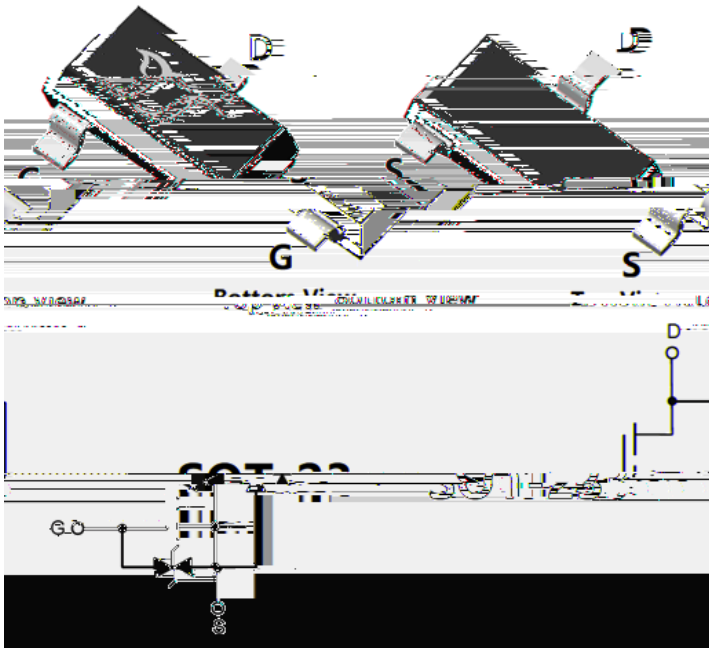




# BSS138KJ

## N-Channel Enhancement Mode Field Effect Transistor



### Product Summary

$V_{DS}$	60V
$I_D$	0.6A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	1.5
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	1.8
$R_{DS(ON)}$ (at $V_{GS}=2.5V$ )	3.7
$R_{DS(ON)}$ (at $V_{GS}=1.8V$ )	8.5
Gate-Source ESD Rating Up to 2KV (HBM)	

### General Description

Trench Power MV MOSFET technology  
 Voltage controlled small signal switch  
 Low input Capacitance  
 Fast Switching Speed  
 Moisture Sensitivity Level 1  
 Epoxy Meets UL 94 V-0 Flammability Rating  
 Halogen Free

### Applications

Battery operated systems  
 Solid-state relays  
 Direct logic-level interface TTL/CMOS

### Absolute Maximum Ratings ( $T_A=25$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	60	V
Gate-source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	$T_A=25$	$I_D$	0.6	A
	$T_A=100$		0.38	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	1.5	A
Total Power Dissipation <sup>B</sup>	$T_A=25$	$P_D$	0.8	W
	$T_A=100$		0.3	
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 +150	

### Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>C</sup>	Steady-State	$R_{JA}$	120	150	$^{\circ}W$

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
BSS138KJ	F2	BK	3000	30000	120000	7" reel



## BSS138KJ

### Electrical Characteristics ( $T_J=25$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$ $V_{DS}=60V, V_{GS}=0V, T_J=150$	-	-	1	$\mu A$





# BSS138KJ

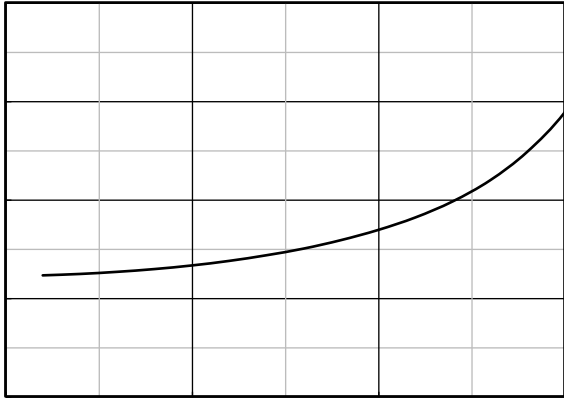


Figure 7.  $R_{DS(on)}$  VS Drain Current

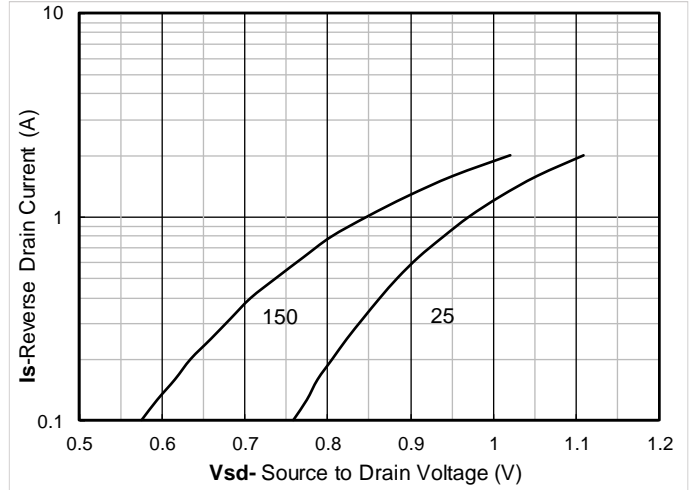


Figure 8. Forward characteristics of reverse diode

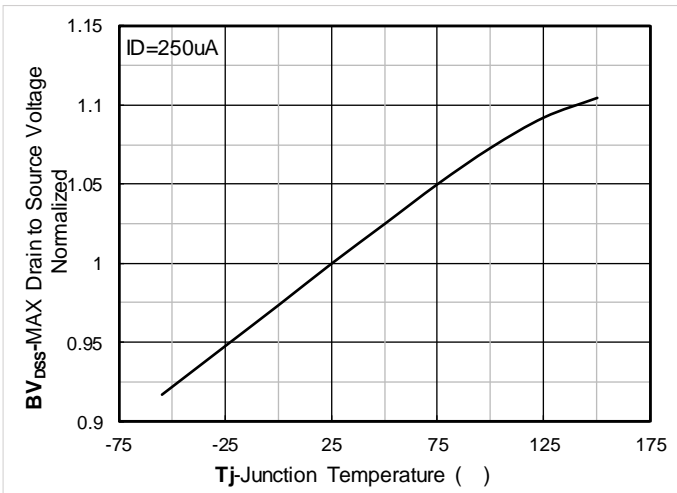


Figure 9. Normalized breakdown voltage

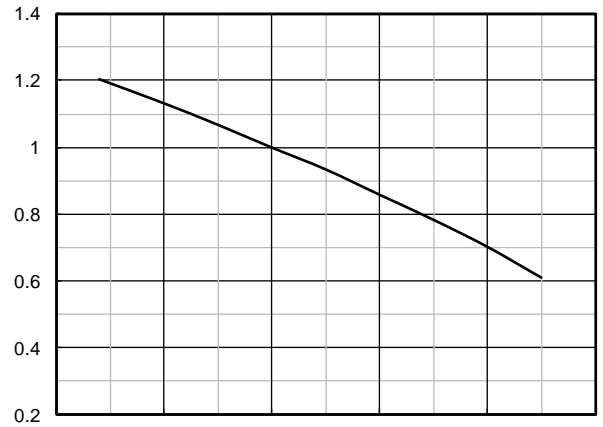


Figure 10. Normalized Threshold voltage

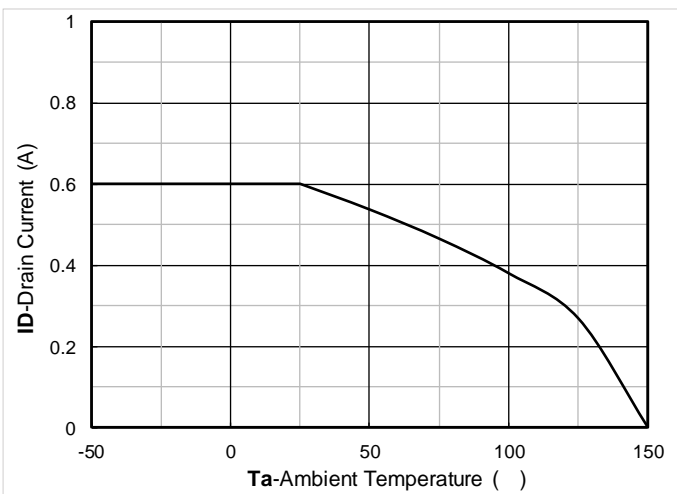


Figure 11. Current dissipation

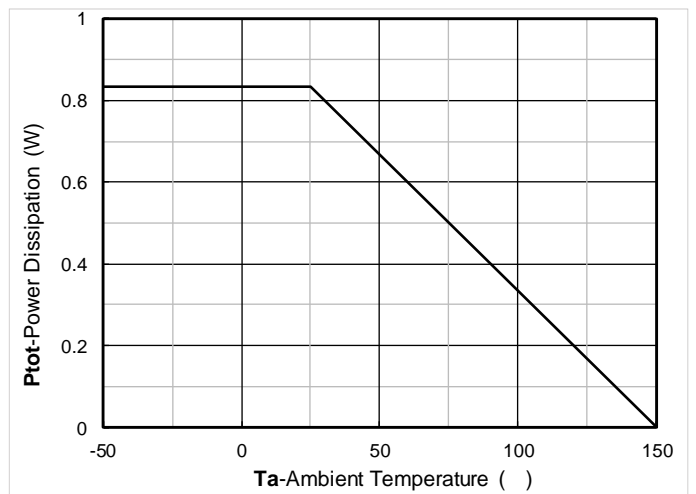


Figure 12. Power dissipation



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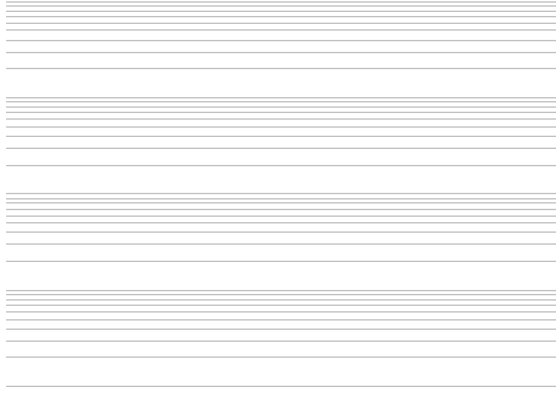


Figure 13. Maximum Transient Thermal Impedance

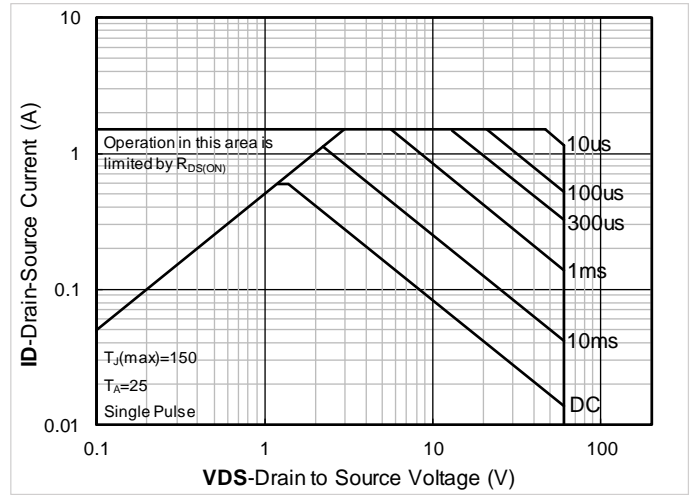


Figure 14. Safe Operation Area

## Test Circuits & Waveforms



Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform



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Figure B. Gate Charge Test Circuit & Waveform

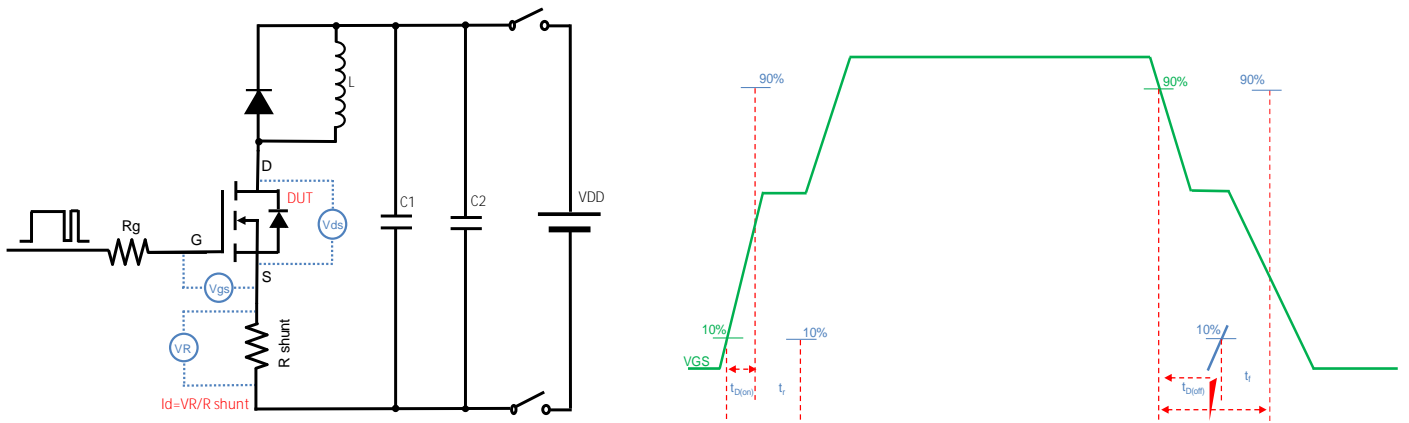


Figure C. Resistive Switching Test Circuit & Waveform

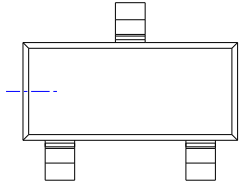


Figure D. Diode Recovery Test Circuit & Waveform



# BSS138KJ

## SOT-23 Package information



UNIT mm



## BSS138KJ

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