DATA SHEET

BSP126
N-channel enhancement mode vertical D-MOS transistor

Product specification
File under Discrete Semiconductors, SC13b

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Philips
Semiconductors

PHILIPS

N-channel enhancement mode vertical D-MOS transistor

BSP126

DESCRIPTION

N-channel enhancement mode vertical D-MOS transistor in a miniature SOT223 envelope and designed for use as a line interrupter in telephone sets and for application in relay, high-speed and line-transformer drivers.

FEATURES

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

QUICK REFERENCE DATA

Drain-source voltage	V_{DS}	max.	250	V
Drain current (DC)	I_D	max.	350	mA
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.	1.5	W
Drain-source on-resistance				
I_D = 300 mA; V_{GS} = 10 V	$R_{DS(on)}$	typ. max.	5.0 7.0	Ω Ω
Gate-source threshold voltage	$V_{GS(th)}$	max.	2	V

PINNING - SOT223

1 = gate
2 = drain
3 = source
4 = drain

Marking code

BSP126

PIN CONFIGURATION

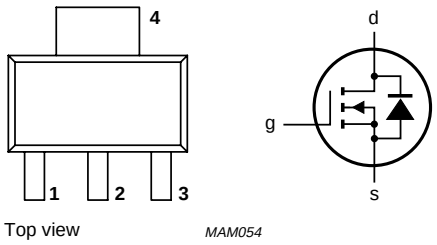


Fig.1 Simplified outline and symbol.

N-channel enhancement mode vertical D-MOS transistor

BSP126

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Drain-source voltage	V_{DS}	max.	250	V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20	V
Drain current (DC)	I_D	max.	350	mA
Drain current (peak)	I_{DM}	max.	1.2	A
Total power dissipation up to T_{amb} = 25 °C (note 1)	P_{tot}	max.	1.5	W
Storage temperature range	T_{stg}		−65 to + 150	°C
Junction temperature	T_j	max.	150	°C

THERMAL RESISTANCE

From junction to ambient (note 1)	$R_{th\ j\text{-}a}$	=	83.3	K/W

Note

1. Device mounted on an epoxy printed-circuit board 40 mm × 40 mm × 1.5 mm; mounting pad for the drain lead min. 6 cm^2.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Drain-source breakdown voltage				
I_D = 10 μA; V_{GS} = 0	$V_{(BR)DSS}$	min.	250	V
Drain-source leakage current				
V_{DS} = 200 V; V_{GS} = 0	I_{DSS}	max.	1.0	μA
Gate-source leakage current				
± V_{GS} = 20 V; V_{DS} = 0	$\pm I_{GSS}$	max.	100	nA
Gate threshold voltage				
I_D = 1 mA; V_{DS} = V_{GS}	$V_{GS(th)}$	min. max.	0.8 2.0	V V
Drain-source on-resistance				
I_D = 300 mA; V_{GS} = 10 V	$R_{DS(on)}$	typ. max.	5.0 7.0	Ω Ω
I_D = 20 mA; V_{GS} = 2.4 V	$R_{DS(on)}$	max.	10	Ω
Transfer admittance				
I_D = 300 mA; V_{DS} = 25 V	$\lvert Y_{fs} \rvert$	min. typ.	200 400	mS mS
Input capacitance at f = 1 MHz;				
V_{DS} = 25 V; V_{GS} = 0	C_{iss}	typ. max.	65 90	pF pF
Output capacitance at f = 1 MHz;				
V_{DS} = 25 V; V_{GS} = 0	C_{oss}	typ. max.	20 30	pF pF

Feedback capacitance at f = 1 MHz; V_{DS} = 25 V; V_{GS} = 0	C_{rss}	typ.	5 pF
		max.	15 pF
Switching times (see Figs 2 and 3)			
I_D = 250 mA; V_{DD} = 50 V; V_{GS} = 0 to 10 V	t_{on}	typ.	5 ns
		max.	10 ns
	t_{off}	typ.	20 ns
		max.	30 ns

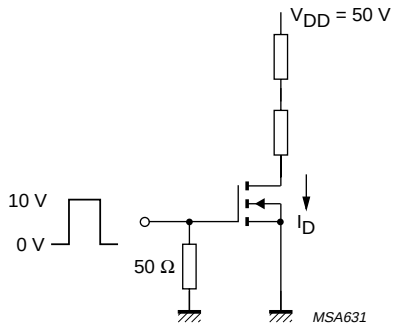


Fig.2 Switching time test circuit.

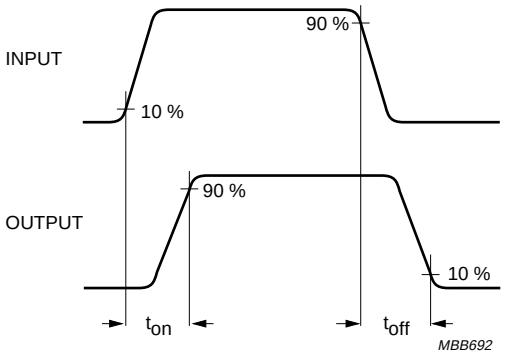


Fig.3 Input and output waveforms.

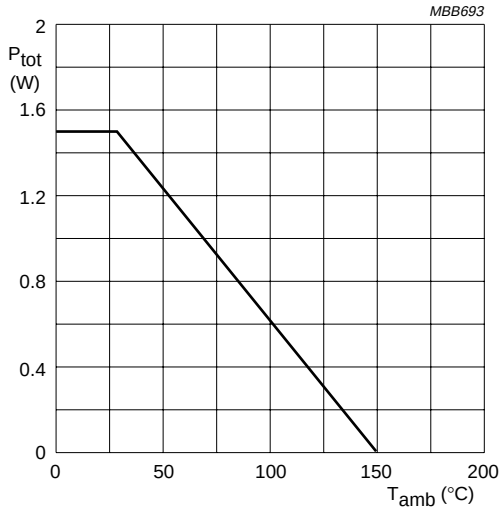


Fig.4 Power derating curve.

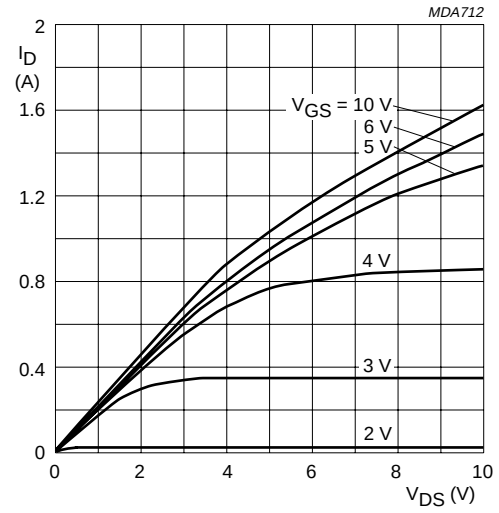


Fig.5 Output characteristics; T_j = 25 °C; typical values.

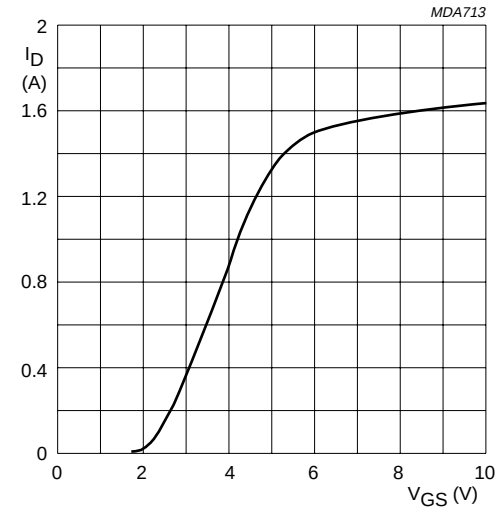


Fig.6 Transfer characteristic; V_{DS} = 10 V; T_j = 25 °C; typical value.

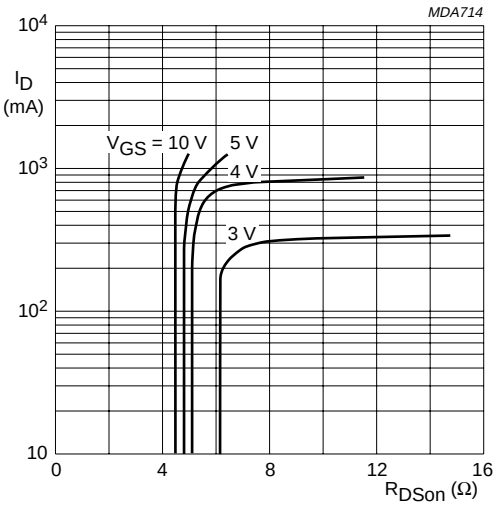


Fig.7 On-resistance as a function of drain current; T_j = 25 °C; typical values.

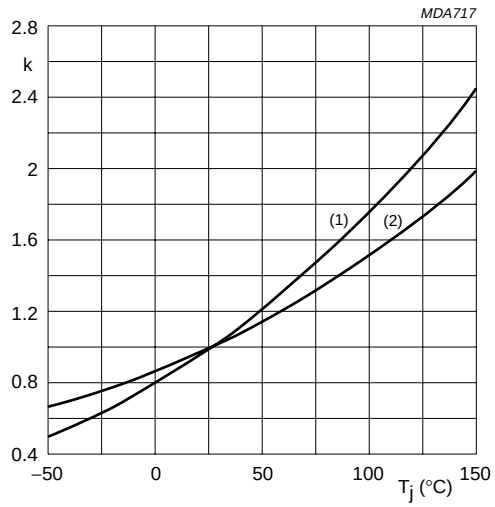


Fig.8 $k = \frac{R_{DS(on)} \text{ at } T_j}{R_{DS(on)} \text{ at } 25\ °C}$; typical values.

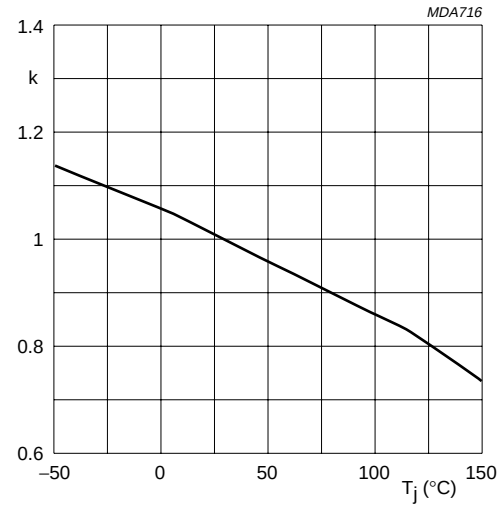


Fig.9 $k = \frac{V_{GS(th)} \text{ at } T_j}{V_{GS(th)} \text{ at } 25\ °C}$; $V_{GS(th)}$ at 1 mA; typical values.

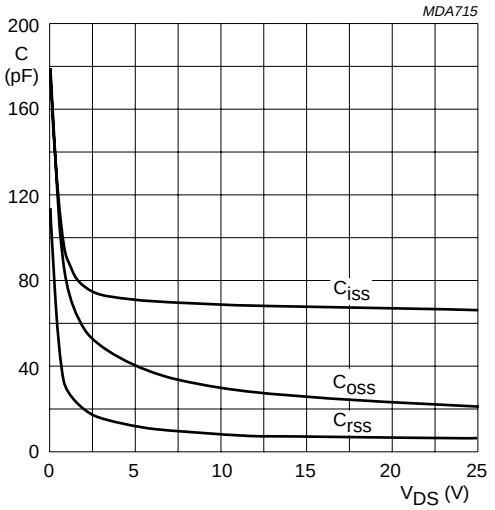
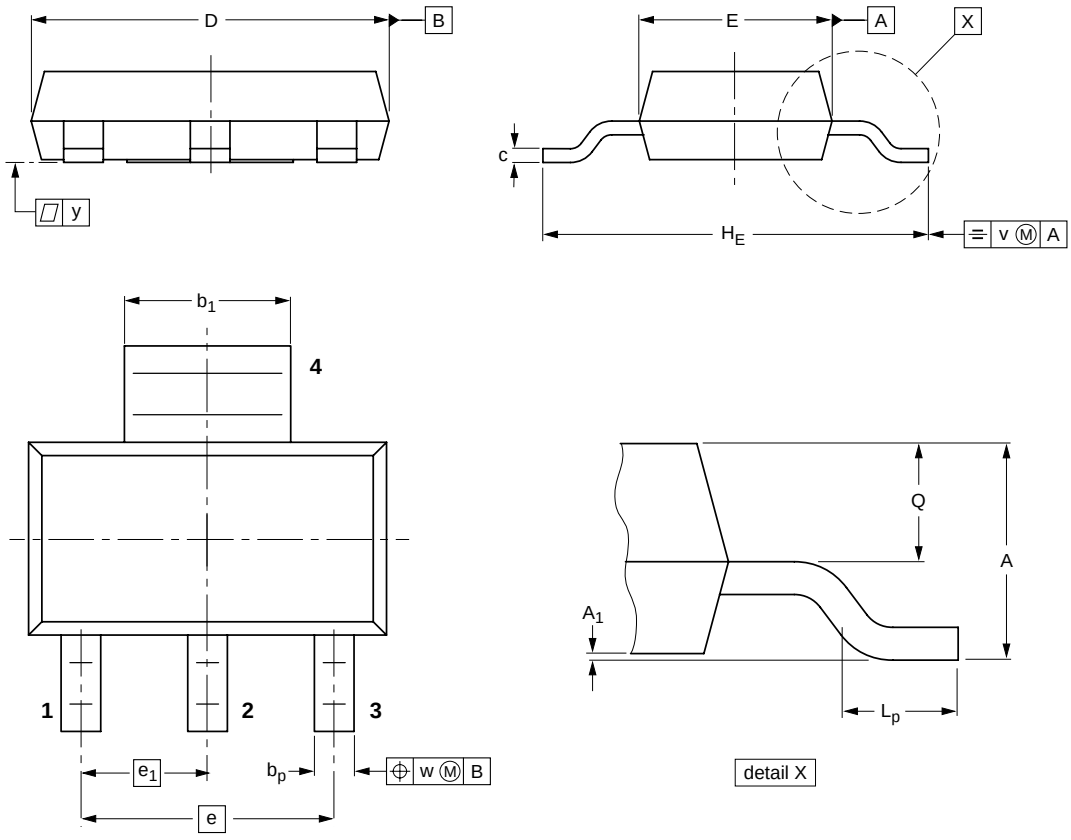


Fig.10 Capacitances as a function of drain-source voltage; V_{GS} = 0; f = 1 MHz; T_j = 25 °C; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads **SOT223**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223						~~96-11-11~~ 97-02-28

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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