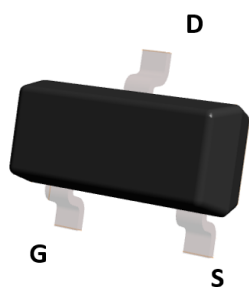
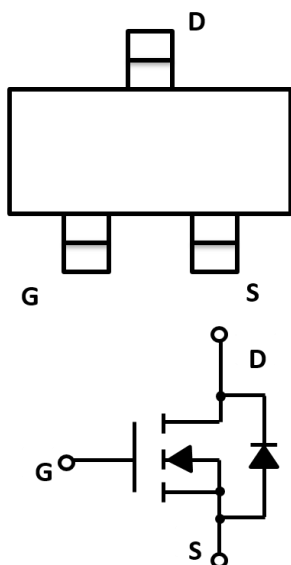


N-Channel Enhancement Mode Field Effect Transistor



Top View

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

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	SA*	B123.	3000	45000	180000	7" reel

* Older packing code: F2

■ Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{GSS1}	$V_{GS}= \pm 20V, V_{DS}=0V$			± 100	nA
	I_{GSS2}	$V_{GS}= \pm 10V, V_{DS}=0V$			± 50	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}= V_{GS}, I_D=250\mu A$	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}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		14		pF
Output Capacitance	C_{OSS}			10		
Reverse Transfer Capacitance	C_{RSS}			5		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=50V, I_D=0.2A$		1.8	2.5	nC
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=50V, I_D=0.2A, R_{GEN}=6\Omega$		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 $\leq 300\mu s$, Duty cycle $\leq 2\%$.

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

■ Typical Performance Characteristics

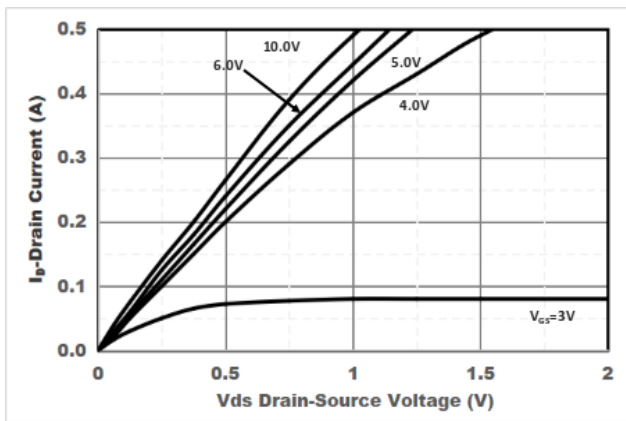


Figure1. Output Characteristics

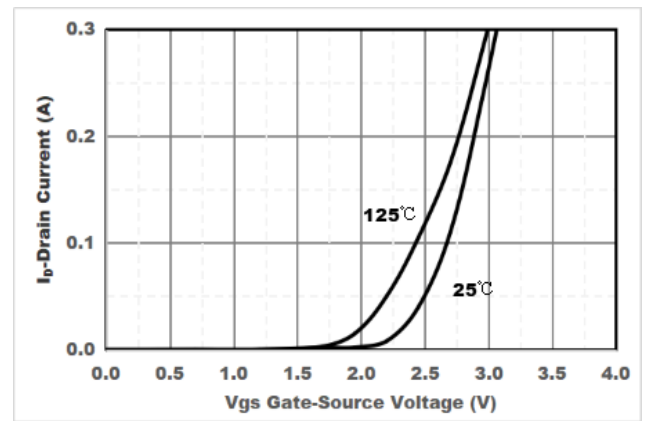


Figure2. Transfer Characteristics

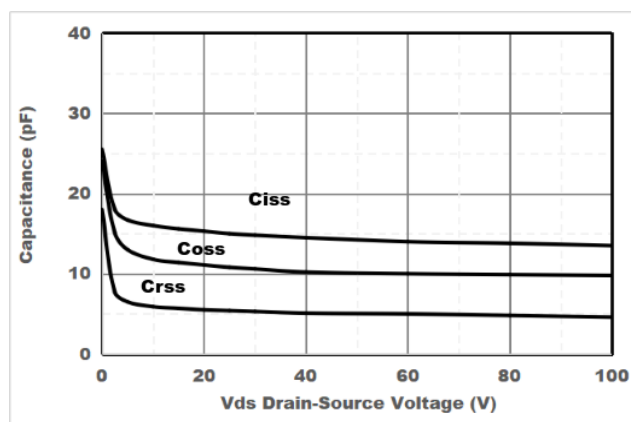


Figure3. Capacitance Characteristics

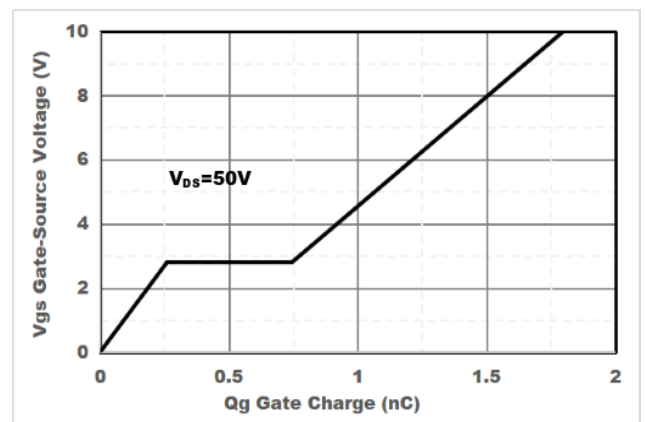


Figure4. Gate Charge

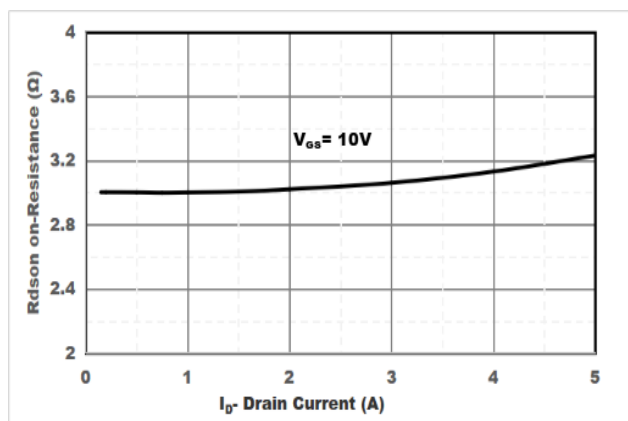


Figure5. Drain-Source on Resistance

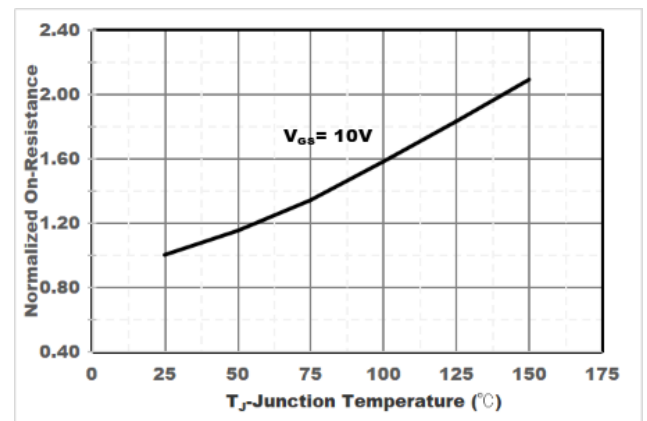


Figure6. Drain-Source on Resistance

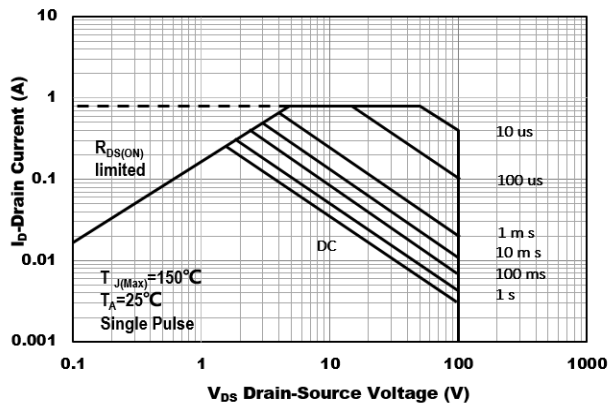


Figure7. Safe Operation Area

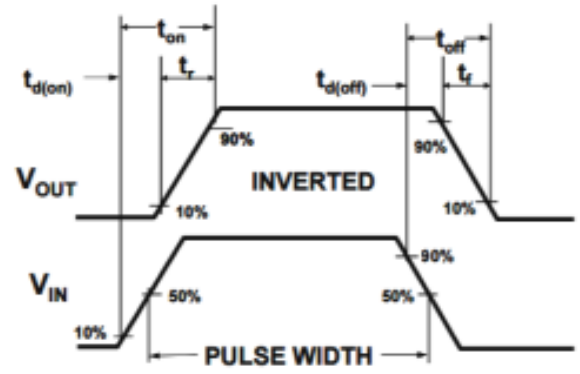
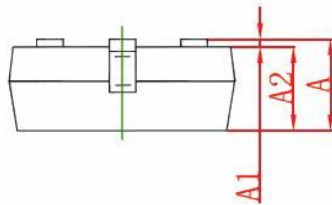
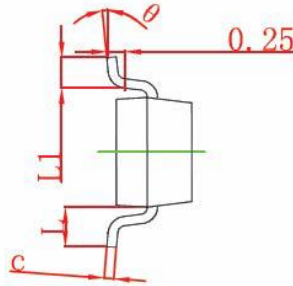
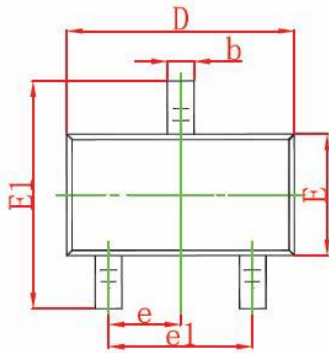


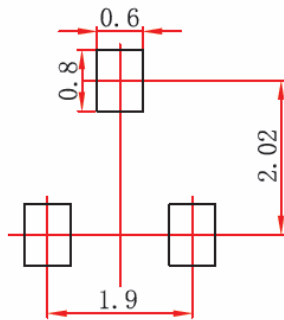
Figure8. Switching wave

■ 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: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.