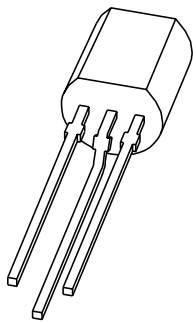


DATA SHEET



BSN304

N-channel enhancement mode
vertical D-MOS transistor

Product specification
Supersedes data of 1997 Jun 17

2001 Dec 11

N-channel enhancement mode vertical D-MOS transistor

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FEATURES

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

APPLICATIONS

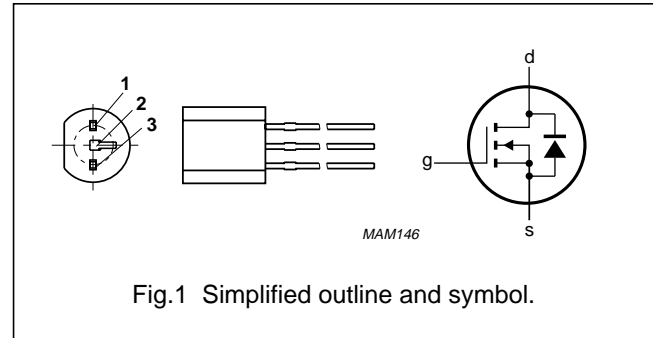
- Line current interruptor in telephone sets
- Relay, high-speed and line transformer drivers.

DESCRIPTION

N-channel enhancement mode vertical D-MOS transistor in a TO-92 variant package.

PINNING - TO-92 variant

PIN	DESCRIPTION
1	gate
2	drain
3	source



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	300	V
I_D	drain current (DC)		–	300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	1	W
V_{GSO}	gate-source voltage	open drain	–	± 20	V
R_{DSon}	drain-source on-state resistance	$I_D = 250\text{ mA}; V_{GS} = 10\text{ V}$	–	6	Ω
V_{GSoff}	gate-source cut-off voltage	$I_D = 1\text{ mA}; V_{GS} = V_{DS}$	0.8	2	V

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	300	V
V_{GSO}	gate-source voltage (DC)	open drain	–	± 20	V
I_D	drain current (DC)		–	300	mA
I_{DM}	peak drain current		–	1.2	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}; \text{note 1}$	–	1	W
T_{stg}	storage temperature		–55	+150	$^{\circ}\text{C}$
T_j	operating junction temperature		–	150	$^{\circ}\text{C}$

Note

1. Device mounted on an epoxy printed-circuit board, maximum lead length 4 mm; mounting pad for the drain lead minimum 10 mm x 10 mm.

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient; note 1	125	K/W

Note

1. Device mounted on an epoxy printed-circuit board, maximum lead length 4 mm; mounting pad for the drain lead minimum 10 mm x 10 mm.

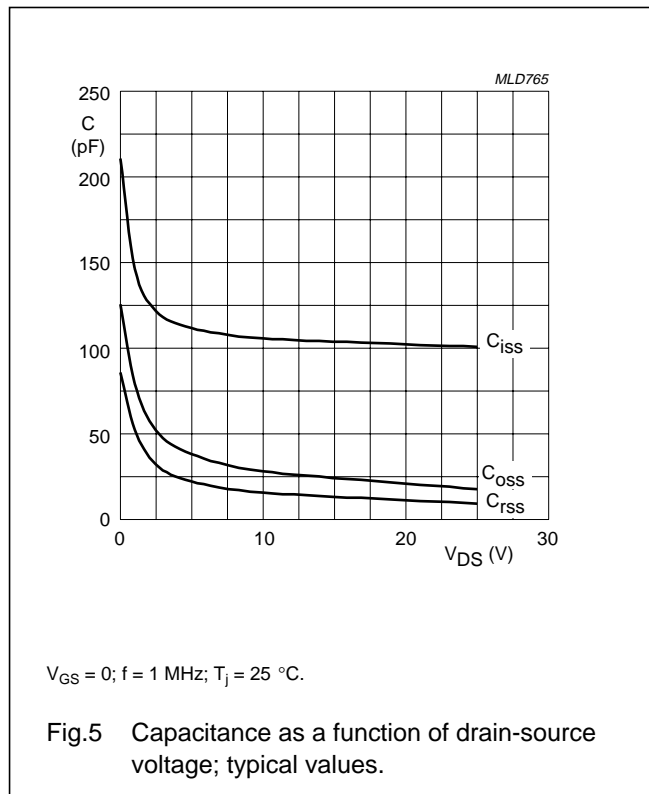
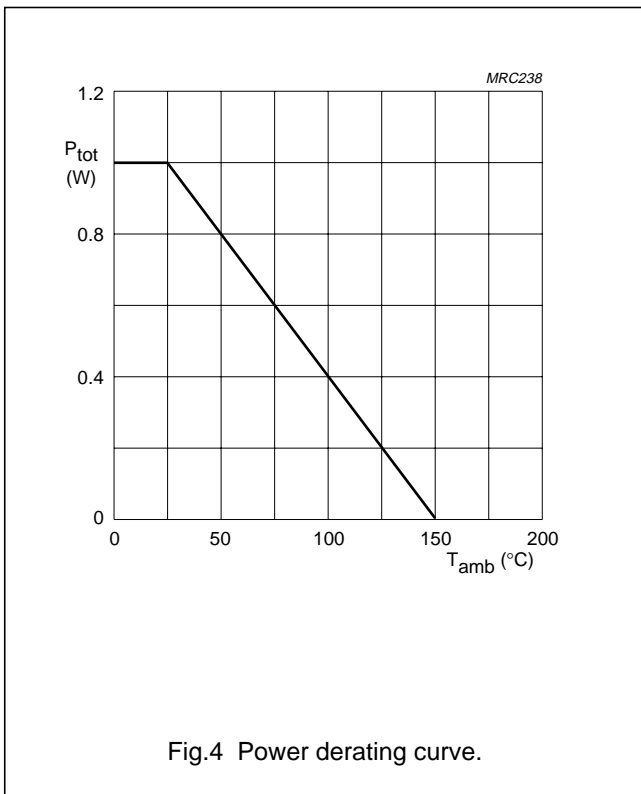
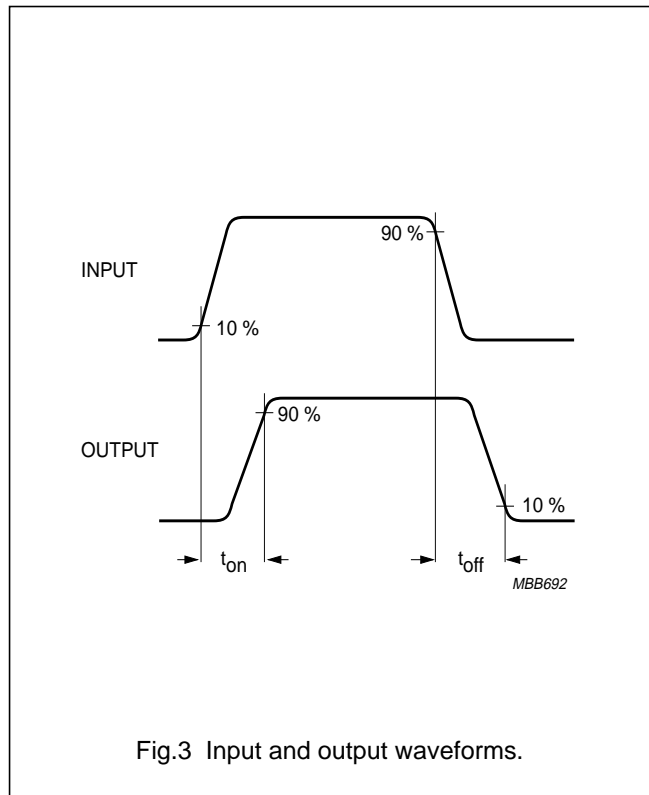
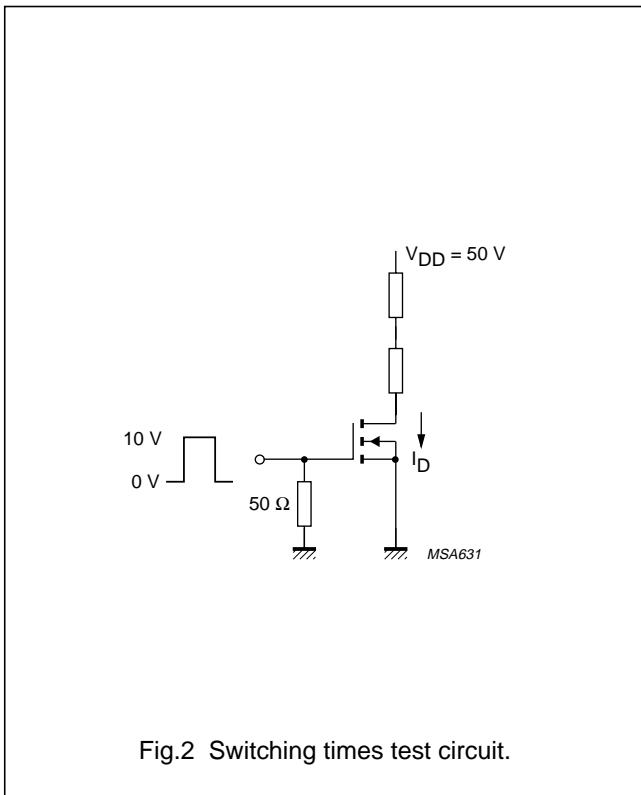
STATIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$I_D = 10\ \mu\text{A}; V_{GS} = 0$	300	–	–	V
I_{GSS}	gate-source leakage current	$V_{GS} = \pm 20\ \text{V}; V_{DS} = 0$	–	–	± 100	nA
V_{GSth}	gate-source threshold voltage	$I_D = 1\ \text{mA}; V_{DS} = V_{GS}$	0.8	–	2	V
R_{DSon}	drain-source on-state resistance	$I_D = 250\ \text{mA}; V_{GS} = 10\ \text{V}$	–	3.7	6	Ω
		$I_D = 20\ \text{mA}; V_{GS} = 2.4\ \text{V}$	–	4.8	10	Ω
I_{DSS}	drain-source leakage current	$V_{DS} = 240\ \text{V}; V_{GS} = 0$	–	–	100	nA
$ Y_{fs} $	transfer admittance	$I_D = 250\ \text{mA}; V_{DS} = 25\ \text{V}$	200	690	–	mS
C_{iss}	input capacitance	$V_{DS} = 25\ \text{V}; V_{GS} = 0; f = 1\ \text{MHz}$	–	100	120	pF
C_{oss}	output capacitance	$V_{DS} = 25\ \text{V}; V_{GS} = 0; f = 1\ \text{MHz}$	–	21	30	pF
C_{rss}	feedback capacitance	$V_{DS} = 25\ \text{V}; V_{GS} = 0;$ $f = 1\ \text{MHz}$	–	10	15	pF
Switching times (see Figs 2 and 3)						
t_{on}	turn-on time	$I_D = 250\ \text{mA}; V_{DD} = 50\ \text{V};$ $V_{GS} = 0\ \text{to}\ 10\ \text{V}$	–	6	10	ns
t_{off}	turn-off time	$I_D = 250\ \text{mA}; V_{DD} = 50\ \text{V};$ $V_{GS} = 10\ \text{to}\ 0\ \text{V}$	–	46	60	ns

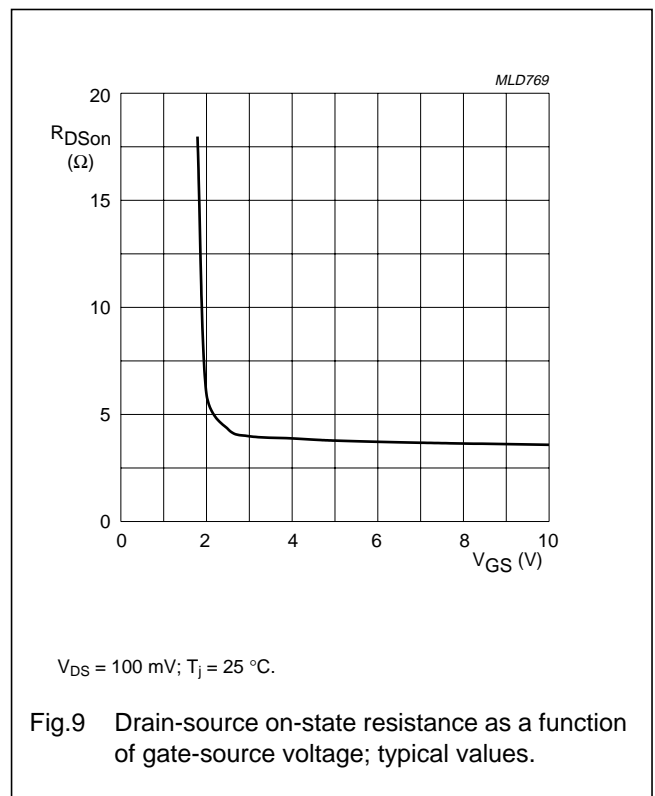
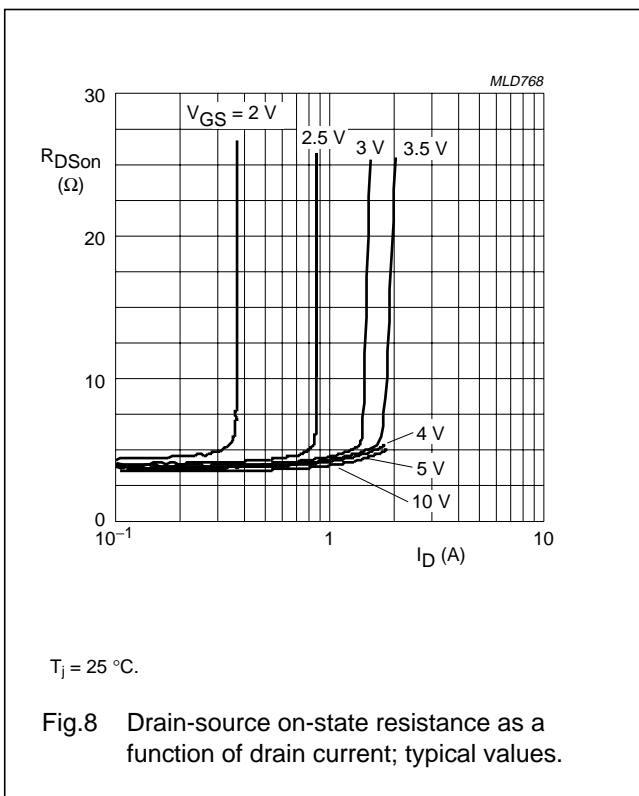
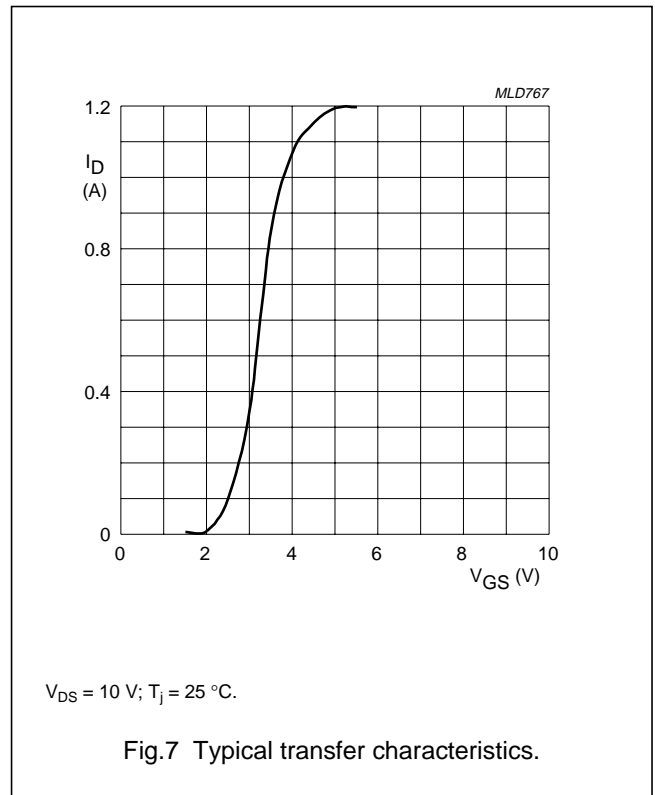
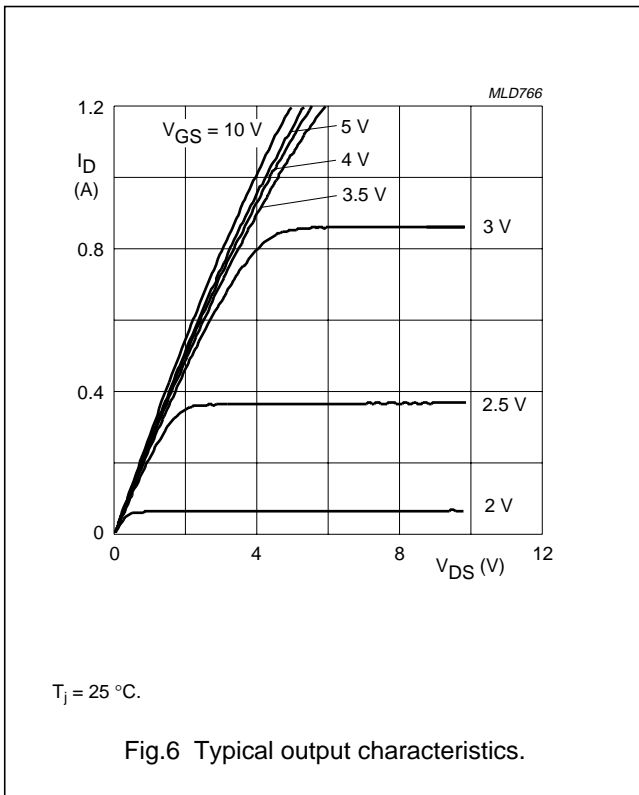
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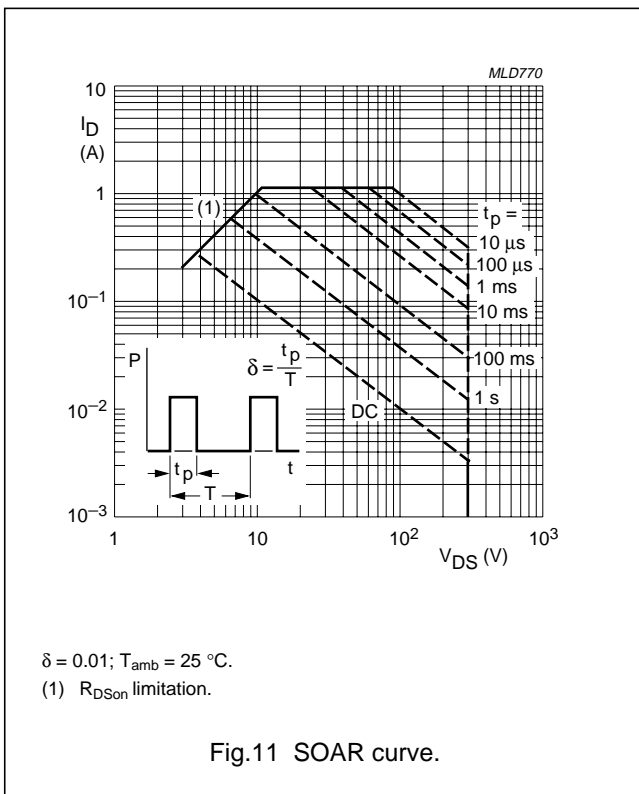
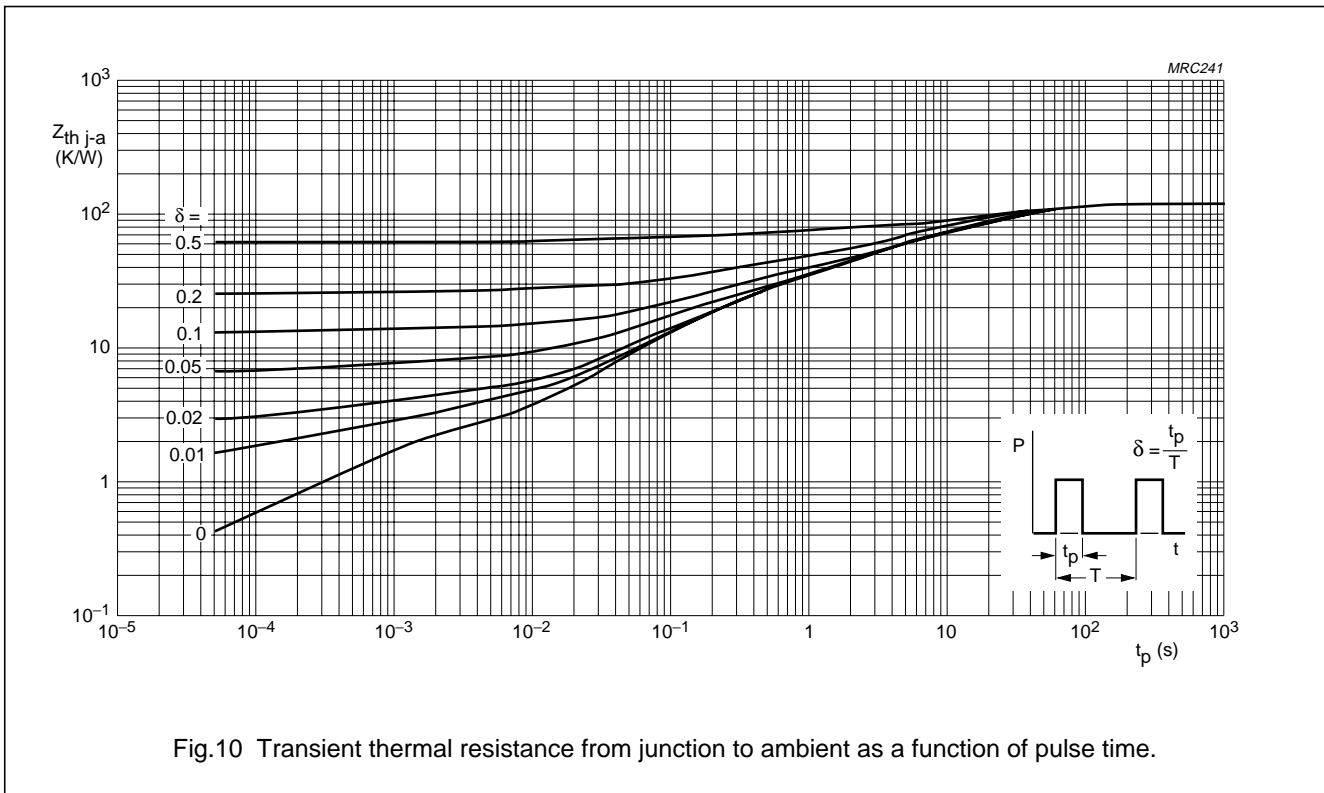
N-channel enhancement mode vertical D-MOS transistor

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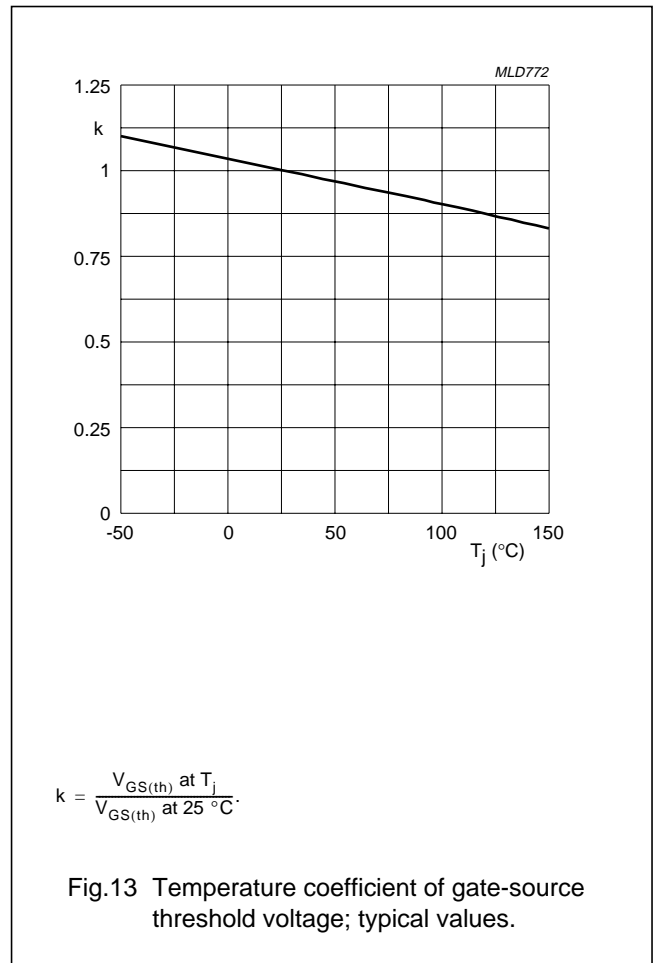
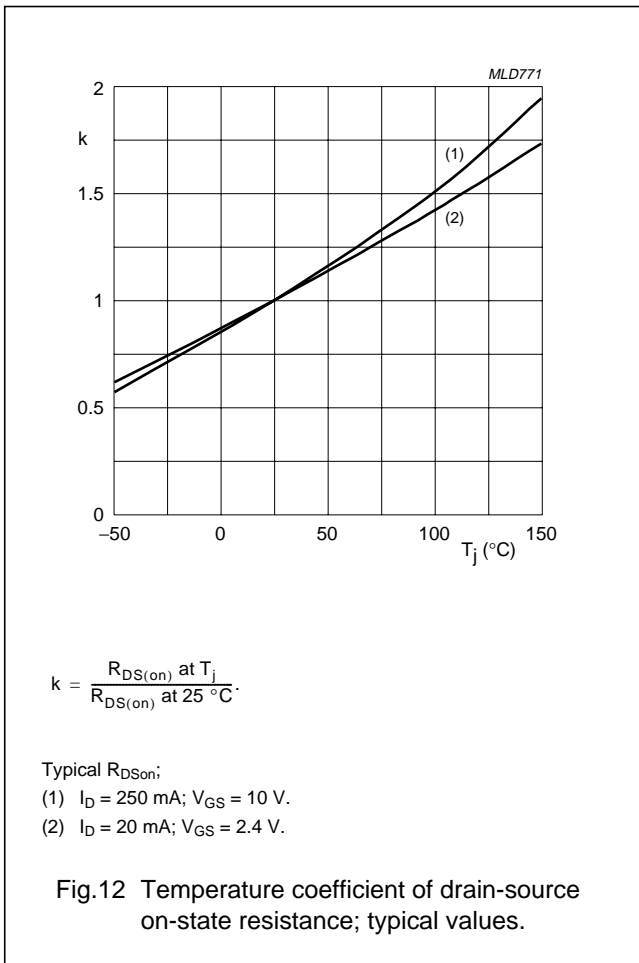
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N-channel enhancement mode vertical D-MOS transistor

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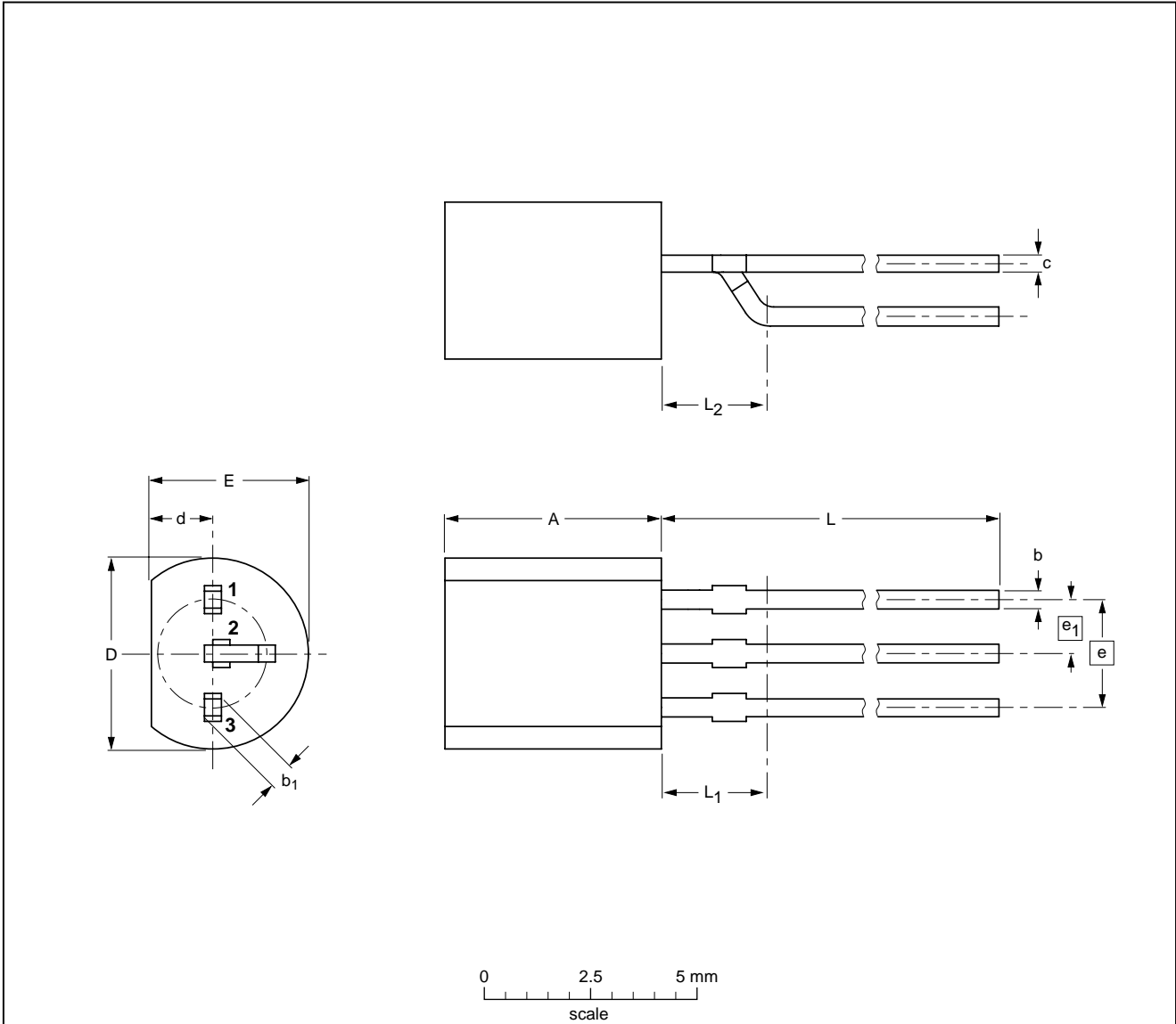
N-channel enhancement mode
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PACKAGE OUTLINES

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 variant	SC-43		98-03-26

N-channel enhancement mode vertical D-MOS transistor

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DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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NOTES

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NOTES

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Printed in The Netherlands

613510/03/pp12

Date of release: 2001 Dec 11

Document order number: 9397 750 09063

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