

Features

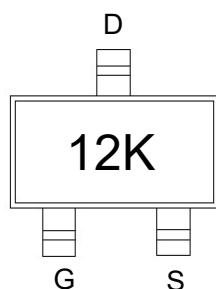
- Low On-Resistance
- Low Threshold
- Fast Switching Speed
- ESD protected up to 2KV

Application

- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

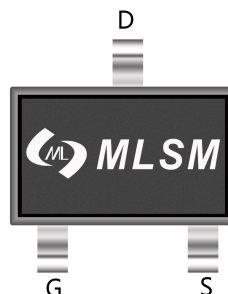
Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
20V	700mΩ@4.5V	0.5A
	850mΩ@2.5V	

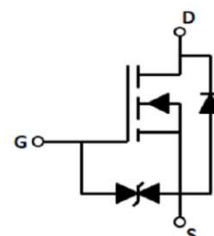


12K: Device code

Marking and pin assignment



SOT-323 top view



Schematic diagram



Pb-Free



Halogen-Free

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

Symbol	Parameter	Rating	Unit
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Common Ratings (TC=25°C Unless Otherwise Noted)

V_{DS}	Drain-Source Breakdown Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-50 to 155	°C
I_S	Diode Continuous Forward Current	$T_c=25^\circ\text{C}$ 0.5	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ 3	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ 0.5	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 0.15	W
E_{SD}	Gate-Source ESD Rating (HBM, Method 3015)	2000	V

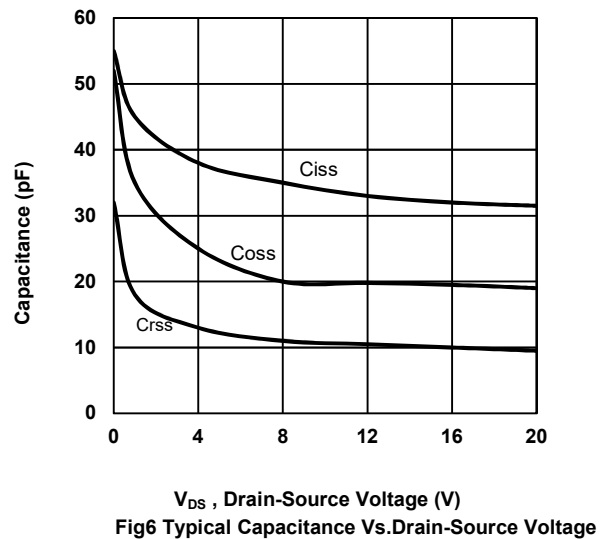
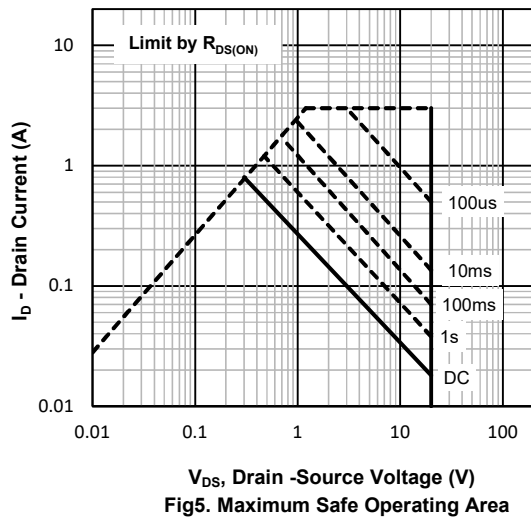
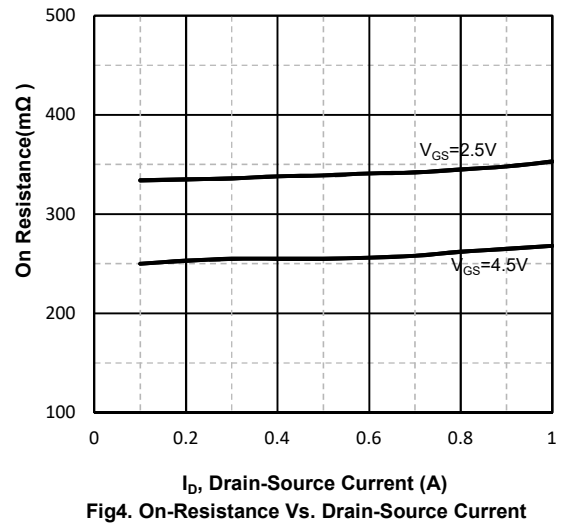
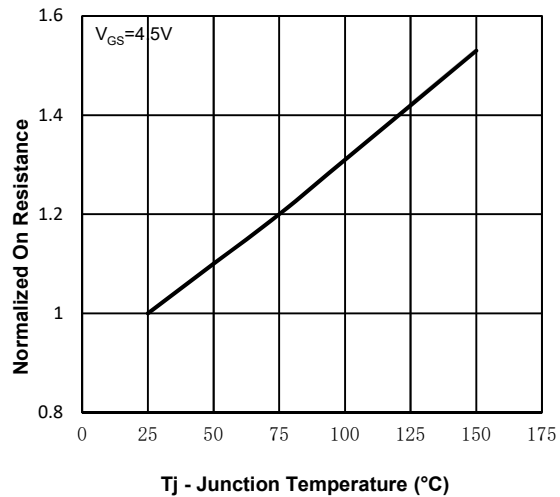
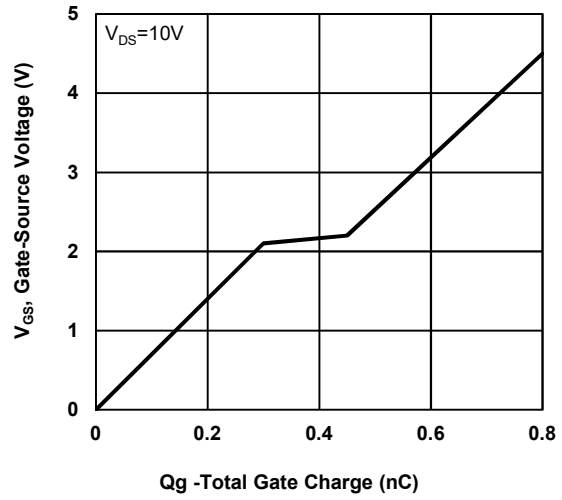
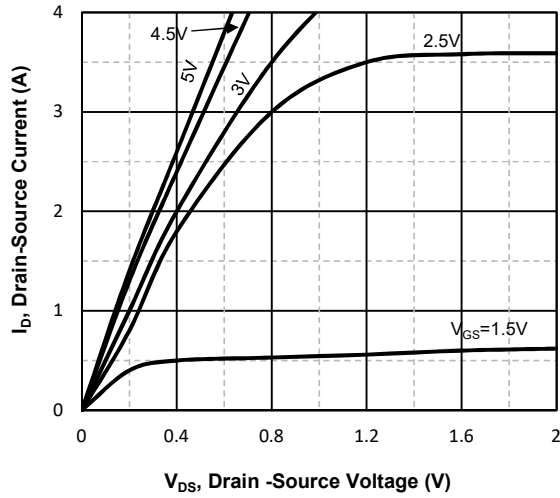
Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLS1012KW	SOT-323	12K	3,000	45,000	180,000	7"reel

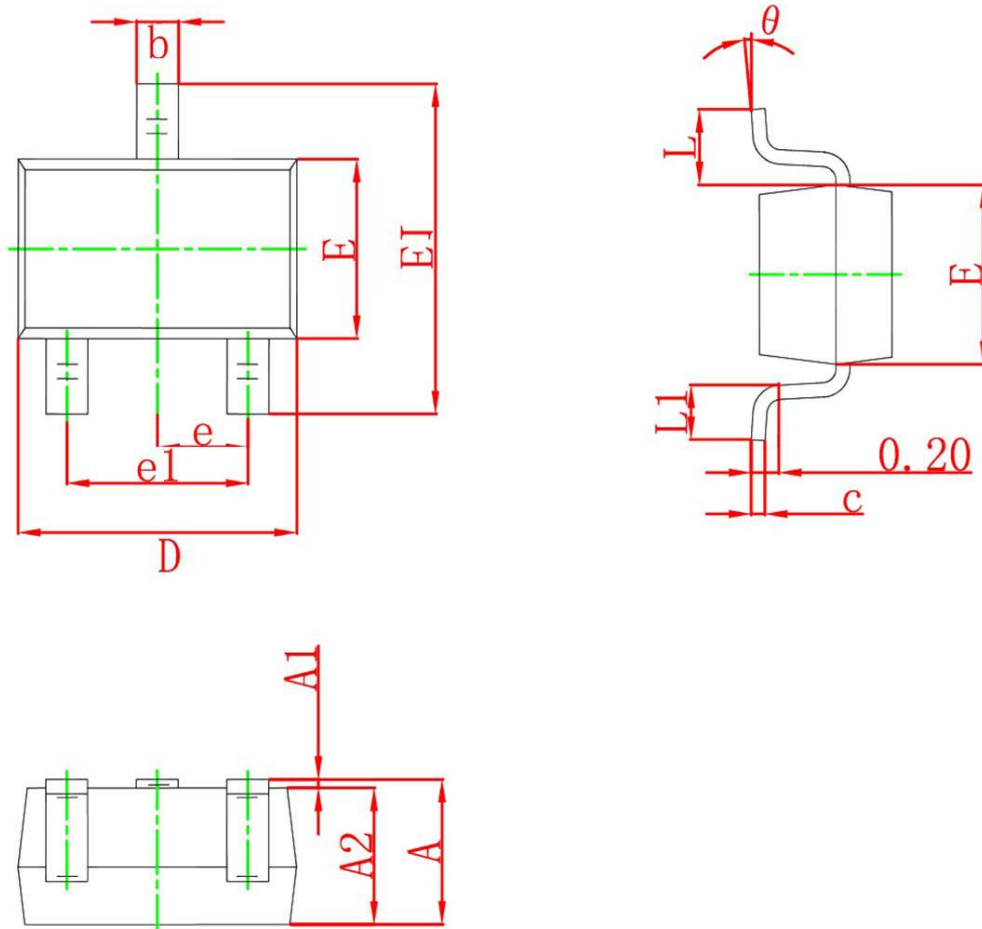
Electrical Characteristics (T_J=25°C unless otherwise noted)

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	--	--	±20	μA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	0.45	0.7	1.2	V
RDS(on)	Drain-Source On-State Resistance	VGS=4.5V, ID=0.75A	--	250	700	mΩ
		VGS=2.5V, ID=0.50A	--	325	850	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
CISS	Input Capacitance	VDS=10V, VGS=0V, f=1MHz	--	33	--	pF
COSS	Output Capacitance		--	21	--	pF
CRSS	Reverse Transfer Capacitance		--	10	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDS=10V, ID=0.5A, VGS=4.5V	--	0.8	--	nC
Qgs	Gate Source Charge		--	0.3	--	nC
Qgd	Gate Drain Charge		--	0.17	--	nC
td(on)	Turn-on Delay Time	VDD=10V, ID=0.5A, VGS=4.5V, RG=10Ω	--	4.2	--	nS
tr	Turn-on Rise Time		--	19.1	--	nS
td(off)	Turn-Off Delay Time		--	10.3	--	nS
tf	Turn-Off Fall Time		--	24	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	Tj=25°C, Is=0.5A	--	--	1.2	V

Typical Operating Characteristics



SOT-323 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°