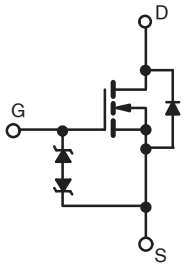
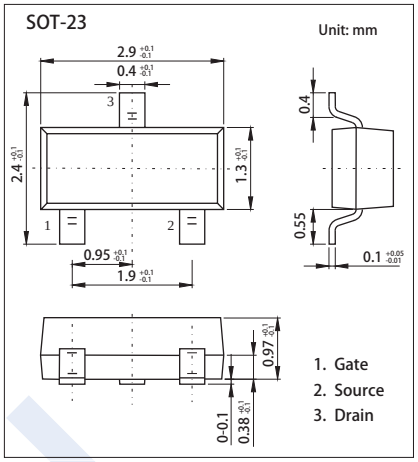
N-Channel MOSFET

BSS138 (KSS138)

■ Features

- $V_{DS\ (V)}$ = 50V
- I_D = 300 mA (V_{GS} = 10V)
- $R_{DS(ON)}$ < 2.5Ω (V_{GS} = 10V)
- $R_{DS(ON)}$ < 3.5Ω (V_{GS}=4.5V)
- Low On-Resistance
- ESD Rating: 1.5KV HBM





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	50	V
Drain-Gate Voltage R_{GS}≤ 20KΩ	V_{DG}	50	
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	300	mA
Power Dissipation	P_D	300	mW
Thermal Resistance.Junction- to-Ambient	R_{thJA}	417	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	50			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=50V, V_{GS}=0V			0.5	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	0.5		1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=220mA			2.5	Ω
		V_{GS}=4.5V, I_D=220mA			3.5	
Forward Transconductance	g_{FS}	V_{DS}=25V, I_D=0.3A,f=1KHz	100			mS
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, f=1MHz			50	pF
Output Capacitance	C_{oss}				25	
Reverse Transfer Capacitance	C_{rss}				8	
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=30V, I_D=0.3A,R_G=50Ω			20	ns
Turn-Off DelayTime	$t_{d(off)}$				20	

■ Marking

Marking	J1

N-Channel MOSFET

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■ Typical Characterisitics

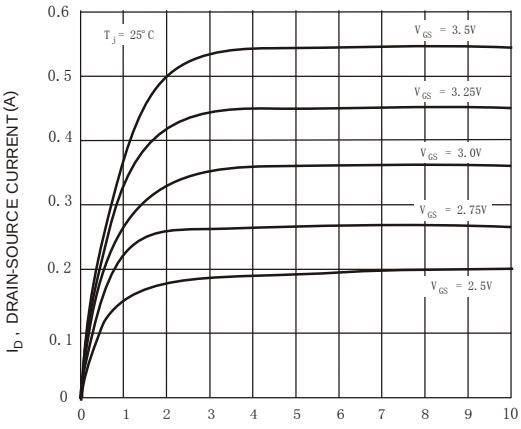

Fig. 1 Drain-Source Currentvs. Drain-SourceVoltage

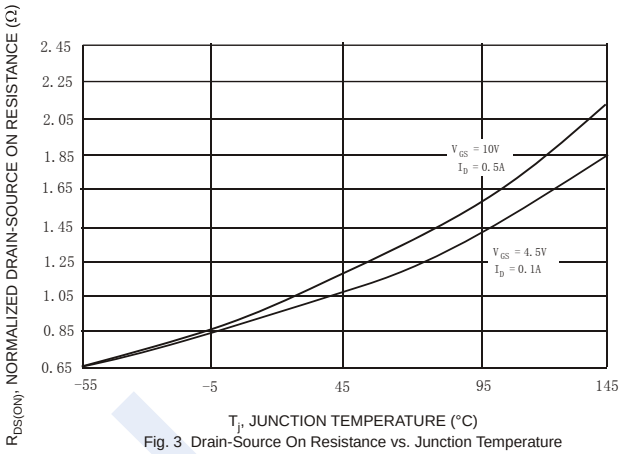

Fig. 3 Drain-Source On Resistance vs. Junction Temperature

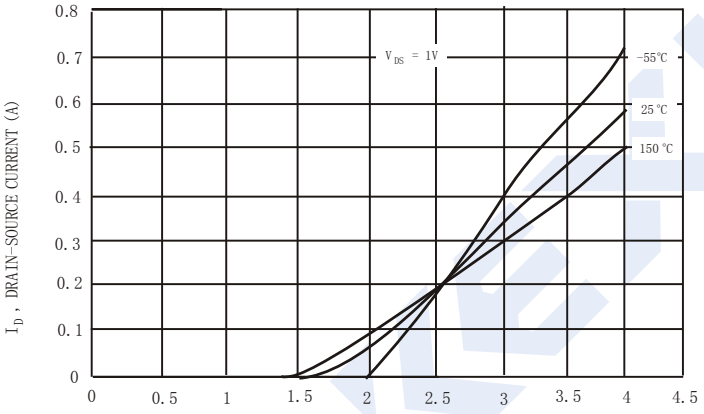

Fig. 2 Transfer Characteristics

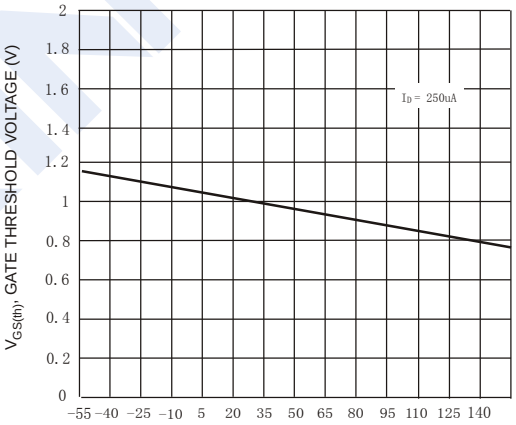

Fig. 4 Gate Threshold Voltage vs. Junction Temperature

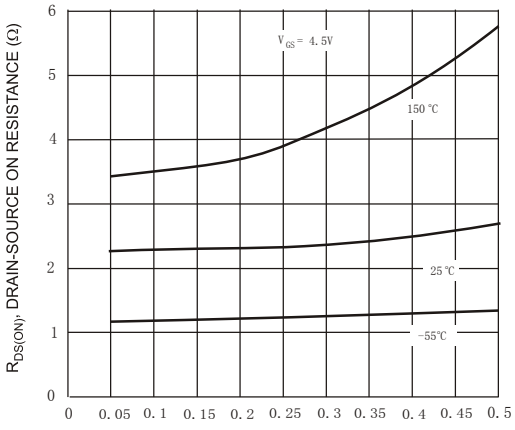

Fig. 5 Drain-Source On Resistance vs. Drain Current

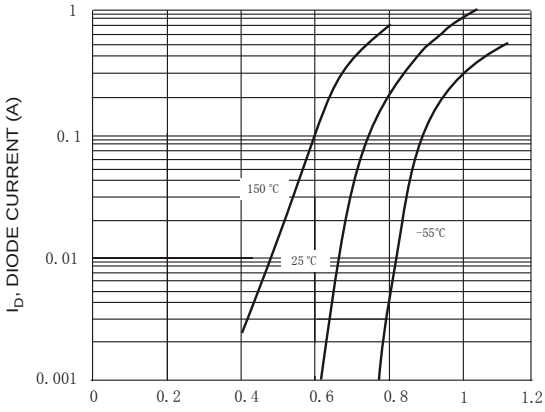

Fig. 6 Body Diode Current vs. Body Diode Voltage

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■ Typical Characterisitics

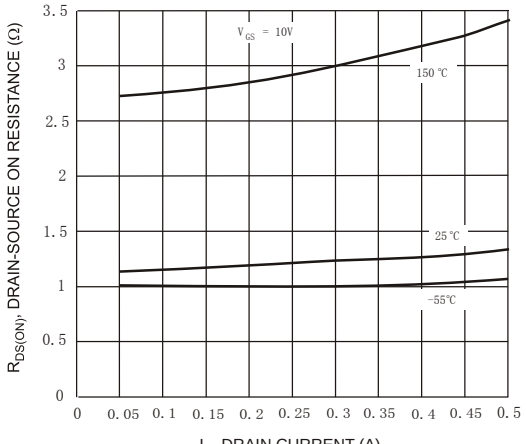

Fig. 7 Drain-Source On Resistance vs. Drain Current

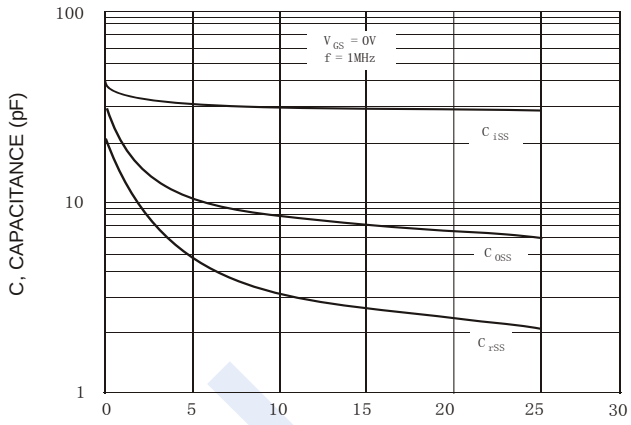

Fig. 8 Capacitance vs. Drain Source Voltage