

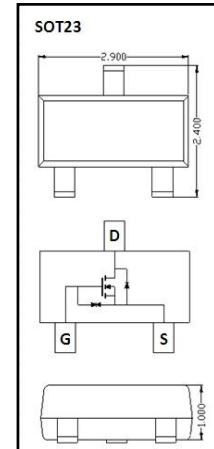
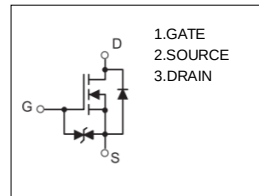
DATA SHEET

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 ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Value	Units
V_{DS}	Drain-source Voltage	50	V
V_{GS}	Gate-source-Voltage	± 20	V
I_D	Drain Current	0.22	A
P_d	Total Power Dissipation	350	mW
T_J	Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{J_s}	Storage Temperature	-55 to 150	$^\circ\text{C}$
R	Thermal Resistance from Junction to Ambient	357	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=48V, V_{GS}=0V$			1	μA
$R_{DS(on)}$	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		

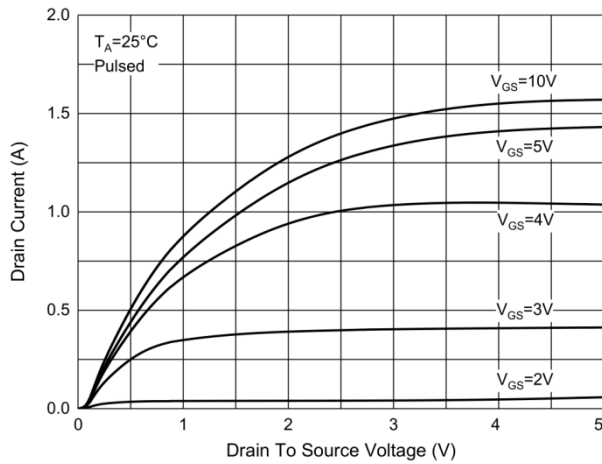
Switching Characteristics

$t_{d(on)}$	Turn on time	$V_{DD}=30V, V_{GEN}=10V, R_G=25\Omega,$ $R_L=60\Omega, I_D=0.5A$		3.8		ns
$t_{d(off)}$	Turn off time			19		

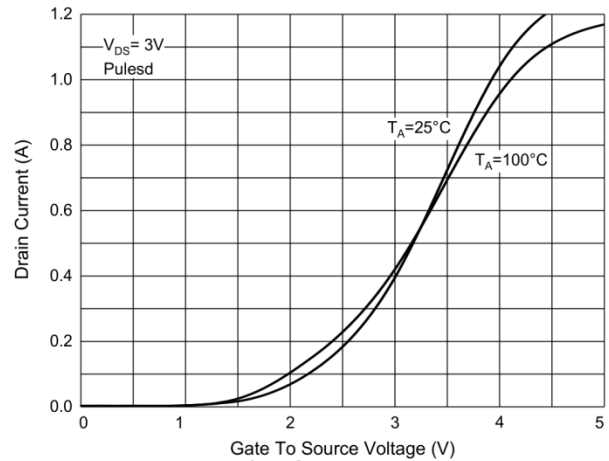
Note:

1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

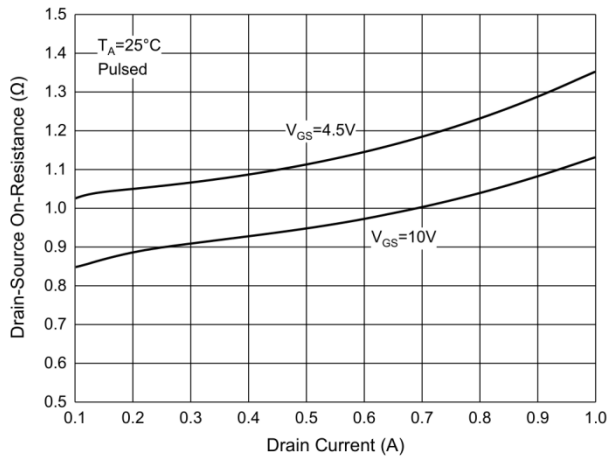
Typical Characteristics



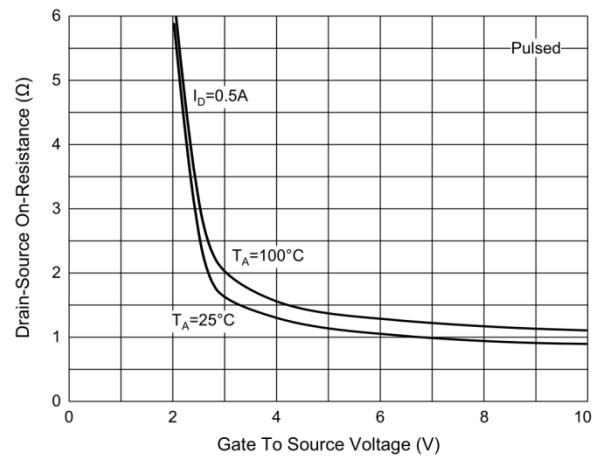
Output Characteristics



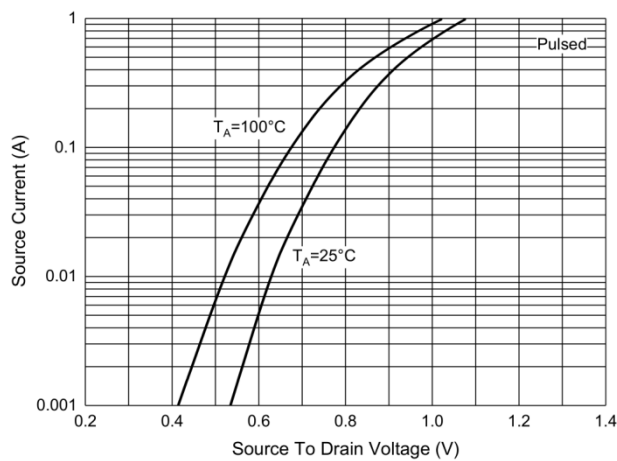
Transfer Characteristics



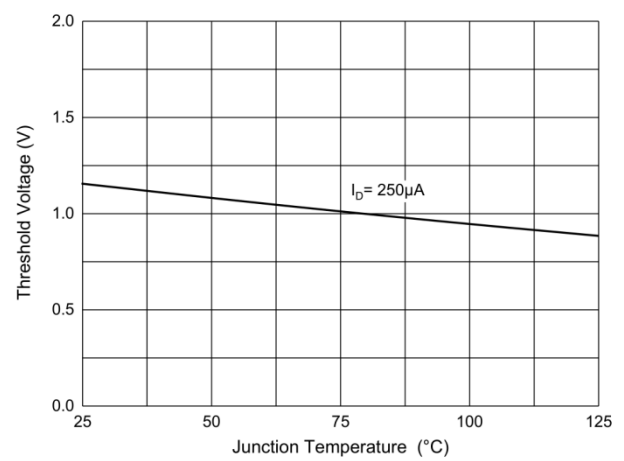
$R_{DS(ON)} - I_D$ Characteristics



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

