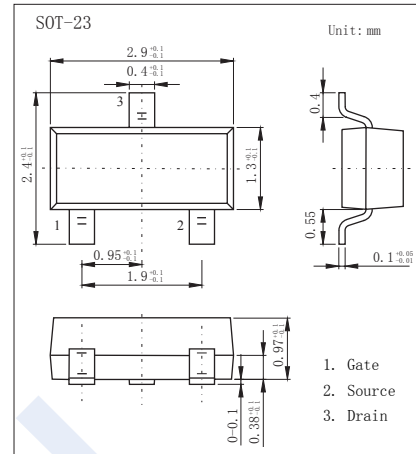


N-Channel MOSFET

BSS138E (KSS138E)

■ Features

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



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	50	V
Drain-Gate Voltage $R_{GS} \leq 20K\Omega$	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	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$I_D = 250 \mu\text{A}$, $V_{GS} = 0V$	50			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 50V$, $V_{GS} = 0V$			0.5	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V$, $V_{GS} = \pm 20V$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	0.7		1.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 500\text{mA}$			2.5	Ω
		$V_{GS} = 2.5V$, $I_D = 500\text{mA}$			3.5	
Forward Transconductance	g_{FS}	$V_{DS} = 25V$, $I_D = 0.3A$, $f = 1\text{kHz}$	100			mS
Input Capacitance	C_{iss}	$V_{GS} = 0V$, $V_{DS} = 10V$, $f = 1\text{MHz}$			50	pF
Output Capacitance	C_{oss}				25	
Reverse Transfer Capacitance	C_{rss}				8	
Turn-On DelayTime	$t_{d(on)}$	$V_{DS} = 30V$, $I_D = 0.3A$, $R_G = 50 \Omega$			20	ns
Turn-Off DelayTime	$t_{d(off)}$				20	

■ Marking

Marking	K38
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N-Channel MOSFET

BSS138E (KSS138E)

Typical Characteristics

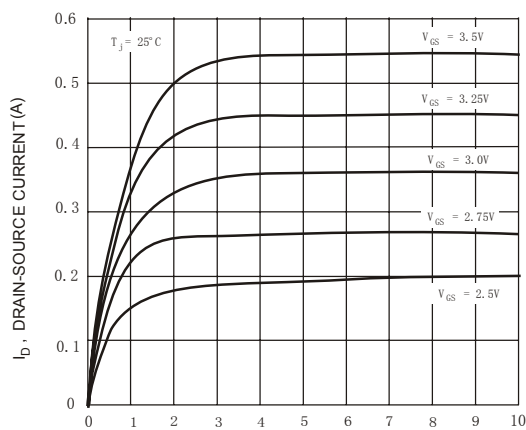


Fig. 1 Drain-Source Current vs. Drain-Source Voltage

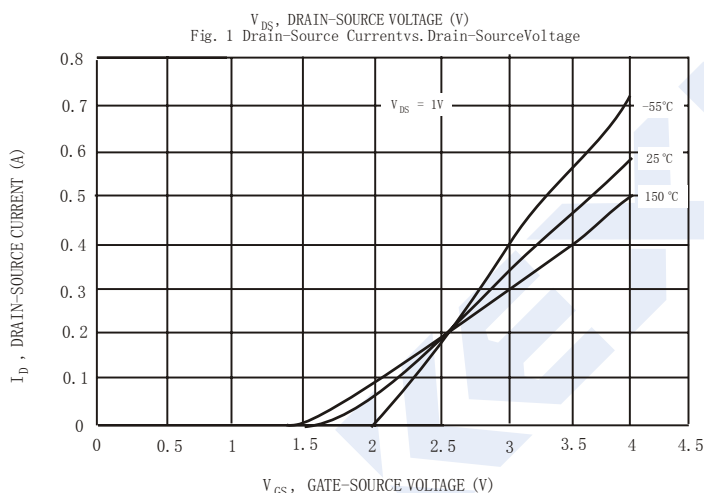


Fig. 2 Transfer Characteristics

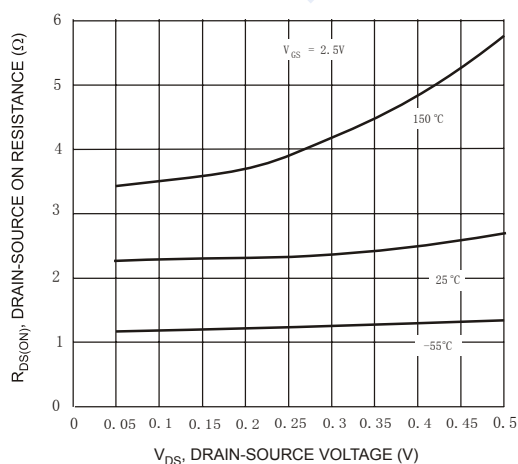


Fig. 5 Drain-Source On Resistance vs. Drain Current

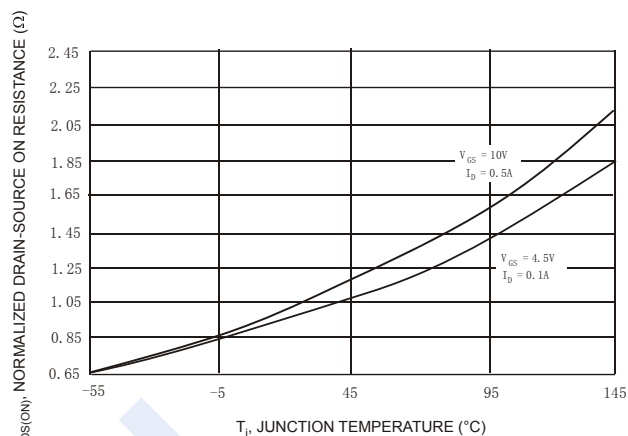


Fig. 3 Drain-Source On Resistance vs. Junction Temperature

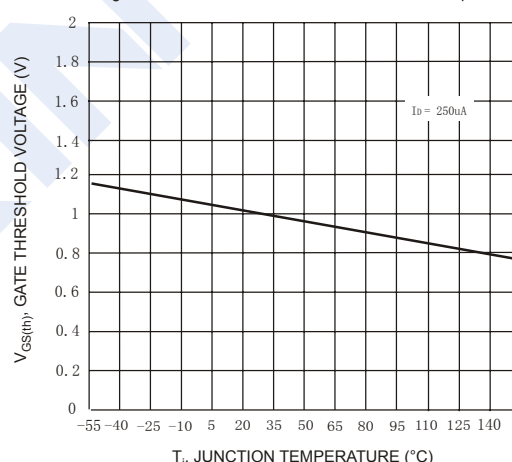


Fig. 4 Gate Threshold Voltage vs. Junction Temperature

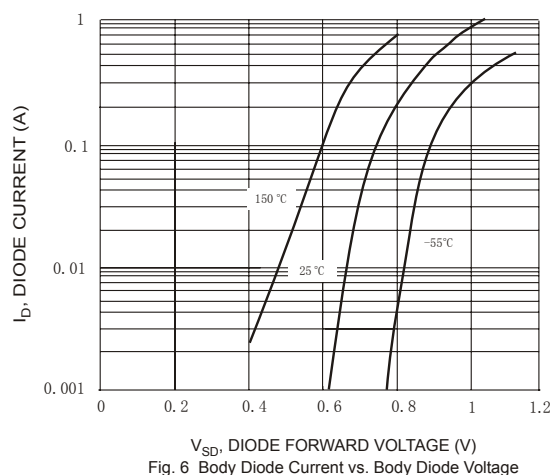


Fig. 6 Body Diode Current vs. Body Diode Voltage

N-Channel MOSFET

BSS138E (KSS138E)

■ Typical Characteristics

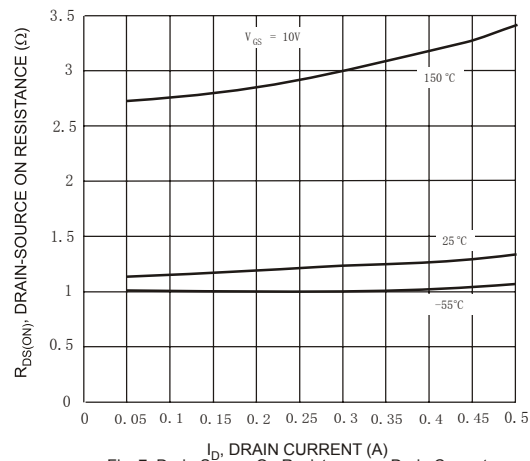


Fig. 7 Drain-Source On Resistance vs. Drain Current

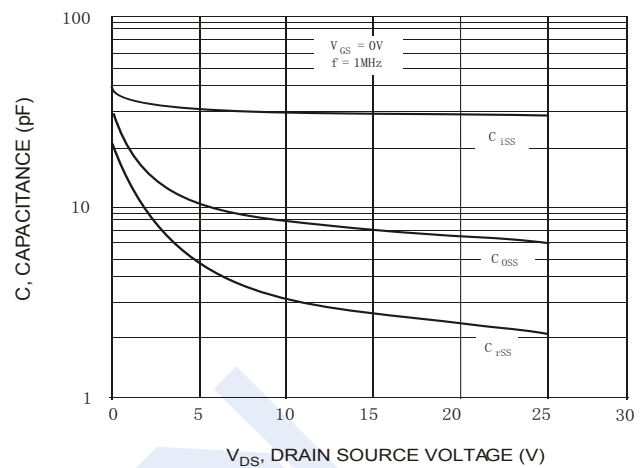


Fig. 8 Capacitance vs. Drain Source Voltage