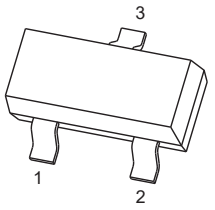
BSS138K

50V N-Channel MOSFET

Product Summary

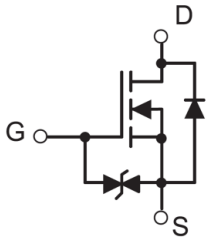
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
50V	0.9Ω@10V	0.34A
	1.0Ω@4.5V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



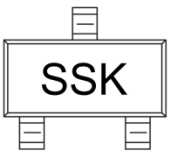
Feature

- High density cell design for extremely low $R_{DS(on)}$
- Rugged and Relaible

Application

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers,Display, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays

MARKING:



ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	0.34	A
Pulsed Drain Current	I_{DM}	1.36	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient[6]	$R_{\theta JA}$	357	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~ +150	°C

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

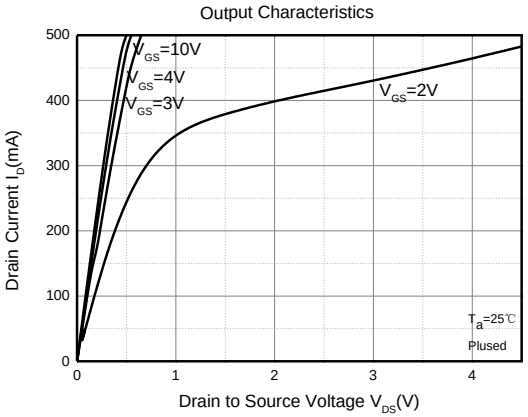
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	50			V
Zero Gate Voltage Drain Current	I_{DSS1}	V_{DS} = 50V, V_{GS} = 0V			0.5	μA
	I_{DSS2}	V_{DS} = 30V, V_{GS} = 0V			100	nA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±10	μA
Gate Threshold Voltage[1]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.8	1.1	1.5	V
Drain-Source On-Resistance[1]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.22A		0.9	1.8	Ω
		V_{GS} = 4.5V, I_D = 0.22A		1.0	2.0	
Forward Tranconductance[1]	g_{FS}	V_{DS} = 10V, I_D = 0.22A		0.13		S
Dynamic Characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz		26.5		pF
Output Capacitance	C_{oss}			12.9		
Reverse Transfer Capacitance	C_{rss}			5.9		
Switching Characteristics[1,2]						
Total Gate Charge	Q_g	V_{DS} = 25V, V_{GS} = 10V, I_D = 0.2A		2.5		nC
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			0.9		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 25V, V_{GS} = 10V, R_G = 6Ω, I_D = 0.3A		4		ns
Turn-On Rise Time	t_r			18		
Turn-Off Delay Time	$t_{d(off)}$			10		
Turn-Off Fall Time	t_f			45		
Source-Drain Diode Characteristics[1]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 0.44A		1.15	1.4	V

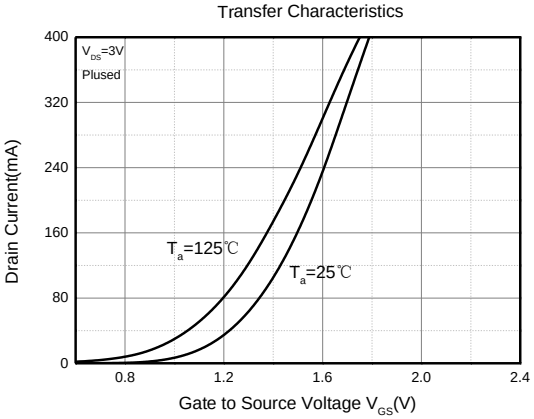
Notes :

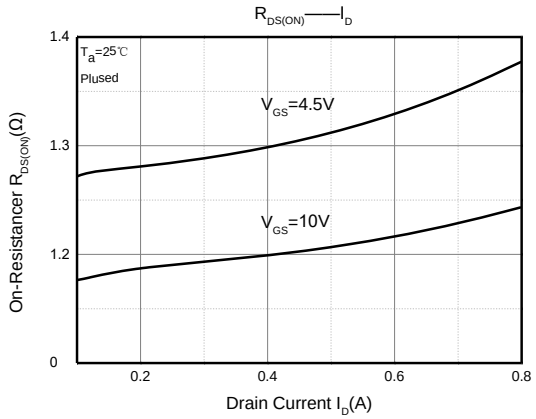
1. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

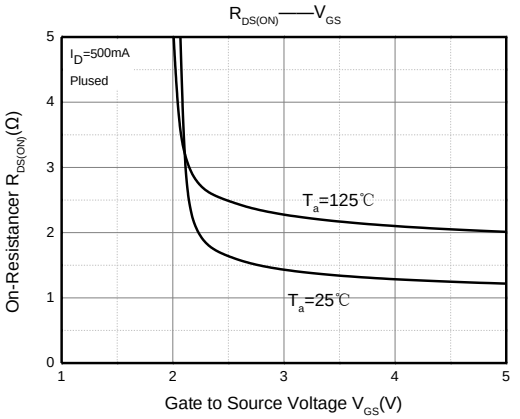
2. These parameters have no way to verify.

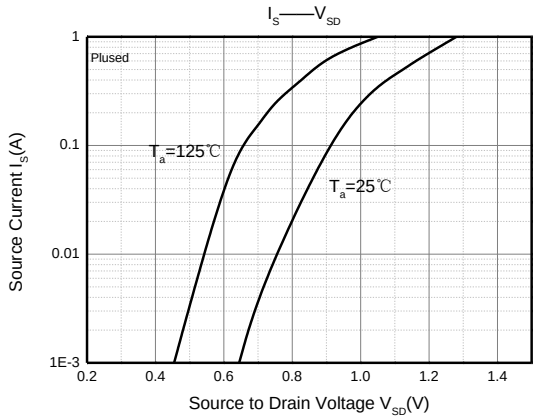
Typical Electrical and Thermal Characteristics

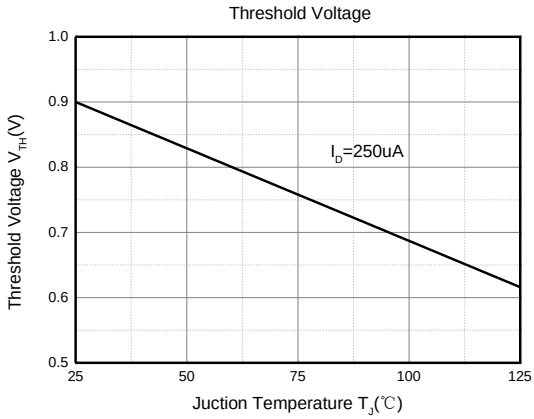




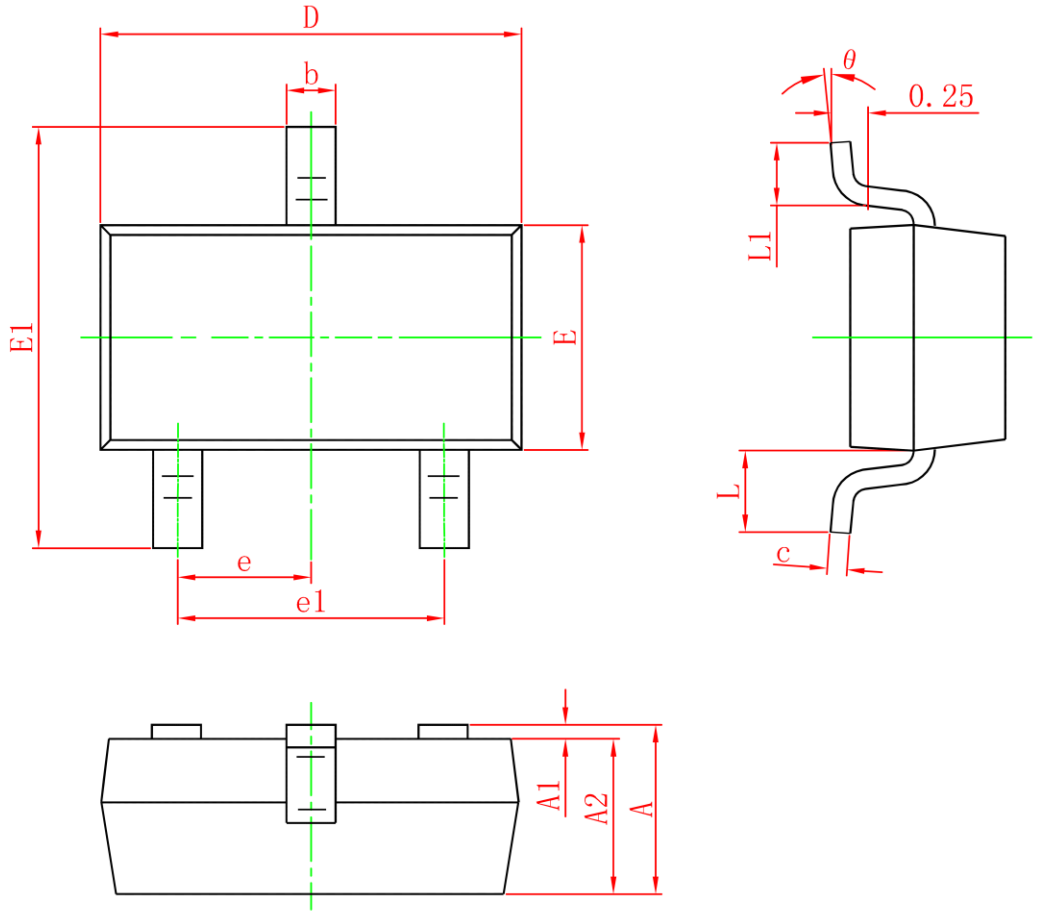








SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.300	0.035	0.051
A1	0	0.100	0	0.004
A2	0.900	1.200	0.035	0.047
b	0.300	0.550	0.012	0.022
c	0.080	0.158	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.150	1.500	0.045	0.059
E1	2.200	2.700	0.087	0.106
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Attention：

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