



## DESCRIPTION

The BSS138L is available in SOT-23 package

## ORDERING INFORMATION

Package Type	Part Number
SOT-23	BSS138L
Note	SPQ: 3,000pcs/Reel
AiT provides all RoHS Compliant Products	

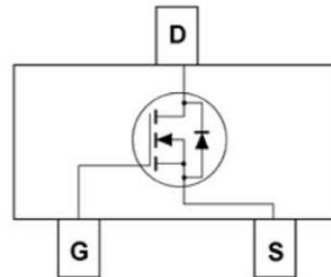
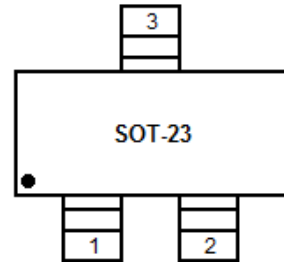
## FEATURES

- 50V/0.2A  
 $R_{DS(ON)} = 3.5\Omega$  (Max) @ $V_{GS}=5V$   $I_D=0.2A$   
 $R_{DS(ON)} = 10\Omega$  (Max) @ $V_{GS}=2.75V$   $I_D=0.2A$
- Super High dense cell design for extremely low  $R_{DS(ON)}$
- Reliable and Rugged
- Low Threshold Voltage(0.5V-1.5V) Make it Ideal for Low Voltage Applications.
- Available in SOT-23 package

## APPLICATION

- Power Management in DC/DC Converters  
Portable and Battery-powered Products.

## PIN DESCRIPTION





## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub>=25°C, unless otherwise noted

V <sub>DS</sub> , Drain-Source Voltage	50V
V <sub>GS</sub> , Gate Source Voltage	±20V
I <sub>D</sub> , Drain Current-Continuous	0.2A

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ELECTRICAL CHARACTERISTICS

T<sub>A</sub>=25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain to Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	50	-	-	V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V	-	-	0.5	μA
		V <sub>DS</sub> =25V, V <sub>GS</sub> =0V	-	-	0.1	
Gate Body Leakage Current, Forward	I <sub>GSSF</sub>	V <sub>GS</sub> =20V, V <sub>DS</sub> =0V	-	-	100	nA
Gate Body Leakage Current, Reverse	I <sub>GSSR</sub>	V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V	-	-	-100	nA
<b>On Characteristics</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =1.0mA	0.5	-	1.5	V
Static Drain-Source On-Resistance	R <sub>Ds(ON)</sub>	V <sub>GS</sub> =5.0V, I <sub>D</sub> =0.2A	-	-	3.5	Ω
		V <sub>GS</sub> =2.75V, I <sub>D</sub> =0.2A	-	-	10	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =0.2A	-	-	2.5	V



## TYPICAL CHARACTERISTICS

Figure 1. Output Characteristics

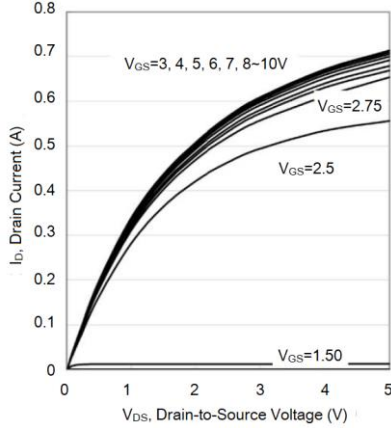


Figure 2. Transfer Characteristics

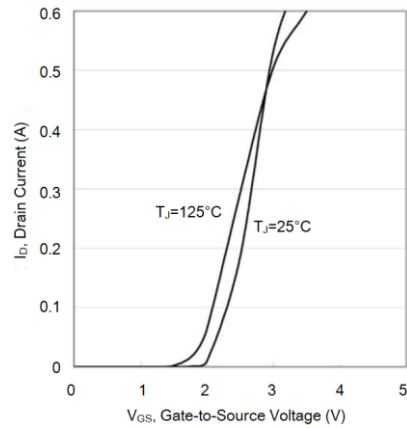


Figure 3. Breakdown Voltage Variation with Temperature

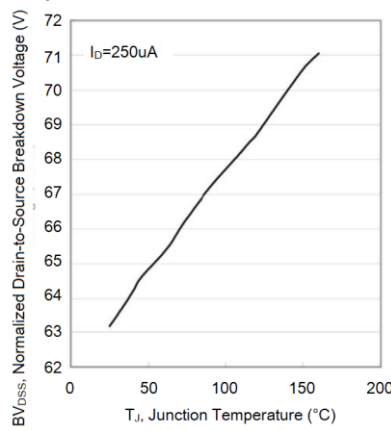


Figure 4. Gate Threshold Variation with Temperature

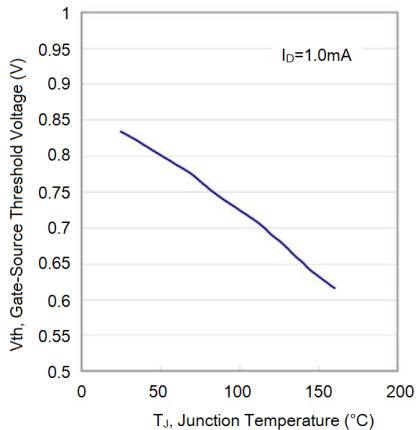


Figure 5. On-Resistance Variation with Temperature

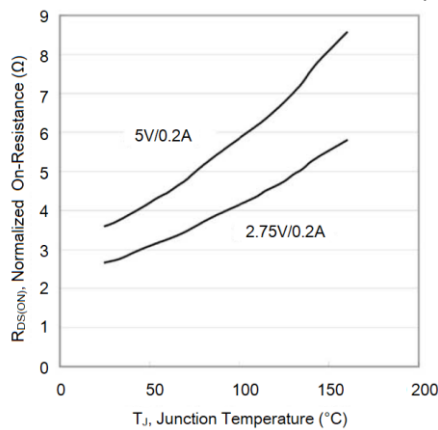


Figure 6. On-Resistance vs. Drain Current

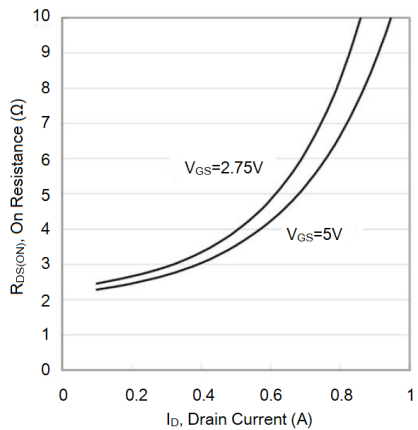




Figure 7. On-Resistance vs. Gate-to-Source Voltage

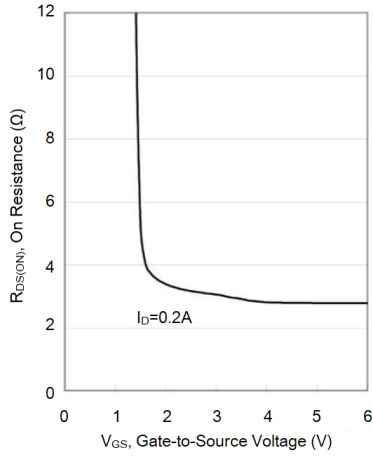
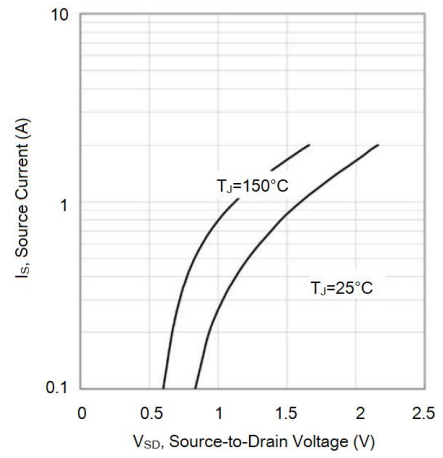


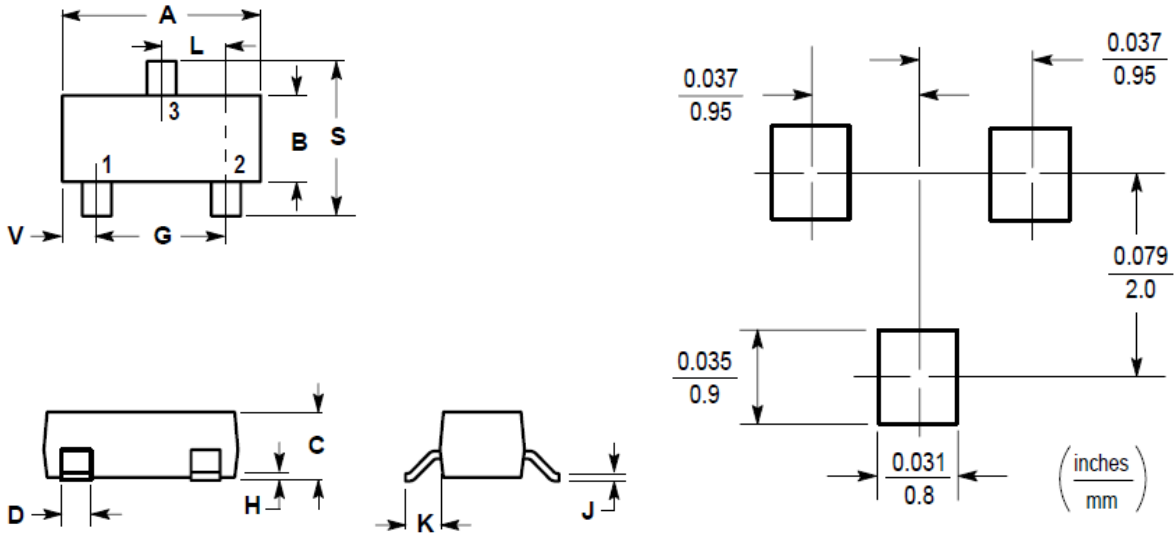
Figure 8. Source-Drain Diode Forward Voltage





## PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.89	1.11	0.0350	0.0440
D	0.37	0.50	0.0150	0.0200
G	1.78	2.04	0.0701	0.0807
H	0.013	0.100	0.0005	0.0040
J	0.085	0.177	0.0034	0.0070
K	0.35	0.69	0.0140	0.0285
L	0.89	1.02	0.0350	0.0401
S	2.10	2.64	0.0830	0.1039
V	0.45	0.60	0.0177	0.0236



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