DATA SHEET

BSP206
P-channel enhancement mode vertical D-MOS transistor

Product specification
File under Discrete Semiconductors, SC13B

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Philips
Semiconductors

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P-channel enhancement mode vertical D-MOS transistor

BSP206

DESCRIPTION

P-channel enhancement mode vertical D-MOS transistor in a miniature SOT223 envelope and intended for use in relay, high-speed and line-transformer drivers.

FEATURES

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

QUICK REFERENCE DATA

Drain-source voltage	$-V_{DS}$	max.	60	V
Drain current (DC)	$-I_D$	max.	350	mA
Drain-source ON-resistance $-I_D$ = 200 mA; $-V_{GS}$ = 10 V	$R_{DS(on)}$	max.	6	Ω
Gate threshold voltage	$-V_{GS(th)}$	max.	3.5	V

PINNING - SOT223

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

Marking code

BSP206

PIN CONFIGURATION

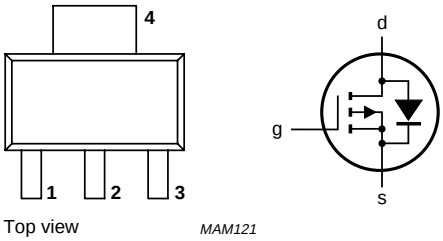

Fig.1 Simplfied outline and symbol.

P-channel enhancement mode vertical D-MOS transistor

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RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)				
Drain-source voltage	$-V_{DS}$	max.	60	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.	700	mA
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.	60	V
Drain-source leakage current $-V_{DS}$ = 48 V; V_{GS} = 0	$-I_{DSS}$	max.	1.0	μA
Gate-source leakage current $\pm V_{GS}$ = 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.	1.5 3.5	V V
Drain-source ON-resistance $-I_D$ = 200 mA; $-V_{GS}$ = 10 V	$R_{DS(on)}$	typ. max.	4.5 6	Ω Ω
Transfer admittance $-I_D$ = 200 mA; $-V_{DS}$ = 15 V	$\lvert Y_{fs} \rvert$	min. typ.	100 200	mS mS
Input capacitance at f = 1 MHz; $-V_{DS}$ = 10 V; V_{GS} = 0	C_{iss}	typ. max.	55 70	pF pF
Output capacitance at f = 1 MHz; $-V_{DS}$ = 10 V; V_{GS} = 0	C_{oss}	typ. max.	30 45	pF pF
Feedback capacitance at f = 1 MHz; $-V_{DS}$ = 10 V; V_{GS} = 0	C_{rss}	typ. max.	8 12	pF pF
Switching times (see Figs 2 and 3) $-I_D$ = 200 mA; $-V_{DD}$ = 50 V; $-V_{GS}$ = 0 to 10 V	t_{on}	typ. max.	4 8	ns ns
	t_{off}	typ. max.	15 25	ns ns

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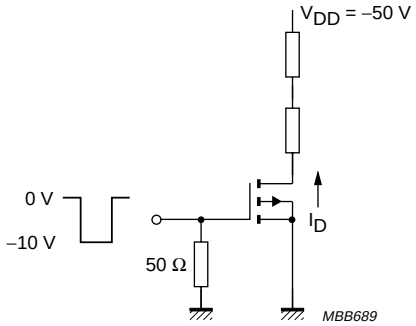


Fig.2 Switching time test circuit.

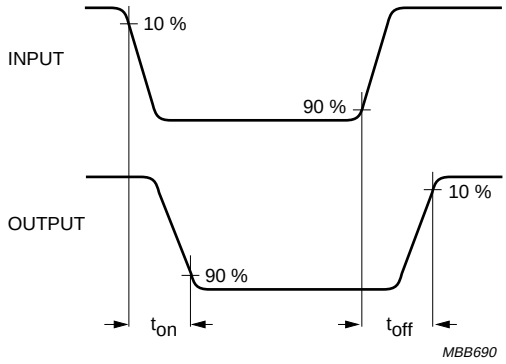


Fig.3 Input and output waveforms.

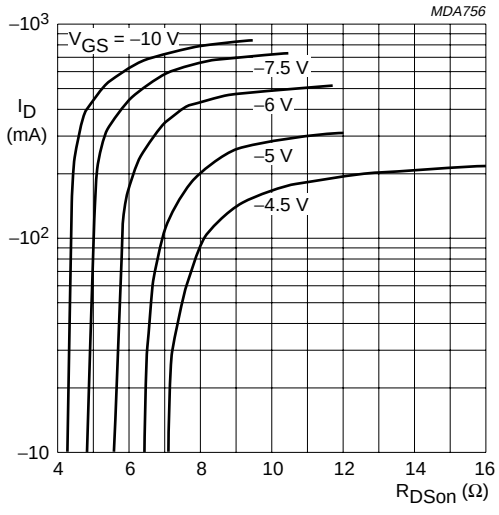


Fig.4 ON-resistance as a function of drain current; T_j = 25 °C; typical values.

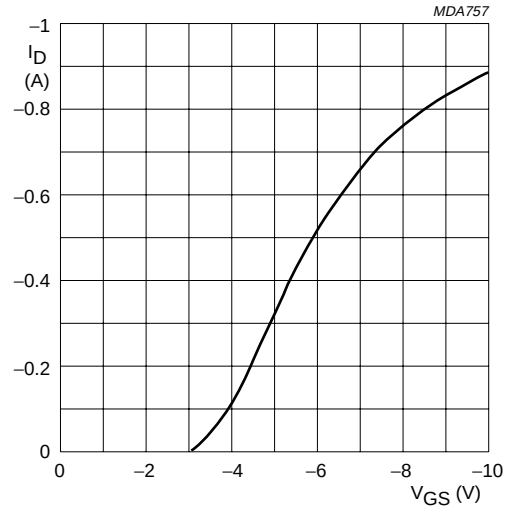


Fig.5 Transfer characteristics; $–V_{DS}$ = 10 V; T_j = 25 °C; typical values.

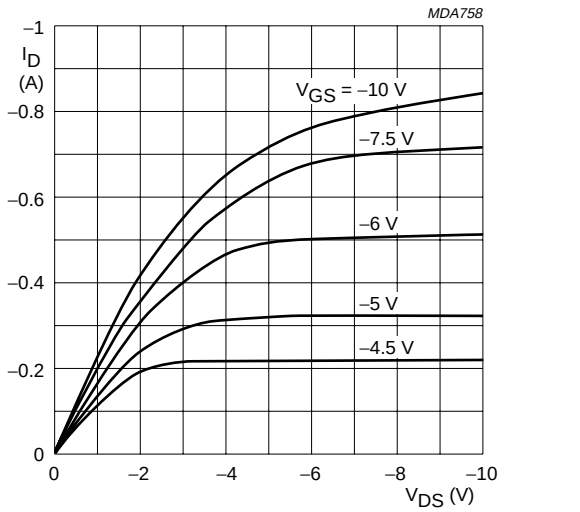


Fig.6 Output characteristics; T_j = 25° C; typical values.

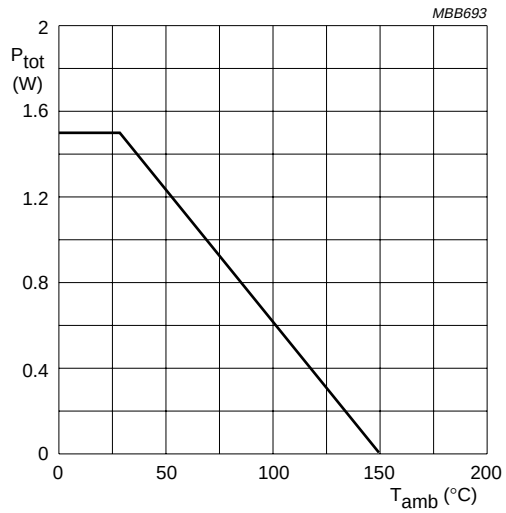


Fig.7 Power derating curve.

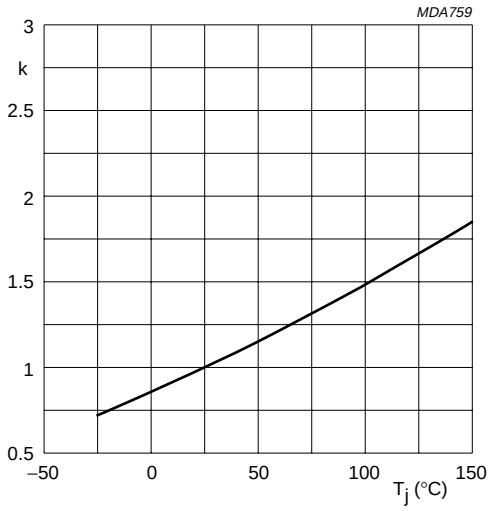


Fig.8

$$k = \frac{R_{DS(on)} \text{ at } T_j}{R_{DS(on)} \text{ at } 25\ ^\circ C};$$

at −200 mA/−10 V; typical values

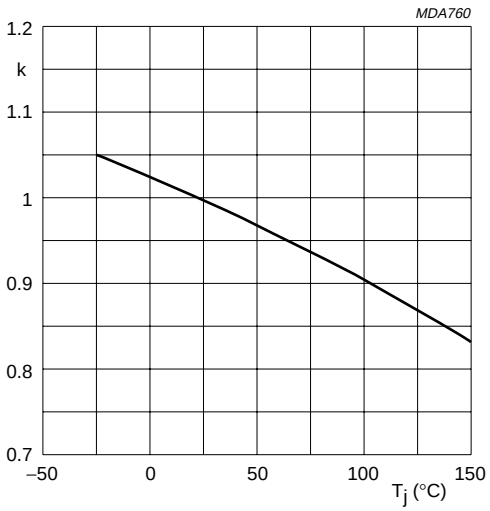


Fig.9

$$k = \frac{-V_{GS\ (th)} \text{ at } T_j}{-V_{GS\ (th)} \text{ at } 25\ ^\circ C};$$

$-V_{GS(th)}$ at −1 mA; typical values.

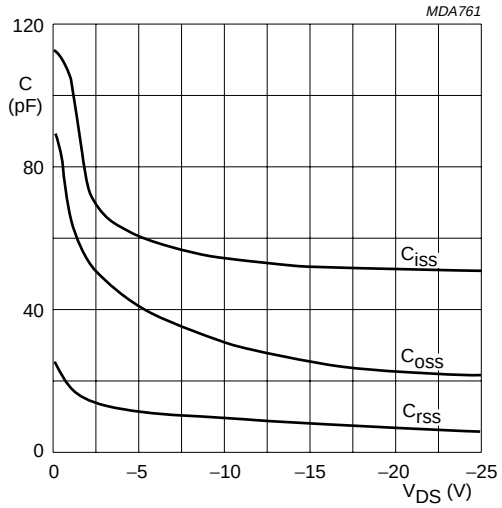
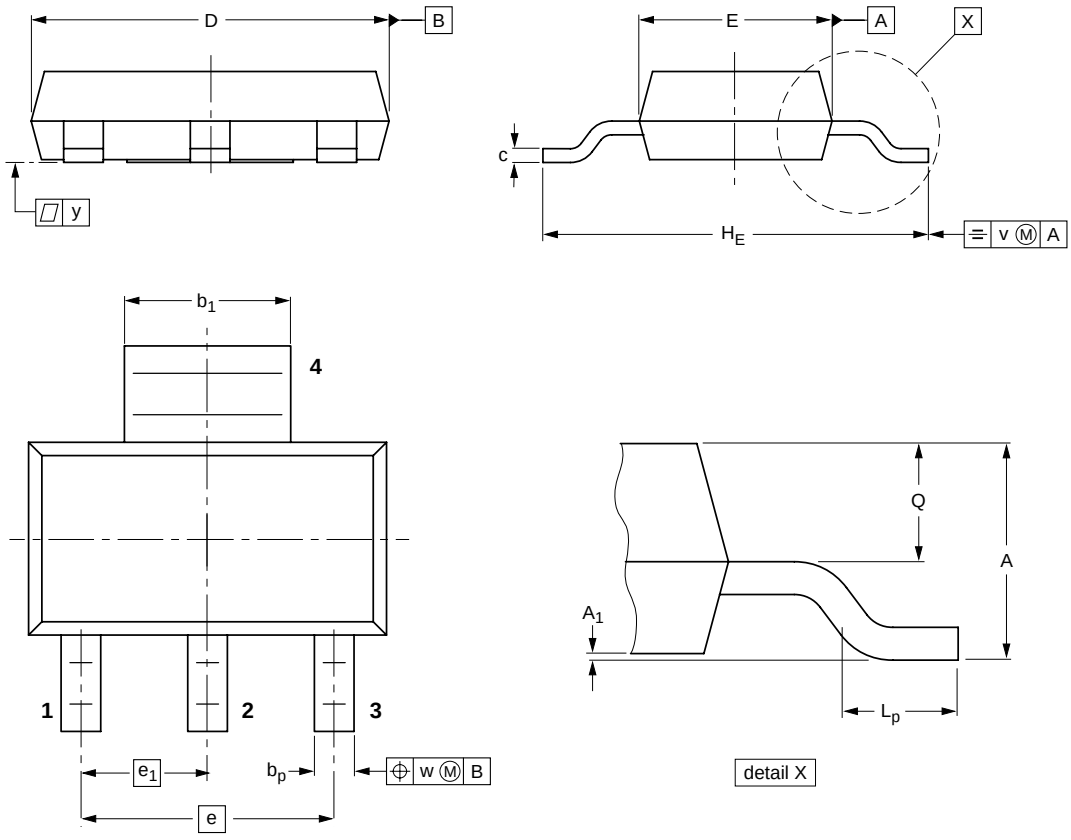


Fig.10 T_j = 25 °C; V_{GS} = 0; f = 1 MHz; typical values.

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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