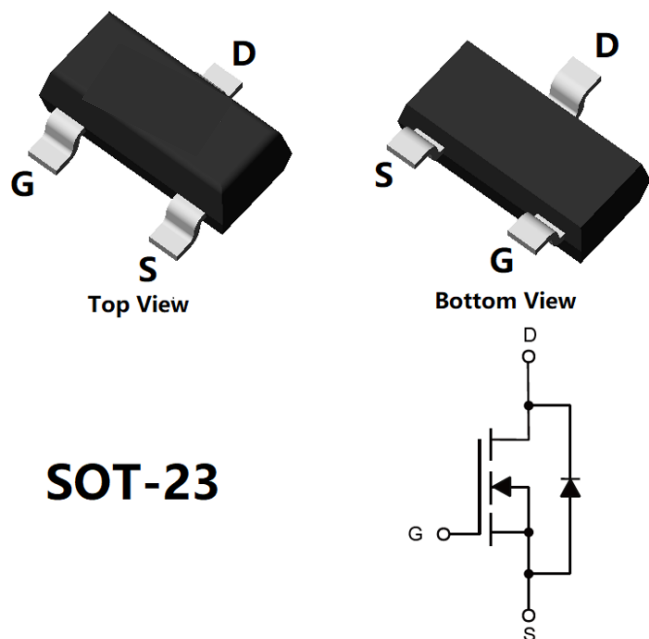


BSS123

N-Channel Enhancement Mode Field Effect Transistor



SOT-23

Product Summary

- V_{DS} 100V
- I_D 200mA
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<5.0\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $<5.5\Omega$

General Description

- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- High density cell design for low $R_{DS(ON)}$
- Fast Switching Speed
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Small servo motor control
- Power MOSFET gate drivers
- Switching application

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ\text{C}$ @ Steady State	I_D	200	mA
	$T_A=70^\circ\text{C}$ @ Steady State		160	
Pulsed Drain Current ^A		I_{DM}	800	mA
Total Power Dissipation @ $T_A=25^\circ\text{C}$		P_D	350	mW
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
BSS123	F2	B123.	3000	30000	120000	7" reel

BSS123

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS1}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
	I _{GSS2}	V _{GS} = ±10V, V _{DS} =0V			±50	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =200mA		3.0	5.0	Ω
		V _{GS} = 4.5V, I _D =175mA		3.5	5.5	
Diode Forward Voltage	V _{SD}	I _S =200mA,V _{GS} =0V			1.2	V
Maximum Body-Diode Continuous Current	I _S				200	mA
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V,f=1MHZ		32		pF
Output Capacitance	C _{oss}			10		
Reverse Transfer Capacitance	C _{rss}			7		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =50V,I _D =0.2A		1.61		nC
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V,V _{DD} =50V, I _D =0.2A, R _{GEN} =6Ω		1.7		ns
Turn-on Rise Time	t _r			9		
Turn-off Delay Time	t _{D(off)}			17		
Turn-off fall Time	t _f			7		

A. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ Typical Performance Characteristics

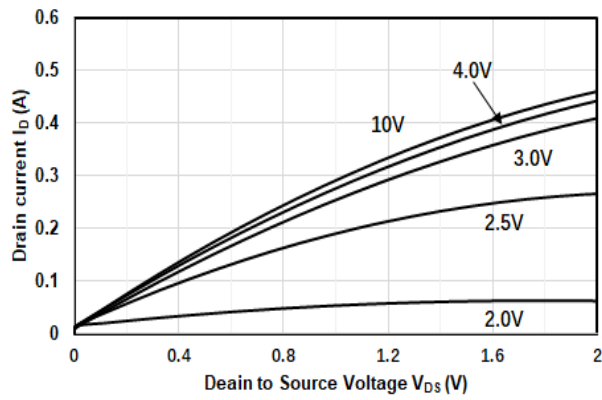


Figure1. Output Characteristics

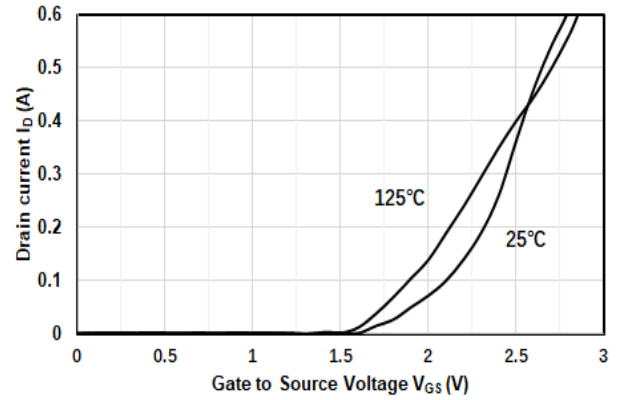


Figure2. Transfer Characteristics

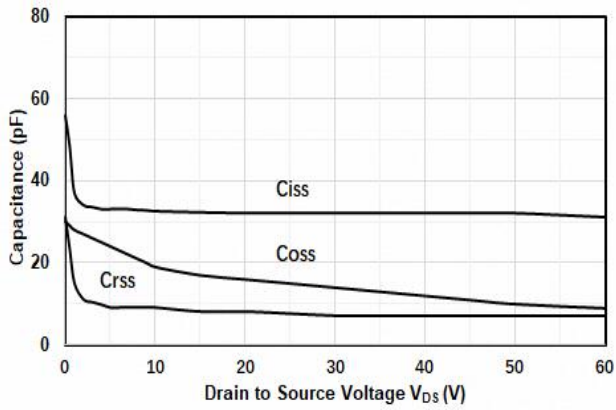


Figure3. Capacitance Characteristics

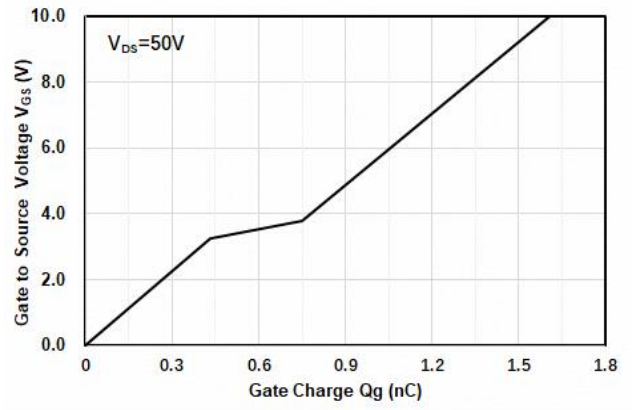


Figure4. Gate Charge

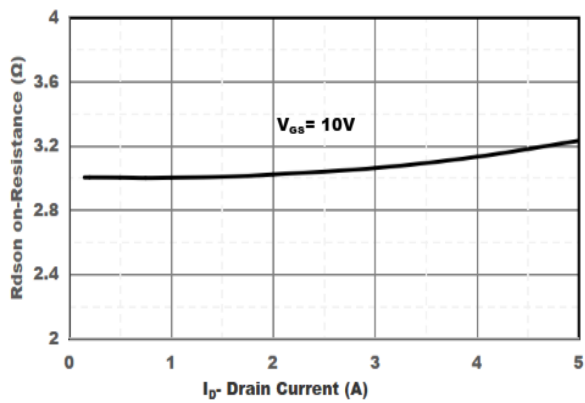


Figure5. Drain-Source on Resistance

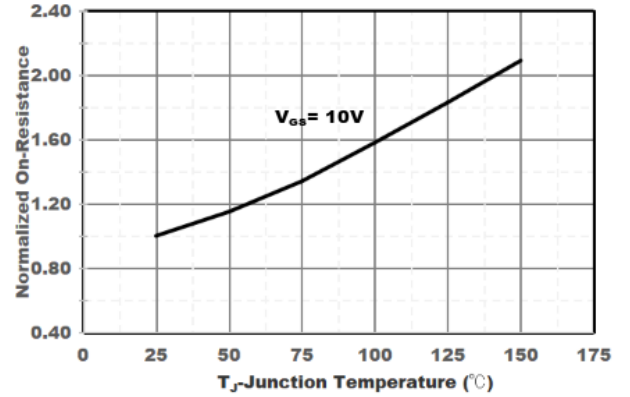


Figure6. Drain-Source on Resistance

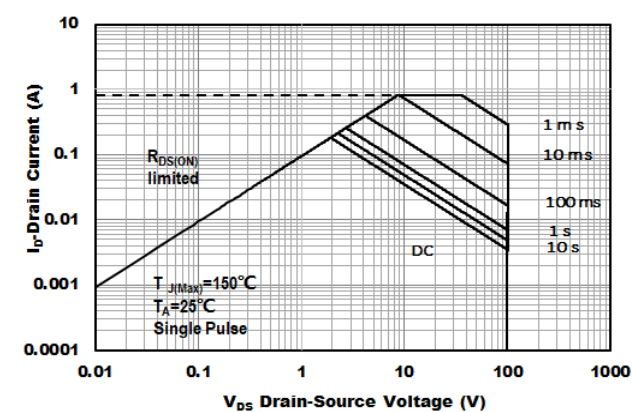


Figure7. Safe Operation Area

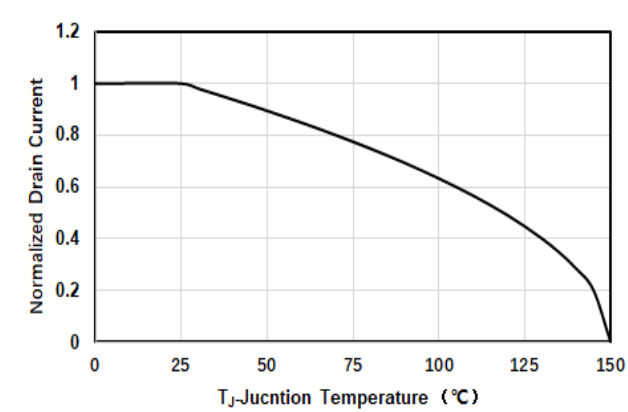


Figure8. Drain-Source Current

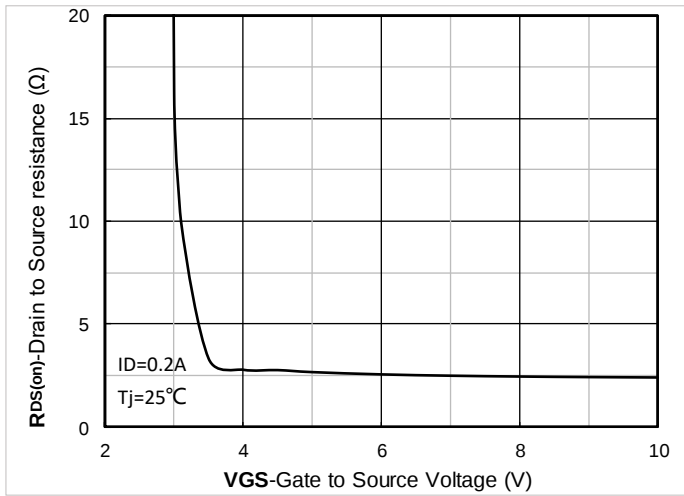


Figure 9. On-Resistance vs Gate to Source Voltage

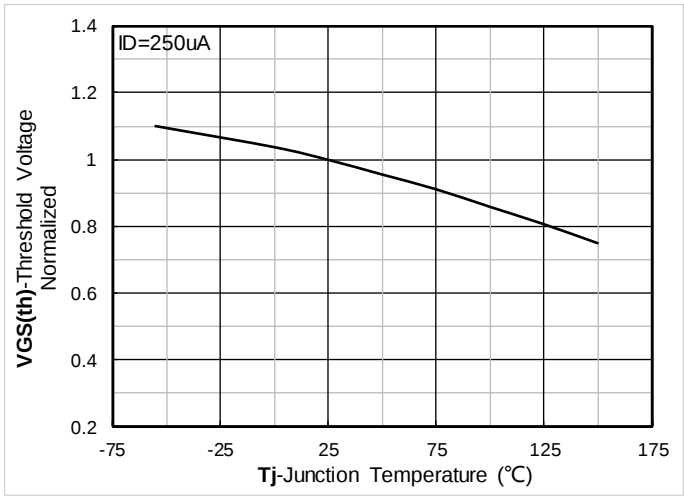
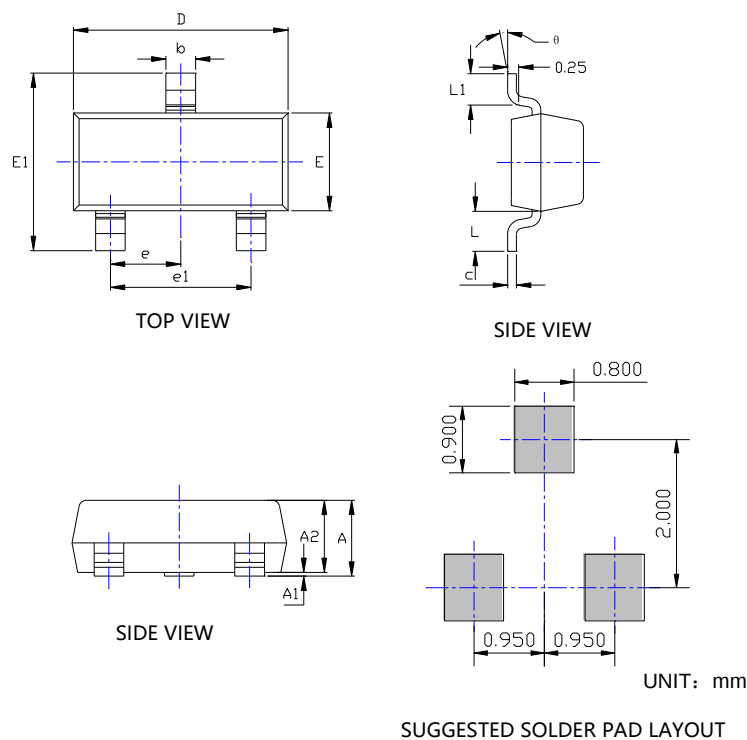


Figure 10. Normalized Threshold voltage

■ SOT-23 Package information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.020	0.300	0.500
θ	0°	8°	0°	8°

NOTE:
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.