

DATA SHEET

BSN10; BSN10A N-channel enhancement mode vertical D-MOS transistors

Product specification
File under Discrete Semiconductors, SC13b

April 1995

N-channel enhancement mode vertical D-MOS transistors

BSN10; BSN10A

FEATURES

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

DESCRIPTION

N-channel enhancement mode vertical D-MOS transistor in a TO-92 envelope, intended for use in general purpose fast switching applications.

PINNING - TO-92

PIN	DESCRIPTION
BSN10	
1	gate
2	drain
3	source
BSN10A	
1	source
2	gate
3	drain

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{DS}	drain-source voltage	50	V
I_D	DC drain current	175	mA
$R_{DS(on)}$	drain-source on-resistance	15	Ω
$V_{GS(th)}$	gate-source threshold voltage	1.8	V

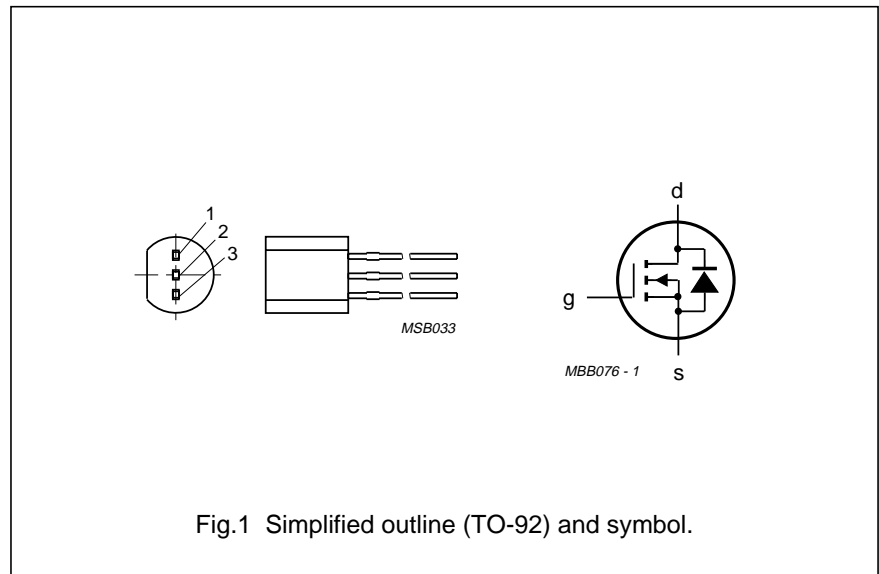


Fig.1 Simplified outline (TO-92) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	50	V
$\pm V_{GSO}$	gate-source voltage	open drain	–	20	V
I_D	DC drain current		–	175	mA
I_{DM}	peak drain current		–	300	mA
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ }^\circ\text{C}$ (note 1)	–	830	mW
T_{stg}	storage temperature range		–65	150	$^\circ\text{C}$
T_j	junction temperature		–	150	$^\circ\text{C}$

THERMAL RESISTANCE

SYMBOL	PARAMETER	THERMAL RESISTANCE
$R_{th\ j-a}$	from junction to ambient (note 1)	150 K/W

Note

1. Device mounted on a printed circuit board, maximum lead length 4 mm.

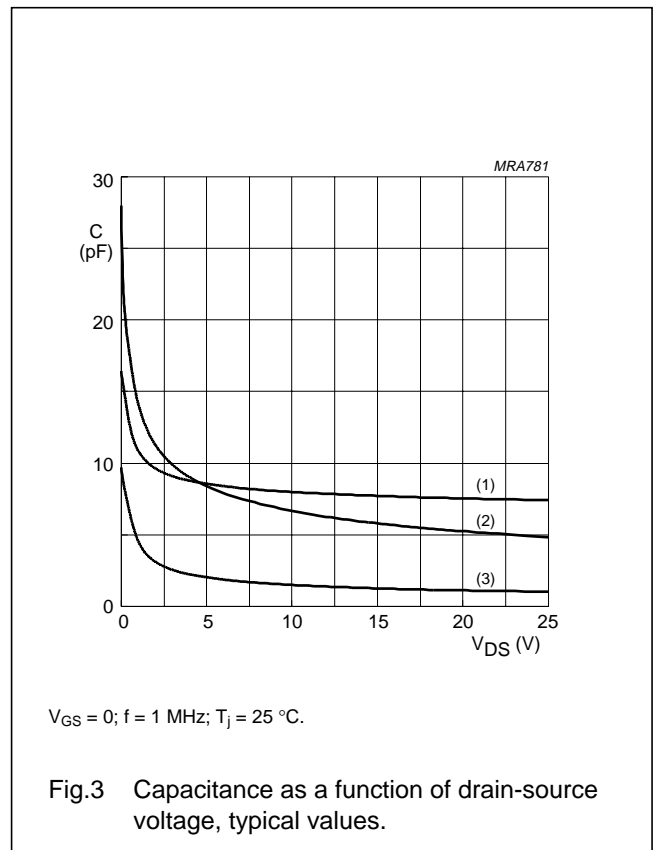
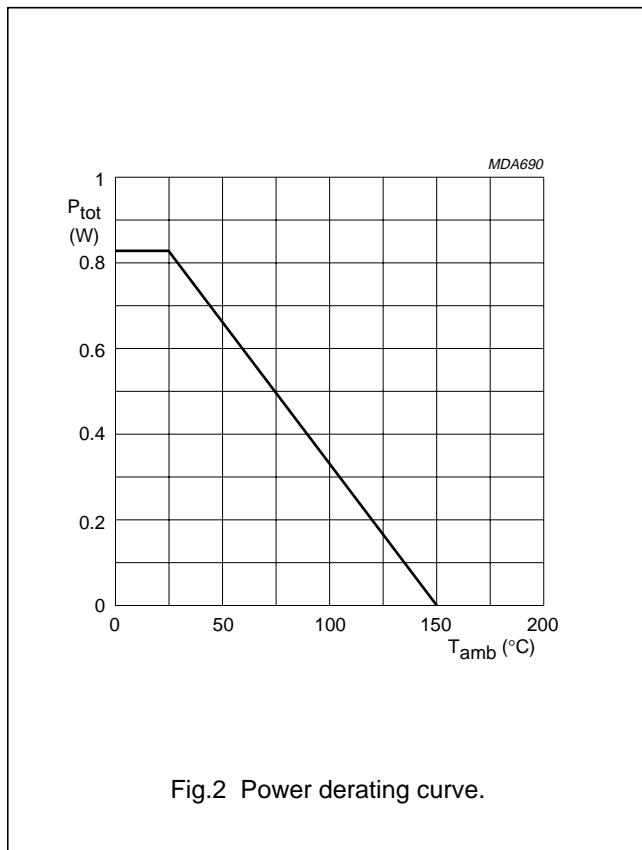
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CHARACTERISTICS

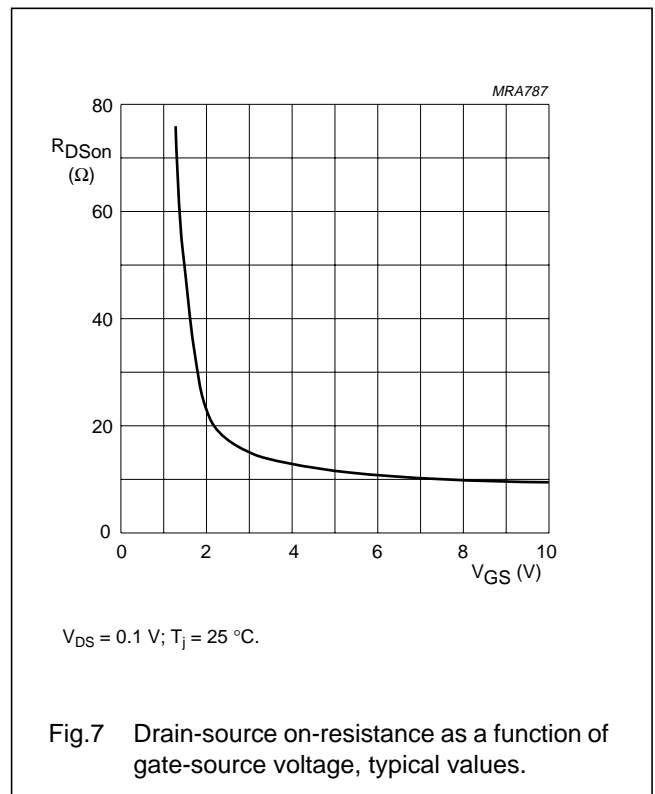
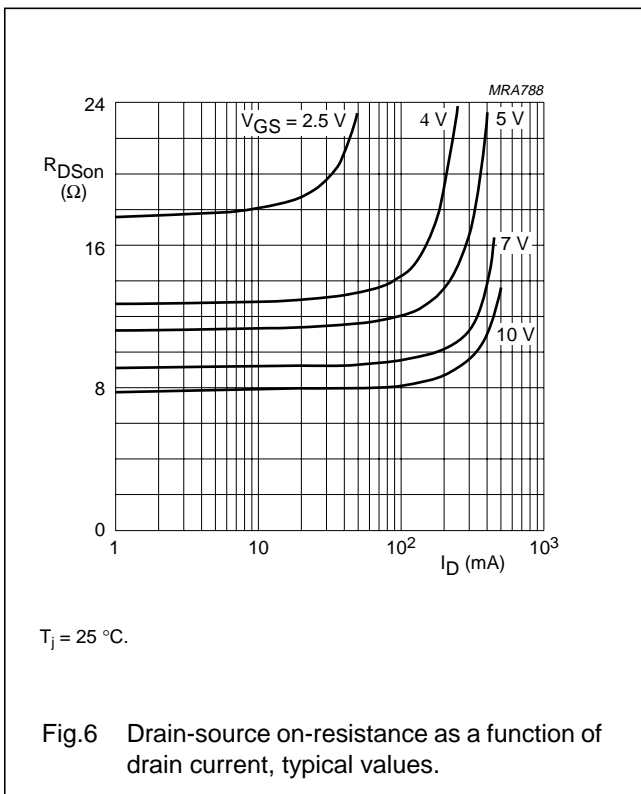
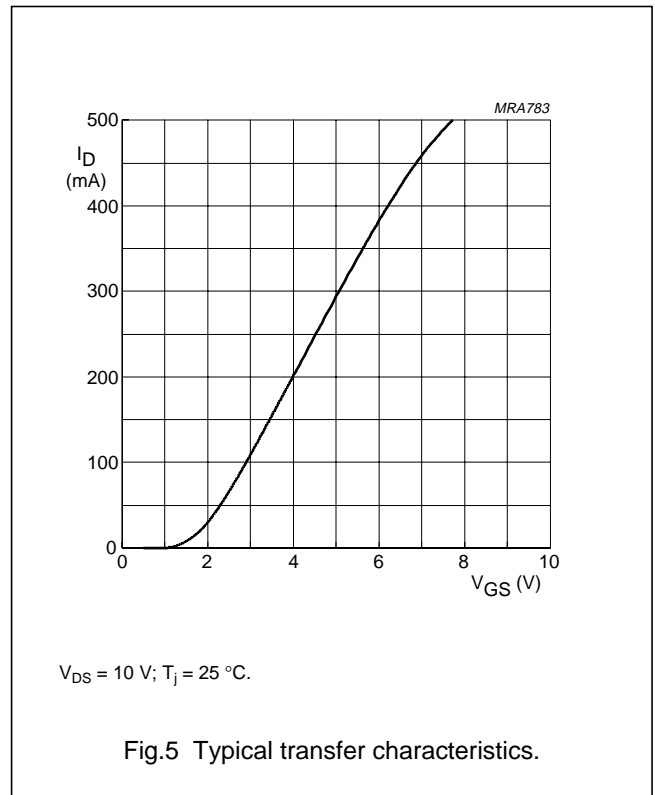
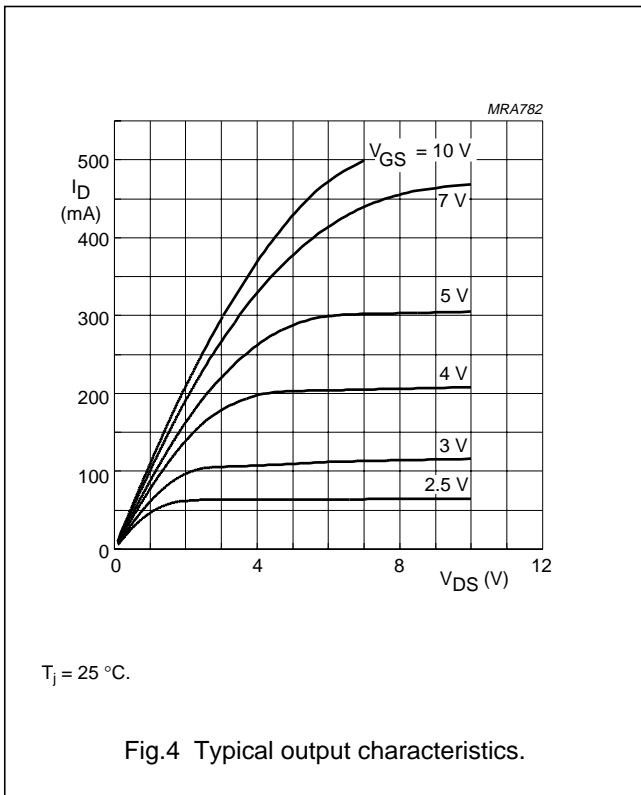
$T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$I_D = 10\text{ }\mu\text{A}; V_{GS} = 0$	50	–	–	V
I_{DSS}	drain-source leakage current	$V_{DS} = 40\text{ V}; V_{GS} = 0$	–	–	1	μA
$\pm I_{GSS}$	gate-source leakage current	$\pm V_{GS} = 20\text{ V}; V_{DS} = 0$	–	–	100	nA
$V_{GS(th)}$	gate-source threshold voltage	$I_D = 1\text{ mA}; V_{GS} = V_{DS}$	0.4	–	1.8	V
$R_{DS(on)}$	drain-source on-resistance	$I_D = 100\text{ mA}; V_{GS} = 10\text{ V}$	–	8	15	Ω
		$I_D = 100\text{ mA}; V_{GS} = 5\text{ V}$	–	12	20	Ω
		$I_D = 10\text{ mA}; V_{GS} = 2.5\text{ V}$	–	18	30	Ω
$ Y_{fs} $	transfer admittance	$I_D = 100\text{ mA}; V_{DS} = 10\text{ V}$	40	80	–	mS
C_{iss}	input capacitance	$V_{DS} = 10\text{ V}; V_{GS} = 0; f = 1\text{ MHz}$	–	8	15	pF
C_{oss}	output capacitance	$V_{DS} = 10\text{ V}; V_{GS} = 0; f = 1\text{ MHz}$	–	7	15	pF
C_{rss}	feedback capacitance	$V_{DS} = 10\text{ V}; V_{GS} = 0; f = 1\text{ MHz}$	–	2	5	pF
Switching times						
t_{on}	turn-on time	$I_D = 100\text{ mA}; V_{DD} = 20\text{ V}; V_{GS} = 0\text{ to }10\text{ V}$	–	2	5	ns
t_{off}	turn-off time	$I_D = 100\text{ mA}; V_{DD} = 50\text{ V}; V_{GS} = 0\text{ to }10\text{ V}$	–	5	10	ns



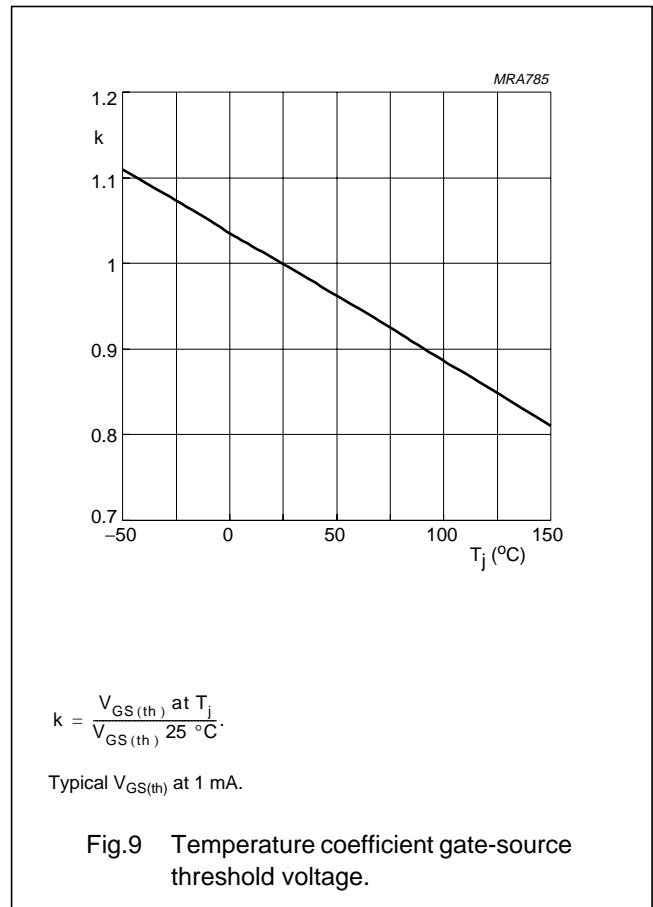
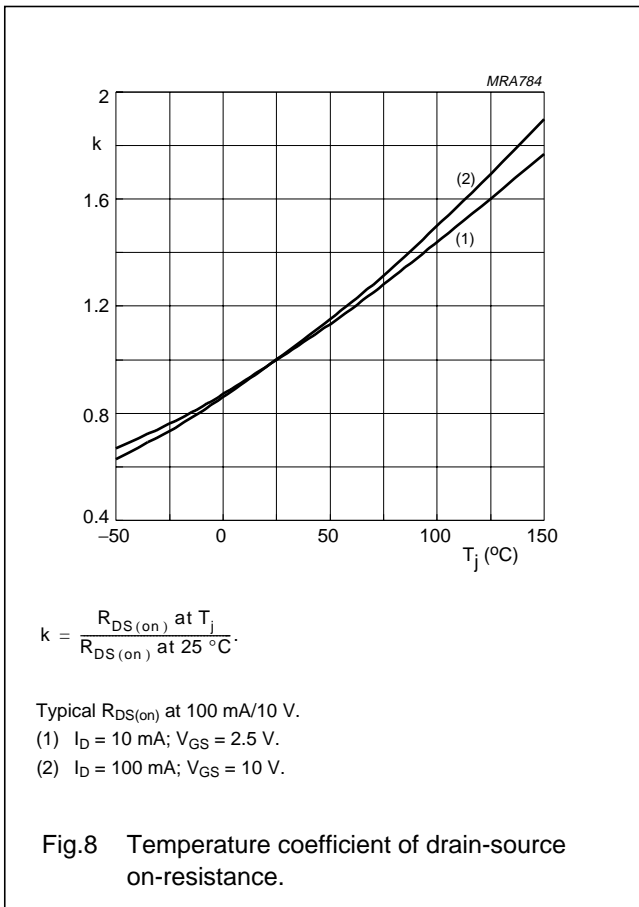
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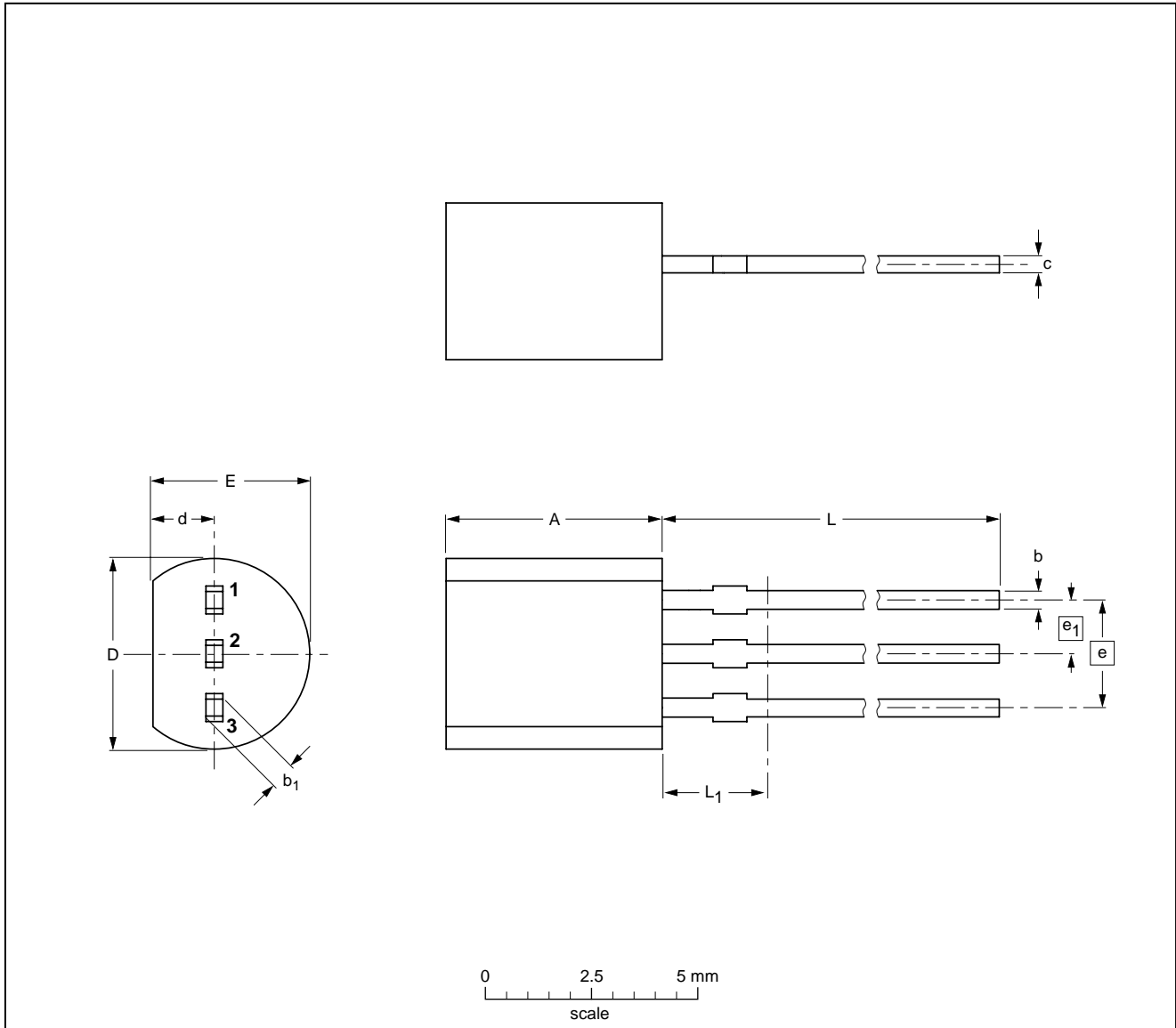
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PACKAGE OUTLINES

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

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b ₁	c	D	d	E	e	e ₁	L	L ₁ ⁽¹⁾
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

Note

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		TO-92	SC-43		97-02-28

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D-MOS transistors**

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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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Printed in The Netherlands

137107/00/01/pp8

Date of release: April 1995

Document order number: 9397 750 02459

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