MLSM
MICROELECTRONICS

BSS123T

100V/0.17A N-Channel MOSFET

Features

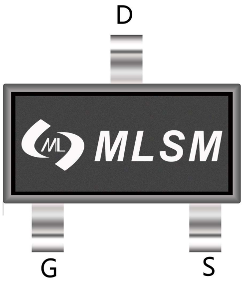
- Low on-resistance
- High-speed switching
- Drive circuits can be simple
- Parallel use is easy

Application

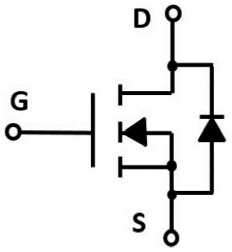
- Small Servo Motor Controls
- Power MOSFET Gate Drivers
- Switching Application

Product Summary

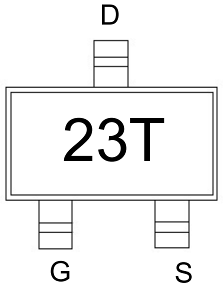
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
100V	6Ω@10V	0.17A
	10Ω@4.5V	



SOT-523 top view



Schematic diagram



23T: Device code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 155	°C
I_S	Diode Continuous Forward Current	Tc=25°C	0.17	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	0.7	A
I_D	Continuous Drain Current	Tc=25°C	0.17	A
P_D	Maximum Power Dissipation	Tc=25°C	0.3	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		400	°C/W

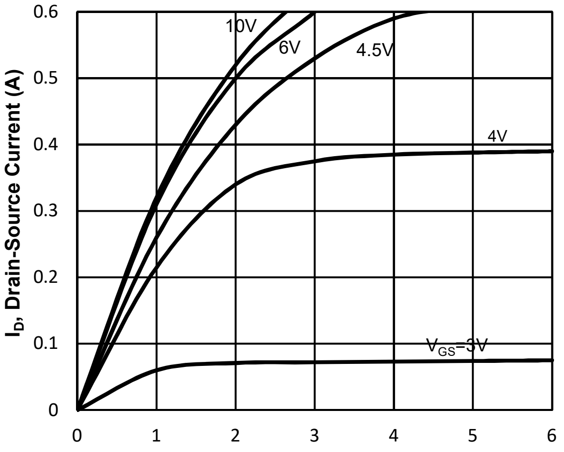
Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
BSS123T	SOT-523	23T	3,000	45,000	180,000	7"reel

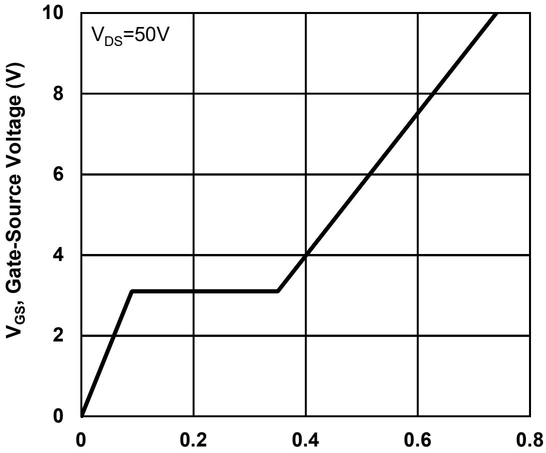
Electrical Characteristics (TJ=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$BV_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V，I_D=250μA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V，V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V，V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}，I_D=250μA	1	2	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V，I_D=0.17A	--	3.0	6	Ω
		V_{GS}=4.5V，I_D=0.15A	--	3.5	10	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=50V，V_{GS}=0V， f=1MHz	--	31.6	--	pF
C_{OSS}	Output Capacitance		--	2.8	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	2	--	pF
Q_g	Total Gate Charge	V_{DS}=50V,I_D=0.2A,V_{GS}=10V	--	0.74	--	nC
Q_{gs}	Gate Source Charge		--	0.08	--	nC
Q_{gd}	Gate Drain Charge		--	0.26	--	nC
Switching Characteristics@ TJ = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V,I_D=0.2A, R_G=3.3Ω,V_{GS}=10V	--	2	--	nS
t_r	Turn on Rise Time		--	3.1	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	6.5	--	nS
t_f	Turn Off Fall Time		--	15	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=0.17A	--	--	1.2	V

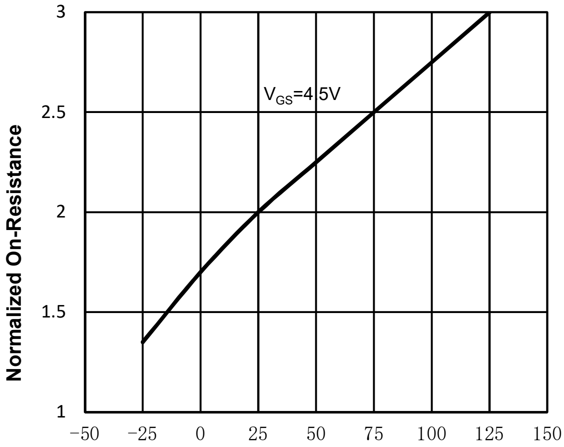
Typical Operating Characteristics



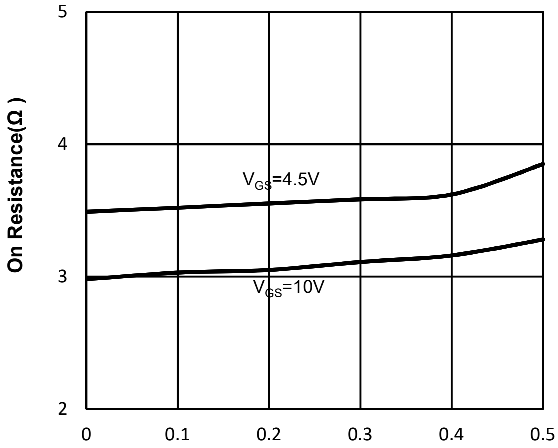
V_{DS}, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



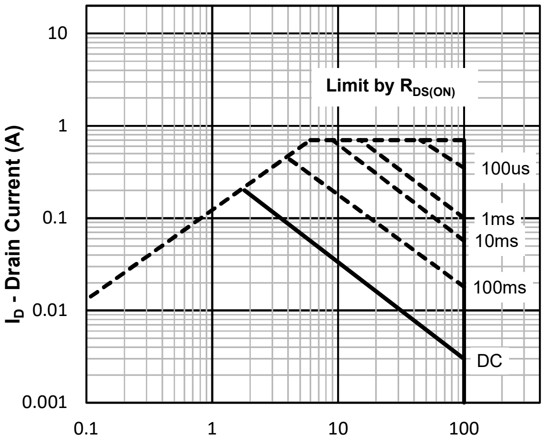
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



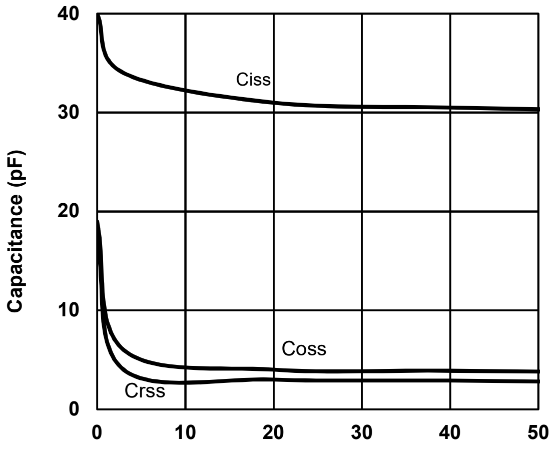
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



I_D, Drain-Source Current (A)
Fig4. On-Resistance Vs. Drain-Source Current

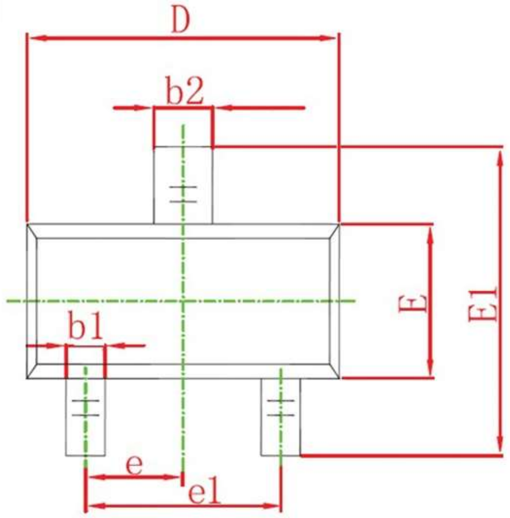


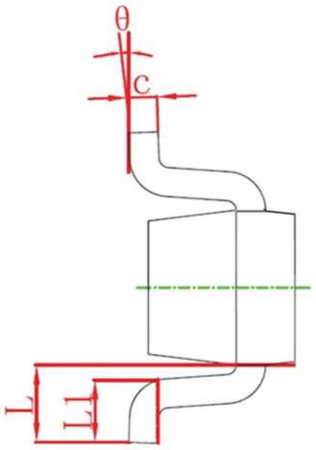
V_{DS}, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area

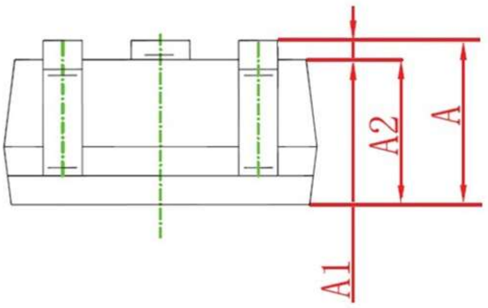


V_{DS} , Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs.Drain-Source Voltage

SOT-523 Package information







Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500TYP		0.020TYP	
e1	0.900	1.100	0.035	0.043
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°