

DATA SHEET

BSS87

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

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DESCRIPTION

N-channel vertical D-MOS transistor in a SOT89 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.

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.	280 mA
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.	6 Ω
$I_D = 400\text{ mA}; V_{GS} = 10\text{ V}$		typ.	4.5 Ω
Transfer admittance	$ Y_{fs} $	typ.	350 mS
$I_D = 400\text{ mA}; V_{DS} = 25\text{ V}$		min.	140 mS

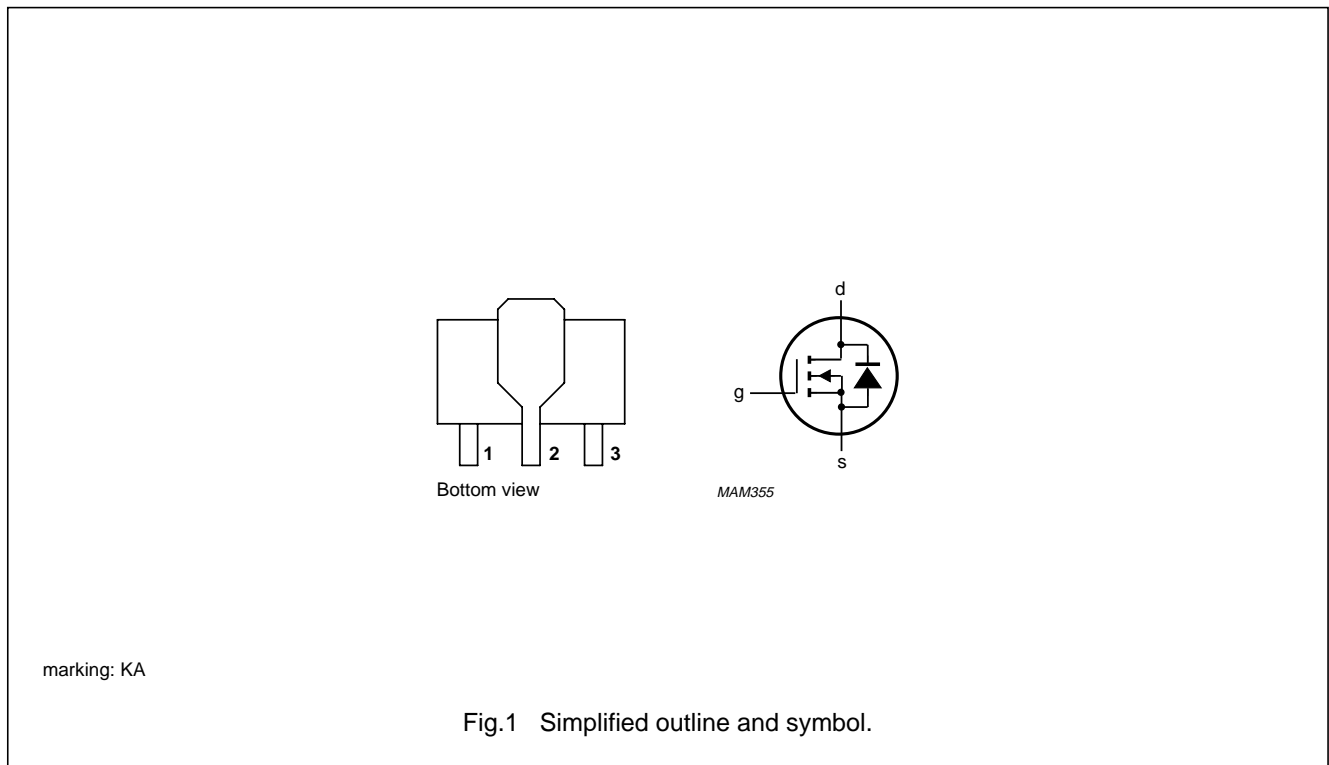
FEATURES

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

PINNING - SOT89

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

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.	280 mA
Drain current (peak)	I_{DM}	max.	1.1 A
Total power dissipation up to $T_{amb} = 25\text{ °C}$ ⁽¹⁾	P_{tot}	max.	1 W
Storage temperature range	T_{stg}		-65 to + 150 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

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

1. Transistor mounted on ceramic substrate area 2.5 cm², thickness 0.7 mm.

CHARACTERISTICS

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

Drain-source breakdown voltage $I_D = 250\ \mu\text{A}; V_{GS} = 0$	$V_{(BR)\ DSS}$	min.	200 V
Drain-source leakage current $V_{DS} = 60\ \text{V}; V_{GS} = 0$ $V_{DS} = 200\ \text{V}; V_{GS} = 0$	I_{DSS} I_{DSS}	max. max. typ.	200 nA 60 μA 100 nA
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 $I_D = 400\ \text{mA}; V_{GS} = 10\ \text{V}$	$R_{DS(on)}$	max. typ.	6 Ω 4.5 Ω
Transfer admittance $I_D = 400\ \text{mA}; V_{DS} = 25\ \text{V}$	$ Y_{fs} $	typ. min.	350 mS 140 mS
Input capacitance $f = 1\ \text{MHz};$ $V_{DS} = 25\ \text{V}; V_{GS} = 0$	C_{iss}	max. typ.	60 pF 45 pF
Output capacitance $f = 1\ \text{MHz};$ $V_{DS} = 25\ \text{V}; V_{GS} = 0$	C_{oss}	max. typ.	25 pF 15 pF

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

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

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

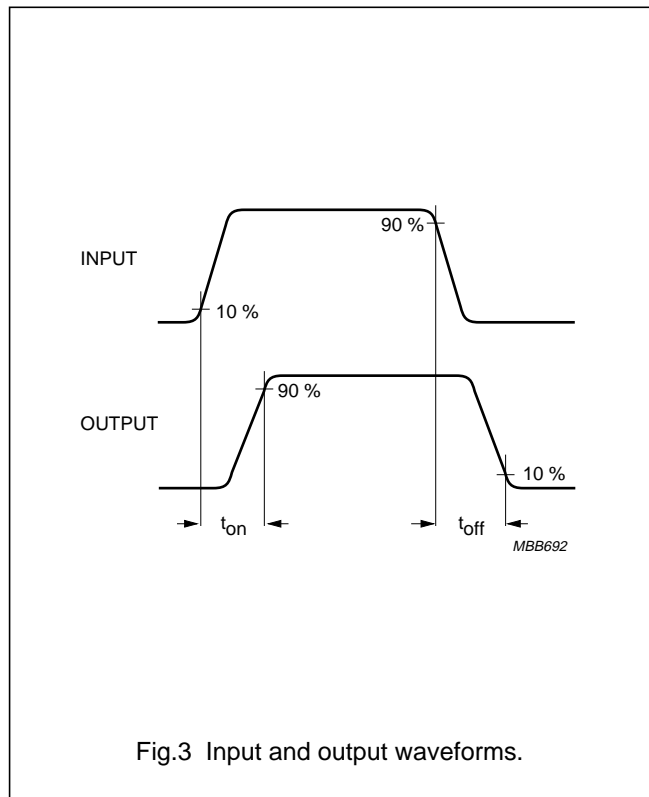
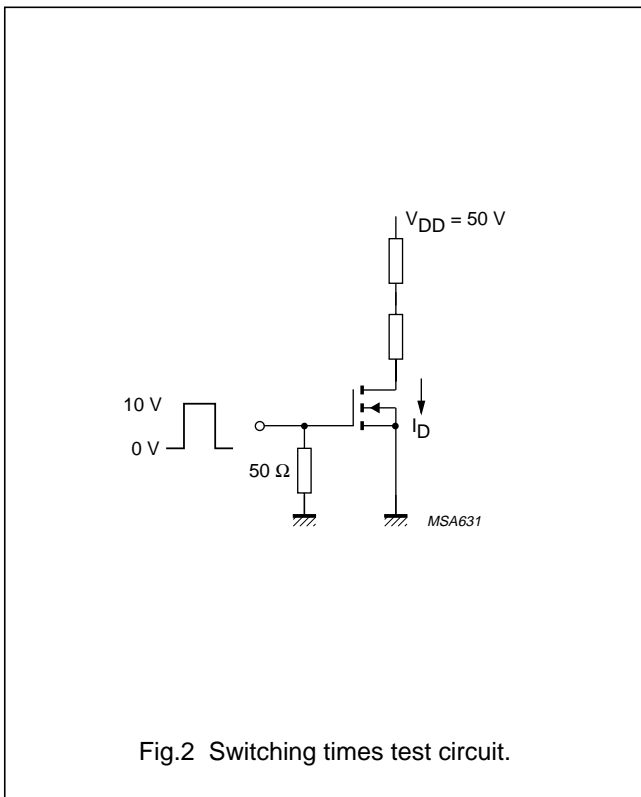
Switching times (see Figs 2 and 3)

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

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

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

t_{off}	typ.	15 ns
	max.	25 ns



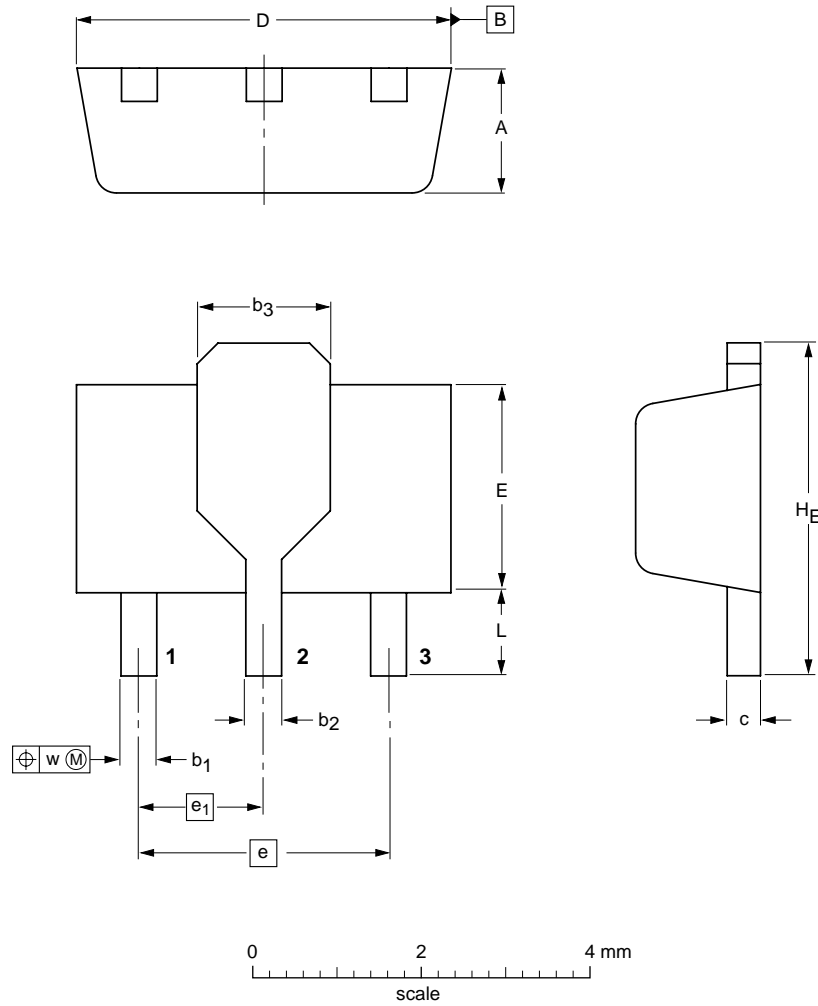
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PACKAGE OUTLINES

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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BSS87**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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