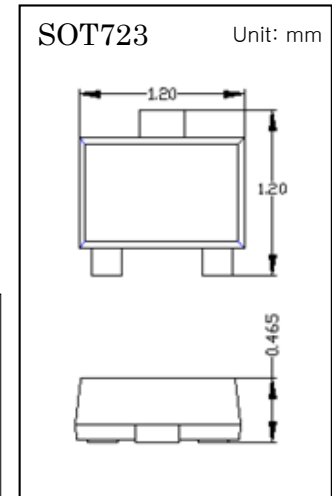
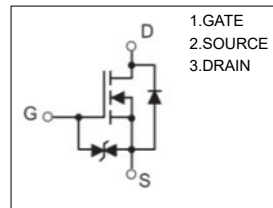


N-Channel MOSFET

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

Device Marking Code	
BSS138AF7	SS

Equivalent Circuit



Maximum Ratings (Ta = 25 °C)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	50	V
V_{GS}	Continuous Gate-Source-Voltage	±20	V
I_D	Continuous Drain Current	0.22	A
P_D	Total Power Dissipation	0.35	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	362	°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_{DSON}	Drain-source On-resistance (note 1)	$V_{GS}=10V, I_D=0.5A$ $V_{GS}=4.5V, I_D=0.2A$		1.1 1.3	3 4	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)	$V_{GS}=10V, I_S=200mA$	100			ms



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Dynamic characteristics (note 1)

C_{iss}	Input Capacitance	$V_{DS}=25V$		22.8		pF
C_{oss}	Output Capacitance	$V_{GS}=0V$		3.5		
C_{rss}	Reverse Transfer Capacitance	$f=1MHz$		2.9		

Switching Time (note 1)

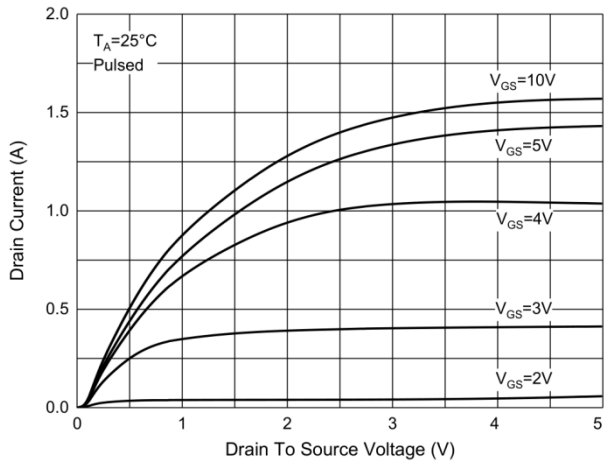
$T_{d(on)}$	Turn on Delay time	$V_{DD}=30V, V_{DS}=10V,$		3.8		ns
$T_{d(off)}$	Turn off Delay time	$I_D=0.5A, R_{GEN}=25\Omega$ $R_L=60\Omega$		19		

Note: 1. Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.

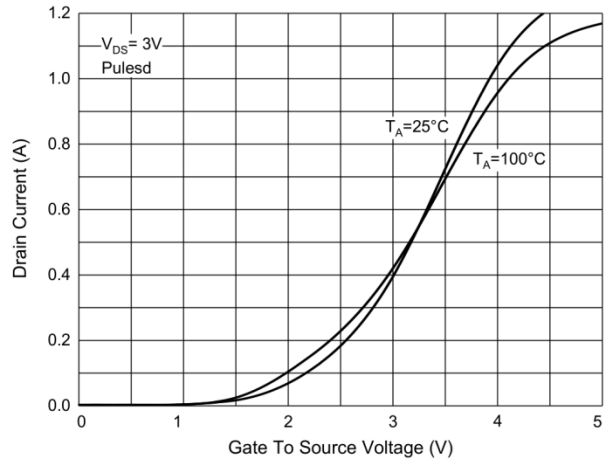


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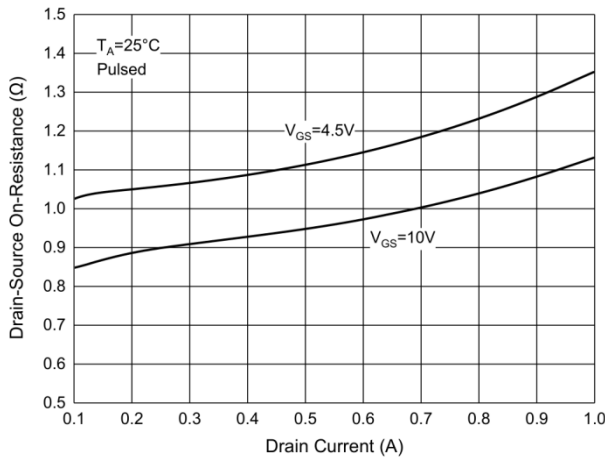
Typical Characteristics



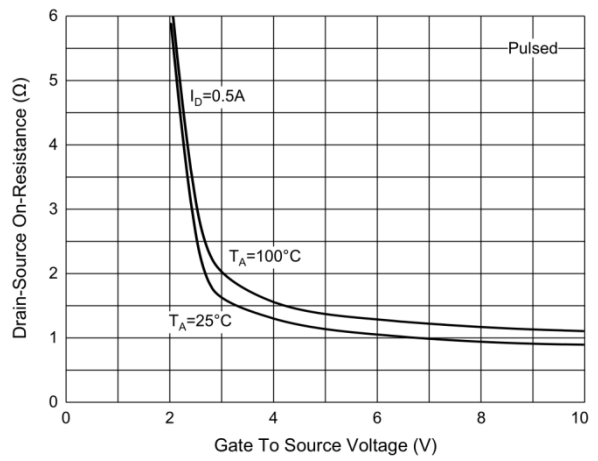
Output Characteristics



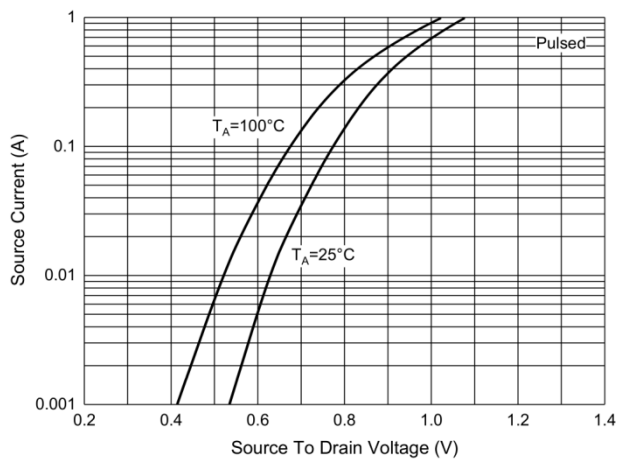
Transfer Characteristics



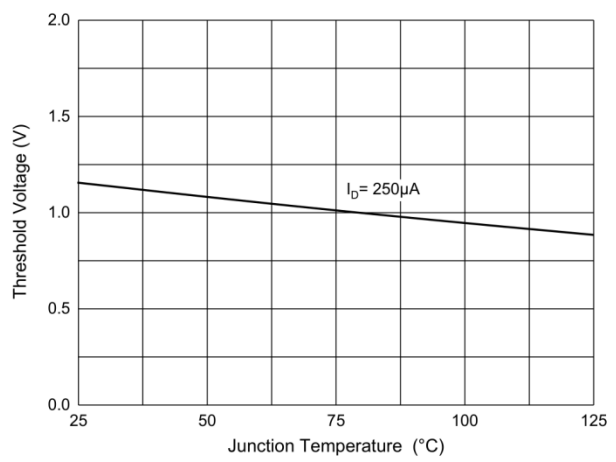
$R_{DS(ON)}-I_D$



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



I_S-V_{SD}



Threshold Voltage

Ordering Information

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
BSS138AF7	SOT723	Tape & Reel 8000pcs /7" Reel	8mm	4mm	Conductive	

Package Dimensions

Package outline : SOT723

Top view

Side view

Front view

Soldering Pattern

SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.430	0.500
A1	0.000	0.050
b	0.170	0.270
b1	0.270	0.370
c	0.080	0.150
D	1.150	1.250
E	1.150	1.250
E1	0.750	0.850
e	0.800 TYP.	
θ	0°	7°

Notice:

- Lead plating: Pb free solder
- Lead thickness includes solder plating
- Lead frame: CAC-5
- Other Tolerance: ±0.05
- Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusion
- Unit: mm