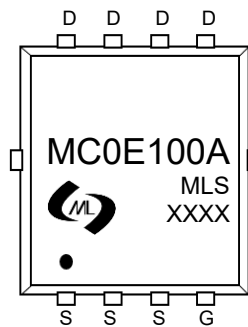


Features

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Application

- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

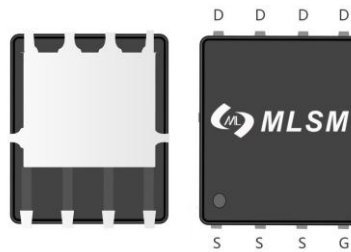


Marking and pin assignment

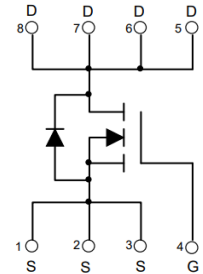
MC0E100A: Device code
XXXX : Code

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
40V	5.5mΩ@10V	100A
	6.9mΩ@4.5V	



PDFN5X6-8L 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		40	V
V _{GS}	Gate-Source Voltage		±20	V
E _{AS}	Single pulse avalanche energy		80	mJ
T _J , T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	Tc=25°C	100	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^{\circ}C$	390	A
I_D	Continuous Drain Current	$T_c=25^{\circ}C$	100	A
P_D	Maximum Power Dissipation	$T_c=25^{\circ}C$	55	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		83.3	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MC0E100A	PDFN5X6-8L	MC0E100A	5,000	10,000	70,000	13"reel

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

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, 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	--	4.5	5.5	mΩ
		V _{GS} =4.5V, I _D =15A	--	5.7	6.9	mΩ

Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)

C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	2504	--	pF
C _{OSS}	Output Capacitance		--	220	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	180	--	pF

Switching Characteristics

Q _g	Total Gate Charge	V _{DD} =20V, I _D =20A, V _{GS} =4.5V	--	25.5	--	nC
Q _{gs}	Gate Source Charge		--	5.1	--	nC
Q _{gd}	Gate Drain Charge		--	12.8	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =20V, I _D =20A, V _{GS} =10V, R _G =3Ω	--	13.8	--	nS
t _r	Turn-on Rise Time		--	19.5	--	nS
t _{d(off)}	Turn-Off Delay Time		--	40	--	nS
t _f	Turn-Off Fall Time		--	15	--	nS

Source- Drain Diode Characteristics

V _{SD}	Forward on voltage	T _J =25°C, I _S =20A	--	0.9	1.2	V
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Typical Operating Characteristics

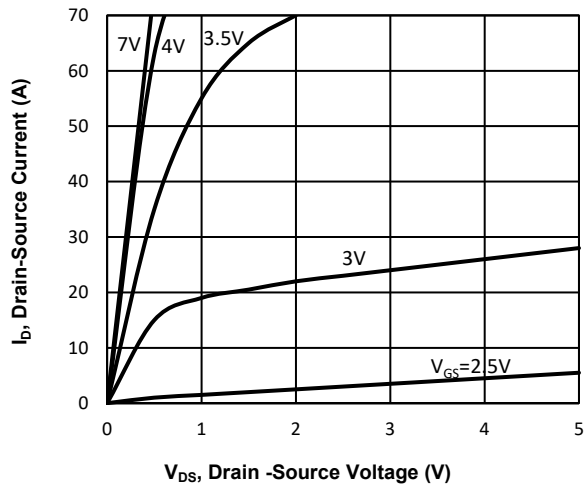


Fig1. Typical Output Characteristics

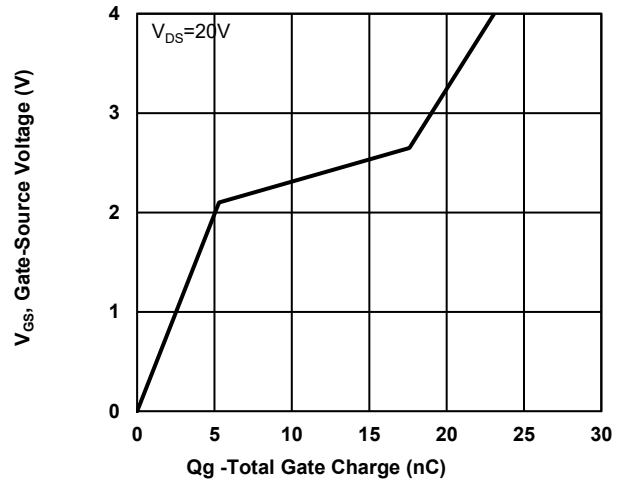


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

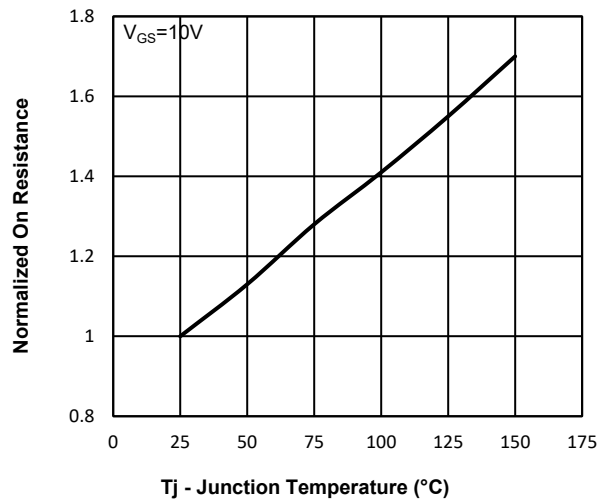


Fig3. Normalized On Resistance Vs. Temperature

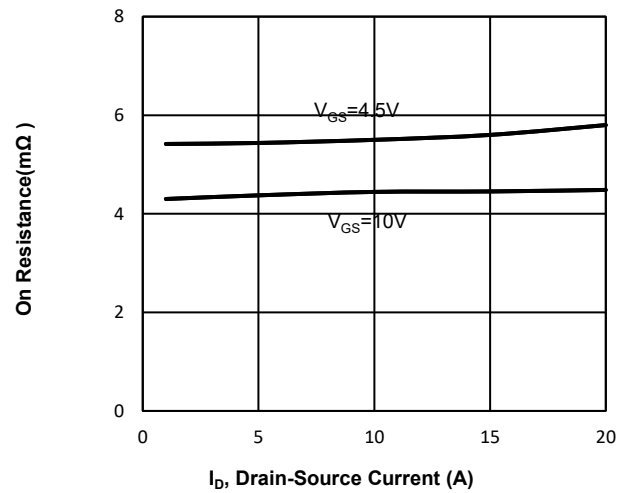


Fig4. On-Resistance Vs. Drain-Source Current

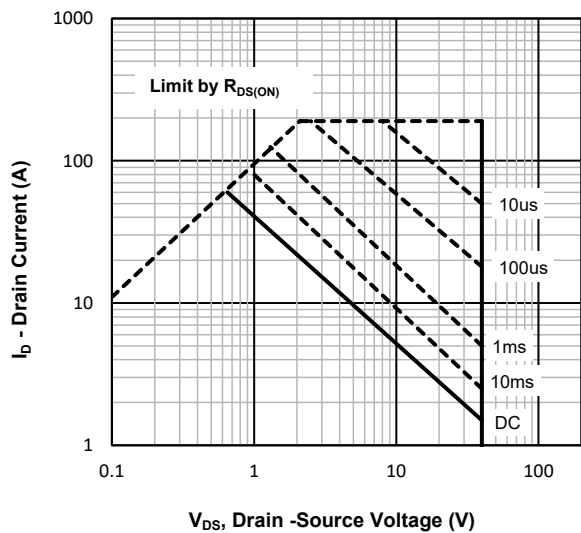


Fig5. Maximum Safe Operating Area

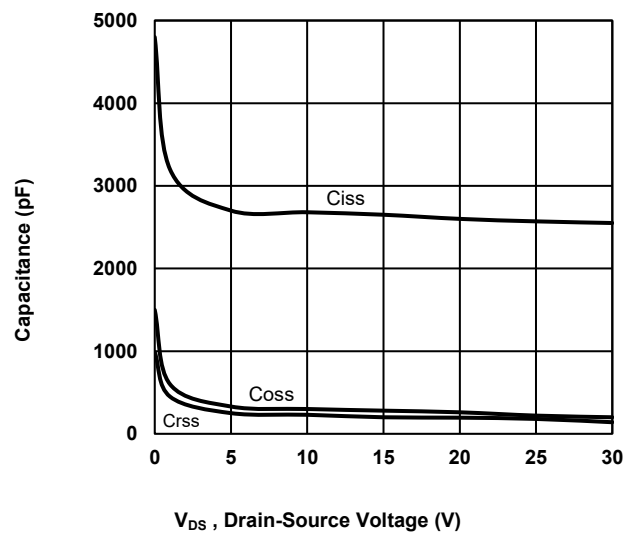
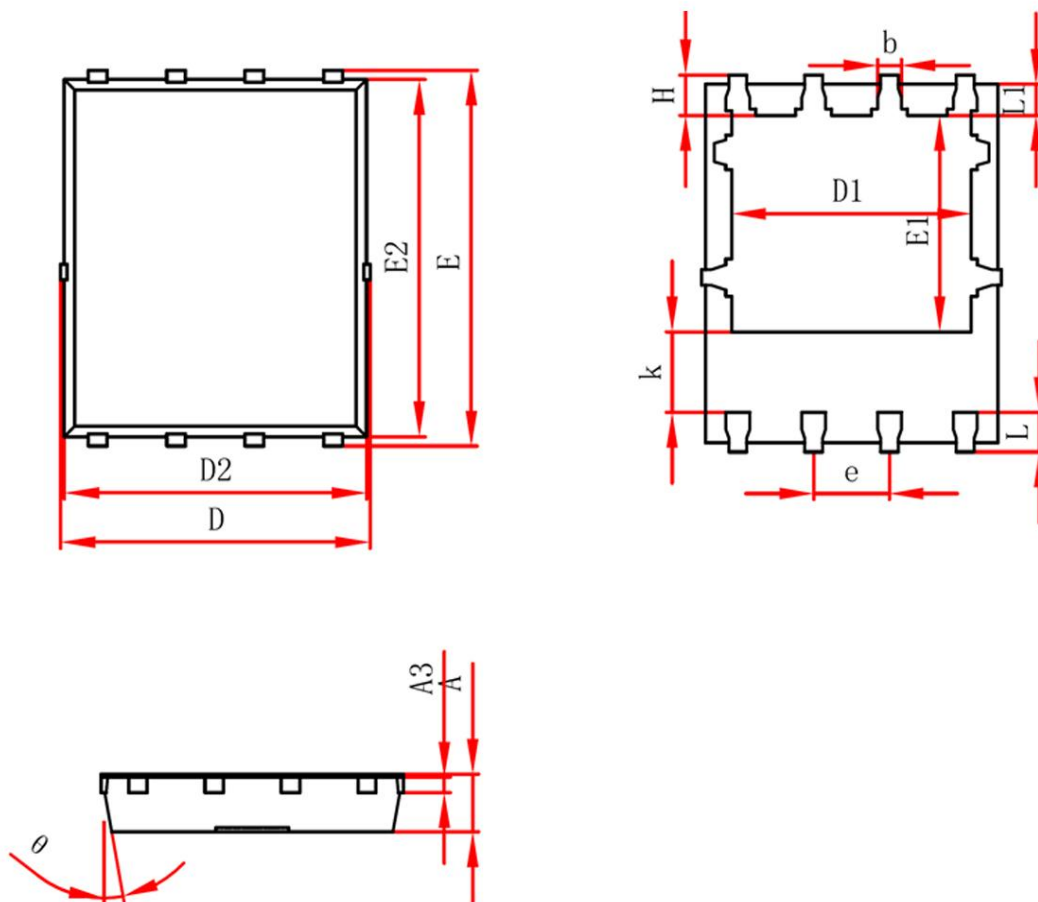


Fig6. Typical Capacitance Vs. Drain-Source Voltage

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°