

# DATA SHEET

## **BSN274; BSN274A** 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

**BSN274; BSN274A**

**FEATURES**

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

**DESCRIPTION**

Silicon n-channel enhancement mode vertical D-MOS transistor in TO-92 variant envelope and intended for use as a line current interruptor in telephone sets and for applications in relay, high speed and line transformer drivers.

**QUICK REFERENCE DATA**

SYMBOL	PARAMETER	MAX.	UNIT
$V_{DS}$	drain-source voltage	270	V
$I_D$	drain current (DC)	250	mA
$R_{DS(on)}$	drain-source on-resistance	8	$\Omega$
$V_{GS(th)}$	threshold voltage	2	V

**PINNING (BSN274)**

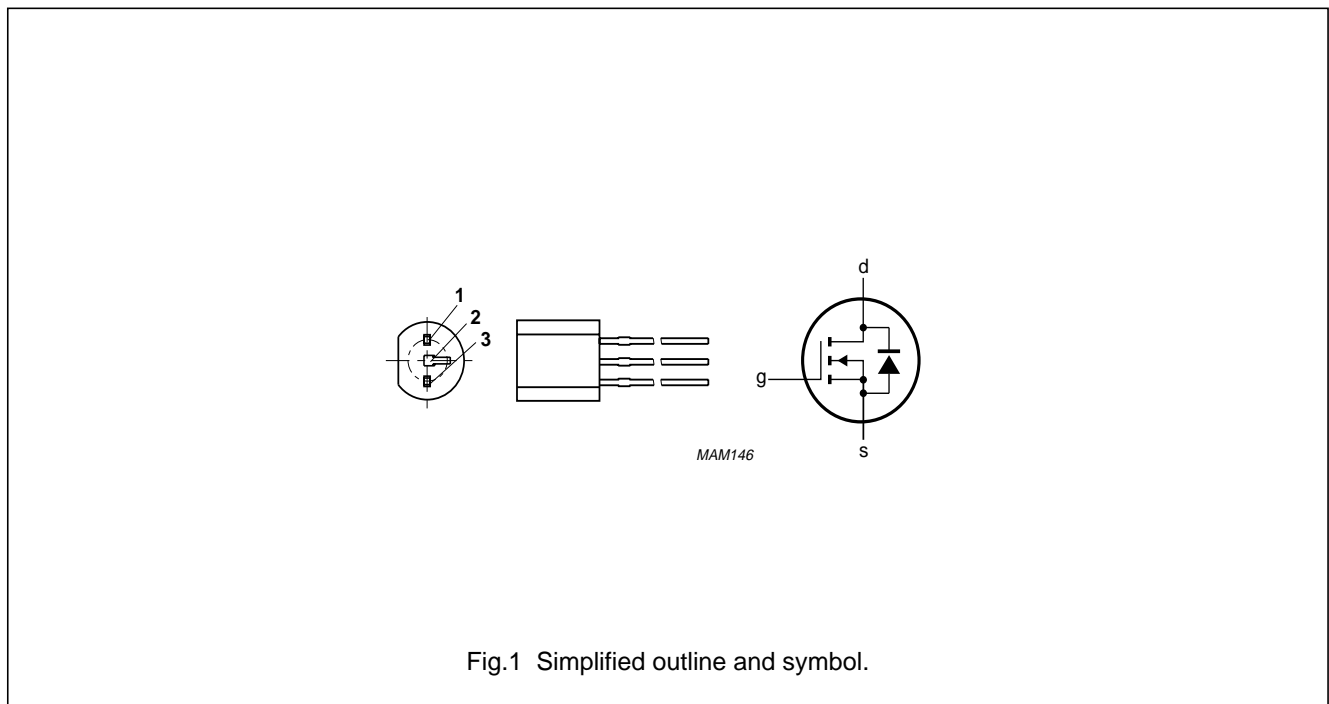
PIN	DESCRIPTION
1	gate
2	drain
3	source

**PINNING (BSN274A)**

PIN	DESCRIPTION
1	source
2	gate
3	drain

**Note:** Other pinnings are available on request.

**PIN CONFIGURATION - TO-92 VARIANT**



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### LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{DS}$	drain-source voltage		–	270	V
$\pm V_{GSO}$	gate-source voltage	open drain	–	20	V
$I_D$	drain current	DC	–	250	mA
$I_{DM}$	drain current	peak	–	1	A
$P_{tot}$	total power dissipation	up to $T_{amb} = 25\text{ °C}$ (note 1)	–	1	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)	125	K/W

### Notes

1. Transistor mounted on printed circuit board, maximum lead length 4 mm, mounting pad for drain leads minimum 10 mm × 10 mm.

### CHARACTERISTICS

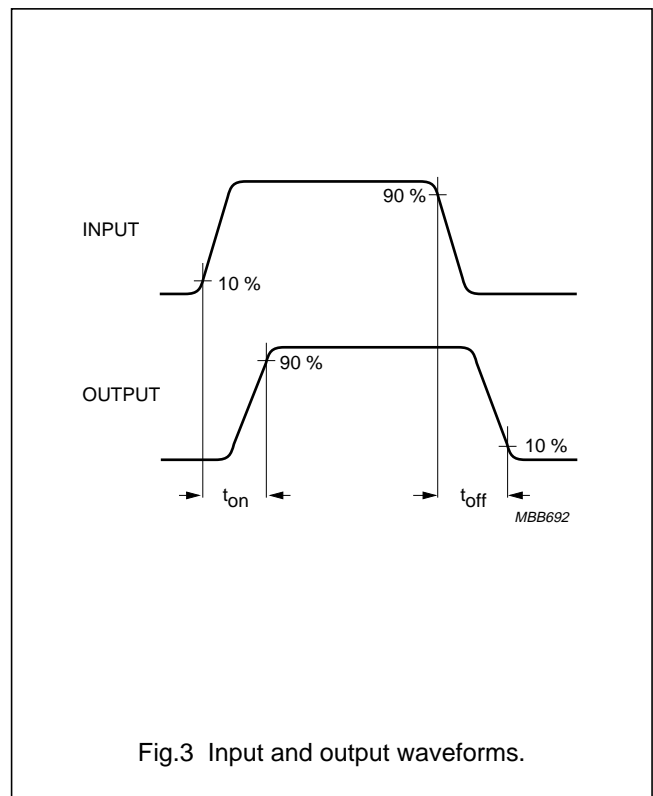
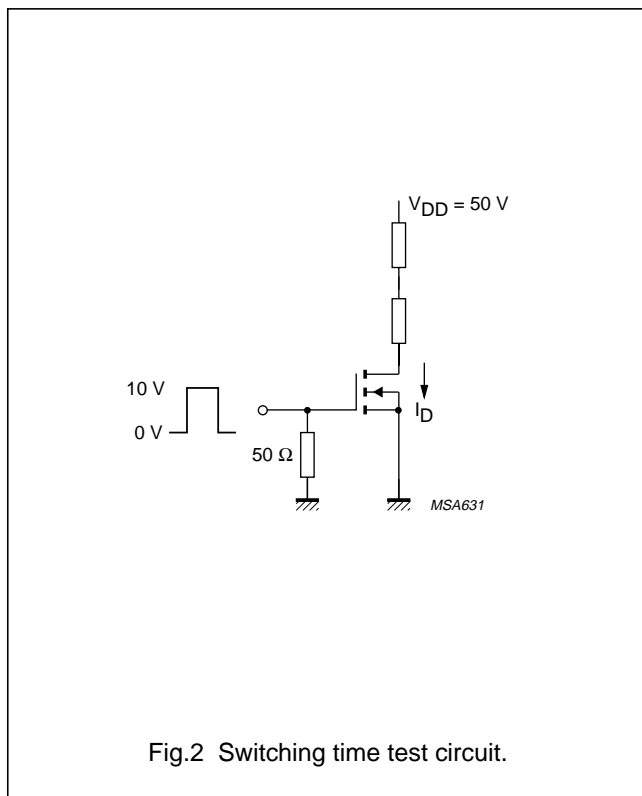
 $T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$ $I_D = 10\ \mu\text{A}$	270	–	–	V
$I_{DSS}$	drain-source leakage current	$V_{DS} = 220\text{ V}$ $V_{GS} = 0$	–	–	1	$\mu\text{A}$
$\pm I_{GSS}$	gate-source leakage current	$\pm V_{GS} = 20\text{ V}$ $V_{DS} = 0$	–	–	100	nA
$V_{GS(th)}$	gate threshold voltage	$I_D = 1\text{ mA}$ $V_{DS} = V_{GS}$	0.8	–	2	V
$R_{DS(on)}$	drain-source on-resistance	$I_D = 250\text{ mA}$ $V_{GS} = 10\text{ V}$	–	6.5	8	$\Omega$
$R_{DS(on)}$	drain-source on-resistance	$I_D = 20\text{ mA}$ $V_{GS} = 2.4\text{ V}$	–	9	14	$\Omega$
$ Y_{fs} $	transfer admittance	$I_D = 250\text{ mA}$ $V_{DS} = 25\text{ V}$	200	400	–	mS
$C_{iss}$	input capacitance	$V_{DS} = 25\text{ V}$ $V_{GS} = 0$ $f = 1\text{ MHz}$	–	65	90	pF
$C_{oss}$	output capacitance	$V_{DS} = 25\text{ V}$ $V_{GS} = 0$ $f = 1\text{ MHz}$	–	20	30	pF

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$C_{rss}$	feedback capacitance	$V_{DS} = 25\text{ V}$ $V_{GS} = 0$ $f = 1\text{ MHz}$	–	5	15	pF
<b>Switching times (see Figs 2 and 3)</b>						
$t_{on}$	switching-on time	$I_D = 250\text{ mA}$ $V_{DD} = 50\text{ V}$ $V_{GS} = 0\text{ to }10\text{ V}$	–	5	10	ns
$t_{off}$	switching-off time	$I_D = 250\text{ mA}$ $V_{DD} = 50\text{ V}$ $V_{GS} = 0\text{ to }10\text{ V}$	–	20	30	ns



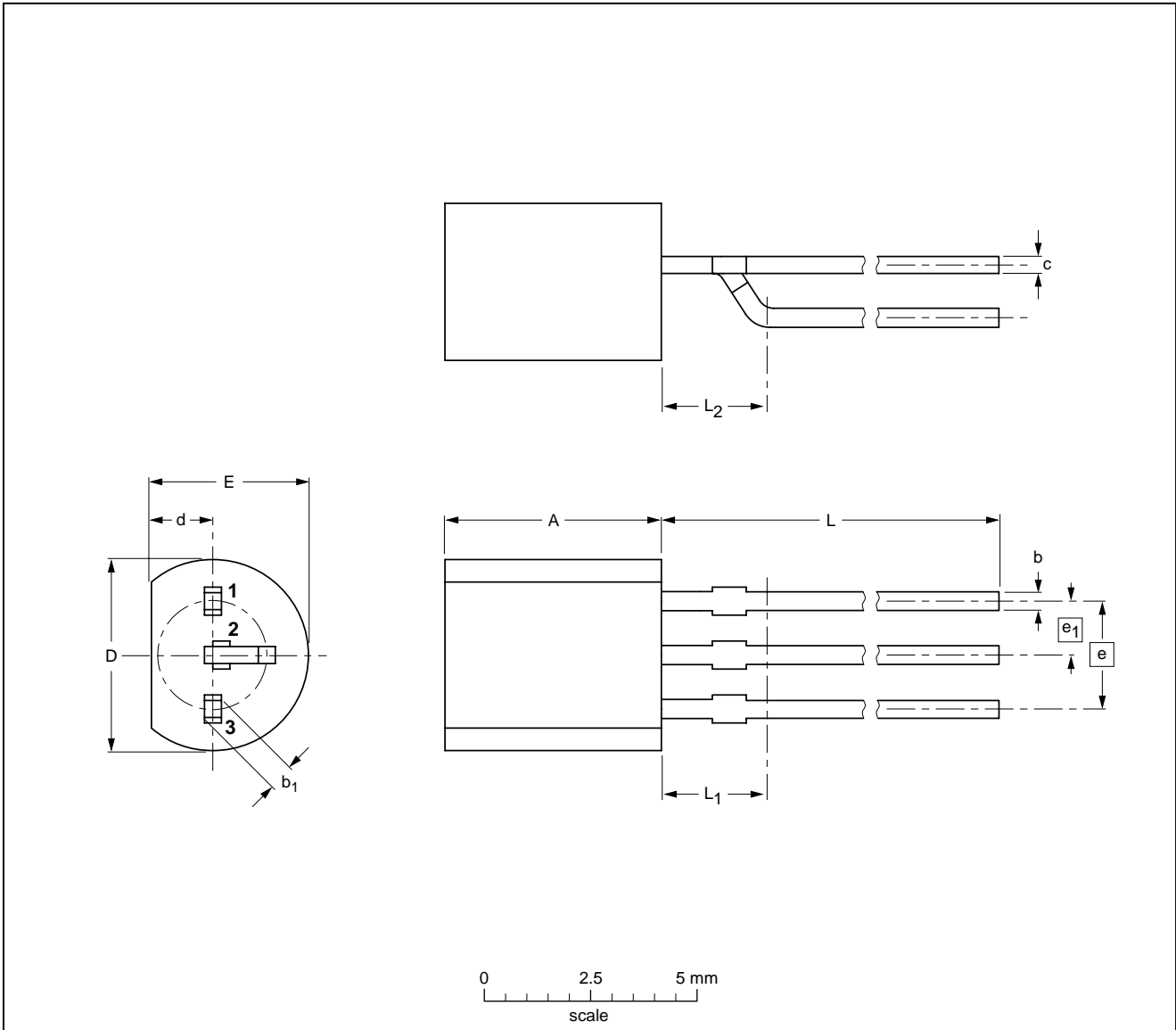
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## PACKAGE OUTLINES

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

SOT54 variant



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup> max	L <sub>2</sub> 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**

<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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