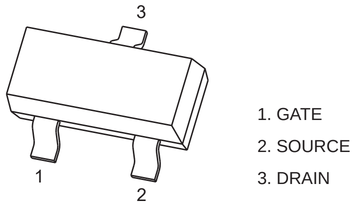
TKBSS138

50V N-Channel MOSFET

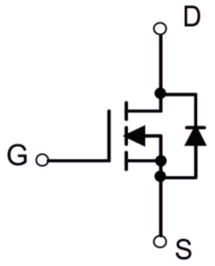
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
50V	1.0Ω@10V	0.22A
	1.1Ω@4.5V	

SOT-23



Schematic diagram



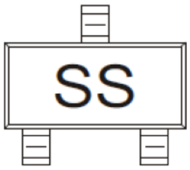
Feature

- 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	
Continuous Drain Current	I_D	0.22	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

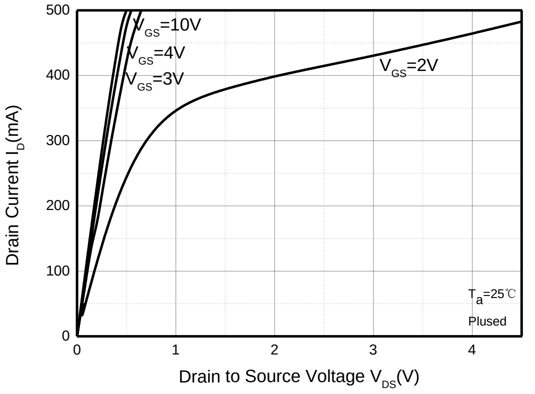
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	50			V
Zero gate voltage drain current	I_{DSS1}	V_{DS} =50V,V_{GS} = 0V			0.5	μA
	I_{DSS2}	V_{DS} =30V,V_{GS} = 0V			100	nA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage[1]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.8		1.5	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =10V, I_D =0.22A		1.0	3.0	Ω
		V_{GS} =4.5V, I_D =0.22A		1.1	5.0	
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]						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,I_D=0.29A, V_{GS}=10V,R_G=6Ω			5	nS
Turn-on rise time	t_r				18	
Turn-off delay time	$t_{d(off)}$				36	
Turn-off fall time	t_f				14	
Source-Drain Diode characteristics[1]						
Diode Forward voltage	V_{SD}	I_S=0.44A, V_{GS} = 0V		1.15	1.4	V

Notes:

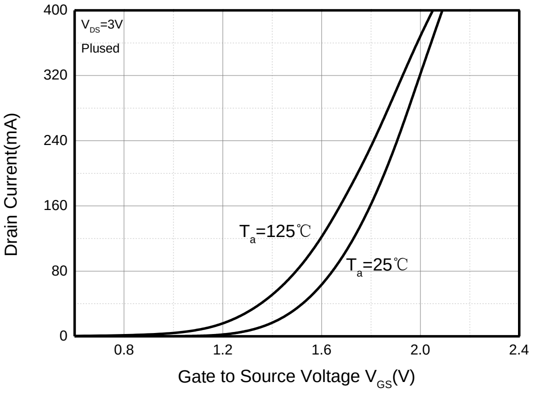
1. Pulse Test ; Pulse Width ≤300μs, Duty Cycle ≤2%.
2. These parameters have no way to verify.

Typical Electrical and Thermal Characteristics

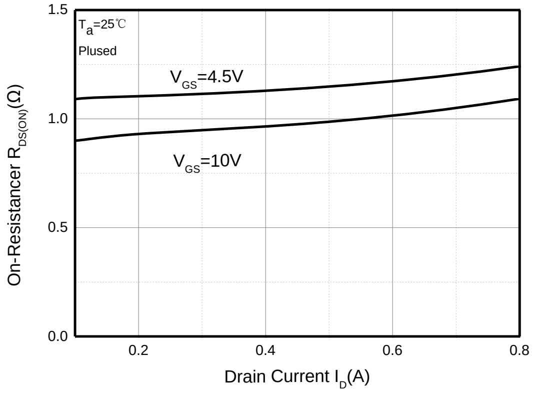
Output Characteristics



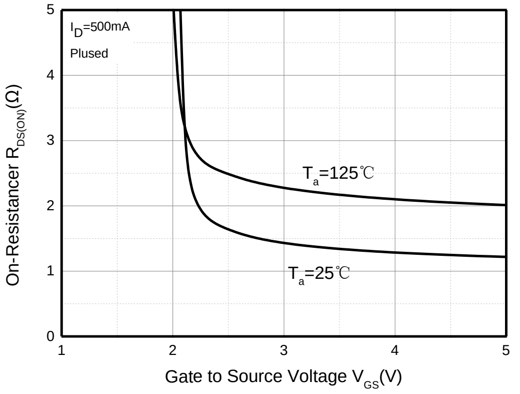
Transfer Characteristics



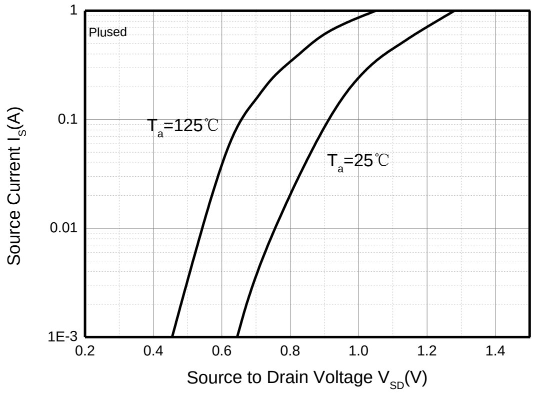
$R_{DS(ON)}$——I_D



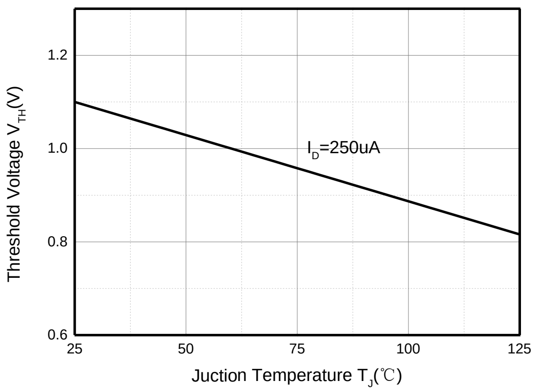
$R_{DS(ON)}$——V_{GS}



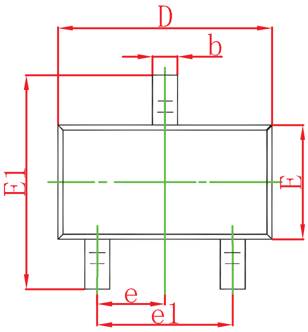
I_S——V_{SD}

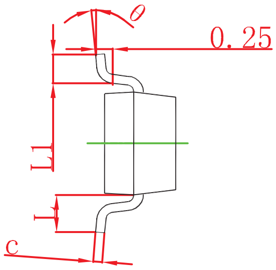


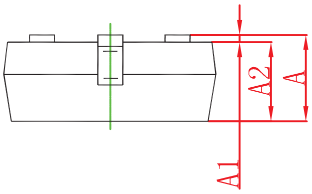
Threshold Voltage



SOT-23 Package Information

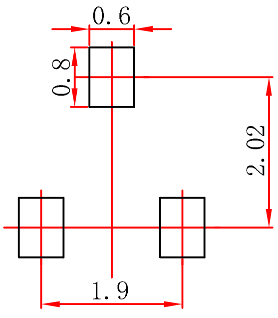






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.