

Features

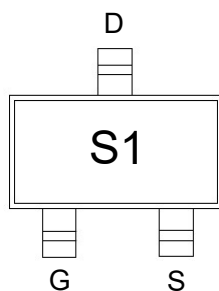
- Leading trench technology for low $R_{DS(on)}$
- Low Gate Charge

Product Summary

V_{DS}	$R_{DS(on)}$ MAX	I_D MAX
-20V	90mΩ@-4.5V	-2.8A
	120mΩ@-2.5V	

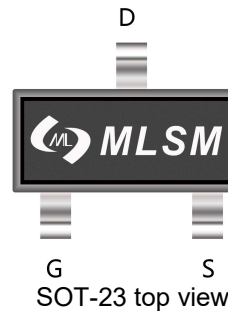
Application

- Video monitor
- Power management

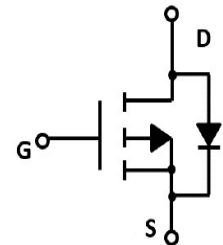


S1: Device code

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	-20	V
V_{GS}	Gate-Source Voltage	±10	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
I_S	Diode Continuous Forward Current	$T_c=25^\circ\text{C}$ -2.8	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ -10	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ -2.8	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 0.35	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	125	°C/W

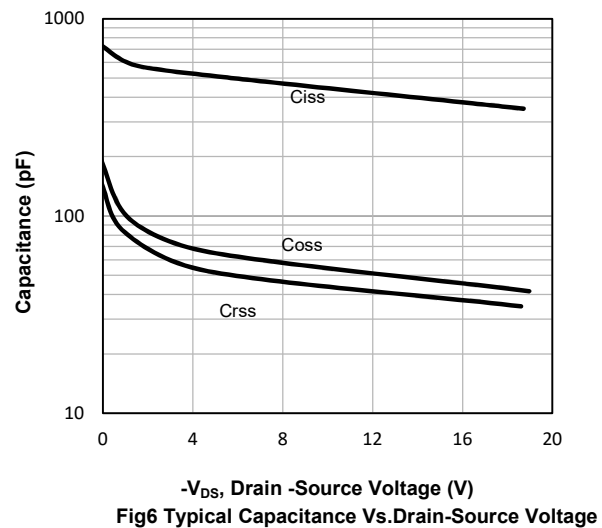
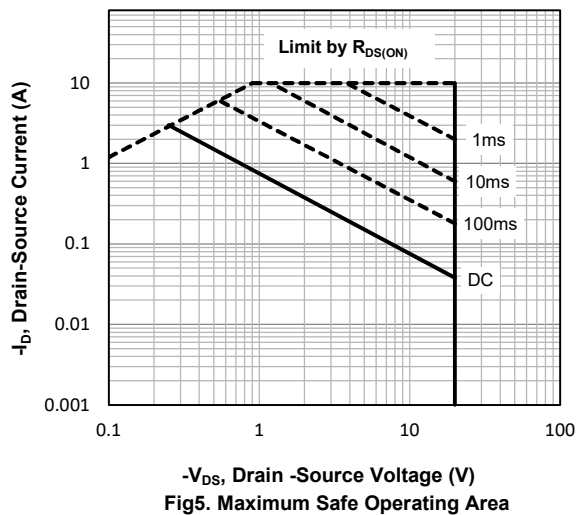
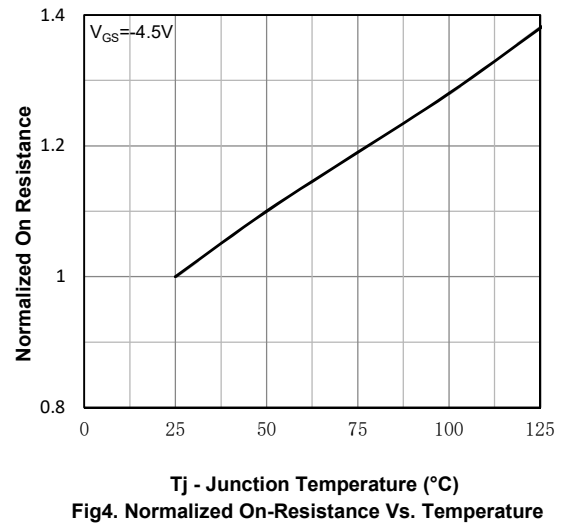
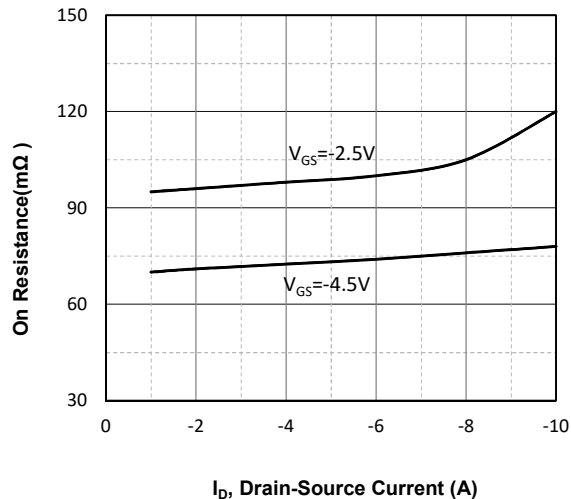
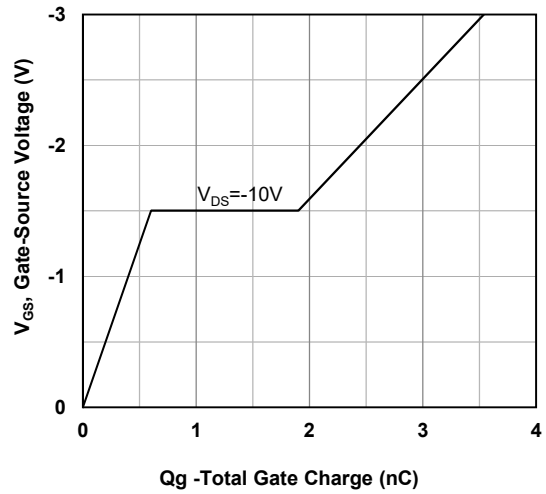
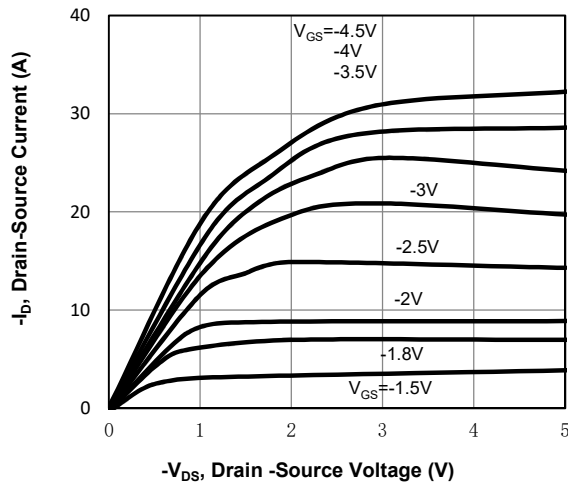
Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLS2301	SOT-23	S1	3,000	45,000	180,000	7"reel

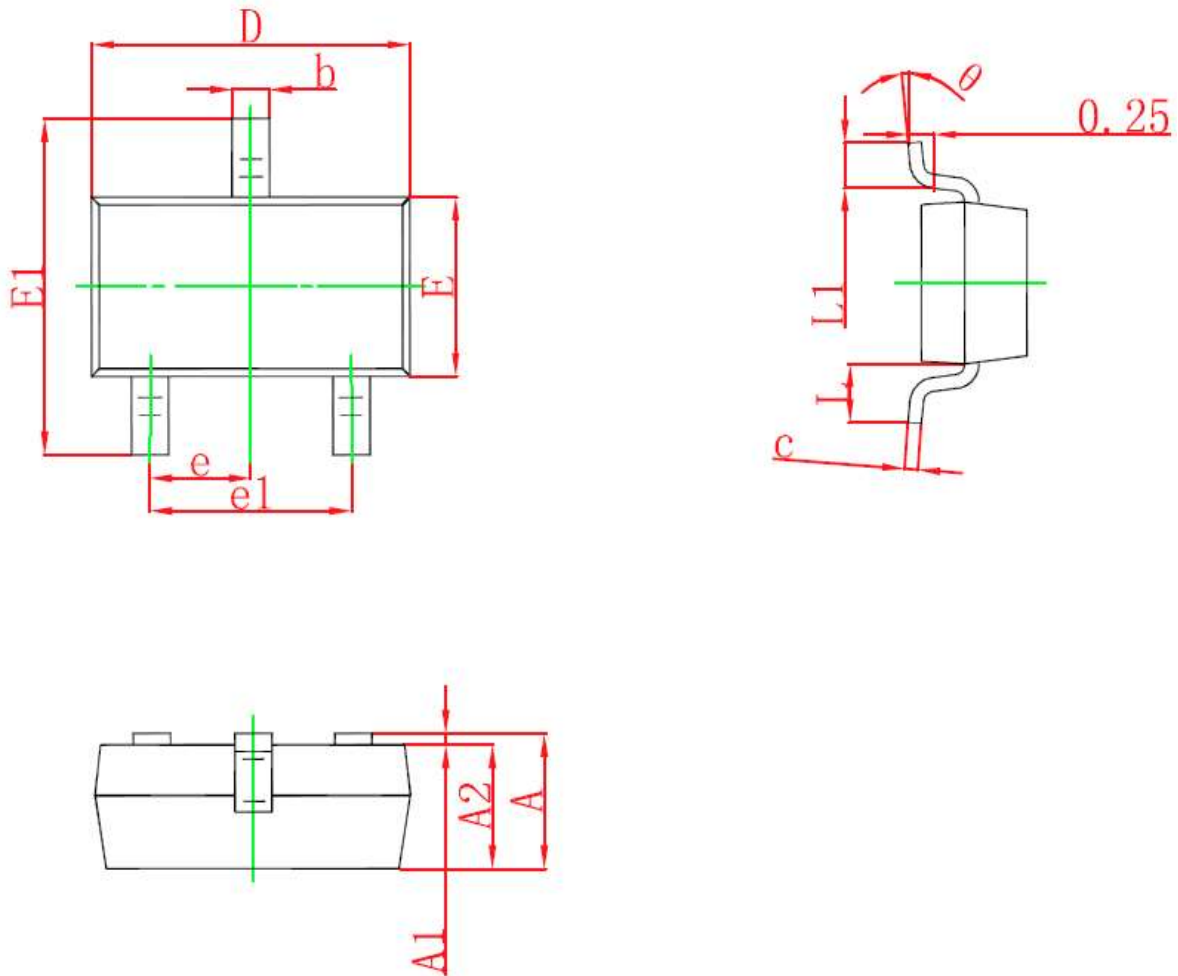
Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
BV(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID=-250μA	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-20V, VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±10V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-0.4	-0.75	-1.0	V
RDS(on)	Drain-Source On-State Resistance	VGS=-4.5V, ID=-2.8A	--	70	90	mΩ
		VGS=-2.5V, ID=-2.0A	--	95	120	mΩ
		VGS=-1.8V, ID=-1.5A	--	120	180	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
CISS	Input Capacitance	VDS=-10V, VGS=0V, f=1MHz	--	486	--	pF
COSS	Output Capacitance		--	55	--	pF
CRSS	Reverse Transfer Capacitance		--	45	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDS=-10V, ID=-2.8A, VGS=-4.5V	--	8.5	--	nC
Qgs	Gate Source Charge		--	0.6	--	nC
Qgd	Gate Drain Charge		--	1.8	--	nC
td(on)	Turn-on Delay Time	VDD=-10V, ID=-1A, VGS=-4.5V, RG=2.8Ω	--	7	--	nS
tr	Turn-on Rise Time		--	4	--	nS
td(off)	Turn-Off Delay Time		--	49	--	nS
tf	Turn-Off Fall Time		--	18	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	Tj=25°C, Is=-2.8A	--	--	-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°