MLSM MICROELECTRONICS

MTL1A150AG

100V/150A N-Channel MOSFET

Features

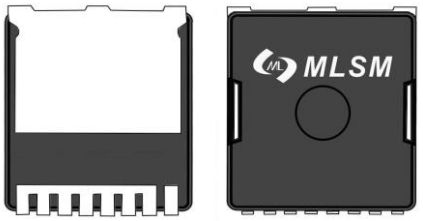
- Advanced SGT technology
- Enhanced Body diode DV/DT capability
- Ehanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- Lead Free, Halogen Free

Application

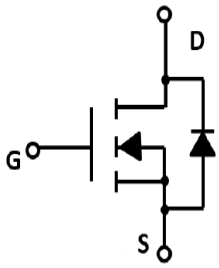
- DC/DC Converter
- Motor Drivers
- Ideal for high-frequency switching and synchronous rectification

Product Summary

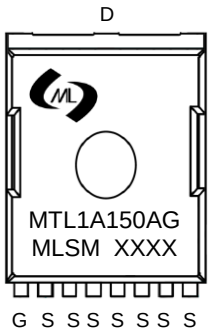
V_{DS}	$R_{DS(ON)}$	I_D
100V	3.5mΩ@10V	150A
	5mΩ@4.5V	



TOLL view



Schematic diagram



MTL1A150AG: Device code
XXXX : Code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
E_{AS}	Single pulse avalanche energy[Note1]		550	mJ
T_J,T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	150	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	600	A
I_D	Continuous Drain Current	Tc=25°C	150	A
P_D	Maximum Power Dissipation	Tc=25°C	300	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		55	°C/W

Ordering Information (Example)						
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
MTL1A150AG	TOLL	MTL1A150AG	2,000	2,000	14,000	13"reel

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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	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V， I_D=30A	--	3.5	4.5	mΩ
		V_{GS}=4.5V，I_D=20A	--	5.0	6.5	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=50V，V_{GS}=0V， f=1MHz	--	4418	--	pF
C_{OSS}	Output Capacitance		--	1353	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	23	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DD}=50V，I_D=20A，V_{GS}=10V	--	65	--	nC
Q_{gs}	Gate Source Charge		--	15.5	--	nC
Q_{gd}	Gate Drain Charge		--	10.5	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V，I_D=20A，V_{GS}=10V，R_G=2.2Ω	--	17.5	--	nS
t_r	Turn-on Rise Time		--	35	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	43.5	--	nS
t_f	Turn-Off Fall Time		--	61.5	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=30A	--	--	1.2	V

Note ：

1、 The EAS data shows Max. rating . The test condition is V_{DD}=30V,V_{GS}=10V,L=0.5mH,RG=25Ω

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Typical Operating Characteristics

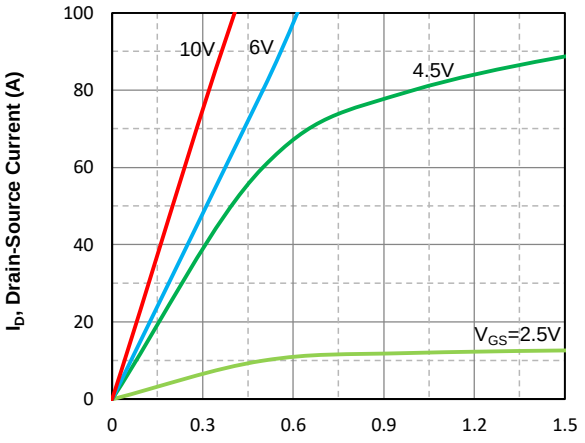


Fig1. Typical Output Characteristics

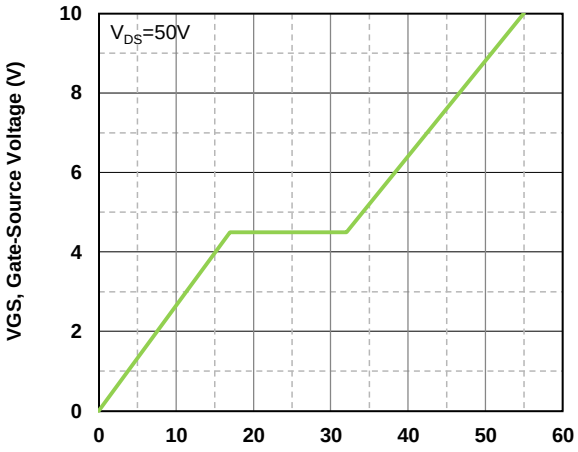


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

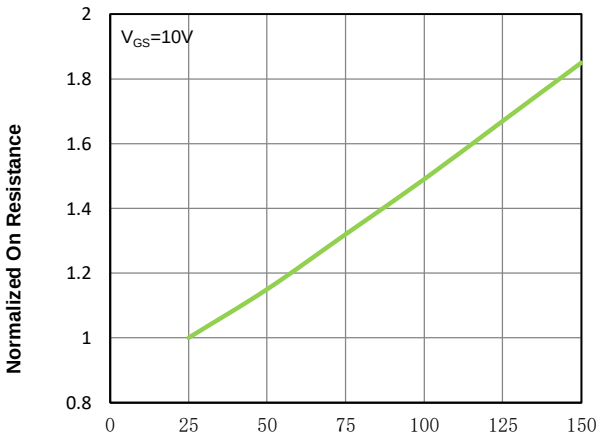


Fig3. Normalized On-Resistance Vs. Temperature

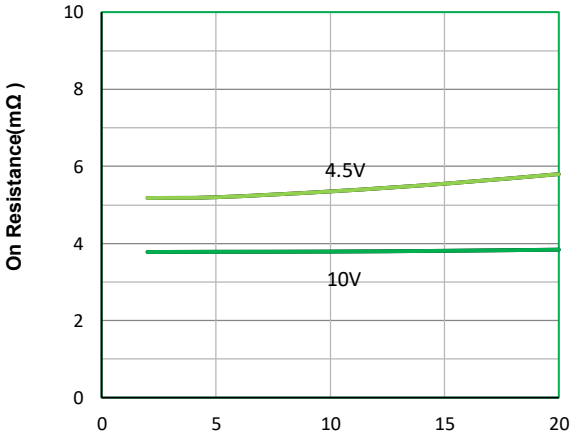


Fig4. On-Resistance Vs. Drain-Source Current

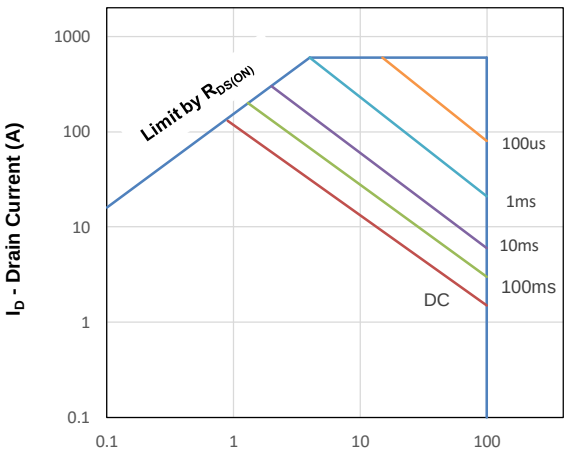


Fig5. Maximum Safe Operating Area

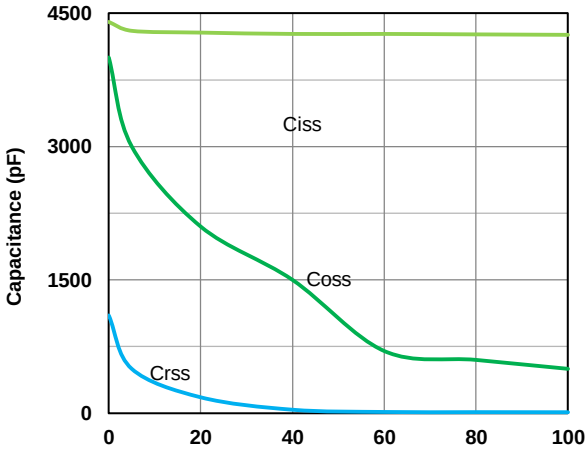
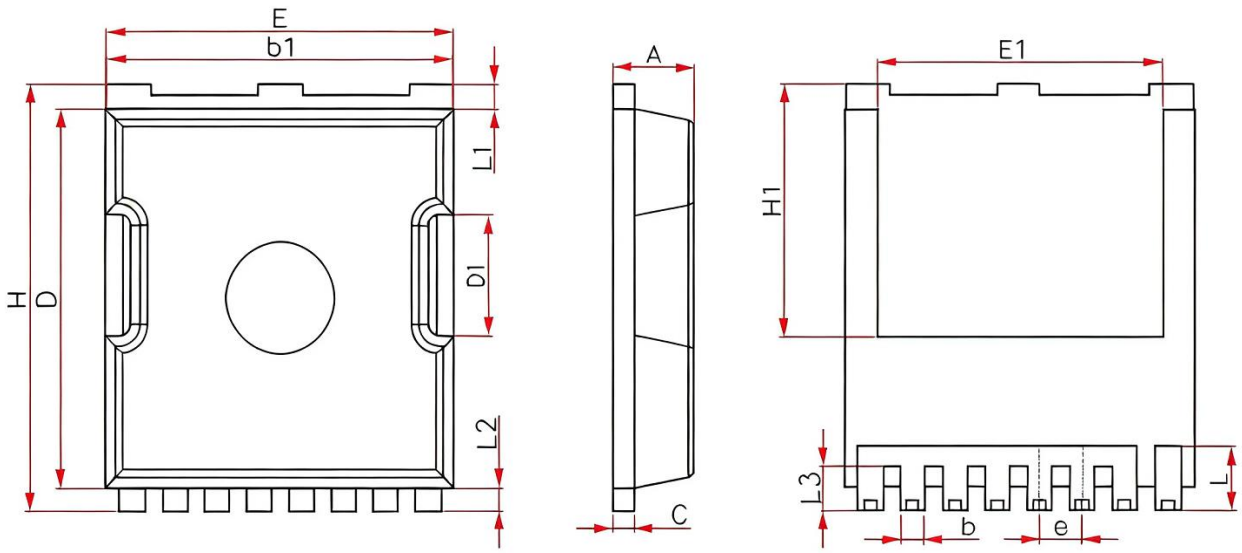


Fig6 Typical Capacitance Vs.Drain-Source Voltage

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TOLL Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.150	2.450	0.085	0.096
b	0.600	0.900	0.024	0.035
b1	9.650	9.950	0.380	0.392
C	0.350	0.650	0.014	0.026
D	10.180	10.700	0.401	0.421
D1	3.150	3.450	0.124	0.136
E	9.700	10.100	0.382	0.398
E1	7.350	8.450	0.289	0.333
e	1.100	1.300	0.043	0.051
H	11.450	11.950	0.451	0.470
H1	6.550	7.500	0.258	0.295
L	1.350	2.100	0.053	0.083
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	1.050	1.300	0.041	0.051

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