

DATA SHEET

BST122

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

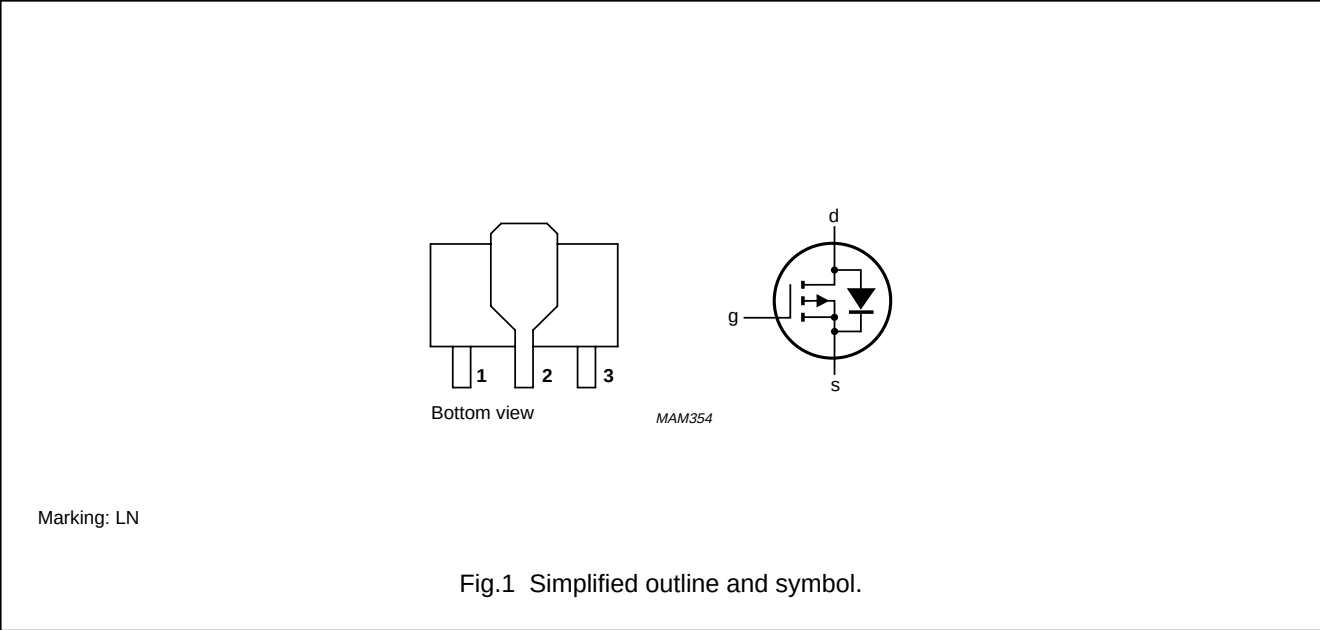
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DESCRIPTION	QUICK REFERENCE DATA			
P-channel vertical D-MOS transistor in SOT89 envelope and intended for use in relay, high-speed and line-transformer drivers, using SMD-technology.	Drain-source voltage	$-V_{DS}$	max.	60 V
	Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
	Drain current (DC)	$-I_D$	max.	0,25 A
	Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.	1 W
	Drain-source ON-resistance	$R_{DS(on)}$	max.	10 Ω
$-I_D = 200\text{ mA}; -V_{GS} = 10\text{ V}$	typ.		7.5 Ω	
FEATURES	Transfer admittance			
	$-I_D = 200\text{ mA}; -V_{DS} = 15\text{ V}$	$ Y_{fs} $	typ.	125 mS
• Very low $R_{DS(on)}$				
• Direct interface to C-MOS, TTL				
• High-speed switching				
• No second breakdown				

PINNING - SOT89

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

PIN CONFIGURATION



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BST122**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.	0.25 A
Drain current (peak)	$-I_{DM}$	max.	0.5 A
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.	1 W
Storage temperature range	T_{stg}	$-65\text{ to }+150\text{ }^{\circ}\text{C}$	
Junction temperature	T_j	max.	150 $^{\circ}\text{C}$

THERMAL RESISTANCE

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

1. Transistor mounted on a ceramic substrate: area = 2,5 cm²; thickness = 0,7 mm.

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CHARACTERISTICS

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

Drain-source breakdown voltage

$$-I_D = 10\text{ }\mu\text{A}; V_{GS} = 0$$

$$-V_{(BR)DSS} \quad \text{min.} \quad 60\text{ V}$$

Drain-source leakage current

$$-V_{DS} = 48\text{ V}; V_{GS} = 0$$

$$-I_{DSS} \quad \text{max.} \quad 1\text{ }\mu\text{A}$$

Gate-source leakage current

$$-V_{GS} = 20\text{ V}; V_{DS} = 0$$

$$-I_{GSS} \quad \text{max.} \quad 100\text{ nA}$$

Gate threshold voltage

$$-I_D = 1\text{ mA}; V_{DS} = V_{GS}$$

$$-V_{GS(th)} \quad \text{min.} \quad 1.5\text{ V}$$

$$\quad \text{max.} \quad 3.5\text{ V}$$

Drain-source ON-resistance

$$-I_D = 200\text{ mA}; -V_{GS} = 10\text{ V}$$

$$R_{DS(on)} \quad \text{max.} \quad 10\text{ }\Omega$$

$$\quad \text{typ.} \quad 7.5\text{ }\Omega$$

Transfer admittance

$$-I_D = 200\text{ mA}; -V_{DS} = 15\text{ V}$$

$$|Y_{fs}| \quad \text{typ.} \quad 125\text{ mS}$$

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

$$-V_{DS} = 10\text{ V}; V_{GS} = 0$$

$$C_{iss} \quad \text{typ.} \quad 30\text{ pF}$$

$$\quad \text{max.} \quad 45\text{ pF}$$

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

$$-V_{DS} = 10\text{ V}; V_{GS} = 0$$

$$C_{oss} \quad \text{typ.} \quad 20\text{ pF}$$

$$\quad \text{max.} \quad 30\text{ pF}$$

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

$$-V_{DS} = 10\text{ V}; V_{GS} = 0$$

$$C_{rss} \quad \text{typ.} \quad 5\text{ pF}$$

$$\quad \text{max.} \quad 10\text{ pF}$$

Switching times (see Figs 2 and 3)

$$-I_D = 200\text{ mA}; -V_{DD} = 50\text{ V}; -V_{GS} = 0\text{ to }10\text{ V}$$

$$t_{on} \quad \text{typ.} \quad 4\text{ ns}$$

$$t_{off} \quad \text{typ.} \quad 10\text{ ns}$$

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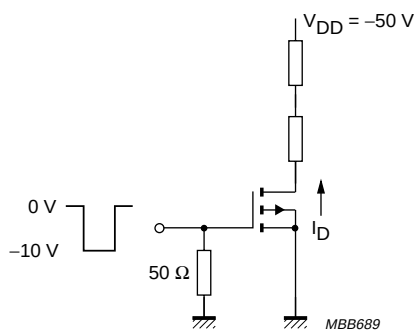


Fig.2 Switching times test circuit.

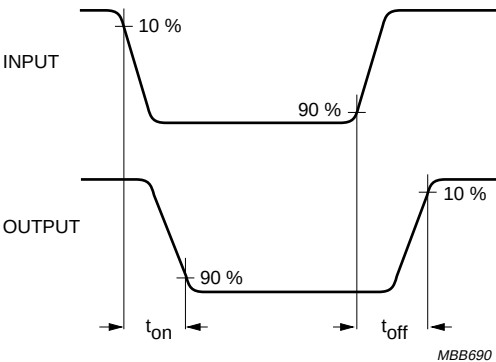


Fig.3 Input and output waveforms.

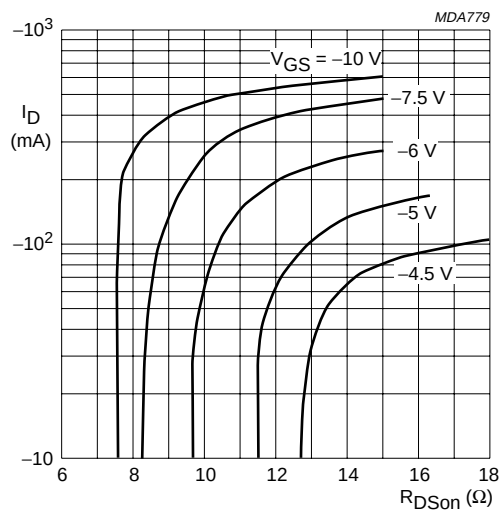


Fig.4 Drain current vs ON-resistance;
 $T_j = 25\text{ }^{\circ}\text{C}$; typical values.

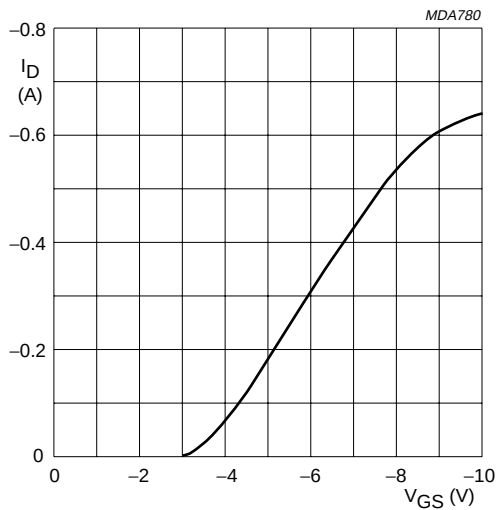


Fig.5 Transfer characteristics;
 $T_j = 25\text{ }^{\circ}\text{C}$; $-V_{DS} = 10\text{ V}$; typical values.

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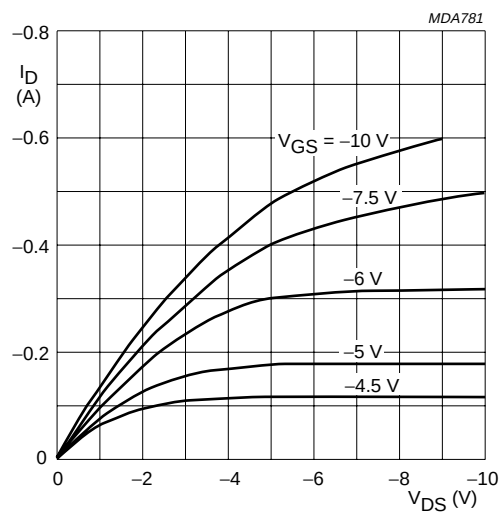


Fig.6 Output characteristics; $T_j = 25\text{ }^{\circ}\text{C}$;
typical values.

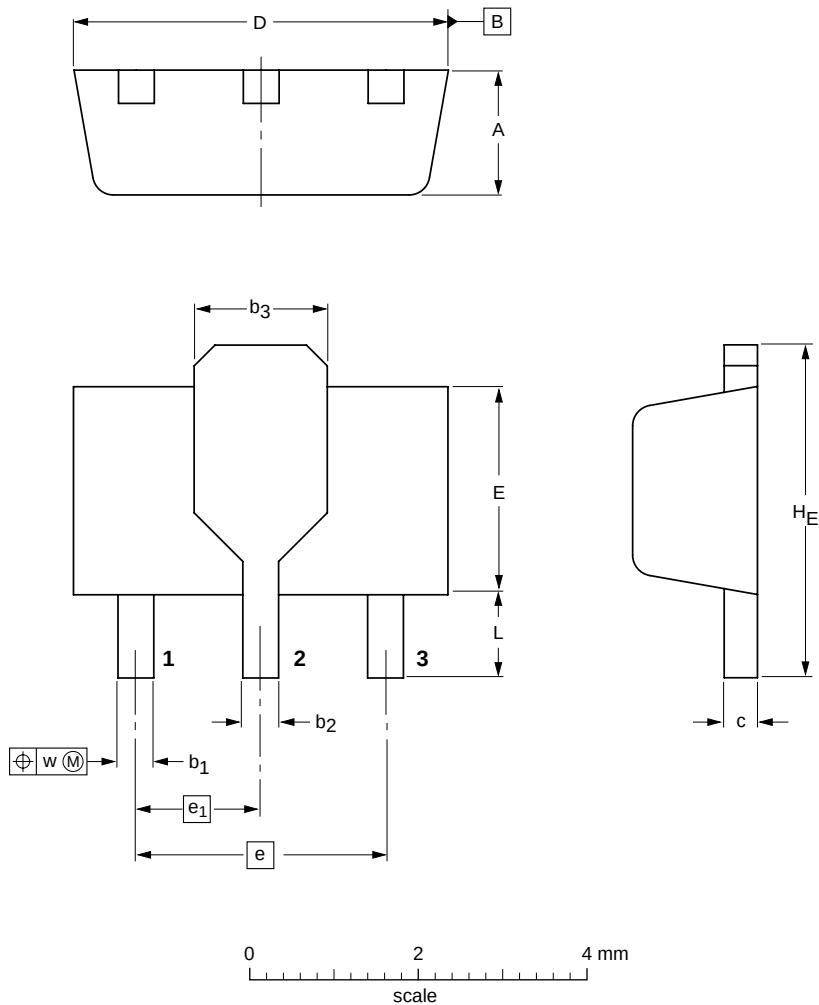
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PACKAGE OUTLINES

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

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b ₁	b ₂	b ₃	c	D	E	e	e ₁	H _E	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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BST122**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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NOTES

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