

DATA SHEET

BSN205; BSN205A

N-channel enhancement mode
vertical D-MOS transistor

Product specification
File under Discrete Semiconductors, SC13b

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DESCRIPTION

N-channel enhancement mode vertical D-MOS transistor in a TO-92 variant envelope. Designed primarily as a line current interrupter in telephone sets, it can also be applied in other applications such as in relays, line and high speed transformer drivers etc.

FEATURES

- Direct interface to C-MOS, TTL, etc.
- High-speed switching
- No secondary breakdown
- Low $R_{DS(on)}$

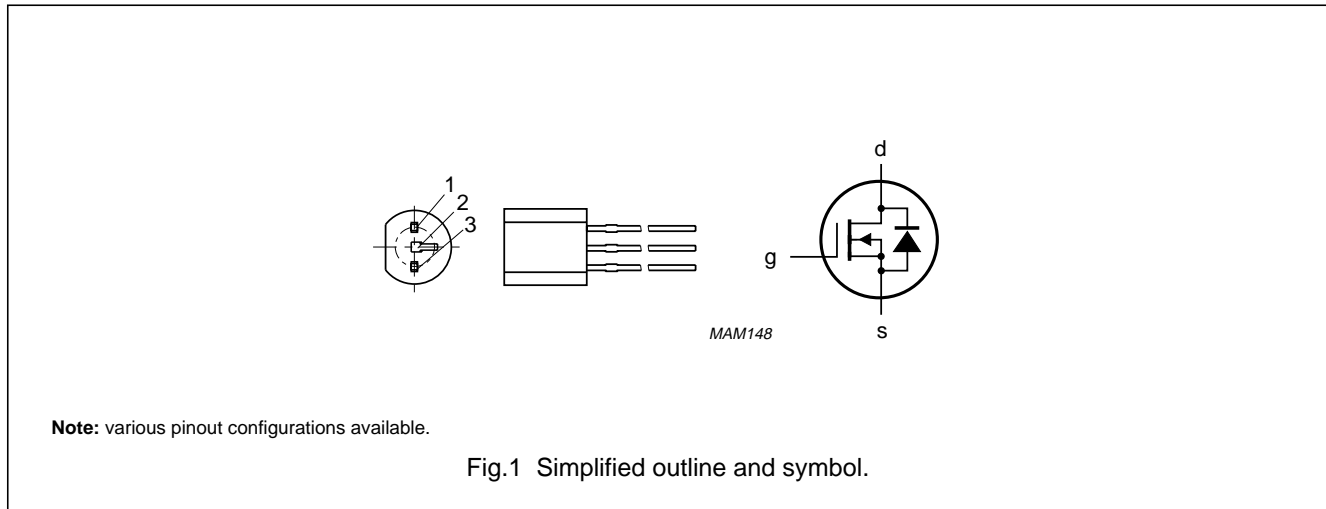
QUICK REFERENCE DATA

Drain-source voltage	V_{DS}	max.	200 V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
Drain current (DC)	I_D	max.	300 mA
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	P_{tot}	max.	1 W
Drain-source ON-resistance $I_D = 400\text{ mA}; V_{GS} = 10\text{ V}$	$R_{DS(on)}$	typ.	4.5 Ω
		max.	6 Ω
Transfer admittance $I_D = 400\text{ mA}; V_{DS} = 25\text{ V}$	$ Y_{fs} $	min.	200 mS
		typ.	350 mS

PINNING - TO-92 VARIANT

BSN205		BSN205A	
1	= gate	1	= source
2	= drain	2	= gate
3	= source	3	= drain

PIN CONFIGURATION



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RATINGS

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

Drain-source voltage	V_{DS}	max.	200 V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
Drain current (DC)	I_D	max.	300 mA
Drain current (peak)	I_{DM}	max.	1.2 A
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$ (note 1)	P_{tot}	max.	1 W
Storage temperature range	T_{stg}		-65 to +150 $^{\circ}\text{C}$
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 printed-circuit board, max. lead length 4 mm, mounting pad for drain lead min. 10 mm × 10 mm.

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.	200 V
Drain-source leakage current $V_{DS} = 160\text{ V}; V_{GS} = 0$	I_{DSS}	max.	1 μA
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. max.	0.8 V 2.8 V
Drain-source ON-resistance $I_D = 400\text{ mA}; V_{GS} = 10\text{ V}$	$R_{DS(on)}$	typ. max.	4 Ω 6 Ω
Transfer admittance $I_D = 400\text{ mA}; V_{DS} = 25\text{ V}$	$ Y_{fs} $	min. typ.	200 mS 350 mS
Input capacitance at $f = 1\text{ MHz}$ $V_{DS} = 25\text{ V}; V_{GS} = 0$	C_{iss}	typ. max.	45 pF 60 pF

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

$V_{DS} = 25 \text{ V}; V_{GS} = 0$

C_{oss}	typ.	15 pF
	max.	25 pF

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

$V_{DS} = 25 \text{ V}; V_{GS} = 0$

C_{rss}	typ.	3.5 pF
	max.	10 pF

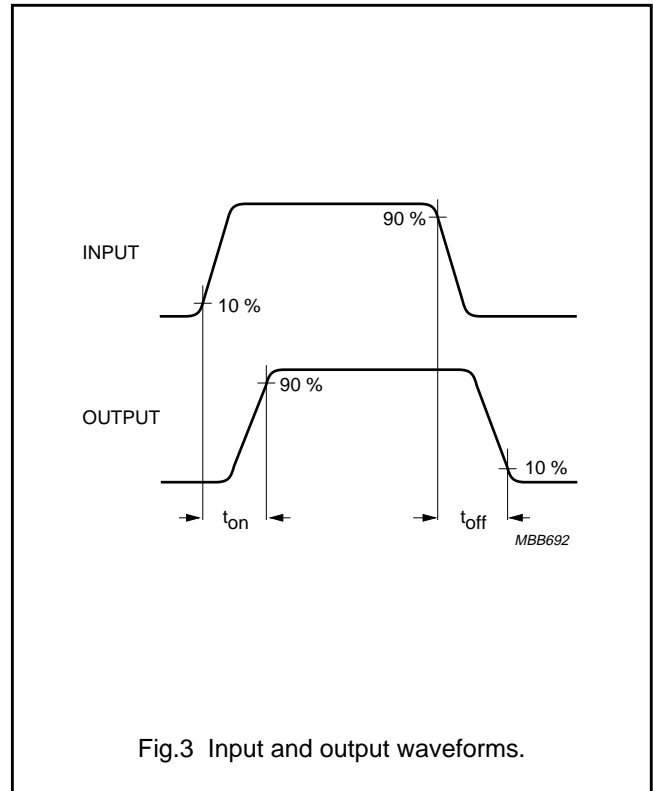
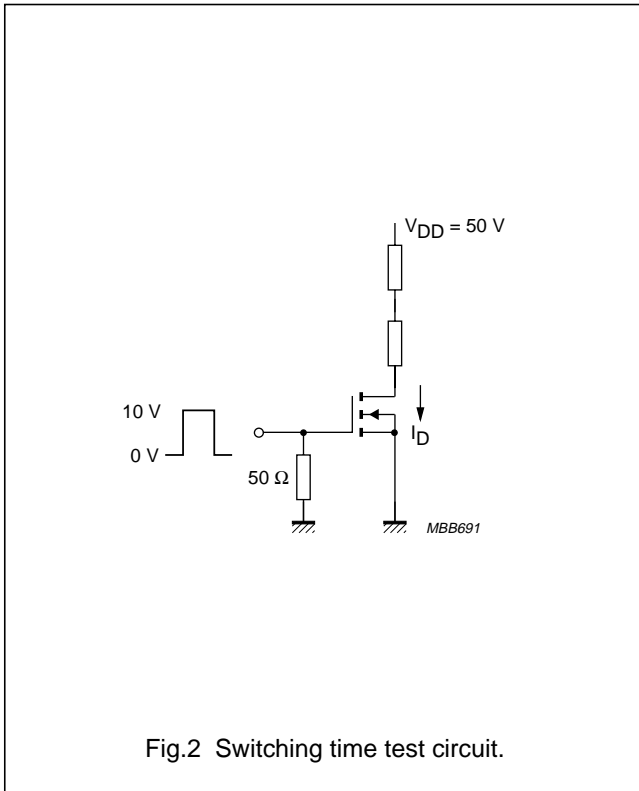
Switching times (see Figs 2 and 3)

$I_D = 250 \text{ mA}; V_{DD} = 50 \text{ V}$

$V_{GS} = 0 \text{ to } 10 \text{ V}$

t_{on}	typ.	5 ns
	max.	10 ns

t_{off}	typ.	15 ns
	max.	20 ns



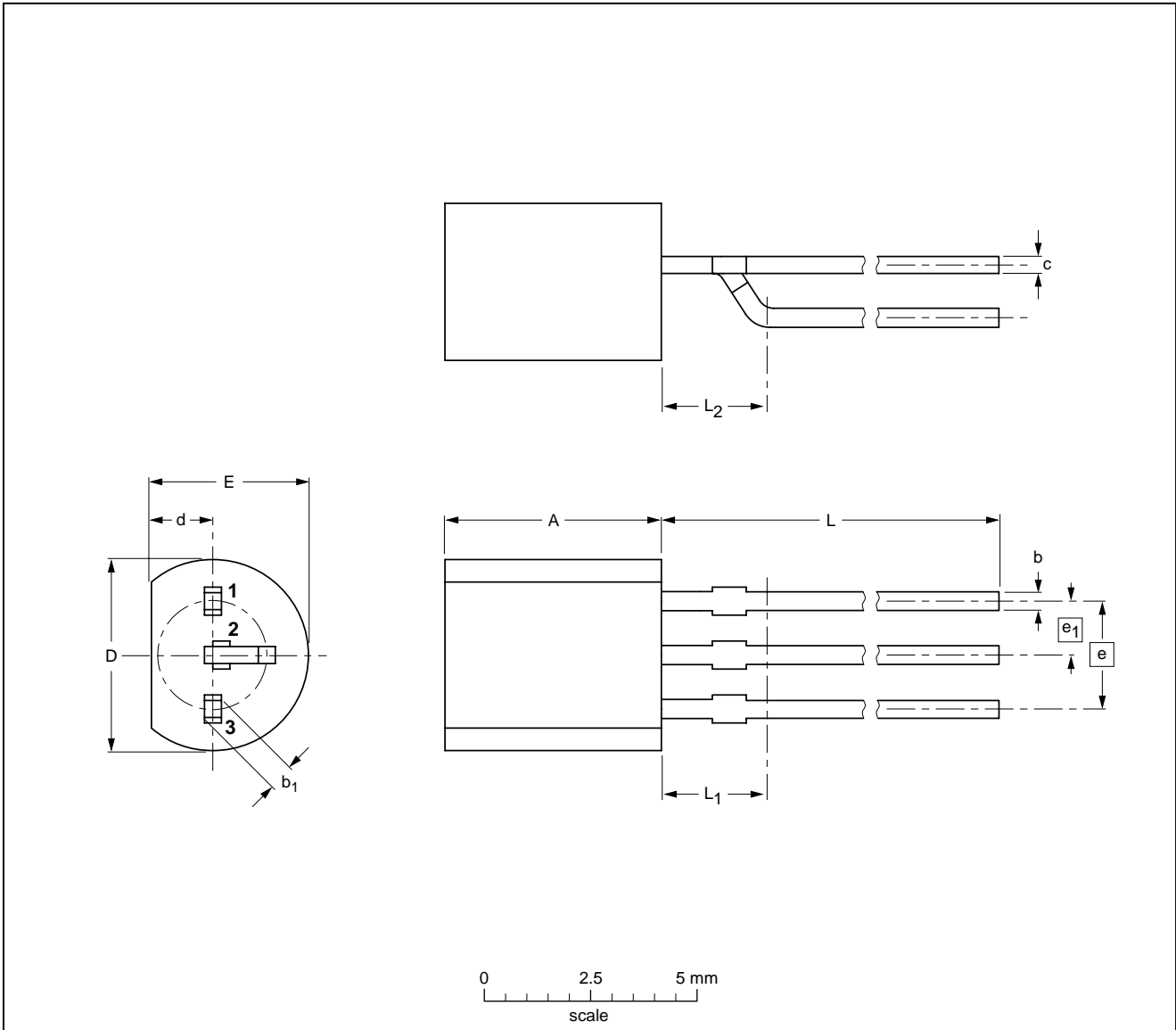
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PACKAGE OUTLINES

Plastic single-ended leaded (through hole) package; 3 leads (on-circle)

SOT54 variant



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b ₁	c	D	d	E	e	e ₁	L	L ₁ ⁽¹⁾ max	L ₂ max
mm	5.2 5.0	0.48 0.40	0.66 0.56	0.45 0.40	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5	2.5

Notes

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT54 variant		TO-92	SC-43			97-04-14

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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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