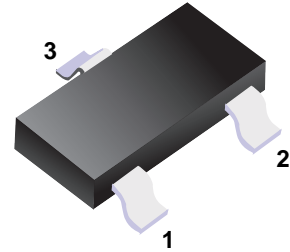


BSS138

N-Channel MOSFET



1. Gate
2. Source
3. Drain

Simplified outline(SOT23)

Features

- $V_{DS} (V) = 50V$
- $I_D = 200 \text{ mA}$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 3.5 \Omega$ ($V_{GS} = 10V$)
- Fast Switching Speed
- Low On-Resistance

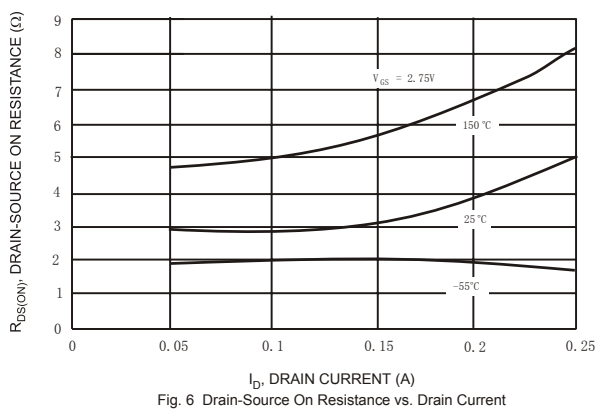
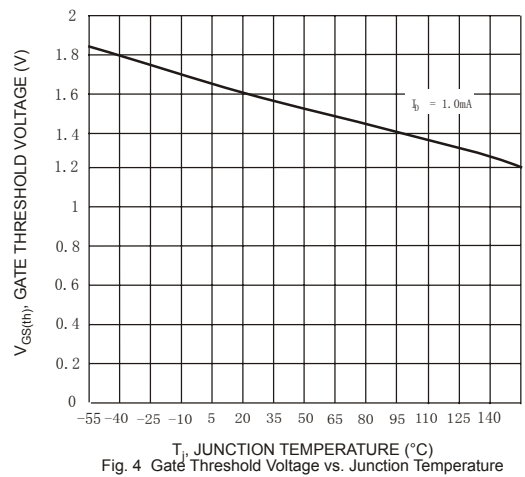
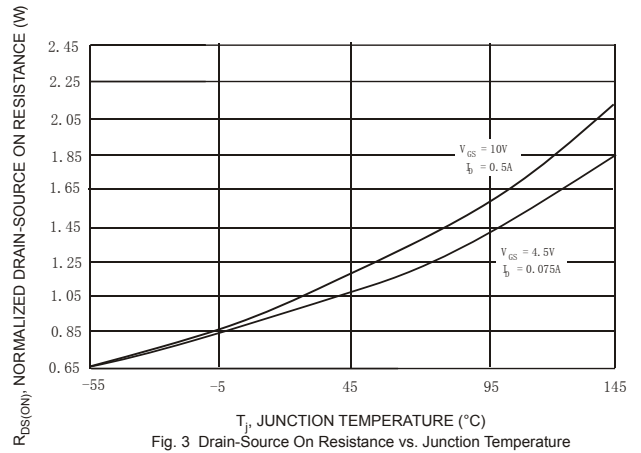
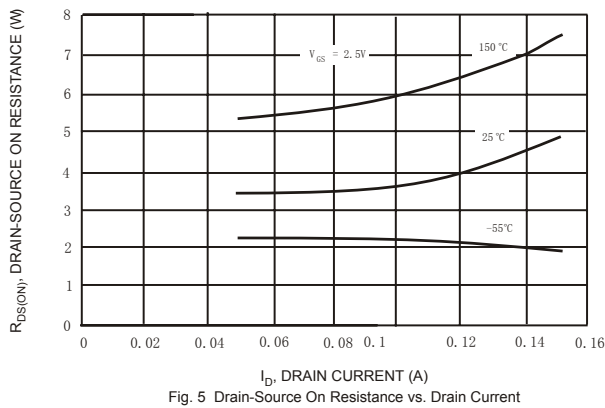
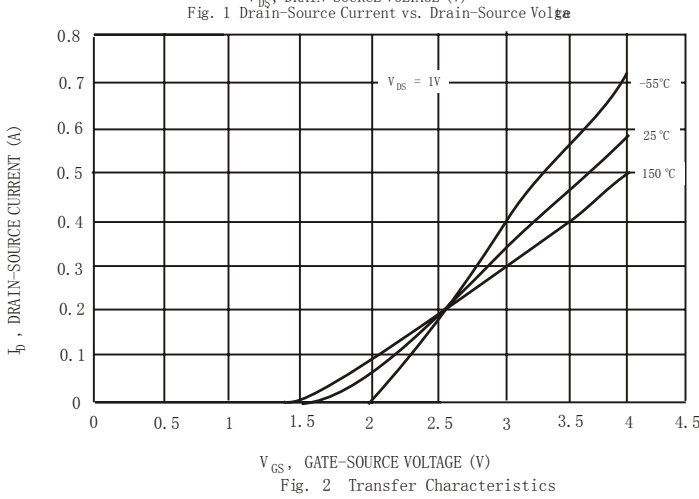
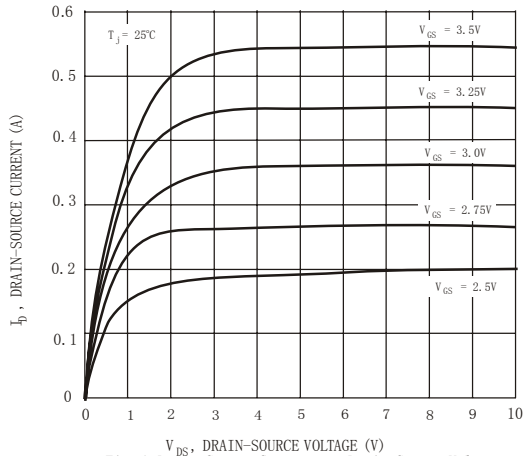
Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

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	200	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_{DSS}	$I_D=250 \mu\text{A}, V_{GS}=0V$	50			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=50V, V_{GS}=0V$			0.5	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250 \mu\text{A}$	0.5		1.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=220\text{mA}$			3.5	Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=0.2A, f=1\text{KHz}$	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	$t_{d(on)}$	$V_{DS}=30V, I_D=0.2A, R_G=50 \Omega$			20	ns
Turn-Off DelayTime	$t_{d(off)}$				20	

Typical Characteristics



■ Typical Characteristics

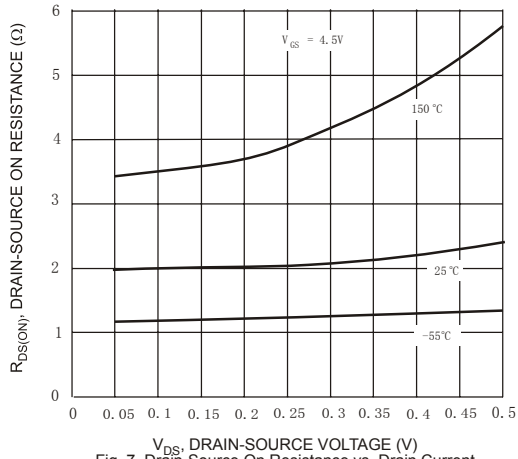


Fig. 7 Drain-Source On Resistance vs. Drain Current

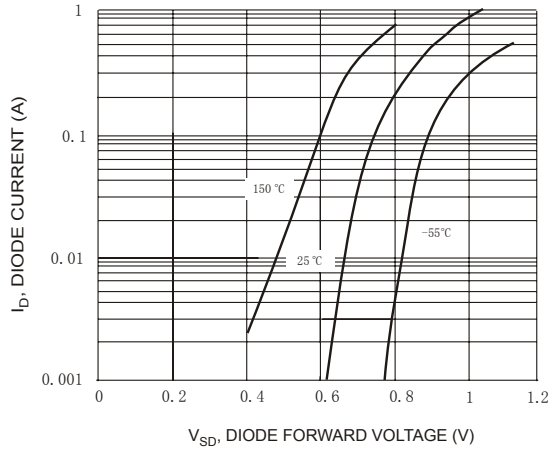


Fig. 9 Body Diode Current vs. Body Diode Voltage

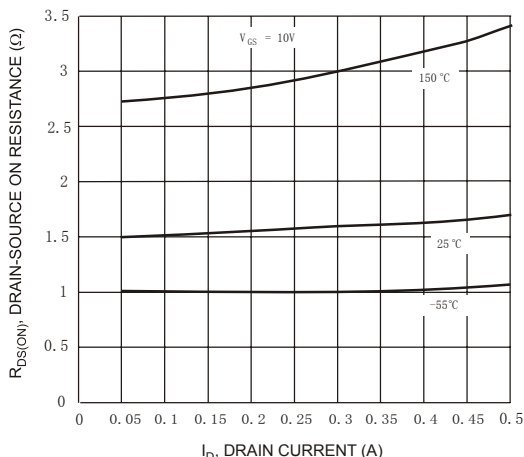


Fig. 8 Drain-Source On Resistance vs. Drain Current

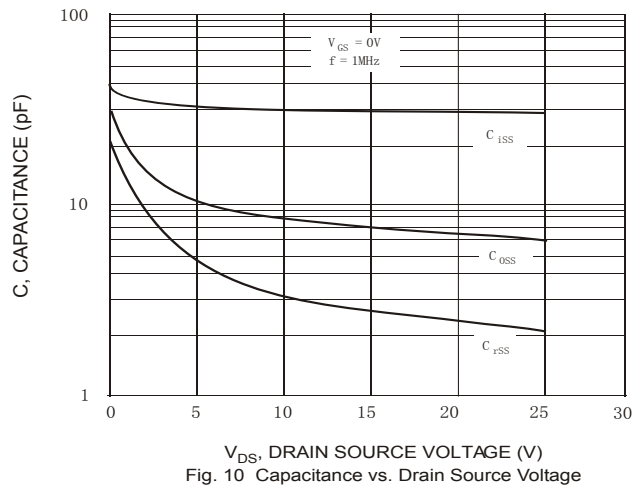
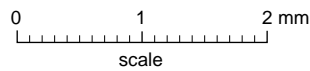
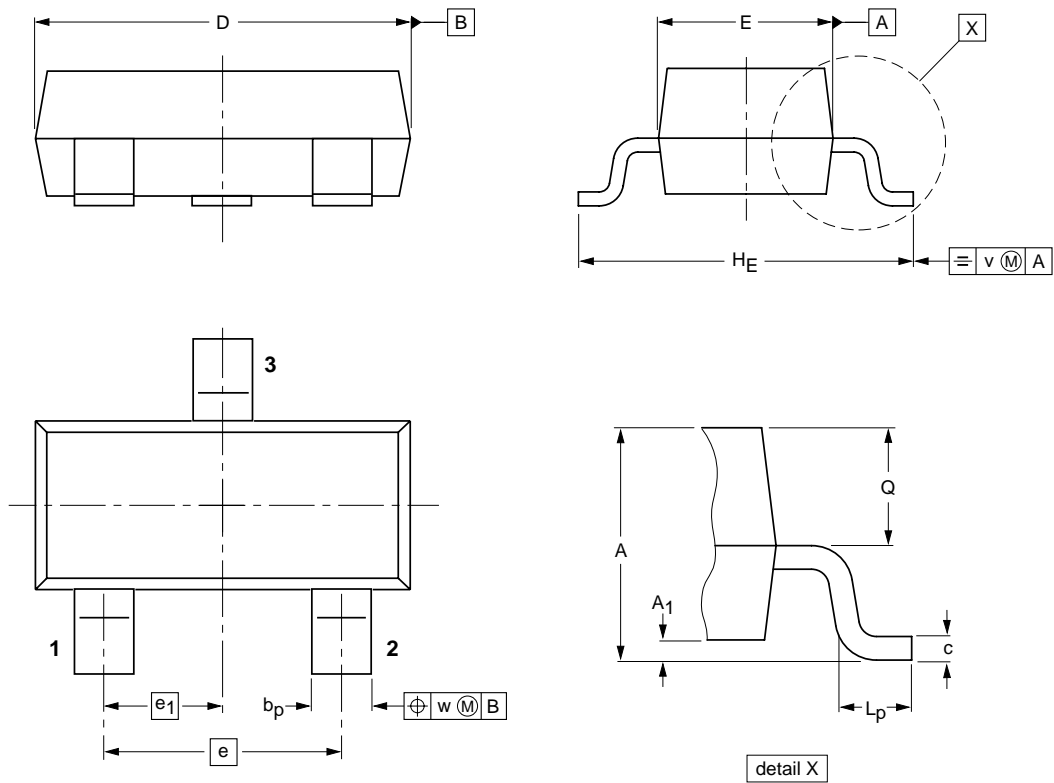


Fig. 10 Capacitance vs. Drain Source Voltage

■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1