

Features

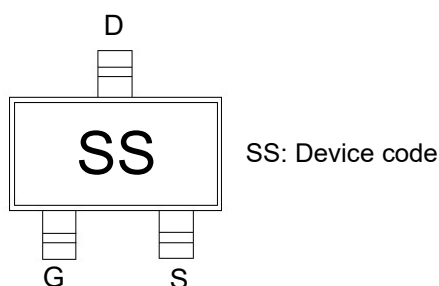
- High density cell design for extremely low $R_{DS(on)}$
- Fast switching speed
- Easily designed drive circuits
- Easy to parallel Portable equipment

Application

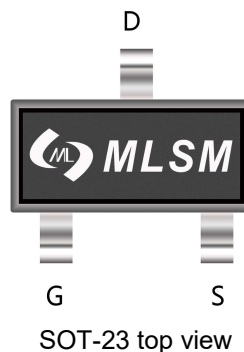
- Interfacing, Switching

Product Summary

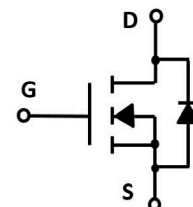
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
50V	3.5Ω@10V	0.22A
	6.0Ω@4.5V	



Marking and pin assignment



SOT-23 top view



Schematic diagram



Pb-Free



Halogen-Free

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
--------	-----------	--------	------

Common Ratings (TC=25°C Unless Otherwise Noted)

V _{DS}	Drain-Source Breakdown Voltage		50	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	0.22	A

Mounted on Large Heat Sink

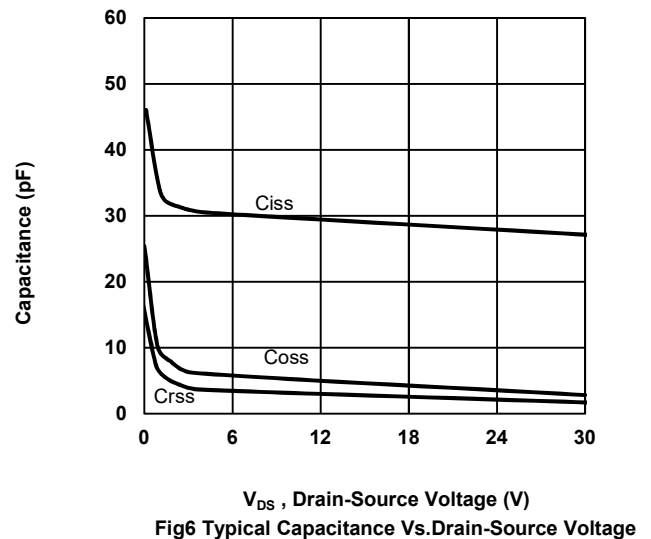
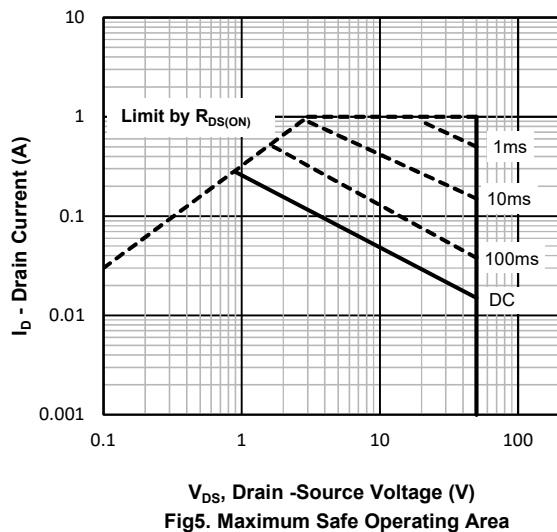
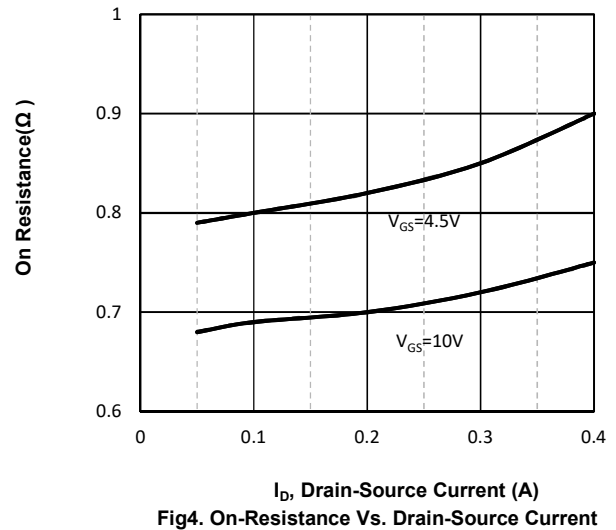
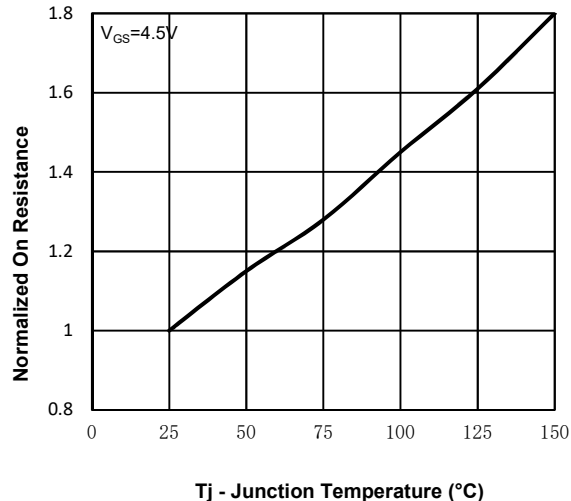
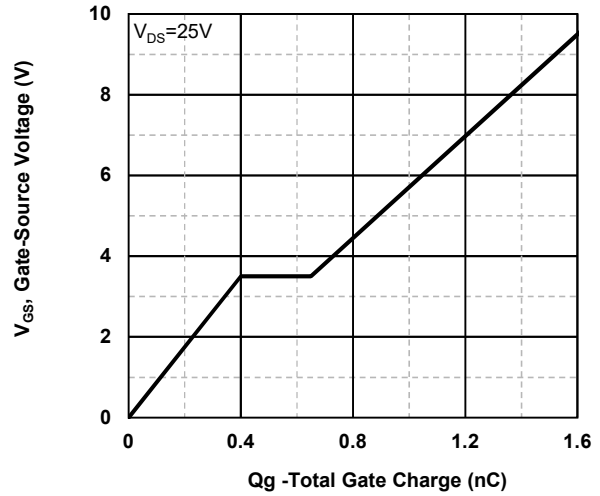
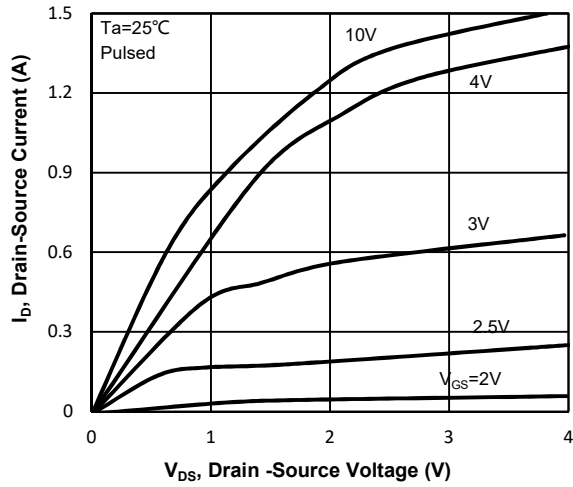
I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$	1	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$	0.22	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$	0.35	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient		357	°C/W

Ordering Information (Example)

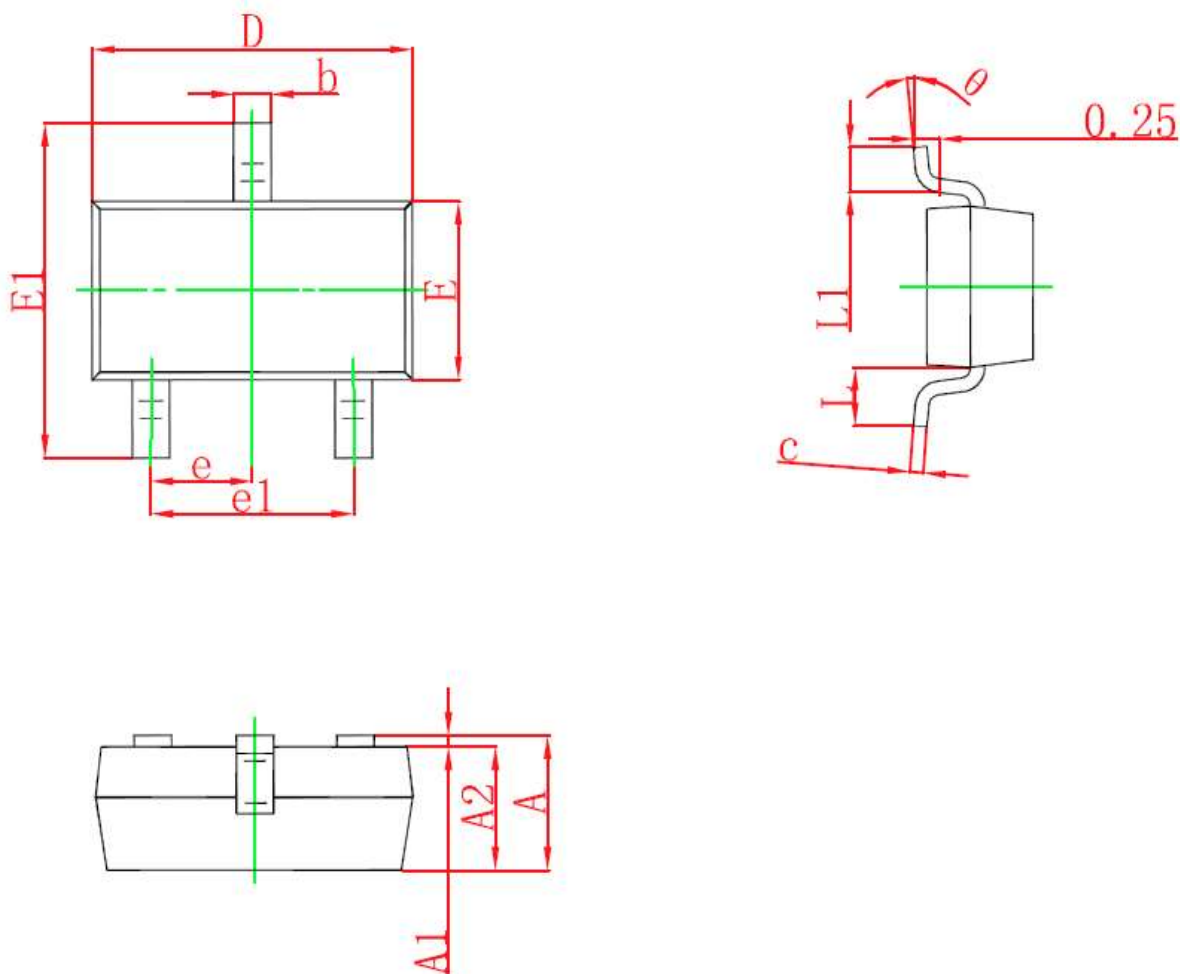
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
BSS138	SOT-23	SS	3,000	45,000	180,000	7"reel

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
B _{V(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	50	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =50V, 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	0.8	1.2	1.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =0.22A	--	0.7	3.5	Ω
		V _{GS} =4.5V, I _D =0.22A	--	0.8	6.0	Ω
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	28.5	--	pF
C _{OSS}	Output Capacitance		--	2.7	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	1.78	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =25V, I _D =0.3A, V _{GS} =10V	--	1.7	--	nC
Q _{gs}	Gate Source Charge		--	0.4	--	nC
Q _{gd}	Gate Drain Charge		--	0.24	--	nC
Q _{rr}	Reverse Recovery Charge	I _F =0.3A, di/dt =100A/us		2.65		nC
t _{rr}	Reverse Recovery Time			12.2		nS
t _{d(on)}	Turn-on Delay Time	V _{DD} =25V, I _D =0.3A, V _{GS} =10V, R _G =6Ω	--	2.6	--	nS
t _r	Turn-on Rise Time		--	18.8	--	nS
t _{d(off)}	Turn-Off Delay Time		--	9.7	--	nS
t _f	Turn-Off Fall Time		--	47	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =0.22A	--	--	1.2	V

Typical Operating Characteristics



SOT-23 Package information



Symbol	Dimensions in Millimeters(mm)		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
E1	2.250	2.550	0.088	0.100
E	1.200	1.400	0.047	0.055
e	0.950TYP		0.037TYP	
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°