MD1A15A

100V/15A N-Channel MOSFET

MLSM MICROELECTRONICS

Features

- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

Product Summary

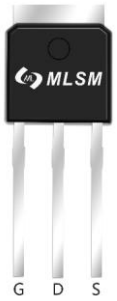
V_{DS}	$R_{DS(ON)}$ TYP	I_D
100V	65mΩ@10V	15A
	75mΩ@4.5V	

Application

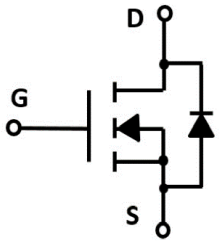
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

MD1A15A : Device code
xxxx : Code

Marking and pin assignment



TO-251 top view



Schematic diagram

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		15	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested		60	A
I_D	Continuous Drain Current	Tc=25°C	15	A
P_D	Maximum Power Dissipation	Tc=25°C	50	W
EAS	Single pulse Avalanche Energy		18	mJ

Ordering Information (Example)					
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**
MD1A15A	TO-251	MD1A15A	80	4,000	20,000

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	3	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V，I_D=10A	--	65	80	mΩ
		V_{GS}=4.5V，I_D=8A	--	75	100	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=50V，V_{GS}=0V，f=1MHz	--	830	--	pF
C_{OSS}	Output Capacitance		--	44	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	30	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DD}=50V，I_D=10A，V_{GS}=10V	--	22	--	nC
Q_{gs}	Gate Source Charge		--	2.9	--	nC
Q_{gd}	Gate Drain Charge		--	6.2	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V，R_L=6.4Ω，V_{GS}=10V，R_G=3Ω	--	25	--	nS
t_r	Turn-on Rise Time		--	430	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	45	--	nS
t_f	Turn-Off Fall Time		--	92	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=15A，	--	--	1.2	V

Typical Operating Characteristics

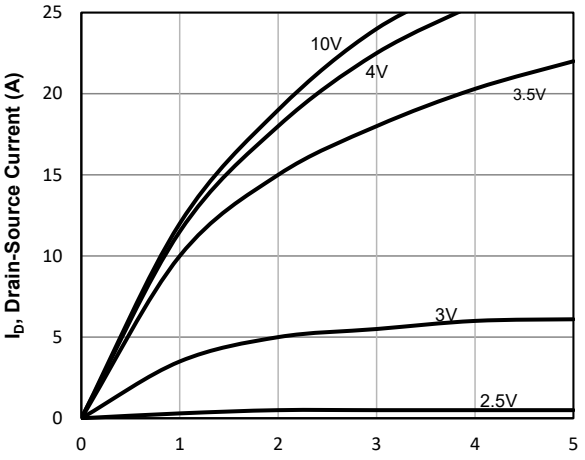


Fig1. Typical Output Characteristics

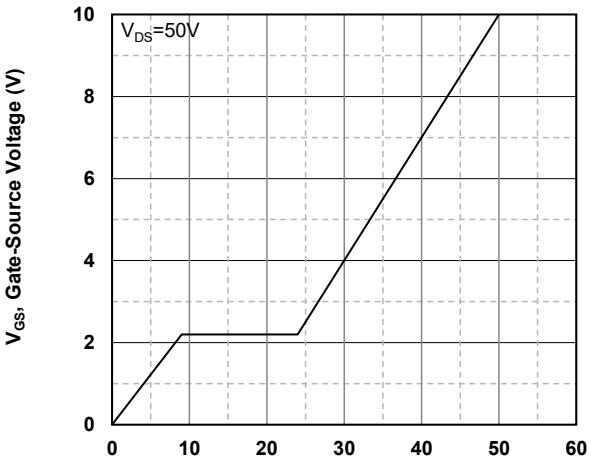


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

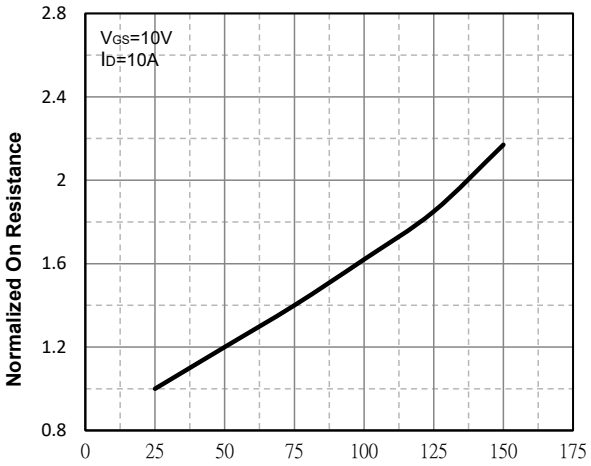


Fig3. Normalized On-Resistance Vs. Temperature

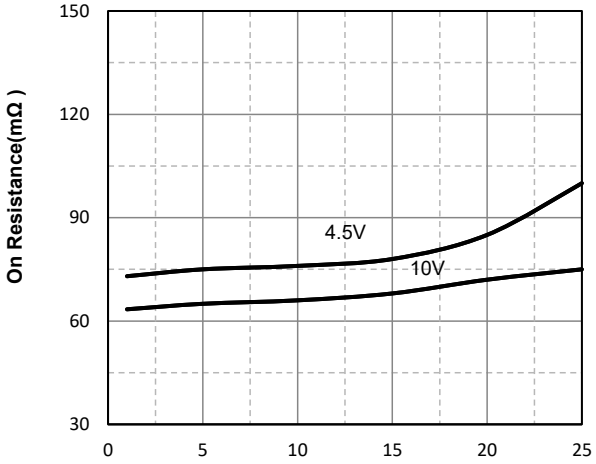


Fig4. On-Resistance Vs. Drain-Source Current

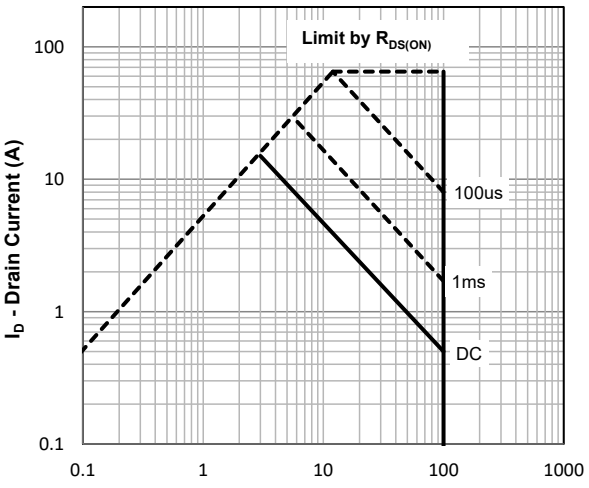


Fig5. Maximum Safe Operating Area

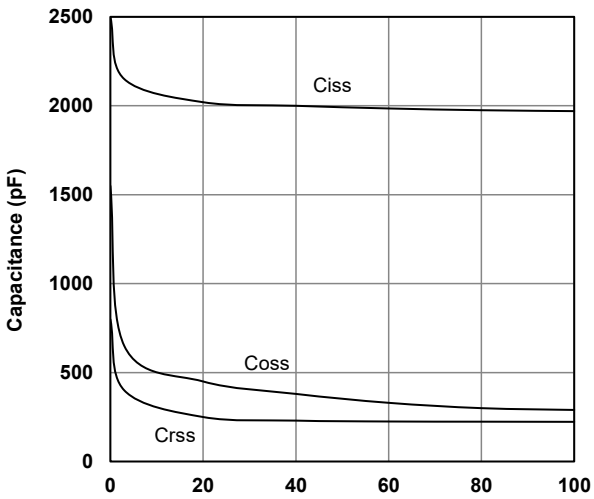
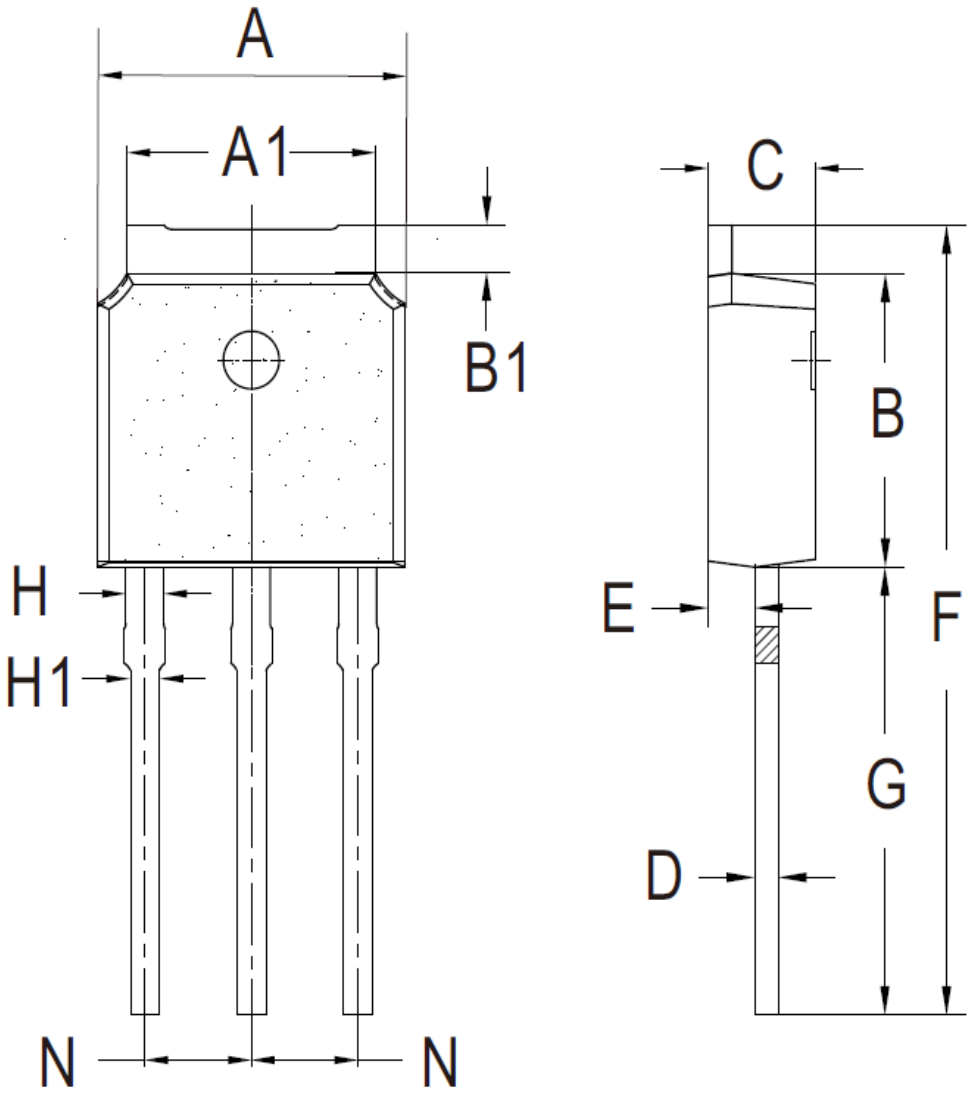


Fig6 Typical Capacitance Vs.Drain-Source Voltage

TO-251 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	6.400	6.800	0.253	0.269
A1	5.200	5.500	0.206	0.217
B	5.900	6.300	0.233	0.249
B1	0.950	1.250	0.038	0.049
C	2.100	2.500	0.083	0.099
D	0.400	0.600	0.016	0.024
E	0.900	1.100	0.036	0.043
F	16.100	16.700	0.637	0.660
G	9.200	9.600	0.364	0.380
H	0.700	0.900	0.028	0.036
H1	0.500	0.700	0.020	0.028
N	2.200	2.400	0.087	0.095