

Features

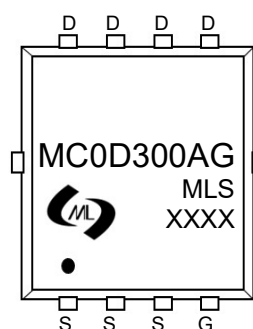
- Split gate trench MOSFET technology
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Application

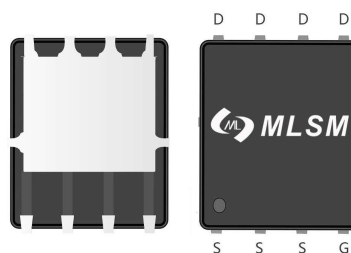
- High current load applications
- Load switch
- Hard switched and high frequency circuits

Product Summary

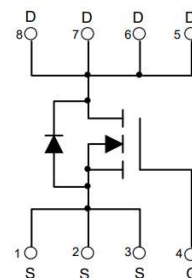
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
30V	1.3m Ω @10V	300A
	2m Ω @4.5V	



MC0C300AG: Device code
XXXX : Code



PDFN5X6-8L view



Schematic diagram



Pb-Free



Halogen-Free

Marking and pin assignment

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	30	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	$T_c=25^\circ\text{C}$ 300	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ 1200	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ 300	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 125	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	45	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MC0D300AG	PDFN5X6-8L	MC0D300AG	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	30	–	–	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, 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	–	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	–	0.9	1.3	mΩ
		V _{GS} =4.5V, I _D =15A	–	1.3	2.0	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	–	6315	–	pF
C _{OSS}	Output Capacitance		–	4260	–	pF
C _{RSS}	Reverse Transfer Capacitance		–	340	–	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, I _D =30A, V _{GS} =10V	–	114	–	nC
Q _{gs}	Gate Source Charge		–	25	–	nC
Q _{gd}	Gate Drain Charge		–	27	–	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =30A, V _{GS} =10V, R _G =3Ω	–	17	–	nS
t _r	Turn-on Rise Time		–	42	–	nS
t _{d(off)}	Turn-Off Delay Time		–	82	–	nS
t _f	Turn-Off Fall Time		–	54	–	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =10A	–	–	1.2	V

Typical Operating Characteristics

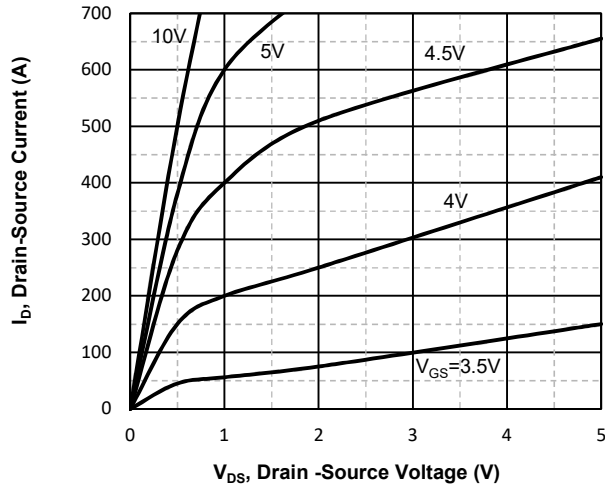


Fig1. Typical Output Characteristics

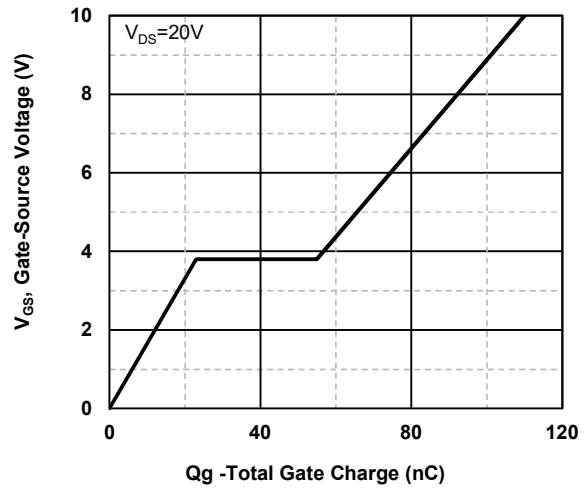


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

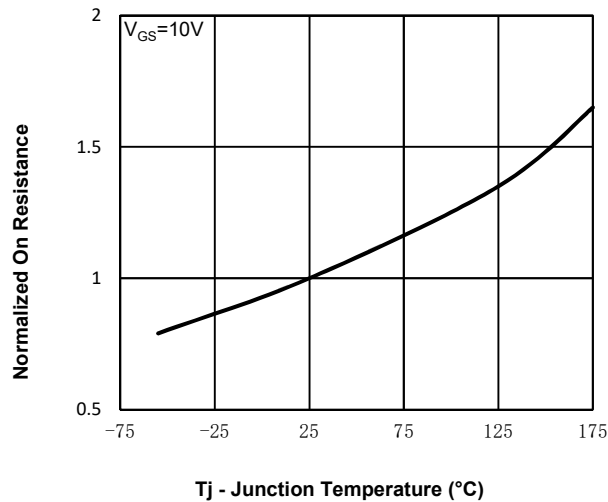


Fig3. Normalized On-Resistance Vs. Temperature

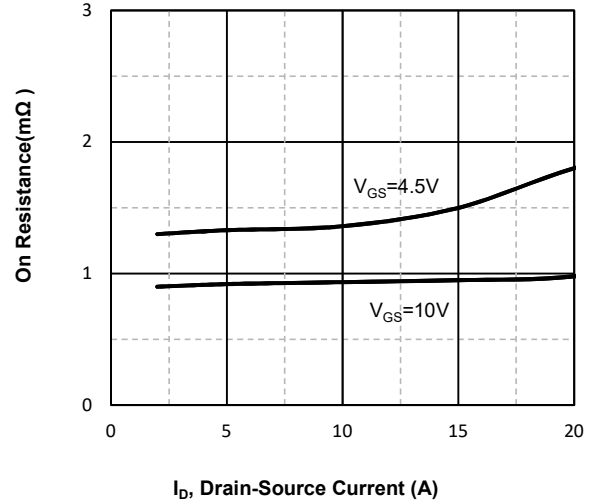


Fig4. On-Resistance Vs. Drain-Source Current

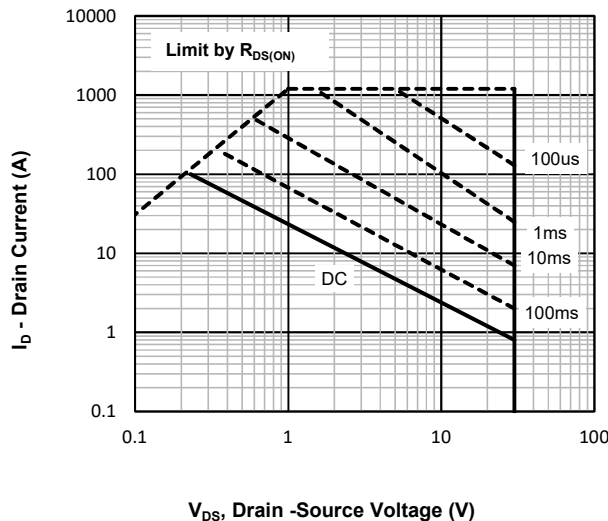


Fig5. Maximum Safe Operating Area

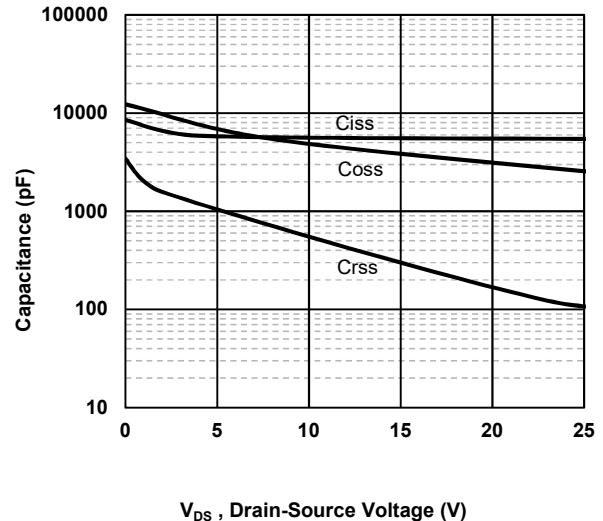
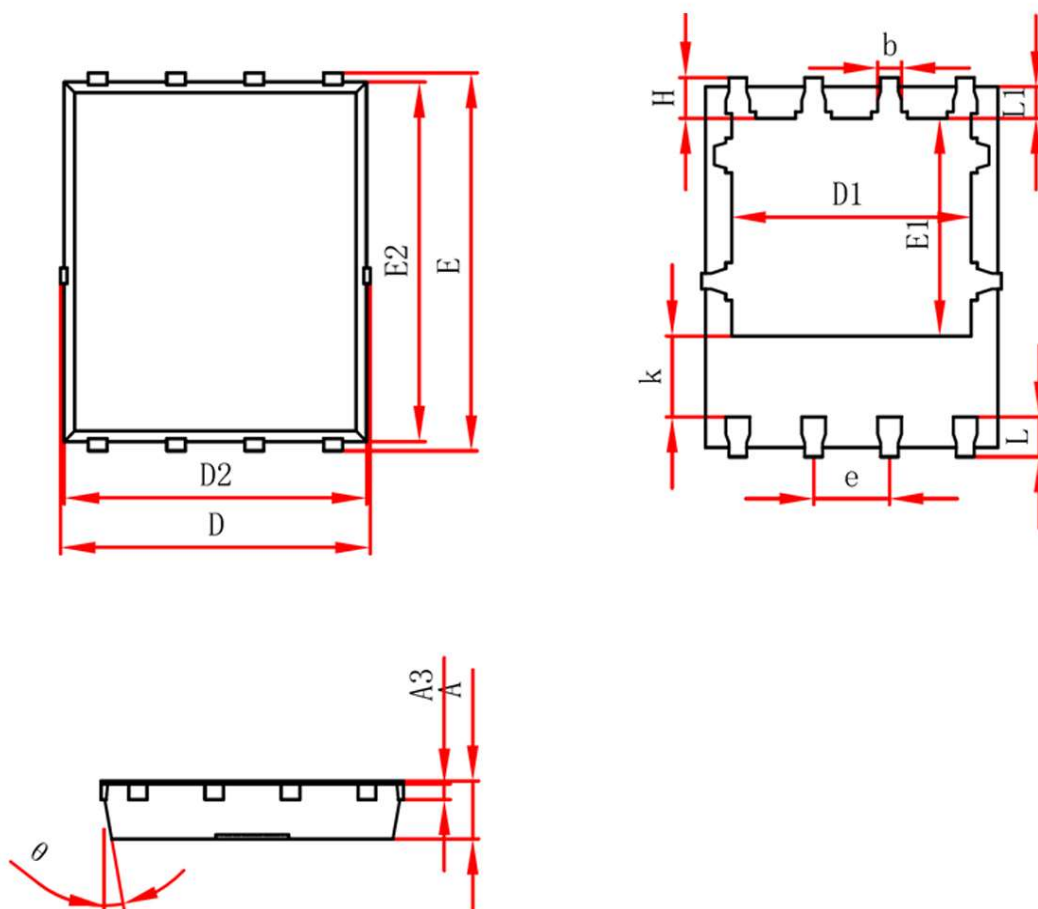


Fig6 Typical Capacitance Vs. Drain-Source

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°