ME1A20A

100V/20A N-Channel MOSFET

Features

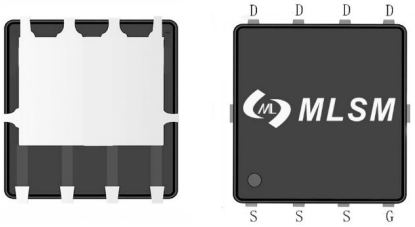
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

Product Summary

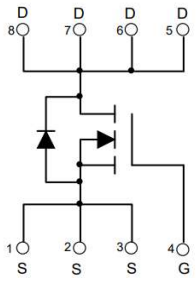
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
100V	45mΩ@10V	20A
	60mΩ@4.5V	

Application

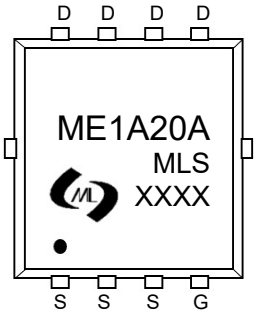
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter



PDFN3X3-8L view



Schematic diagram



ME1A20A: Device code
XXXX: Code

Marking and pin assignment

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		20	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested		80	A
I_D	Continuous Drain Current	Tc=25°C	20	A
P_D	Maximum Power Dissipation	Tc=25°C	50	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		83.3	°C/W
E_{AS}	Single pulse Avalanche Energy[Note1]		9.9	mJ

Ordering Information (Example)						
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
ME1A20A	PDFN3X3-8L	ME1A20A	5,000	10,000	70,000	13"reel

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	--	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V， I_D=20A	--	35	45	mΩ
		V_{GS}=4.5V，I_D=8A	--	45	60	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=50V，V_{GS}=0V，f=1MHz	--	2180	--	pF
C_{OSS}	Output Capacitance		--	103	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	59	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DD}=50V，I_D=20A，V_{GS}=10V	--	37.8	--	nC
Q_{gs}	Gate Source Charge		--	11	--	nC
Q_{gd}	Gate Drain Charge		--	9.8	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V，R_L=5Ω，V_{GS}=10V，R_G=3Ω	--	10	--	nS
t_r	Turn-on Rise Time		--	45	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	27	--	nS
t_f	Turn-Off Fall Time		--	25	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=20A	--	--	1.2	V

Note：

1、EAS Test condition: V_{DD}=30V,V_{GS}=10V, L=0.5mH, I_{AS}=6.3A, Starting T_J = 25℃

Typical Operating Characteristics

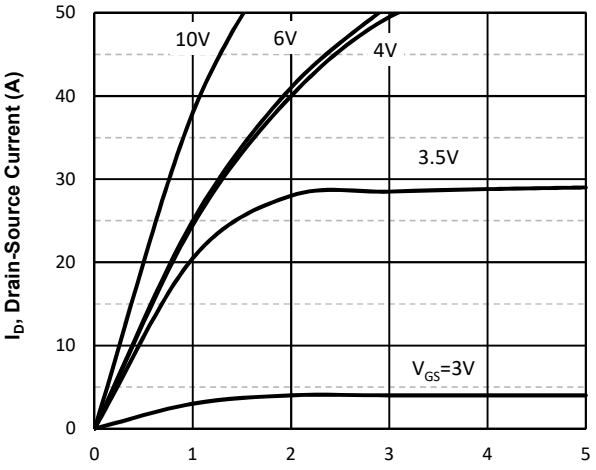


Fig1. Typical Output Characteristics

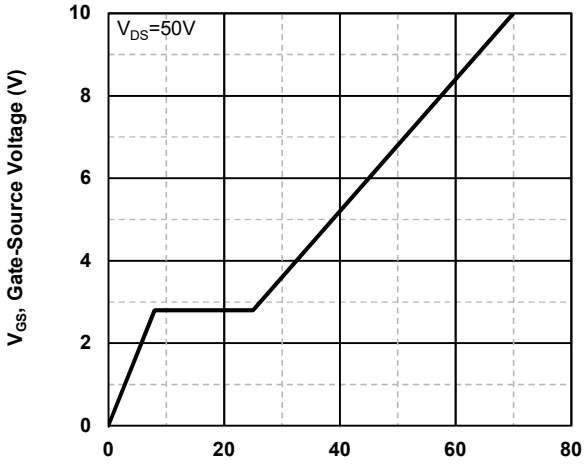


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

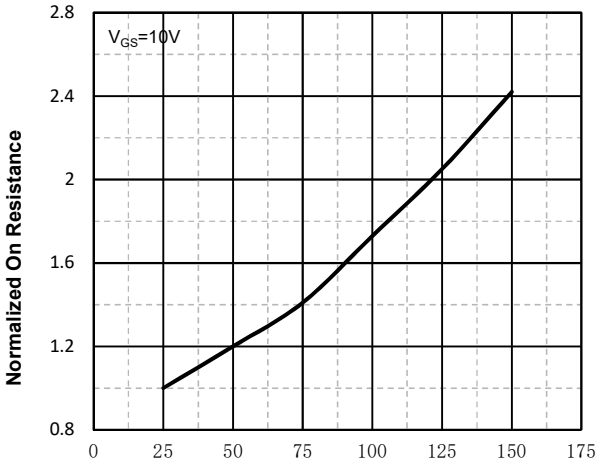


Fig3. Normalized On-Resistance Vs. Temperature

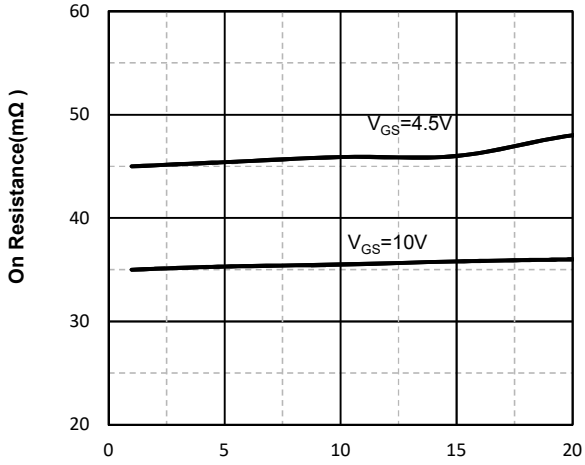


Fig4. On-Resistance Vs. Drain-Source Current

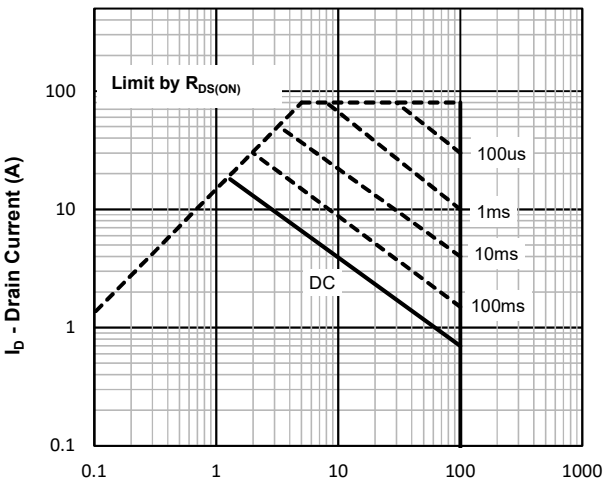


Fig5. Maximum Safe Operating Area

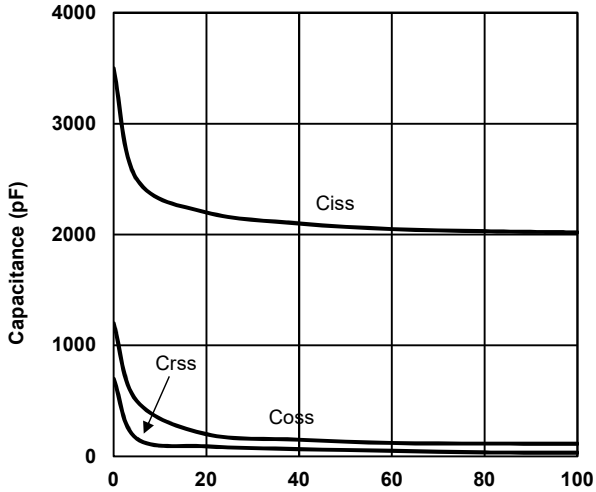
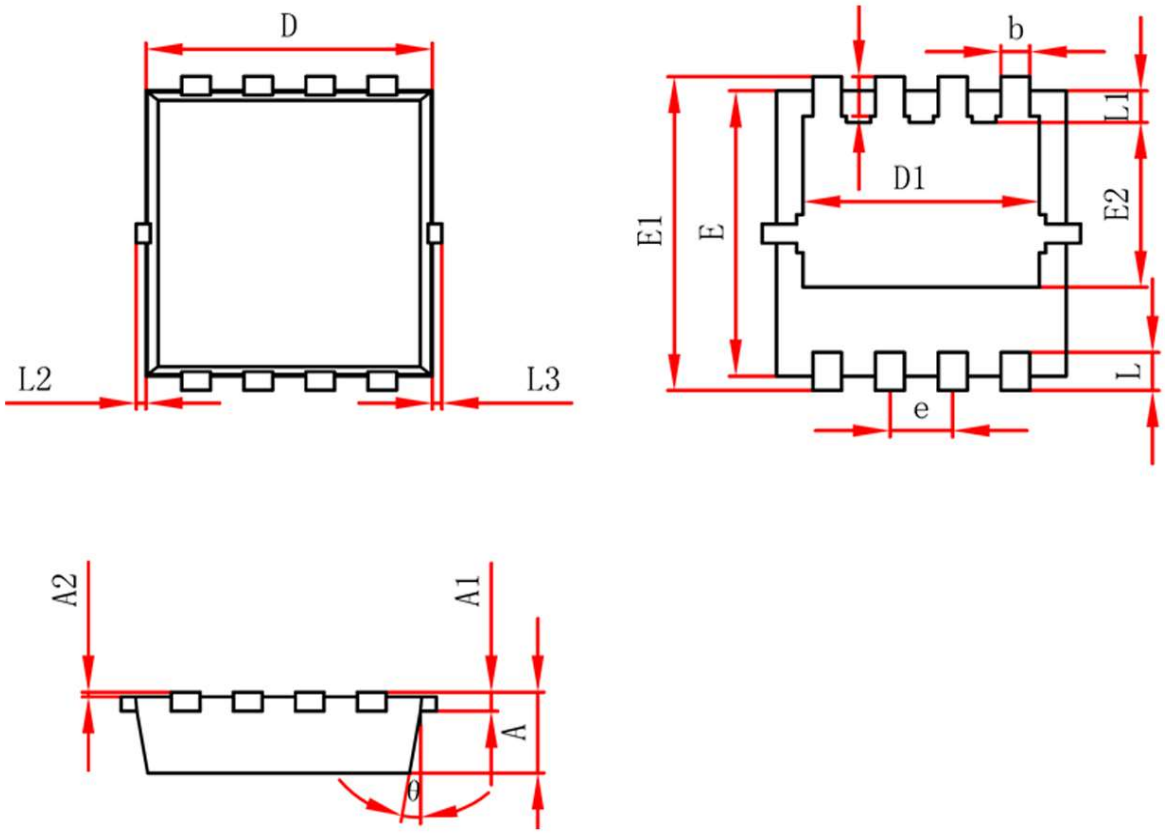


Fig6 Typical Capacitance Vs.Drain-Source Voltage

PDFN3X3-8L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.750	0.850	0.030	0.034
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.950	3.150	0.117	0.125
D1	2.400	2.500	0.095	0.099
E	2.950	3.050	0.117	0.121
E1	3.250	3.350	0.129	0.132
E2	1.685	1.785	0.067	0.071
b	0.250	0.350	0.010	0.014
e	0.600	0.700	0.024	0.028
L	0.350	0.450	0.014	0.018
L1	0.325	0.425	0.013	0.017
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.365	0.465	0.014	0.018
θ	10°	12°	10°	12°