

Features

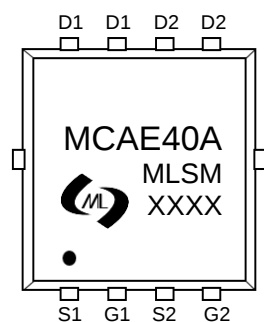
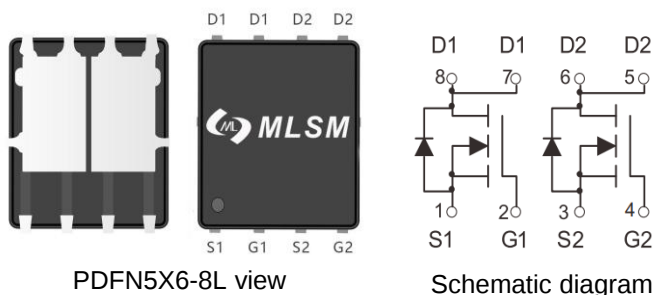
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Application

- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
40V	10m Ω @10V	40A
	15m Ω @4.5V	



MCAE40A : Device code
 XXXX : Code

Marking and pin assignment



Halogen-Free

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
--------	-----------	--------	------

Common Ratings ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

V_{DS}	Drain-Source Breakdown Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-50 to 155	$^{\circ}\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}\text{C}$ 40	A

Mounted on Large Heat Sink

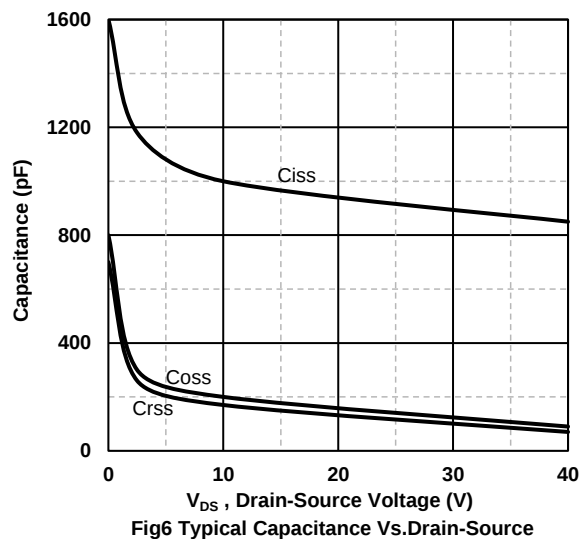
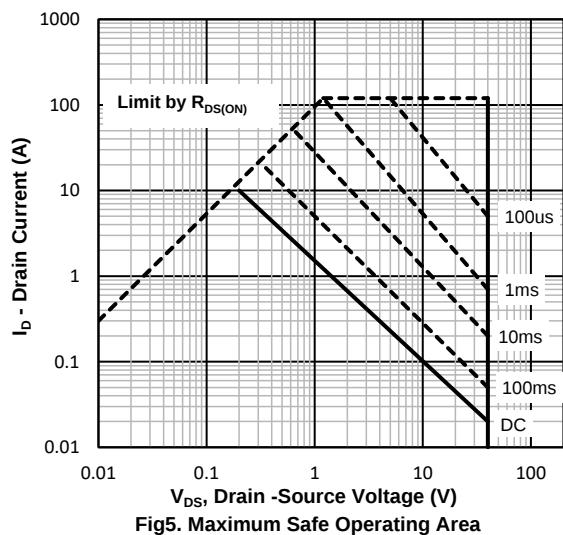
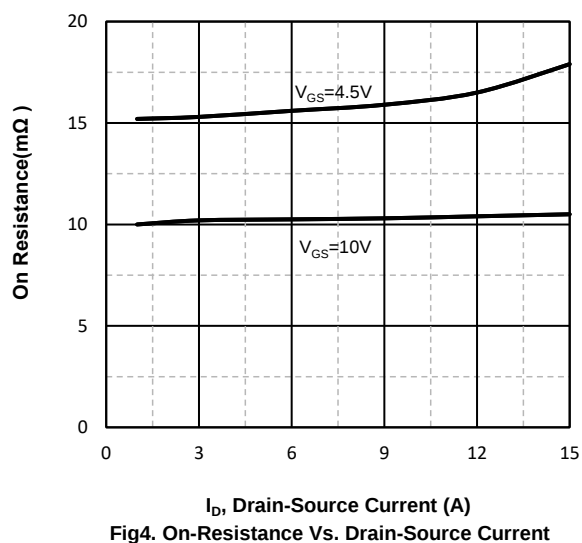
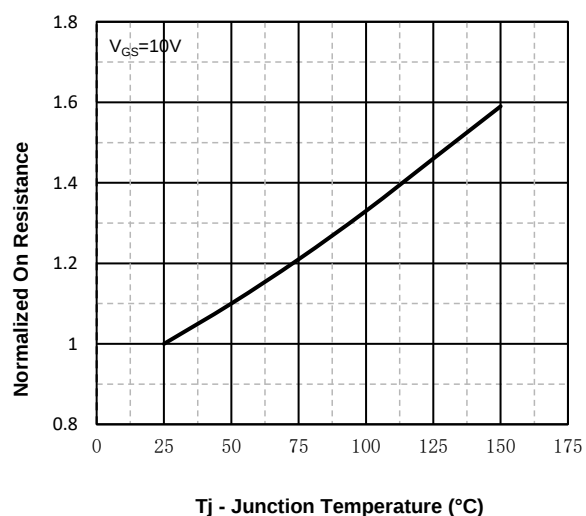
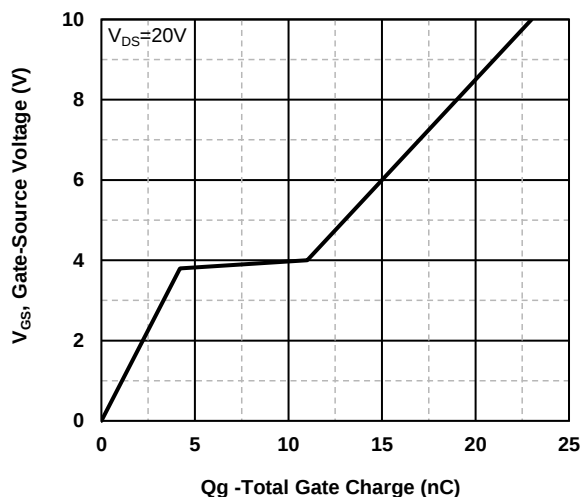
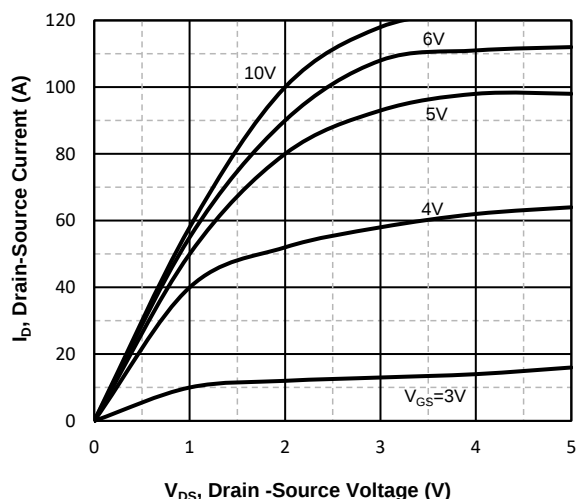
I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}\text{C}$ 120	A
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}$ 40	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}\text{C}$ 28	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	35	$^{\circ}\text{C/W}$

Ordering Information (Example)

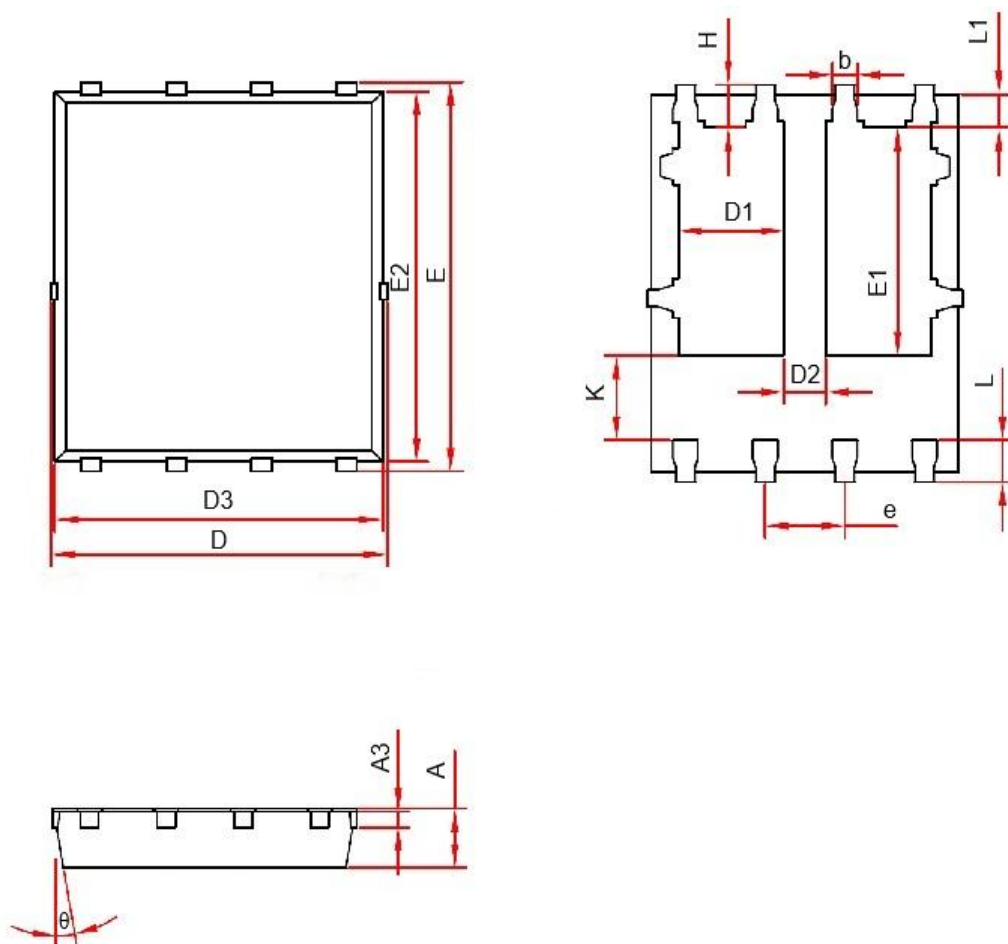
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MCAE40A	PDFN5X6-8L	MCAE40A	5,000	10,000	70,000	13"reel

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	40	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, 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	1.5	2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	--	10	13	mΩ
		V _{GS} =4.5V, I _D =15A	--	15	20	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	--	917	--	pF
C _{OSS}	Output Capacitance		--	128	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	108	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DD} =20V, I _D =20A, V _{GS} =10V	--	23.6	--	nC
Q _{gs}	Gate Source Charge		--	4.4	--	nC
Q _{gd}	Gate Drain Charge		--	6.3	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =10V, I _D =20A, V _{GS} =4.5V, R _G =3Ω	--	10	--	nS
t _r	Turn-on Rise Time		--	56	--	nS
t _{d(off)}	Turn-Off Delay Time		--	27	--	nS
t _f	Turn-Off Fall Time		--	72	--	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°