

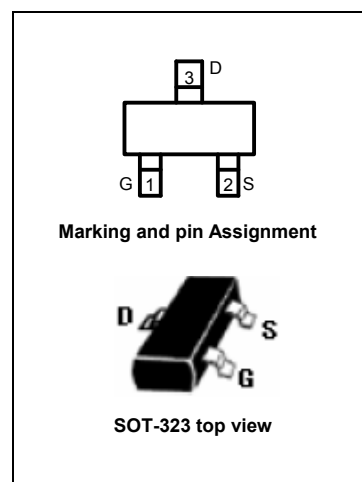
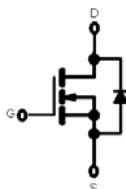
SOT-' & Plastic-Encapsulate MOSFETS

BSS138? F

N-Channel 50-V(D-S) MOSFET

FEATURE

- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching Speed
- Low Input / Output Leakage



Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

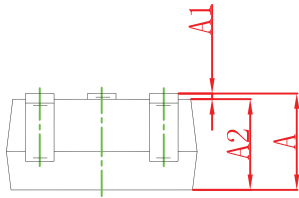
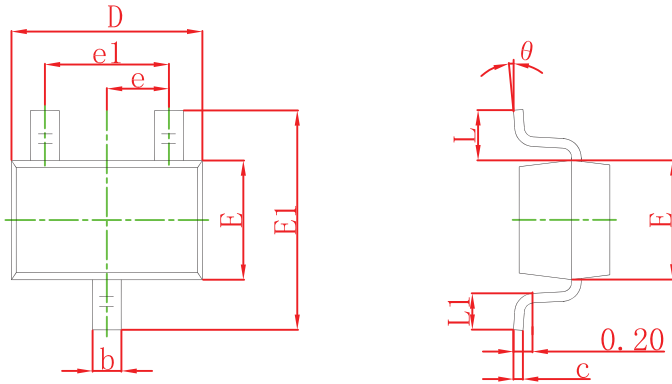
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Continuous Gate-Source Voltage	V_{GSS}	± 12	
Continuous Drain Current	I_D	0.34	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Operating Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 ~ +150	

Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Off characteristics							
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	50			V	
Gate-body leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±1	μA	
		V _{DS} =0V, V _{GS} =±10V			±0.5	μA	
		V _{DS} =0V, V _{GS} =±5V			±0.05	μA	
Zero gate voltage drain current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			0.1	μA	
On characteristics							
Gate-threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =0.25mA	0.1	0.20	0.3	V	
Static drain-source on-resistance	R _{DS(on)}	V _{GS} =1.8V, I _D =0.05A			1.2	3.0	
		V _{GS} =2.5V, I _D =0.05A		1.20	3.0	Ω	
		V _{GS} =5V, I _D =0.05A				1.6	
		V _{GS} =5V, I _D =0.2A					
Forward transconductance	g _{FS}	V _{DS} =10V, I _D =0.2A	0.20			S	
Dynamic characteristics*							
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		58		pF	
Output capacitance	C _{oss}			9.75			
Reverse transfer capacitance	C _{rss}			5.2			
Gate resistance	R _G	V _{DS} =5V, V _{GS} =10mV, f=1MHz		281		Ω	
Switching characteristics*							
Turn-on delay time	t _{d(on)}	V _{DD} =30V, V _{DS} =10V, I _D =0.29A, R _{GEN} =6Ω			5	ns	
Rise time	t _r				5		
Turn-off delay time	t _{d(off)}				60		
Fall time	t _f				35		
Drain-source body diode characteristics							
Body diode forward voltage	V _{SD}	I _S =0.115A, V _{GS} = 0V			1.2	V	

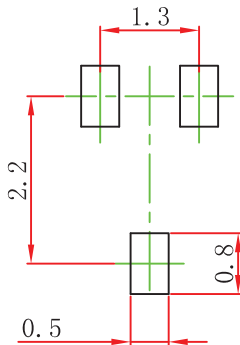
* These parameters have no way to verify.

SOT-323 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-323 Suggested Pad Layout



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ±0.05mm.
 3. The pad layout is for reference purposes only.