

Features

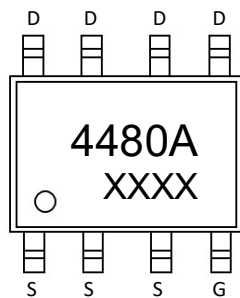
- Trench Power LV MOSFET technology
- High Density Cell Design for Low $R_{DS(ON)}$
- High Speed switching

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
40V	11.5mΩ@10V	14A
	15.5mΩ@4.5V	

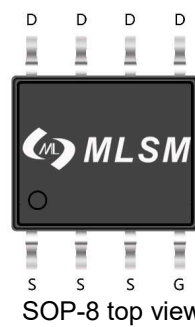
Application

- Battery protection
- Load switch
- Power management

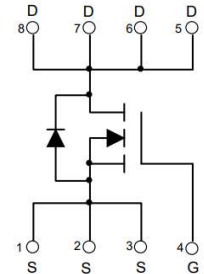


4480A : Device code
 XXXX : Code

Marking and pin assignment



SOP-8 top view



Schematic diagram



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		40	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	14	A

Mounted on Large Heat Sink

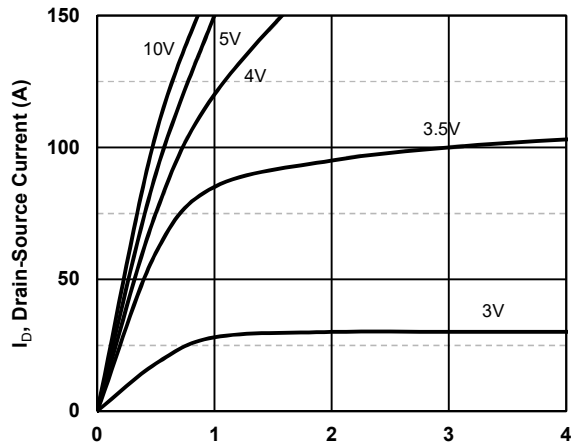
I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$	60	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$	14	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$	2	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		60	°C/W

Ordering Information (Example)

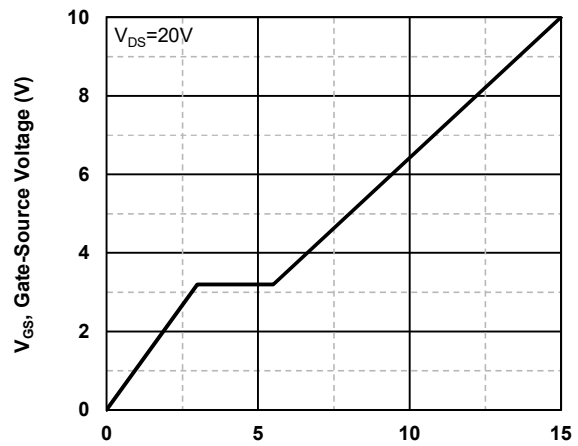
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSQ4480A	SOP-8	4480A	3,000	6,000	42,000	13"reel

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)						
B _(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	1.5	3.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =14A	--	9	11.5	mΩ
		V _{GS} =4.5V, I _D =5.0A	--	12	15.5	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	--	750	--	pF
C _{OSS}	Output Capacitance		--	150	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	80	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =20V, I _D =14A, V _{GS} =10V	--	15	--	nC
Q _{gs}	Gate Source Charge		--	3	--	nC
Q _{gd}	Gate Drain Charge		--	2.5	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =20V, R _L =2.5Ω, V _{GS} =10V, R _G =3Ω	--	6	--	nS
t _r	Turn-on Rise Time		--	36	--	nS
t _{d(off)}	Turn-Off Delay Time		--	29	--	nS
t _f	Turn-Off Fall Time		--	7	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =14A	--	--	1.2	V

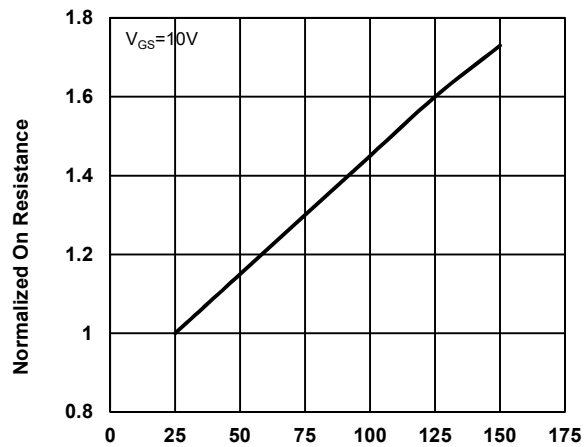
Typical Operating Characteristics



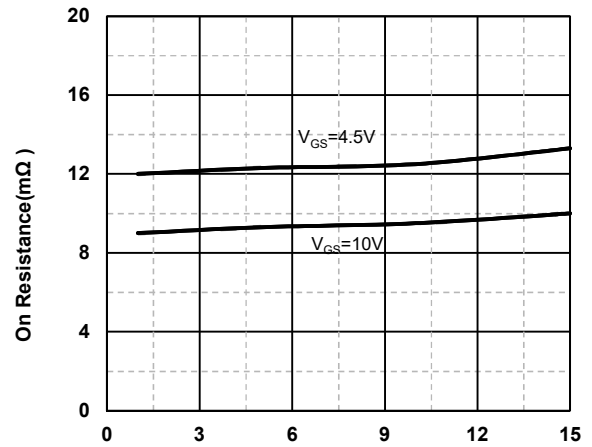
V_{DS} , Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



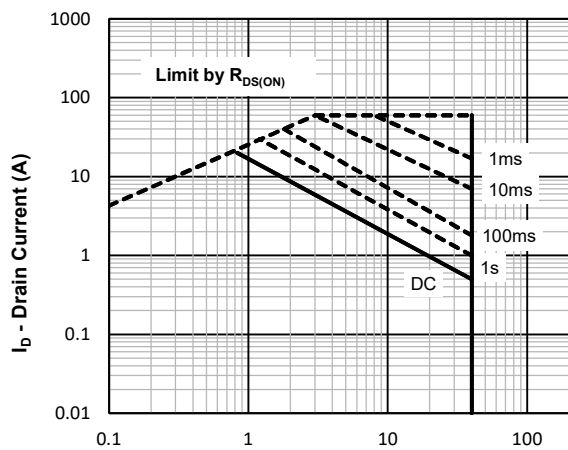
Q_g -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs. Gate-Source Voltage



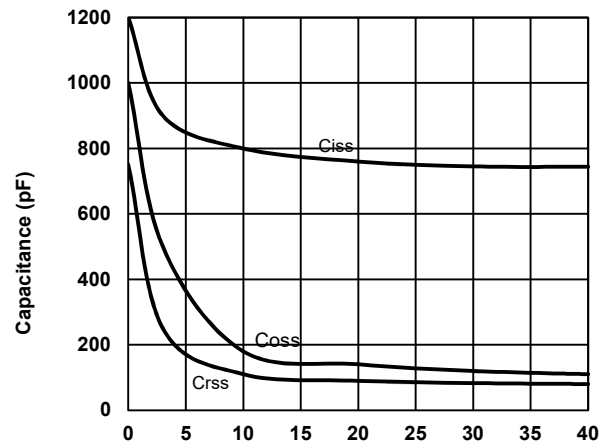
T_J - Junction Temperature ($^{\circ}C$)
Fig3. Normalized On-Resistance Vs. Temperature



I_D , Drain-Source Current (A)
Fig4. On-Resistance Vs. Drain-Source Current

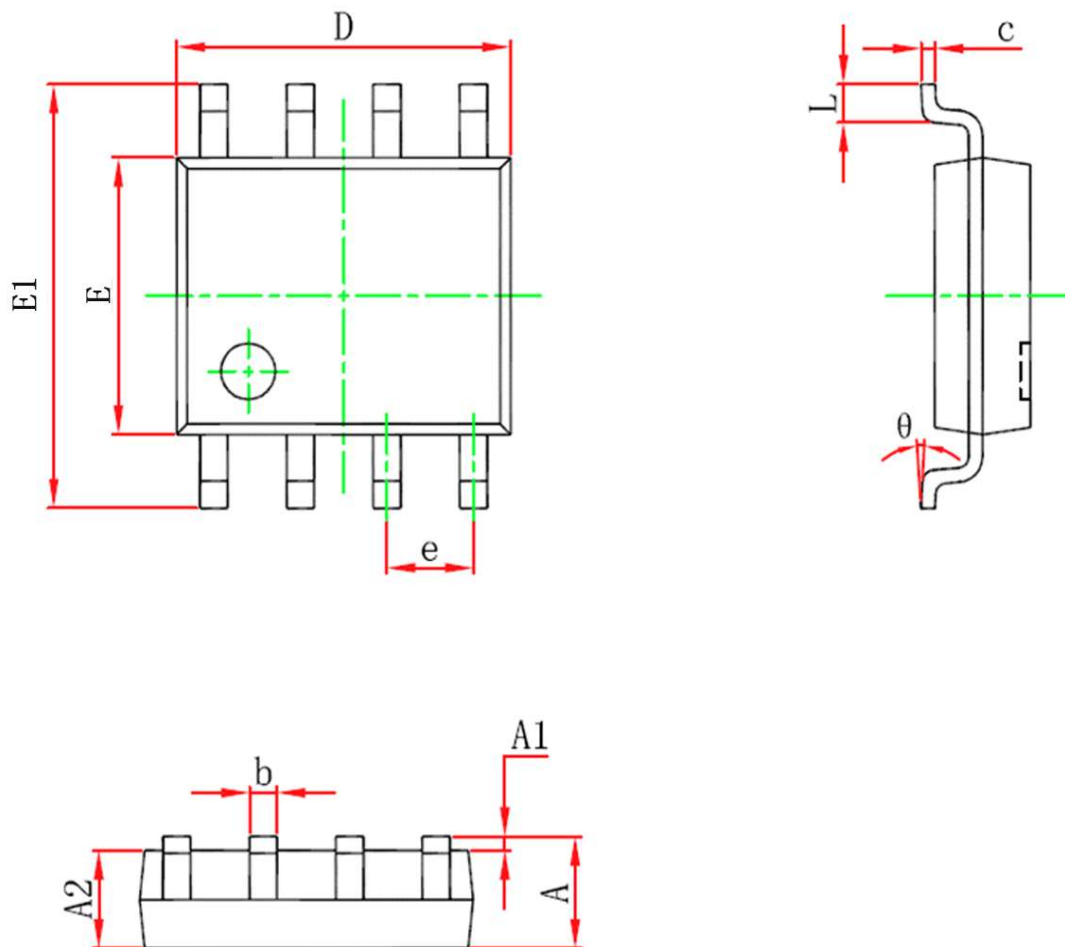


V_{DS} , Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



V_{DS} , Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs. Drain-Source Voltage

SOP-8 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.057	0.068
A1	0.100	0.250	0.003	0.009
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.012	0.020
c	0.170	0.250	0.006	0.009
D	4.700	5.100	0.185	0.200
e	1.270(BSC)		0.050(BSC)	
E	3.800	4.000	0.149	0.157
E1	5.800	6.200	0.228	0.244
L	0.400	1.270	0.015	0.050
θ	0°	8°	0°	8°