



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Micro Commercial Components



Micro Commercial Components
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BSS138W

N-Channel Enhancement Mode Field Effect Transistor

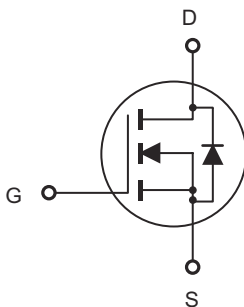
Features

- Halogen free available upon request by adding suffix "-HF"
- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable
- Lead free product is acquired
- SOT-323 Package
- Marking Code: SS
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

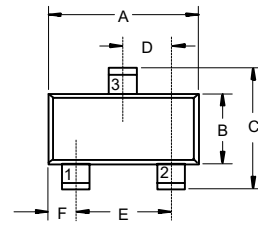
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	50	V
I_D	Drain Current-Continuous	0.22	A
V_{GS}	Gate-source Voltage	± 20	V
P_D	Total Power Dissipation	0.3	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	417	$^{\circ}C/W$
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$

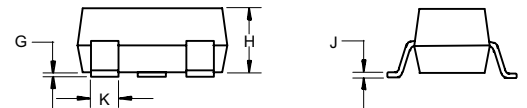
Internal Block Diagram



SOT-323

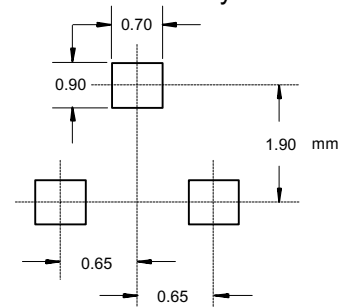


1. GATE
2. SOURCE
3. DRAIN



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.071	.087	1.80	2.20	
B	.045	.053	1.15	1.35	
C	.083	.096	2.10	2.45	
D	.026 Nominal		0.65Nominal		
E	.047	.055	1.20	1.40	
F	.012	.016	.30	.40	
G	.000	.004	.000	.100	
H	.035	.039	.90	1.00	
J	.004	.010	.100	.250	
K	.006	.016	.15	.40	

Suggested Solder Pad Layout



BSS138W

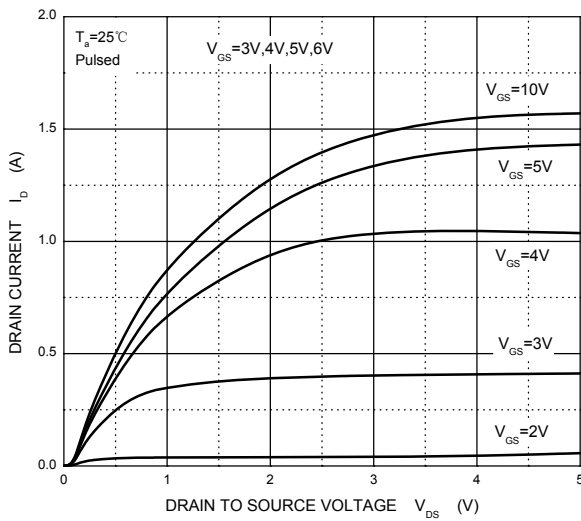
Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
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} = ±20V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = 50V, V _{GS} = 0V			0.5	μA
		V _{DS} = 30V, V _{GS} = 0V			100	nA
On characteristics						
Gate-threshold voltage (note 1)	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1mA	0.80		1.50	V
Static drain-source on-resistance (note 1)	R _{DS(on)}	V _{GS} = 10V, I _D = 0.22A			3.50	Ω
		V _{GS} = 4.5V, I _D = 0.22A			6	
Forward transconductance (note 1)	g _{FS}	V _{DS} = 10V, I _D = 0.22A	0.12			S
Dynamic characteristics (note 2)						
Input capacitance	C _{iss}	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz		27		pF
Output capacitance	C _{oss}			13		
Reverse transfer capacitance	C _{rss}			6		
Switching characteristics						
Turn-on delay time (note 1,2)	t _{d(on)}	V _{DD} = 30V, V _{DS} = 10V, I _D = 0.29A, R _{GEN} = 6Ω			5	ns
Rise time (note 1,2)	t _r				18	
Turn-off delay time (note 1,2)	t _{d(off)}				36	
Fall time (note 1,2)	t _f				14	
Drain-source body diode characteristics						
Body diode forward voltage (note 1)	V _{SD}	I _S = 0.44A, V _{GS} = 0V			1.4	V

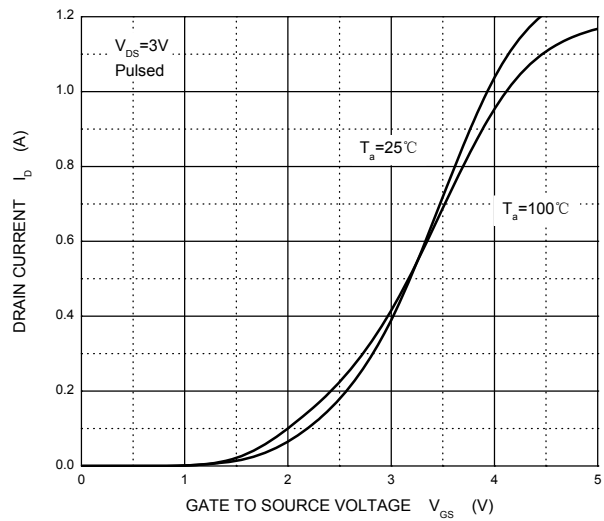
Notes:

1. Pulse Test ; Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
2. These parameters have no way to verify.

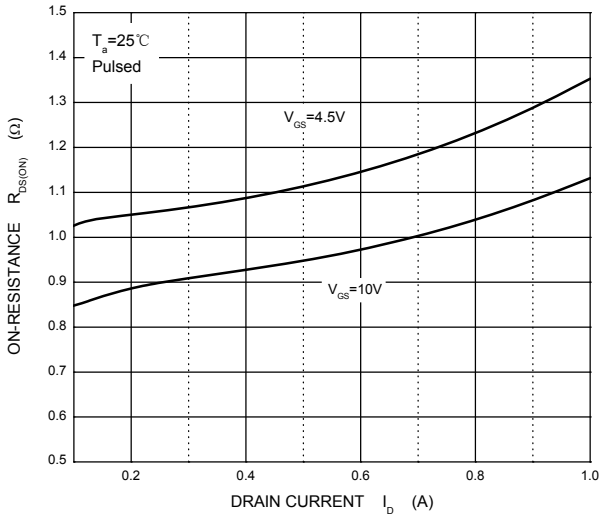
Output Characteristics



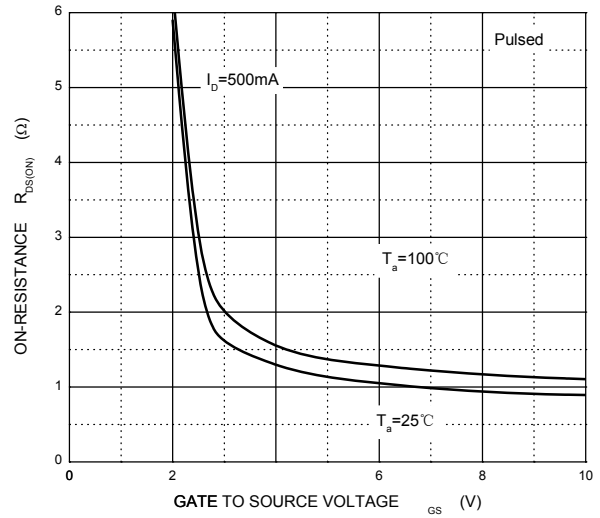
Transfer Characteristics



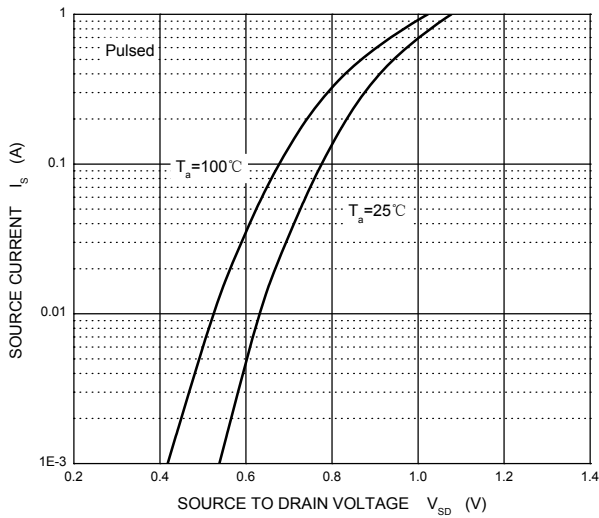
$R_{DS(ON)}$ — I_D



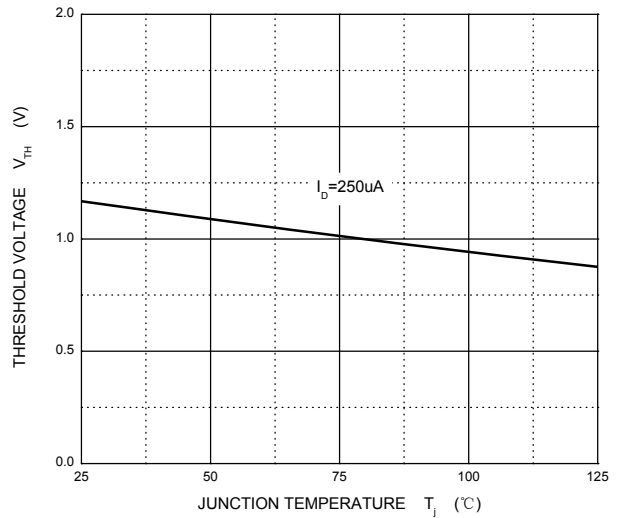
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage





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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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