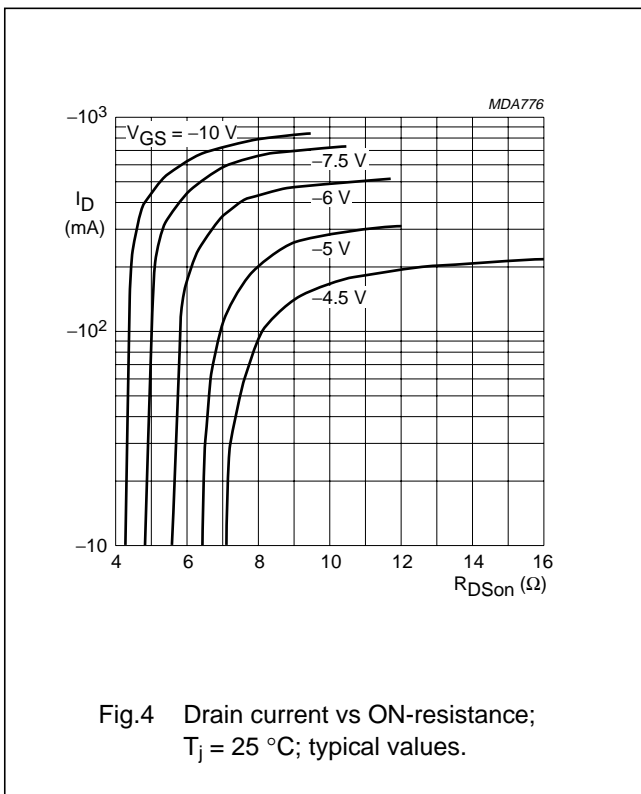
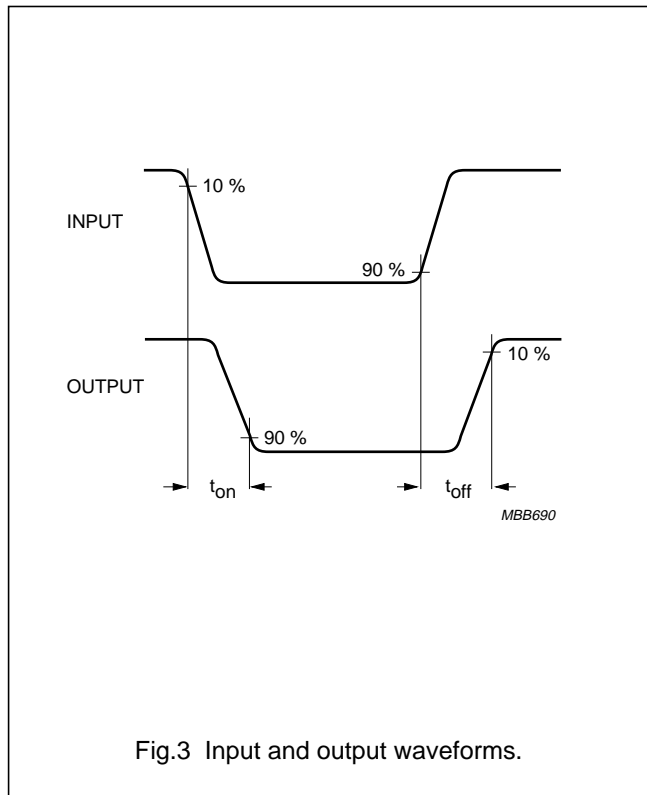
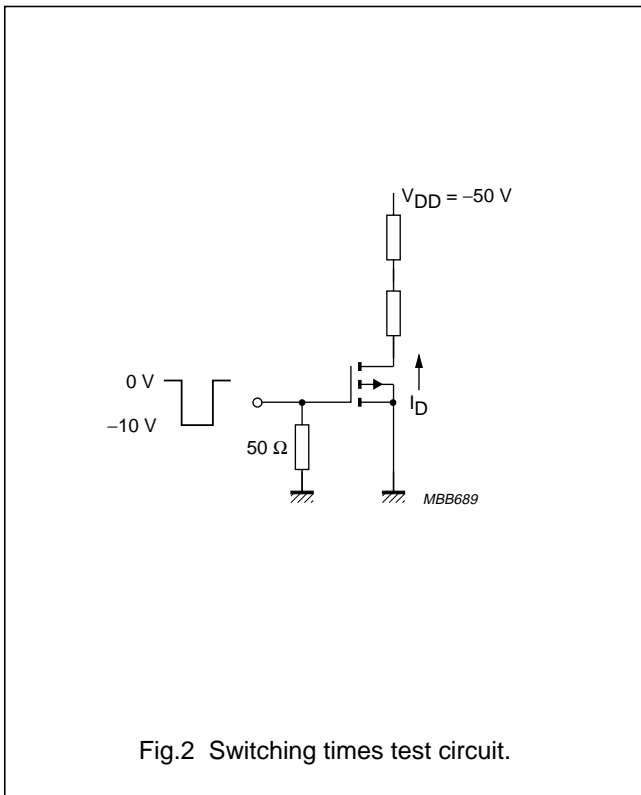
$-V_{DS} = 10\text{ V}; V_{GS} = 0$   $C_{rss}$  typ. 8 pF  
max. 12 pF

Switching times (see Figs 2 and 3)

$-I_D = 200\text{ mA}; -V_{DD} = 50\text{ V}; -V_{GS} = 0\text{ to }10\text{ V}$   $t_{on}$  typ. 4 ns  
 $t_{off}$  typ. 20 ns

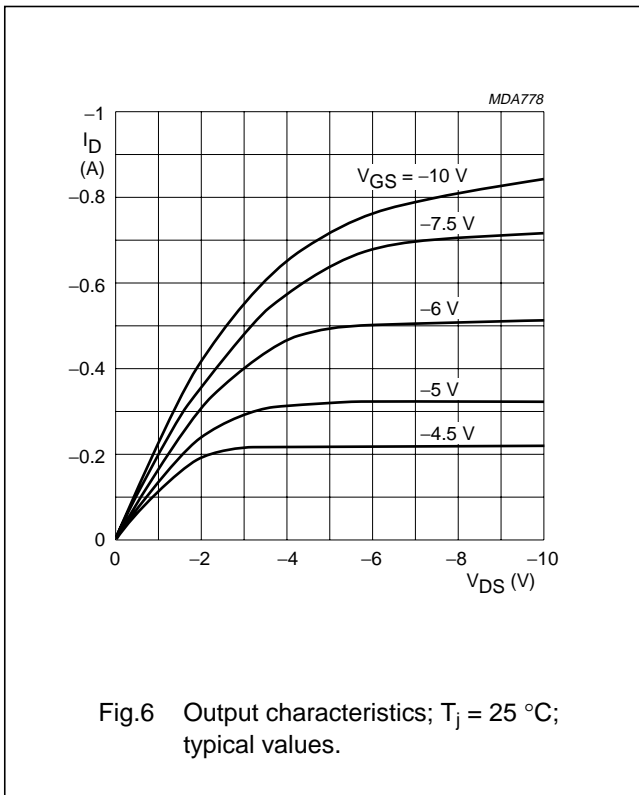
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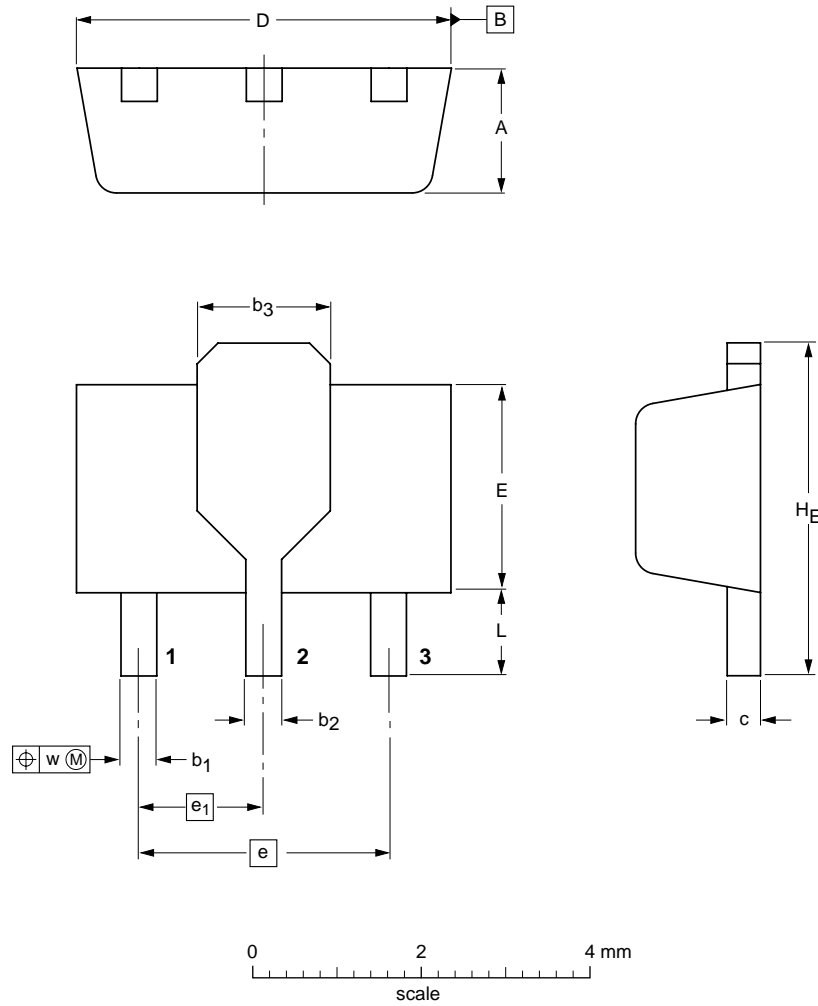
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PACKAGE OUTLINES

Plastic surface mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89						97-02-28

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**BST120****DEFINITIONS**

<b>Data sheet status</b>	
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.
<b>Application information</b>	
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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**NOTES**

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Printed in The Netherlands

137107/00/01/pp12

Date of release: April 1995

Document order number: 9397 750 02494

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