



Micro Commercial Components



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BSS138W

N-Channel Enhancement Mode Field Effect Transistor

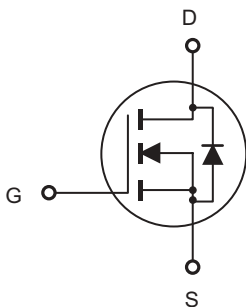
Features

- 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

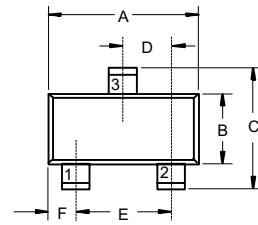
Maximum Ratings @ 25°C Unless Otherwise Specified

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	$^{\circ}C$

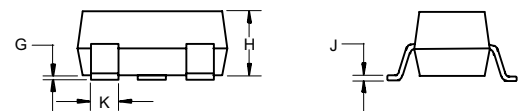
Internal Block Diagram



SOT-323

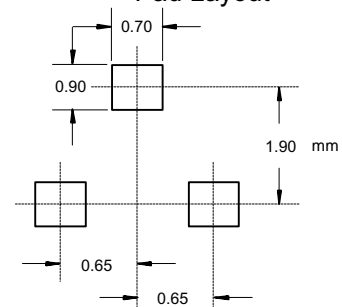


1. GATE
2. SOURCE
3. DRAIN



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



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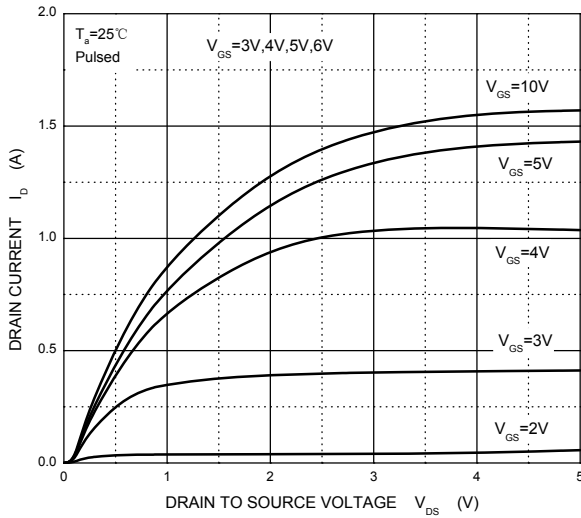
Electrical characteristics (T_a=25°C unless otherwise noted)

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	

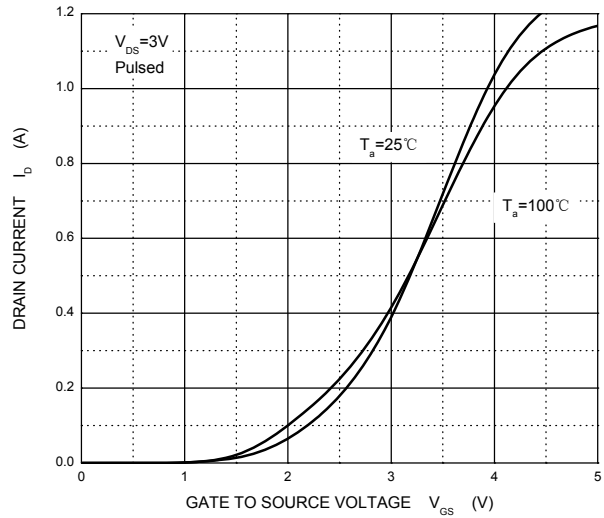
Notes:

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

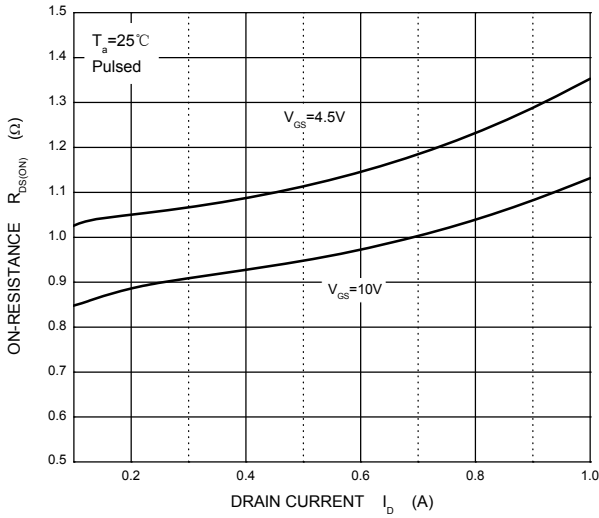
Output Characteristics



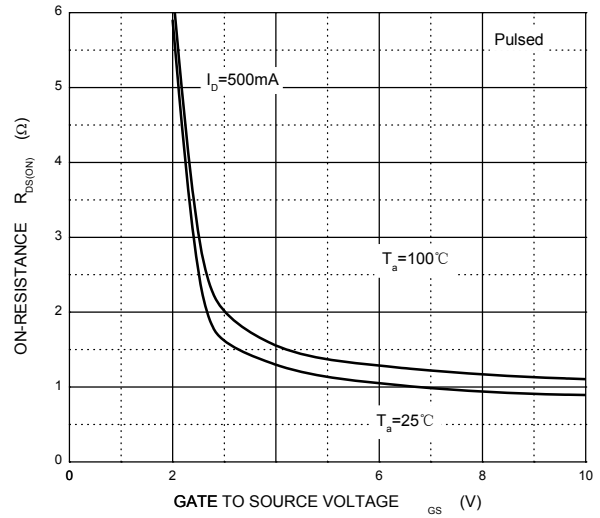
Transfer Characteristics



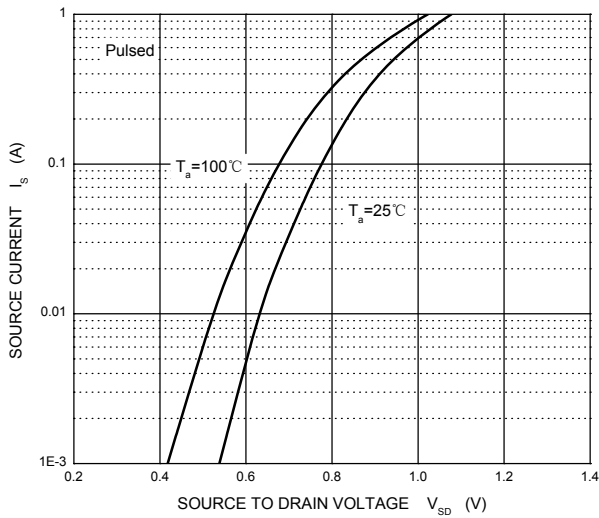
$R_{DS(ON)}$ — I_D



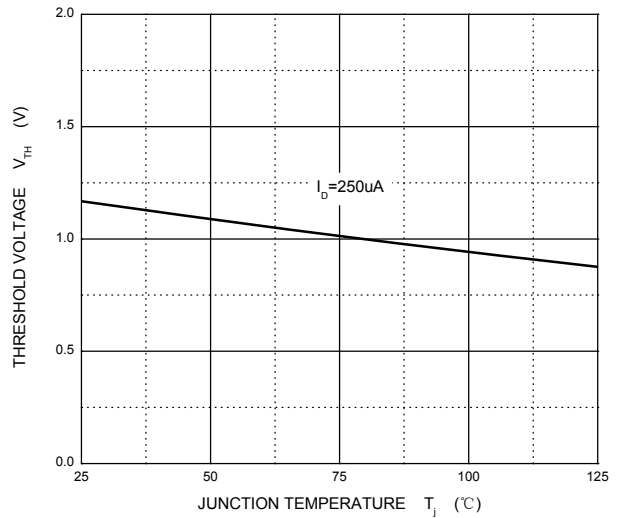
$R_{DS(ON)}$ — V_{GS}



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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