MLSM MICROELECTRONICS

MC0G40AP

-60V/-40A P-Channel MOSFET

Features

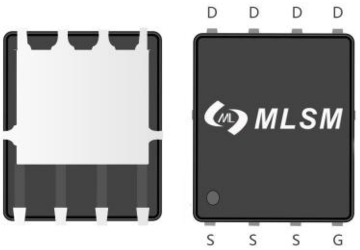
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Product Summary

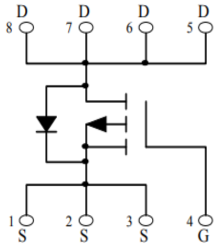
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-60V	35mΩ@-10V	-40A
	45mΩ@-4.5V	

Application

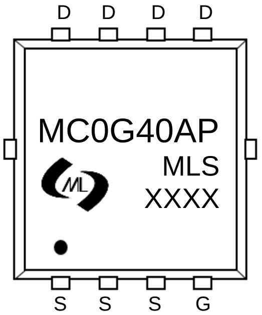
- PWM applications
- Power management
- Load switch



PDFN5X6-8L view



Schematic diagram



Marking and pin assignment

MC0G40AP: Device code
XXXX : Code

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		-60	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	-40	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	-160	A
I_D	Continuous Drain Current	Tc=25°C	-40	A
P_D	Maximum Power Dissipation	Tc=25°C	25	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		315	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MC0G40AP	PDFN5X6-8L	MC0G40AP	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	-60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-60V，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	-1.0	-1.8	-2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-10V，I_D=-20A	--	25	35	mΩ
		V_{GS}=-4.5V，I_D=-10A	--	30	45	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=-30V，V_{GS}=0V， f=1MHz	--	3880	--	pF
C_{OSS}	Output Capacitance		--	169	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	138	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=-30V，I_D=-10A， V_{GS}=-10V	--	111	--	nC
Q_{gs}	Gate Source Charge		--	25	--	nC
Q_{gd}	Gate Drain Charge		--	15.5	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-10V，I_D=-10A， V_{GS}=-10V，R_G=6Ω	--	20	--	nS
t_r	Turn-on Rise Time		--	25	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	71	--	nS
t_f	Turn-Off Fall Time		--	30	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=-10A	--	--	-1.2	V

Typical Operating Characteristics

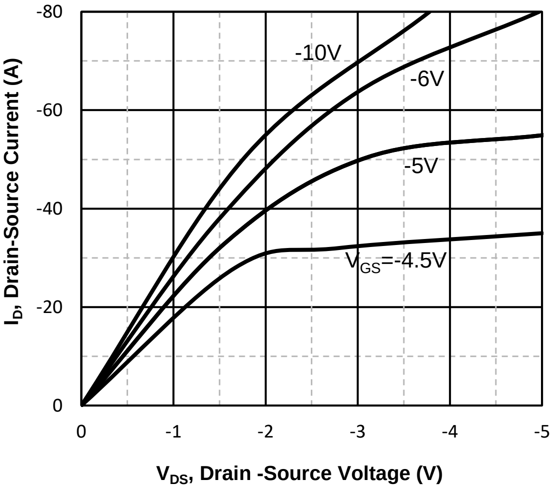


Fig1. Typical Output Characteristics

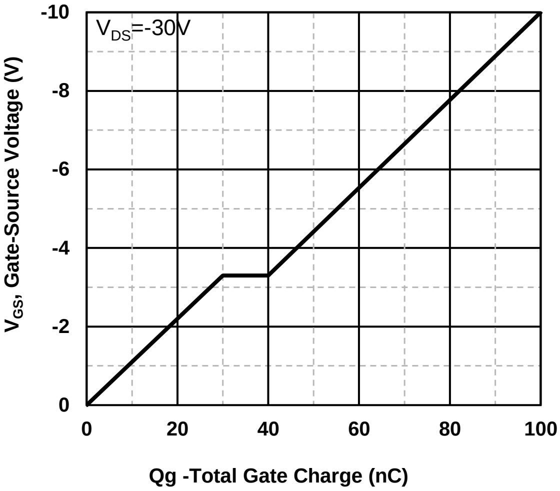


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

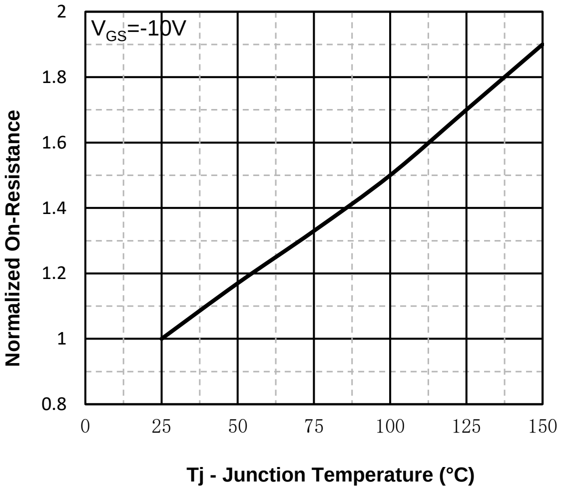


Fig3. Normalized On-Resistance Vs. Temperature

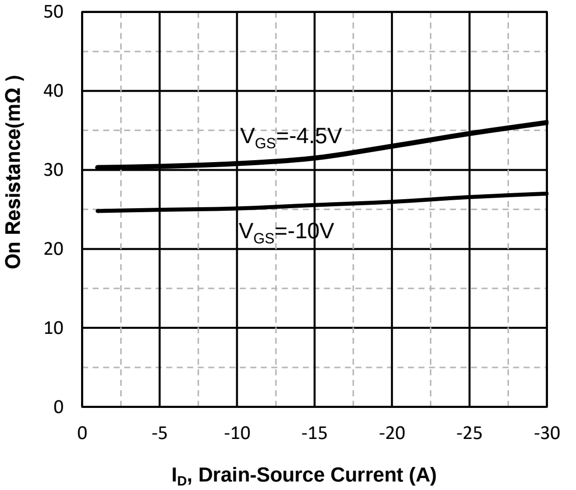


Fig4. Drain-Source on Resistance Vs.Drain-Source Current

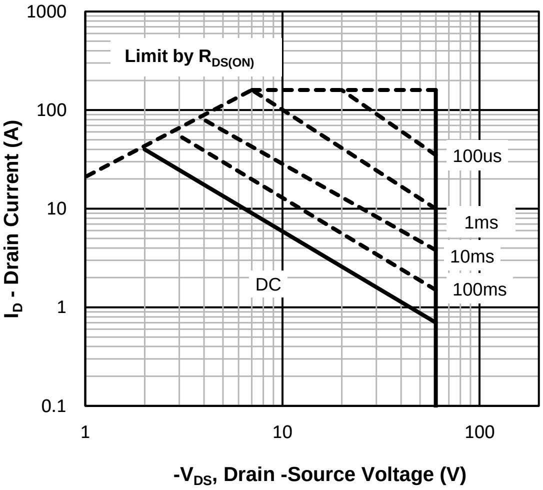


Fig5. Maximum Safe Operating Area

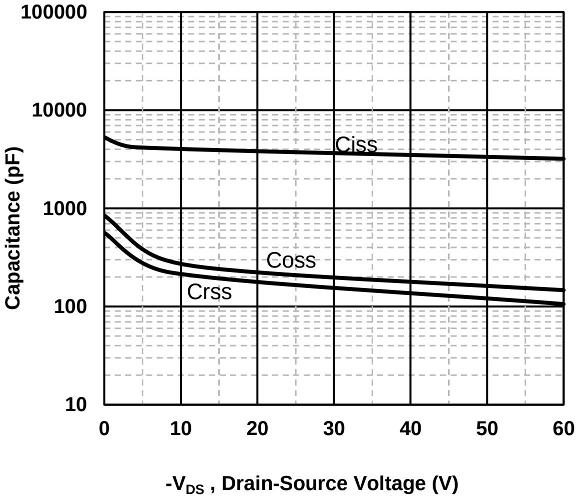
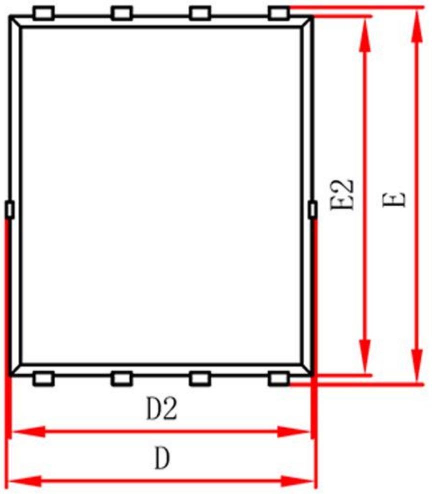
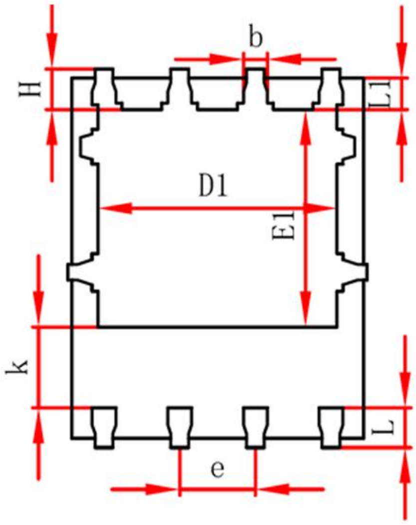
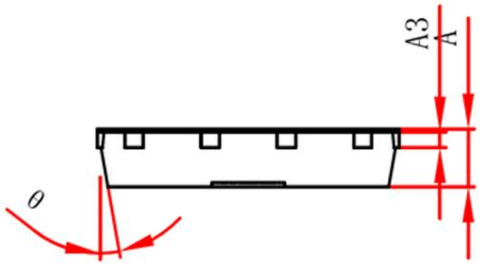


Fig6 Typical Capacitance Vs.Drain-Source Voltage

PDFN5X6-8L Package information







Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.950	1.050	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.950	5.050	0.196	0.200
E	5.950	6.050	0.235	0.239
D1	4.026	4.126	0.159	0.163
E1	3.510	3.610	0.139	0.143
D2	4.850	4.950	0.192	0.196
E2	5.700	5.800	0.225	0.229
k	1.190	1.390	0.047	0.055
b	0.300	0.400	0.012	0.016
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°