

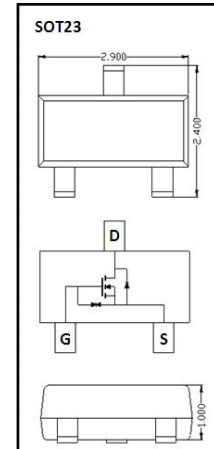
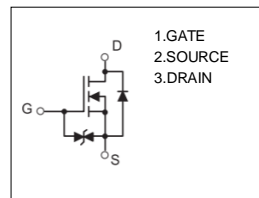
DATA SHEET

BSS138A

- ◇Epoxy meets UL 94 V-0 flammability rating
- ◇High density cell design for low $R_{DS(ON)}$
- ◇Voltage controlled small signal switch
- ◇Rugged and reliable
- ◇ESD Protected

Device Marking Code	
BSS138A	• SS

Internal Structure



MAXIMUM RATINGS (Ta = 25 °C)

Symbol	Parameter	Value	Units
VDS	Drain-source Voltage	50	V
VGS	Gate-source-Voltage	±20	V
ID	Drain Current	0.22	A
Pd	Total Power Dissipation	350	mW
TJ	Junction Temperature	-55 to 150	°C
TJ,	Storage Temperature	-55 to 150	°C
R	Thermal Resistance from Junction to Ambient	357	°C/W

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{(BR)DSS}$	Drain-source Voltage Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	50			V
$V_{GS(th)}$	Gate-Threshold Voltage (note 1)	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	1.0	1.45	V
I_{GSS}	Gate-body Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=48V, V_{GS}=0V$			1	uA
$R_{DS(on)}$	Drain-source On-resistance (note 1)	$V_{GS}=4.5V, I_D=0.2A$ $V_{GS}=10V, I_D=0.5A$		1.3 1.1	4 3	Ω
V_{SD}	Diode Forward Voltage(note 1)	$V_{GS}=0V, I_S=0.5A$	0.5		1.3	V
g_{FS}	Forward Transconductance (note 1)	$V_{DS}=10V, I_D=0.2A$	100			mS

Dynamic Characteristics

Ciss	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		22.8		pF
Coss	Output Capacitance			3.5		
Crss	Reverse Transfer Capacitance			2.9		

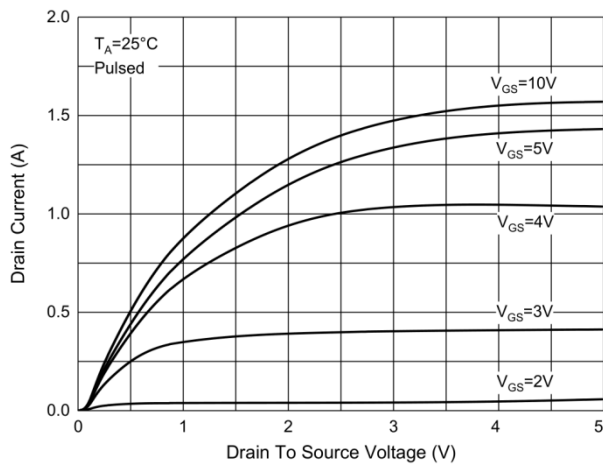
Switching Characteristics

t _{d(on)}	Turn on time	V _{DD} =30V, V _{GEN} =10V, R _G =25 Ω, R _L =60 Ω, I _D =0.5A		3.8		ns
t _{d(off)}	Turn off time			19		

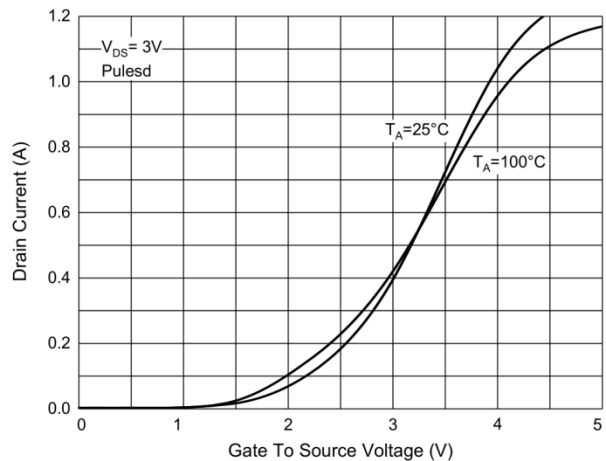
Note:

1. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.

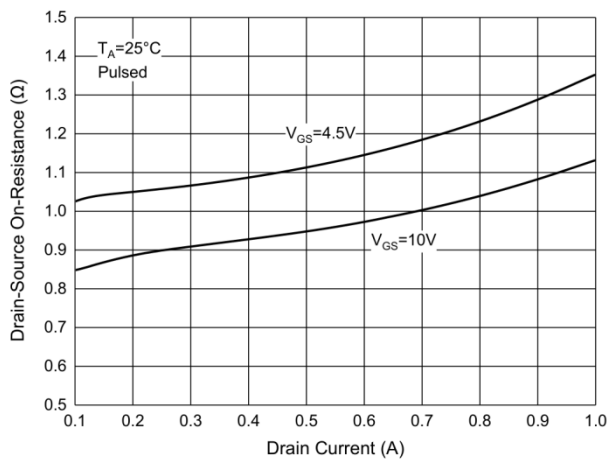
Typical Characteristics



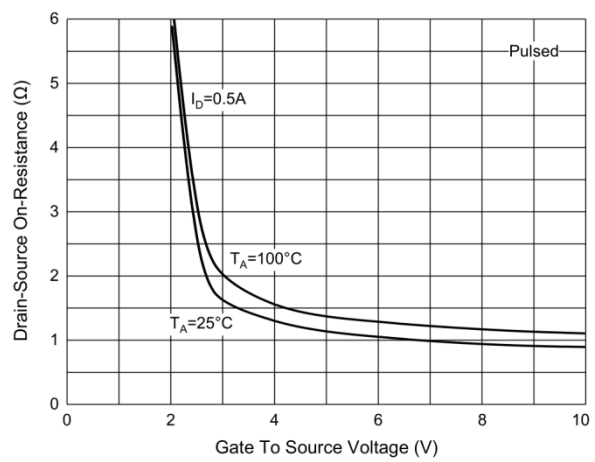
Output Characteristics



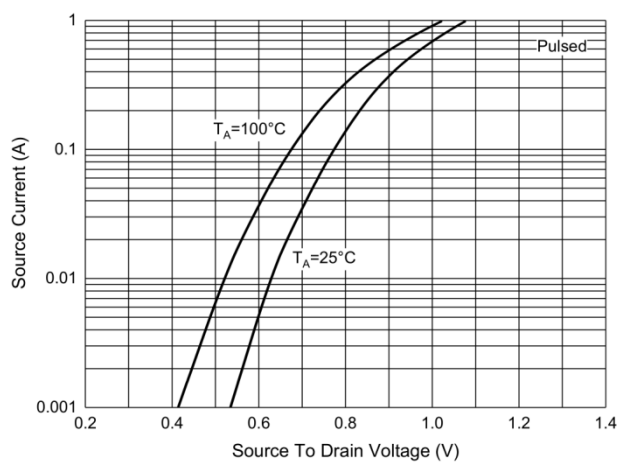
Transfer Characteristics



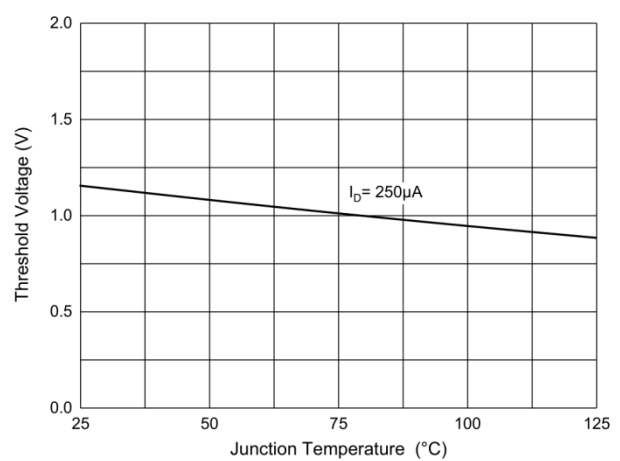
$R_{DS(ON)} - I_D$ Characteristics



$R_{DS(ON)} - V_{GS}$ Characteristics



$I_S - V_{SD}$ Characteristics



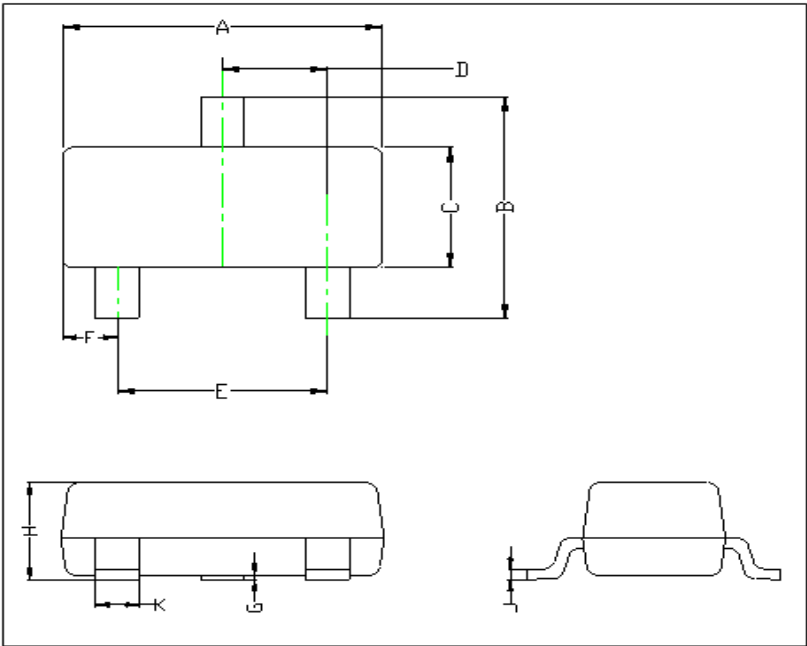
Threshold Voltage Characteristics

ORDERING INFORMATION

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
BSS138A	SOT23	Tape & Reel 3000pcs /7" Reel	8mm	4mm	Conductive	

PACKAGE DIMENSIONS

Package Outline : SOT23



The diagram shows three views of the SOT23 package: a top view with dimensions A, B, C, D, E, and F; a side view with dimension G; and a bottom view with dimension K. Dimension A is the total width, B is the width of the main body, C is the width of the leads, D is the width of the top lead, E is the width of the bottom lead, F is the lead thickness, G is the lead height, and K is the lead length.

Symbol	Dimensions in mm	
	Min.	Max.
A	2.800	3.040
B	2.100	2.640
C	1.200	1.400
D	0.890	1.030
E	1.780	2.050
F	0.450	0.600
G	0.013	0.100
H	0.900	1.110
J	0.090	0.180
K	0.370	0.510

SOT23 Package Outline

Note:
 1. Halogen free ,EMC
 2. Pb free solder
 3. Lead thickness solder plating
 4. Lead frame CAC-5
 5. Other Tolerance ± 0.05
 6. Dimensions are exclusive of Burrs Mold Flash and Tie Bar extrusions
 7. Unit : mm

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