

Features

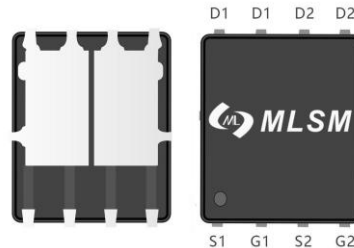
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Product Summary

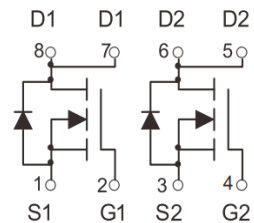
V_{DS}	$R_{DS(ON)}$ TYP	I_D
60V	5.4mΩ@10V	90A
	7.0mΩ@4.5V	

Application

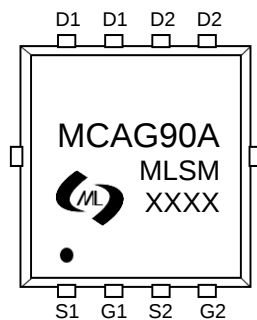
- Power switching application



PDFN5X6-8L view



Schematic diagram



Marking and pin assignment

MCAG90A : Device code
XXXX : Code



Pb-Free



Halogen-Free

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

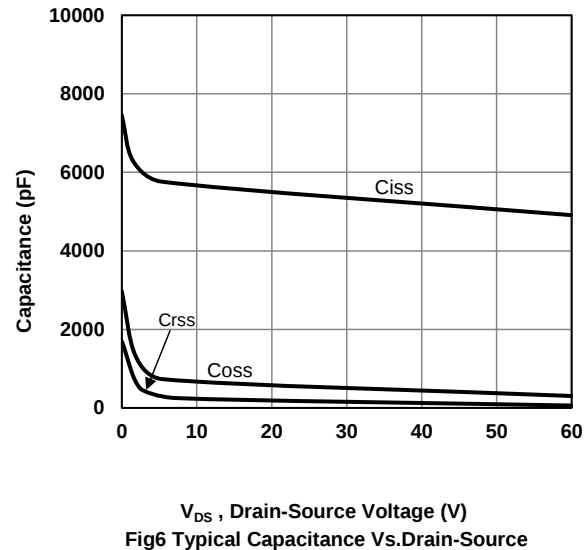
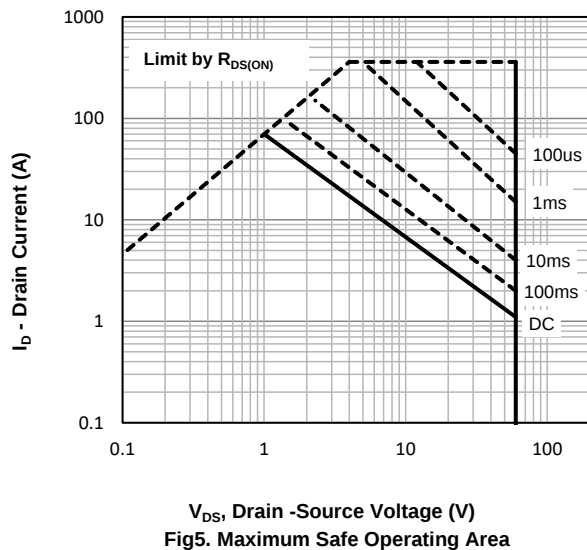
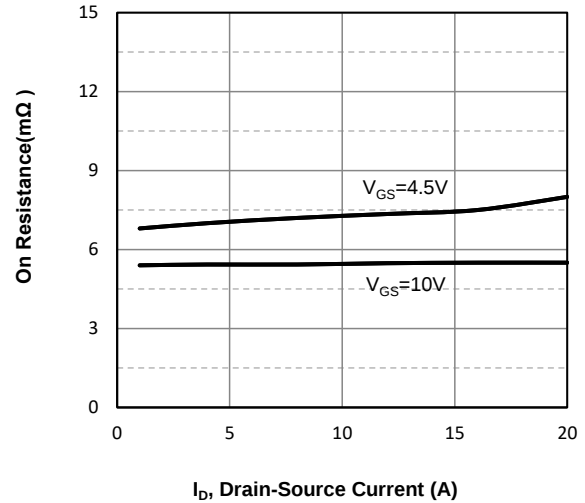
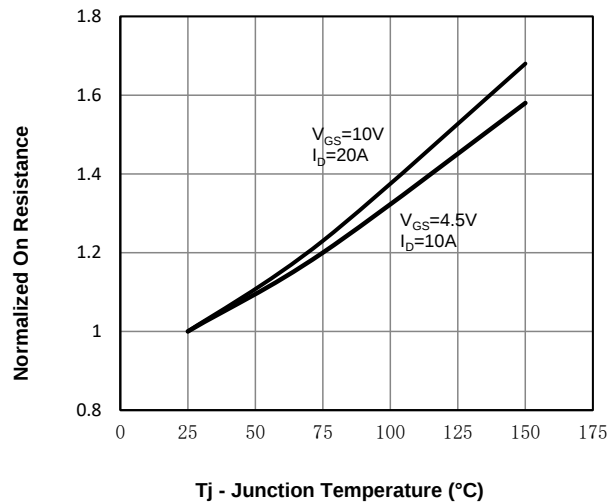
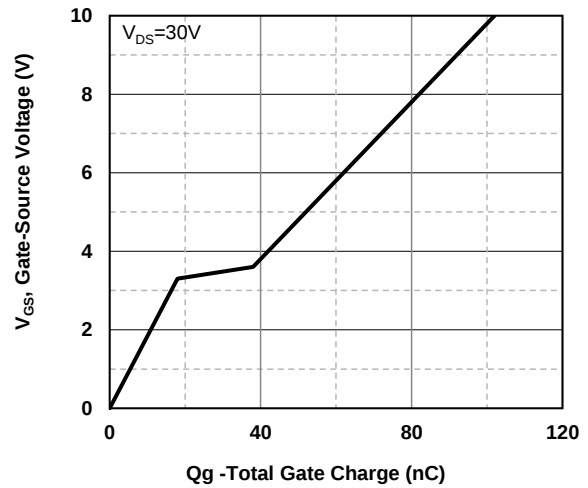
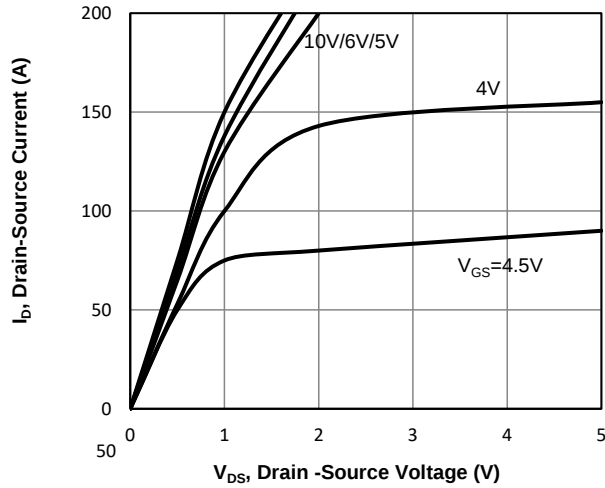
Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{DS}	Drain-Source Breakdown Voltage		60	V
V _{GS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-50 to 155	°C
I _S	Diode Continuous Forward Current	Tc=25°C	90	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested	Tc=25°C	360	A
I _D	Continuous Drain Current	Tc=25°C	90	A
P _D	Maximum Power Dissipation	Tc=25°C	110	W
R _{θJA}	Thermal Resistance Junction-to-Ambient		20	°C/ W

Ordering Information (Example)

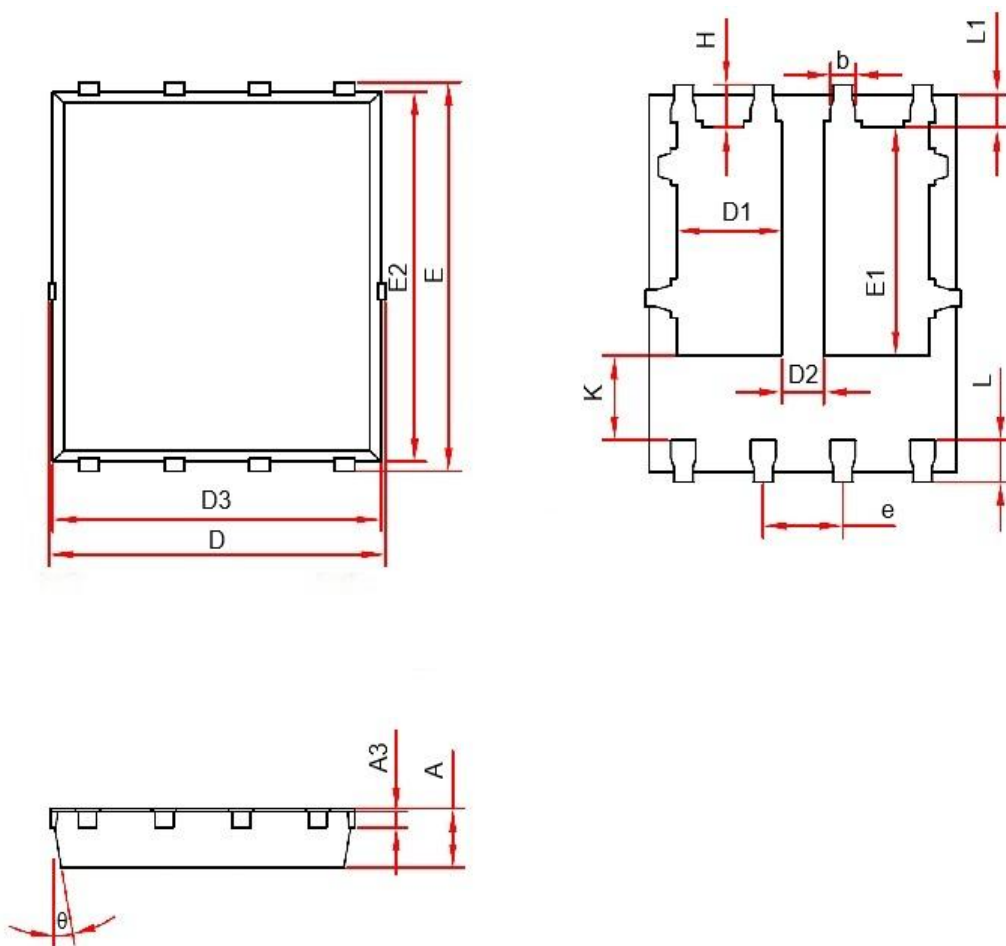
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MCAG90A	PDFN5X6-8L	MCAG90A	5,000	10,000	70,000	13"reel

Electrical Characteristics (TJ=25°C 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	--	--	1.0	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	1.6	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	--	5.4	7.0	mΩ
		V _{GS} =4.5V, I _D =10A	--	7.0	10	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	5170	--	pF
C _{OSS}	Output Capacitance		--	300	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	155	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =30V, I _D =20A, V _{GS} =10V	--	102	--	nC
Q _{gs}	Gate Source Charge		--	18.7	--	nC
Q _{gd}	Gate Drain Charge		--	20	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =30V, R _L =6.7Ω, V _{GS} =10V, R _G =3Ω	--	12	--	nS
t _r	Turn-on Rise Time		--	46	--	nS
t _{d(off)}	Turn-Off Delay Time		--	90	--	nS
t _f	Turn-Off Fall Time		--	80	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=10A	--	--	1.2	V

Typical Operating Characteristics



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	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.510	3.610	0.139	0.143
D3	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°