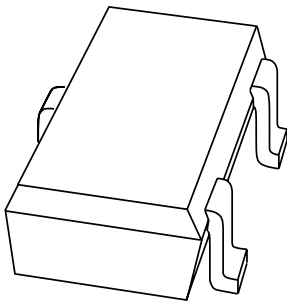


DATA SHEET



BSN20W

**N-channel enhancement mode
vertical D-MOS transistor**

Product specification
Supersedes data of 1997 Jun 20

2000 Mar 10

N-channel enhancement mode vertical D-MOS transistor

BSN20W

FEATURES

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

APPLICATIONS

- Thin and thick film circuits
- General purpose fast switching applications.

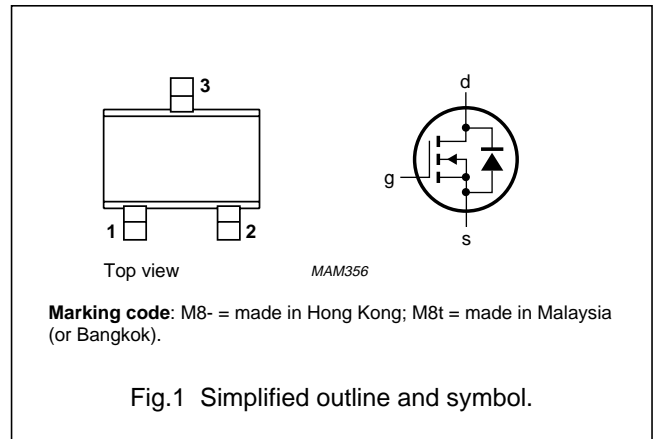
DESCRIPTION

N-channel enhancement mode vertical D-MOS transistor in a 3 pin plastic SOT323 SMD package.

CAUTION
The device is supplied in an antistatic package. The gate-source input must be protected against static discharge during transport or handling.

PINNING - SOT323

PIN	SYMBOL	DESCRIPTION
1	g	gate
2	s	source
3	d	drain



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		50	V
V_{GSth}	gate-source threshold voltage		1.8	V
I_D	drain current (DC)		80	mA
R_{DSon}	drain-source on-state resistance		15	Ω
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$; note 1	200	mW

Note

1. Device mounted on a printed-circuit board.

N-channel enhancement mode vertical D-MOS transistor

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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	50	V
V_{GSO}	gate-source voltage (DC)	open drain	–	±20	V
I_D	drain current (DC)		–	80	mA
I_{DM}	peak drain current		–	300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	200	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	operating junction temperature		–65	+150	°C

Note

1. Device mounted on a printed-circuit board.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	625	K/W

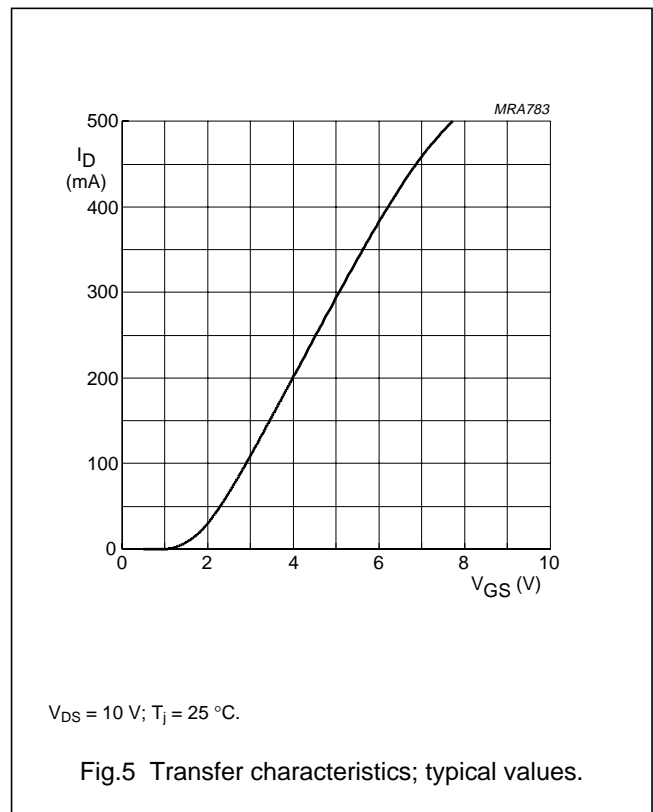
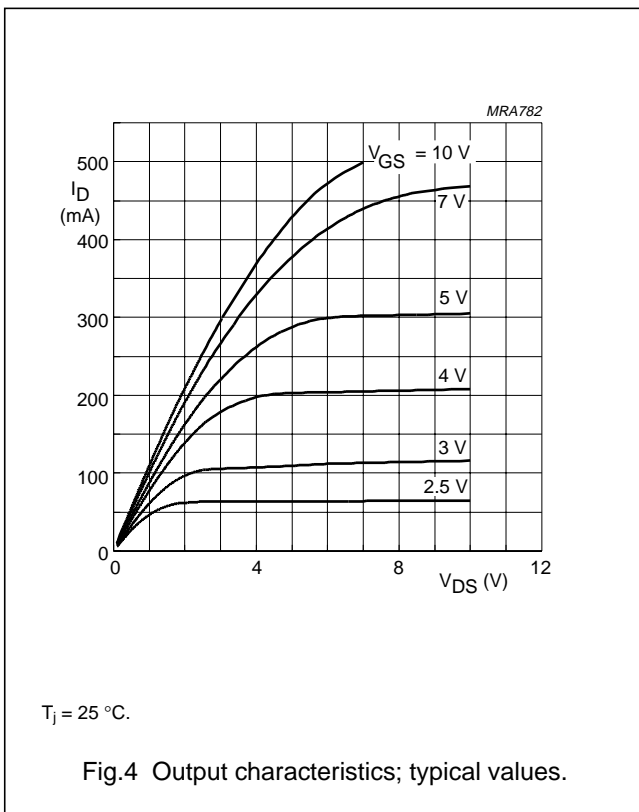
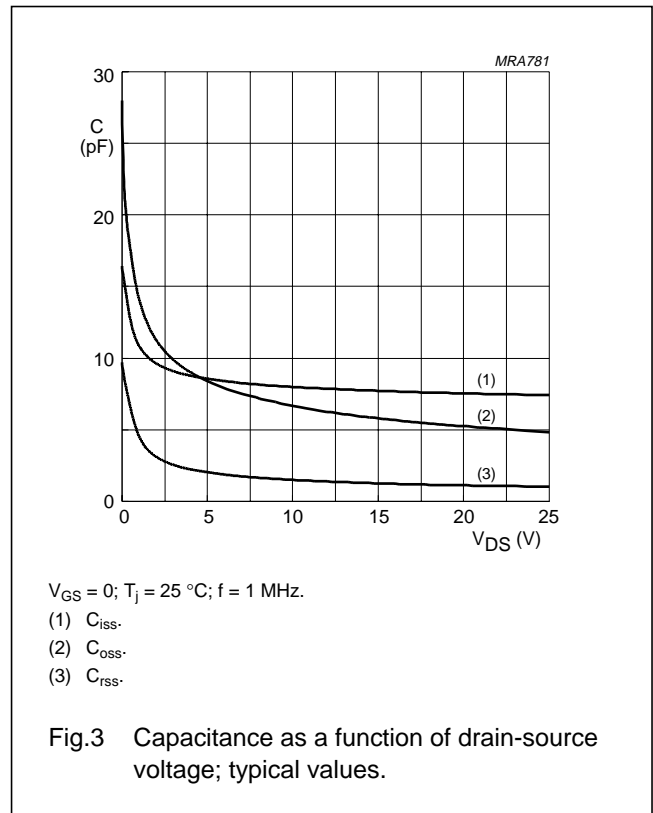
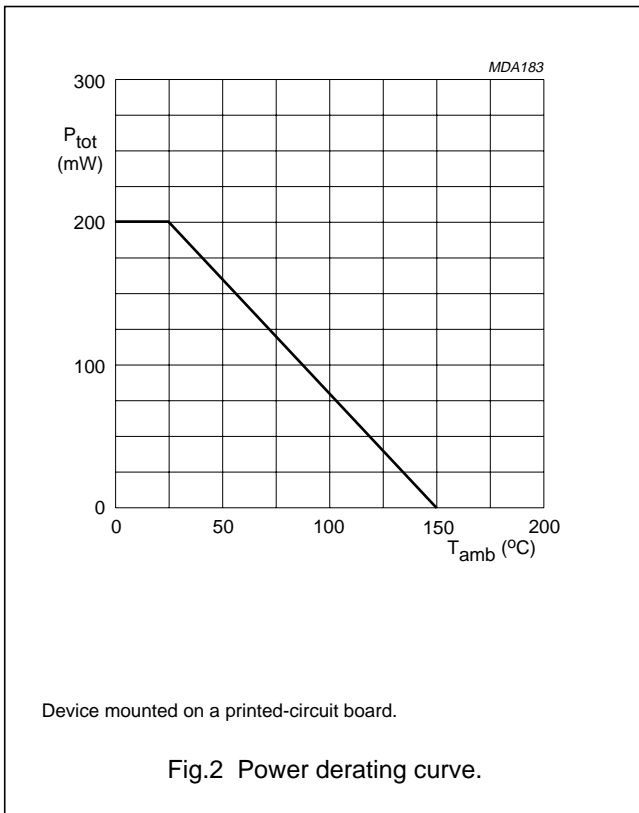
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$; $I_D = 10\ \mu\text{A}$	50	–	–	V
V_{GSth}	gate-source threshold voltage	$V_{GS} = V_{DS}$; $I_D = 1\ \text{mA}$	0.4	–	1.8	V
I_{DSS}	drain-source leakage current	$V_{GS} = 0$; $V_{DS} = 40\ \text{V}$	–	–	1	μA
I_{GSS}	gate-source leakage current	$V_{GS} = \pm 20\ \text{V}$; $V_{DS} = 0$	–	–	±100	nA
R_{DSon}	drain-source on-state resistance	$V_{GS} = 10\ \text{V}$; $I_D = 80\ \text{mA}$	–	8	15	Ω
		$V_{GS} = 5\ \text{V}$; $I_D = 80\ \text{mA}$	–	14	20	Ω
		$V_{GS} = 2.5\ \text{V}$; $I_D = 10\ \text{mA}$	–	18	30	Ω
C_{iss}	input capacitance	$V_{GS} = 0$; $V_{DS} = 10\ \text{V}$; $f = 1\ \text{MHz}$	–	8	15	pF
C_{oss}	output capacitance	$V_{GS} = 0$; $V_{DS} = 10\ \text{V}$; $f = 1\ \text{MHz}$	–	7	15	pF
C_{rss}	reverse transfer capacitance	$V_{GS} = 0$; $V_{DS} = 10\ \text{V}$; $f = 1\ \text{MHz}$	–	2	5	pF
Switching times						
t_{on}	turn-on time	$V_{GS} = 0$ to $10\ \text{V}$; $V_{DD} = 20\ \text{V}$; $I_D = 80\ \text{mA}$	–	2	5	ns
t_{off}	turn-off time	$V_{GS} = 10$ to $0\ \text{V}$; $V_{DD} = 20\ \text{V}$; $I_D = 80\ \text{mA}$	–	5	10	ns

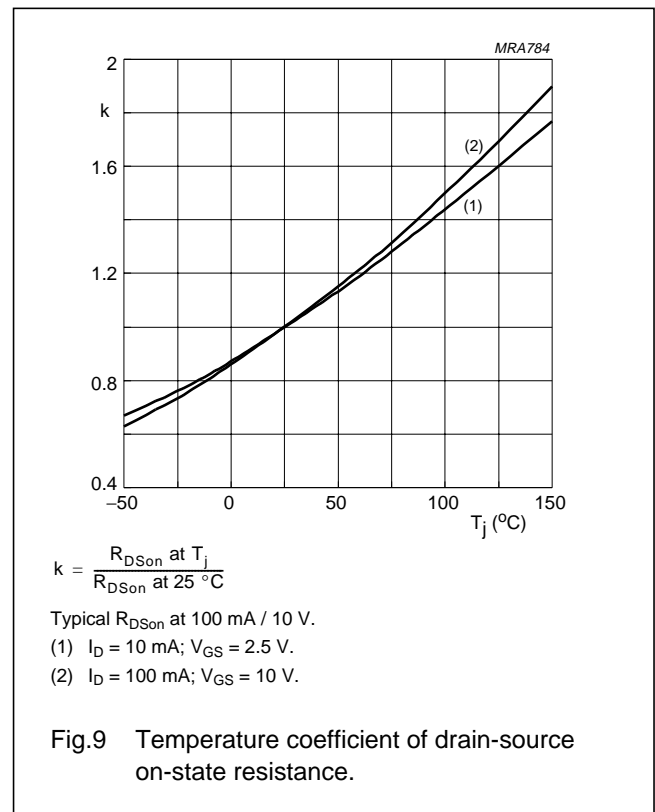
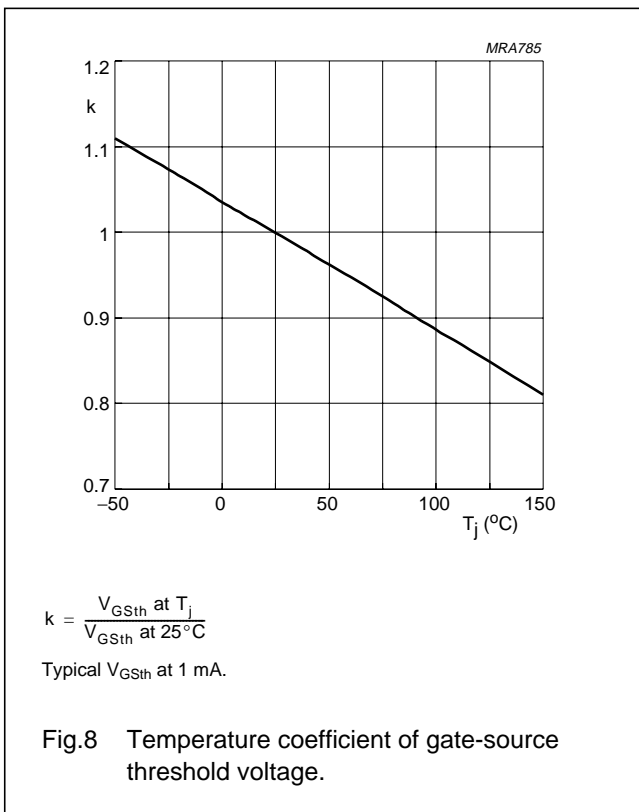
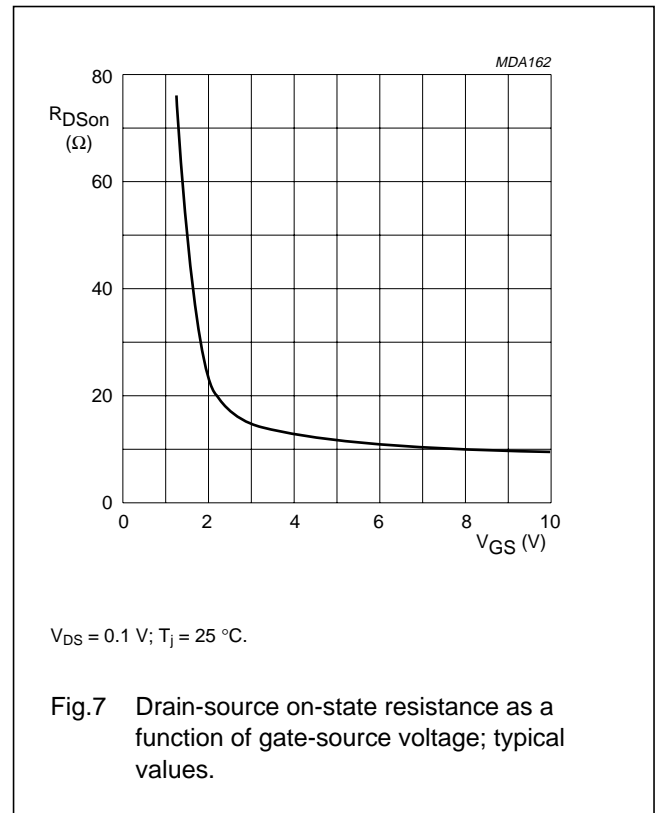
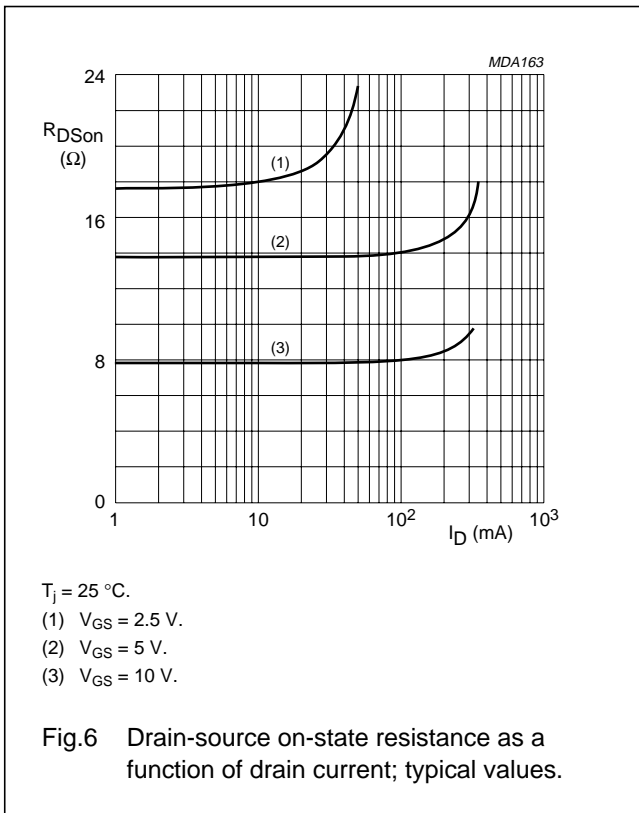
N-channel enhancement mode vertical D-MOS transistor

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N-channel enhancement mode vertical D-MOS transistor

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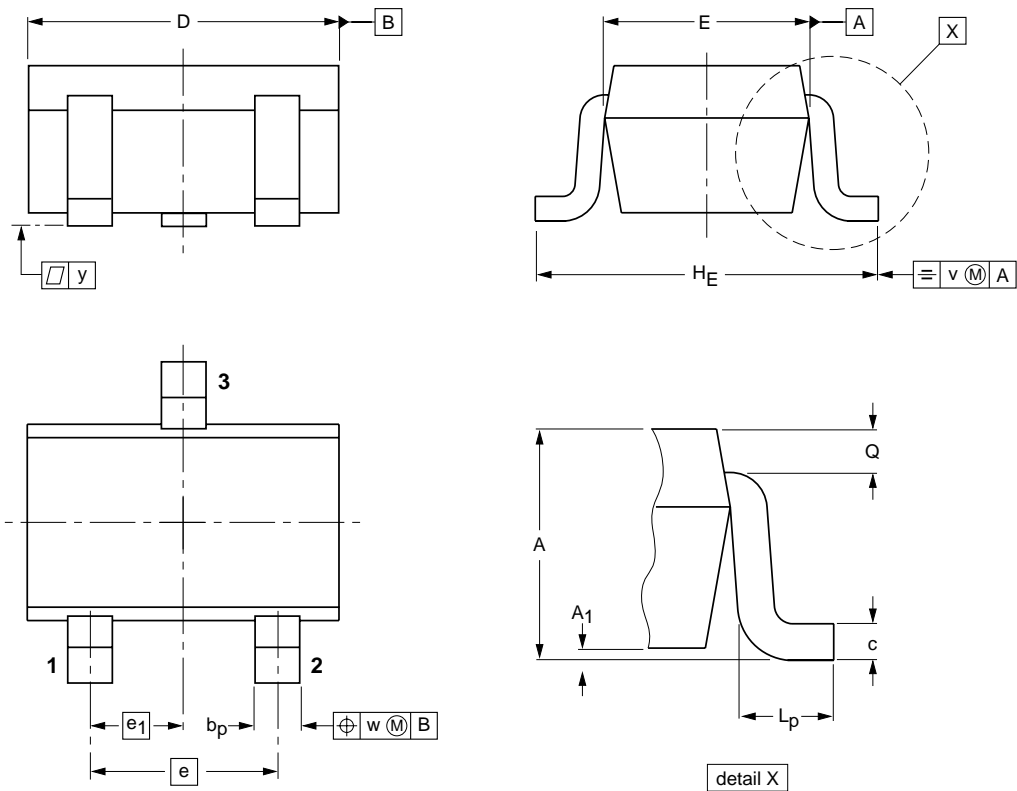
N-channel enhancement mode
vertical D-MOS transistor

BSN20W

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT323			SC-70			97-02-28

N-channel enhancement mode vertical D-MOS transistor

BSN20W

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.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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Printed in The Netherlands

603502/02/pp8

Date of release: 2000 Mar 10

Document order number: 9397 750 06692

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