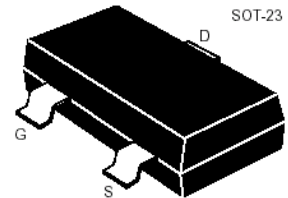




# THE DATASHEET OF BSS138



**N-Channel Enhancement-Mode MOS FETs**

**MAXIMUM RATINGS**

Characteristic	Symbol	Max	Unit
Drain-Source Voltage	$BV_{DSS}$	50	V
Gate- Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current (continuous)	$I_{DR}$	220	mA
Drain Current (pulsed)	$I_{DRM}$	880	mA

**THERMAL CHARACTERISTICS**

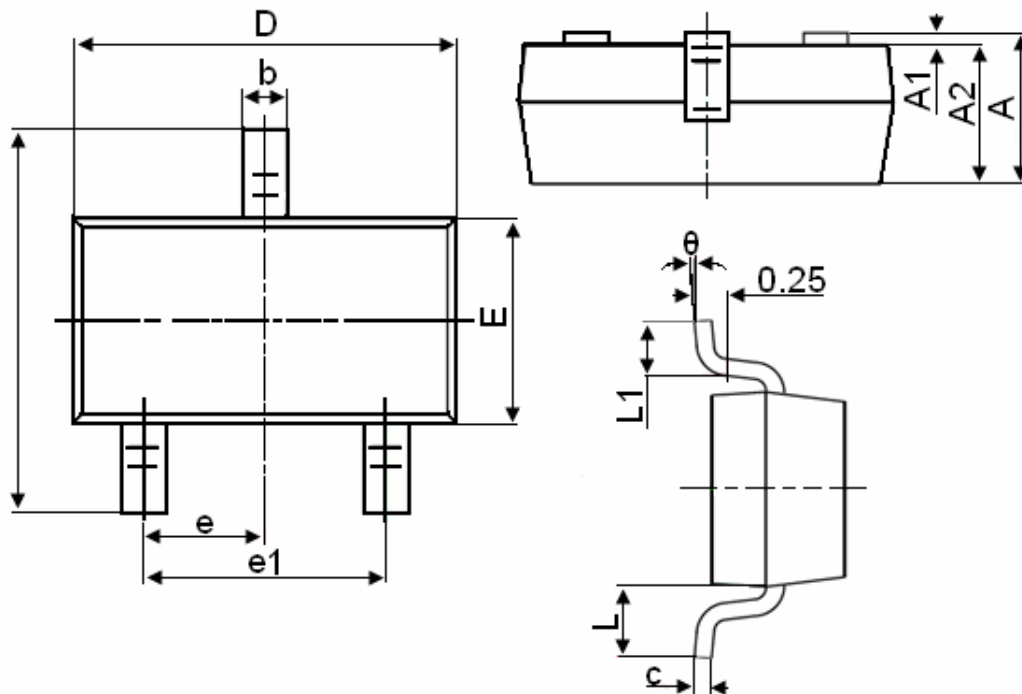
Characteristic	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	350	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	150 $^\circ\text{C}$ , -55to+150 $^\circ\text{C}$	

**ELECTRICAL CHARACTERISTICS**

 ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage ( $I_D=250\mu\text{A}, V_{GS}=0\text{V}$ )	$BV_{DSS}$	50	—	—	V
Gate Threshold Voltage ( $I_D=1\text{mA}, V_{GS}=V_{DS}$ )	$V_{GS(th)}$	0.8	—	1.6	V
Diode Forward Voltage Drop ( $I_{SD}=220\text{mA}, V_{GS}=0\text{V}$ )	$V_{SD}$	—	—	1.4	V
Zero Gate Voltage Drain Current ( $V_{GS}=0\text{V}, V_{DS}=BV_{DSS}$ ) ( $V_{GS}=0\text{V}, V_{DS}=0.6BV_{DSS}$ )	$I_{DSS}$	—	—	0.5 100	$\mu\text{A}$ $\text{nA}$
Gate Body Leakage ( $V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$ )	$I_{GSS}$	—	—	$\pm 100$	$\text{nA}$
Static Drain-Source On-State Resistance ( $I_D=220\text{mA}, V_{GS}=10\text{V}$ ) ( $I_D=220\text{mA}, V_{GS}=4.5\text{V}$ )	$R_{DS(ON)}$	—	—	3.5 6	$\Omega$
Input Capacitance ( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )	$C_{ISS}$	—	—	50	$\text{pF}$
Common Source Output Capacitance ( $V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1\text{MHz}$ )	$C_{OSS}$	—	—	25	$\text{pF}$
Turn-ON Time ( $V_{DS}=30\text{V}, I_D=200\text{mA}, R_{GEN}=25\Omega$ )	$t_{(on)}$	—	—	20	$\text{ns}$
Turn-OFF Time ( $V_{DS}=30\text{V}, I_D=200\text{mA}, R_{GEN}=25\Omega$ )	$t_{(off)}$	—	—	20	$\text{ns}$

1. FR-5=1.0×0.75×0.062in.
2. Alumina=0.4×0.3×0.024in.99.5%alumina.
3. Pulse Width≤300  $\mu\text{s}$ ; Duty Cycle≤2.0%.

**SOT-23 Package Information**


Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
$\theta$	0°	8°

## Looking for pricing, stock, or lifecycle information?

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