N-channel enhancement mode vertical D-MOS transistor

BSS138

FEATURES

- Low threshold voltage
- CMOS compatible
- Low on-resistance.

DESCRIPTION

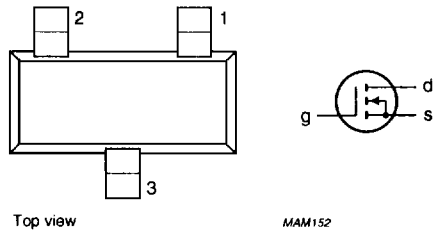
N-channel enhancement mode vertical D-MOS transistor in a SOT23 envelope. Intended for use in general purpose and high-speed switching applications, such as relays, multiplexers, choppers and line transformer drivers.

PINNING - SOT23

PIN	DESCRIPTION
1	source
2	gate
3	drain

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{DS}	drain-source voltage (DC)	50	V
V_{GSth}	gate-source threshold voltage	1.5	V
I_D	drain current (DC)	200	mA
R_{DSon}	drain-source on-state resistance	3.5	Ω



Marking code: SS.

Fig.1 Simplified outline and symbol.

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LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		-	50	V
V_{GSO}	gate-source voltage	open drain $I_D = 0$	-	20	V
I_D	drain current	average value	-	200	mA
I_{DM}	drain current	peak value	-	800	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	-	360	mW
T_{stg}	storage temperature range		−55	150	°C
T_j	junction temperature		-	150	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}a}$	from junction to ambient	350	K/W

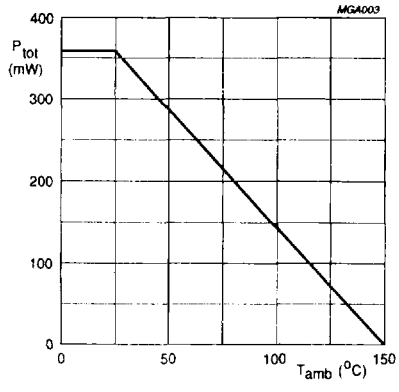

Fig.2 Total power dissipation as a function of ambient temperature.

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CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	V_{GS} = 0 I_D = 250 μA	50	-	-	V
I_{DSS}	drain-source leakage current	V_{GS} = 0 V_{DS} = 25 V	-	-	0.1	μA
		V_{GS} = 0 V_{DS} = 50 V	-	-	0.5	μA
		V_{GS} = 0 V_{DS} = 50 V T_j = 125 °C	-	-	5	μA
I_{GSS}	gate-source leakage current	V_{DS} = 0 V_{GS} = 20 V	-	-	0.1	μA
$V_{GS(th)}$	gate-source threshold voltage	I_D = 1 mA V_{DS} = V_{GS}	0.5	-	1.5	V
$R_{DS(on)}$	drain-source on resistance	V_{GS} = 5 V I_D = 200 mA	-	2	3.5	Ω
$\|Y_{fs}\|$	transfer admittance	V_{DS} = 25 V I_D = 200 mA f = 1 kHz	100	200	-	mS
C_{iss}	input capacitance	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz	-	40	-	pF
C_{oss}	output capacitance	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz	-	12	-	pF
C_{rss}	feedback capacitance	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz	-	5	-	pF
t_{on}	turn-on time	V_{CC} = 30 V I_D = 0.28 A V_{GS} = 0/5 V	-	16	-	ns
t_{off}	turn-off time	V_{CC} = 30 V I_D = 0.28 A V_{GS} = 0/5 V	-	40	-	ns