MLSM MICROELECTRONICS

MLSL6607A

20V N Channel+P Channel MOSFET

Features

- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

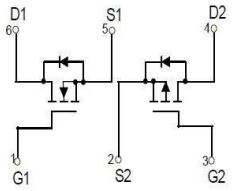
Application

- DC/DC converter
- Load switch
- LCD display inverter

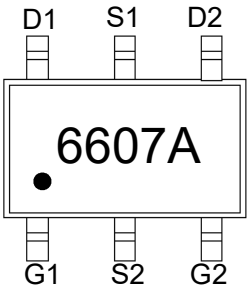
Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
20V	27mΩ@4.5V	6A
	40mΩ@2.5V	
-20V	45mΩ@-4.5V	-5A
	65mΩ@-2.5V	

SOT-23-6L top view



Schematic diagram



6607A : Device code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Symbol	Parameter		N-Channel	P-Channel	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)					
V_{DS}	Drain-Source Breakdown Voltage		20	-20	V
V_{GS}	Gate-Source Voltage		±10	±10	V
T_J	Maximum Junction Temperature		150	150	°C
T_{STG}	Storage Temperature Range		-55 to 150	-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	6	-5	A
Mounted on Large Heat Sink					
I_{DM}	Pulse Drain Current Tested	Tc=25°C	24	-20	A
I_D	Continuous Drain Current	Tc=25°C	6	-5	A
P_D	Maximum Power Dissipation	Tc=25°C	0.35	0.35	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		357	357	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSL6607A	SOT-23-6L	6607A	3,000	45,000	180,000	7"reel

N-Ch Electrical Characteristics (TJ=25℃ 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	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±10V, V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.4	0.7	1.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=6.0A	--	20	27	mΩ
		V_{GS}=2.5V, I_D=5.5A	--	28	40	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	--	378	--	pF
C_{OSS}	Output Capacitance		--	74	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	58	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=10V, I_D=6A, V_{GS}=4.5V	--	6.08	--	nC
Q_{gs}	Gate Source Charge		--	1.07	--	nC
Q_{gd}	Gate Drain Charge		--	1.95	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=10V, R_L=1Ω, V_{GS}=4.5V, R_G=3Ω	--	4.2	--	nS
t_r	Turn-on Rise Time		--	19.8	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	22.6	--	nS
t_f	Turn-Off Fall Time		--	23.2	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃, Is=6A	--	--	1.2	V

P-Ch Electrical Characteristics (TJ=25℃ 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	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±10V, V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-0.4	-0.6	-1.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-5.0A	--	32	45	mΩ
		V_{GS}=-2.5V, I_D=-4.5A	--	45	65	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=-10V, V_{GS}=0V, f=1MHz	--	1015	--	pF
C_{OSS}	Output Capacitance		--	138	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	105	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=-10V, I_D=-5A, V_{GS}=-10V	--	11.3	--	nC
Q_{gs}	Gate Source Charge		--	2.3	--	nC
Q_{gd}	Gate Drain Charge		--	2.4	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-10V, I_D=-5A, V_{GS}=-10V, R_G=2.5Ω	--	8.5	--	nS
t_r	Turn-on Rise Time		--	35.5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	78	--	nS
t_f	Turn-Off Fall Time		--	58	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃, Is=-5A	--	--	-1.2	V

N-Channel Typical Operating Characteristics

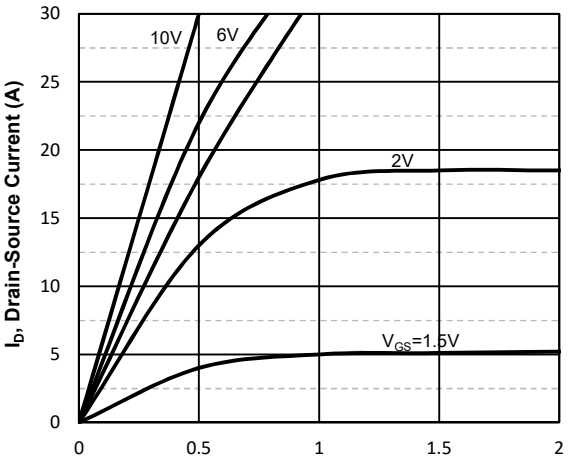


Fig1. Typical Output Characteristics

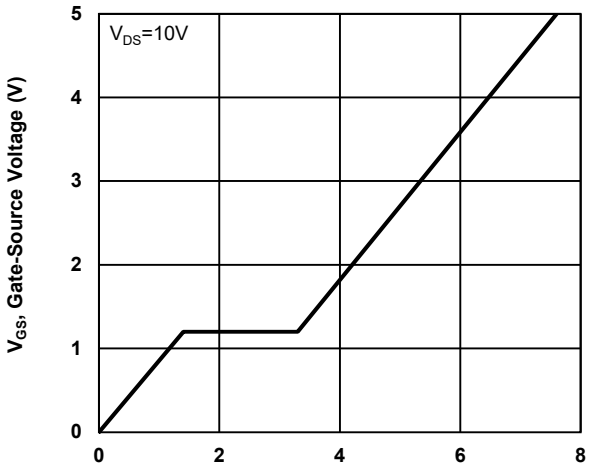


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

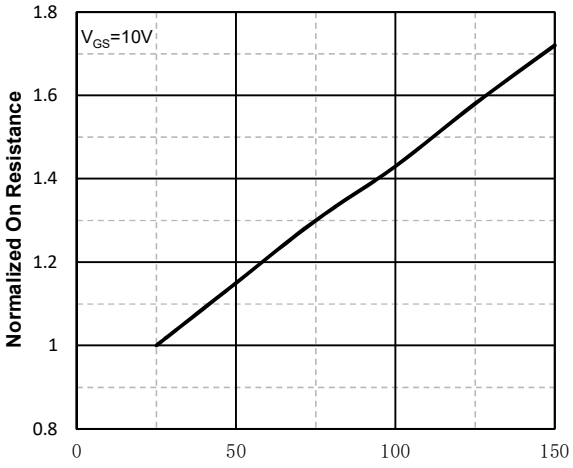


Fig3. Normalized On-Resistance Vs. Temperature

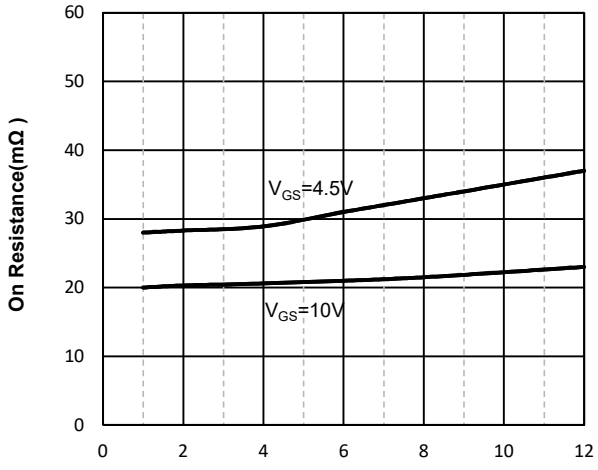


Fig4. On-Resistance Vs. Drain-Source Current

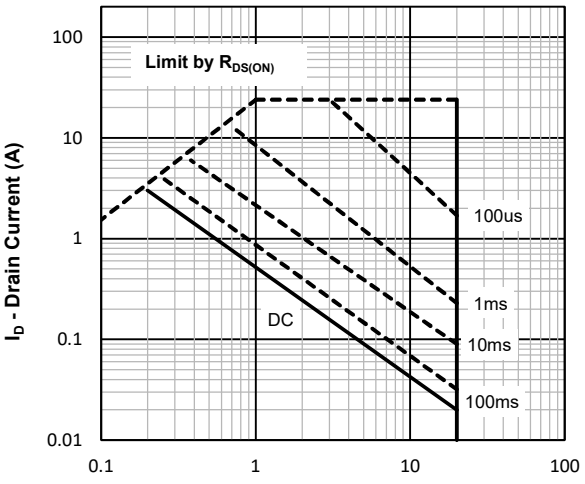


Fig5. Maximum Safe Operating Area

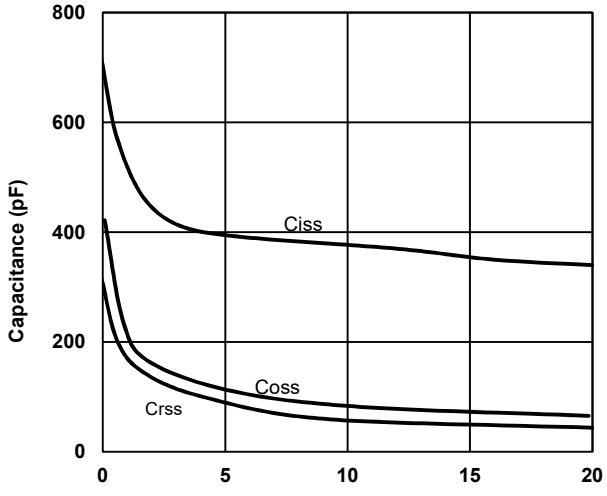
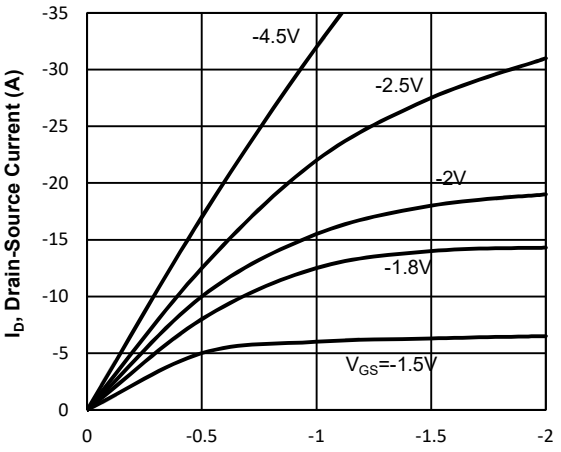
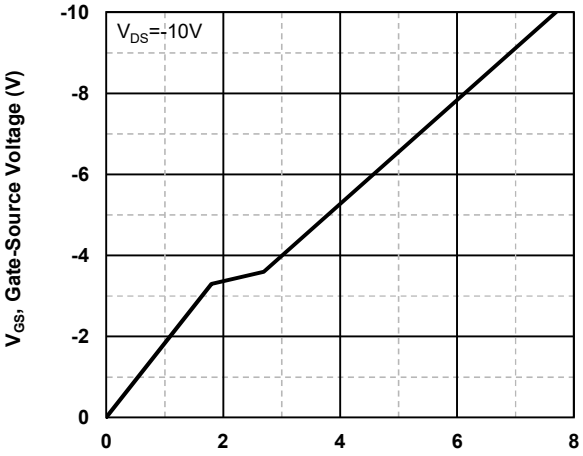


Fig6 Typical Capacitance Vs.Drain-Source Voltage

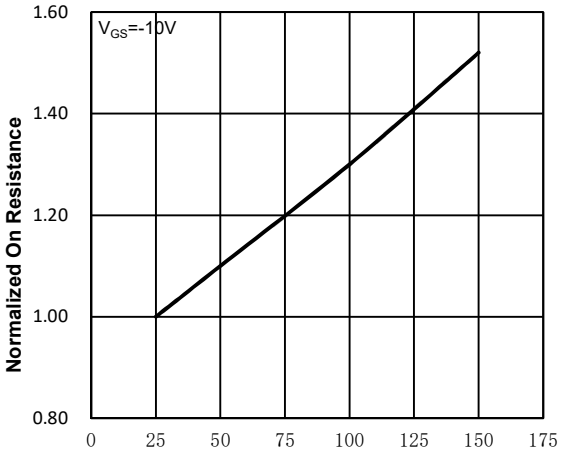
P-Channel Typical Operating Characteristics



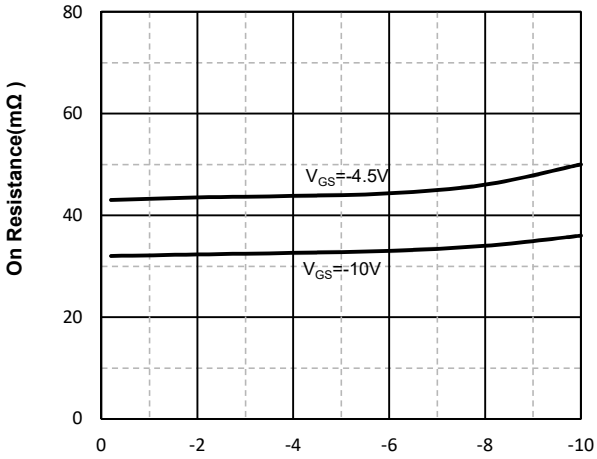
V_{DS}, Drain -Source Voltage (V)
Fig7. Typical Output Characteristics



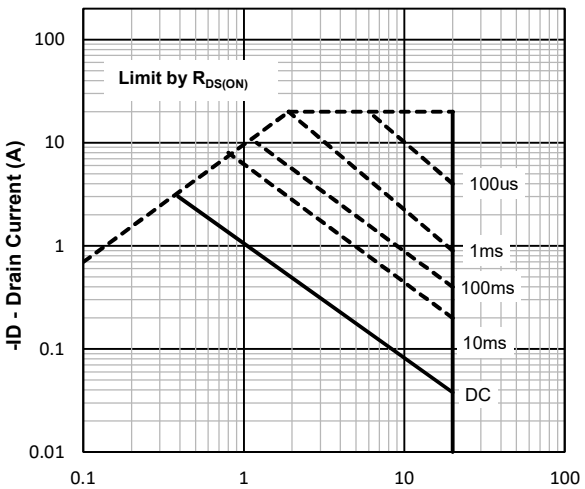
Qg -Total Gate Charge (nC)
Fig8. Typical Gate Charge Vs.Gate-Source Voltage



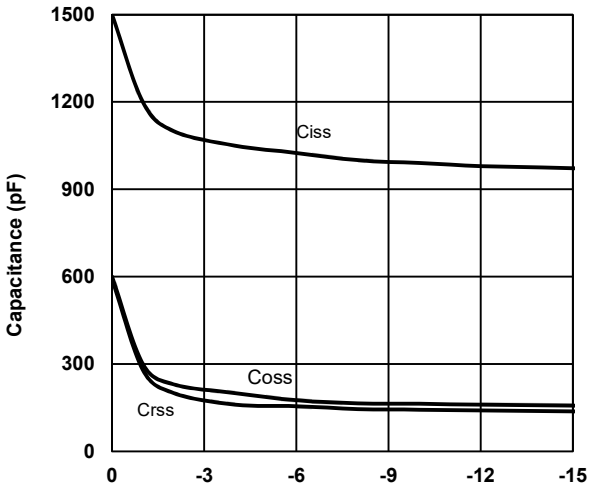
Tj - Junction Temperature (°C)
Fig9. Normalized On-Resistance Vs. Temperature



I_D, Drain-Source Current (A)
Fig10. On-Resistance Vs. Drain-Source Current

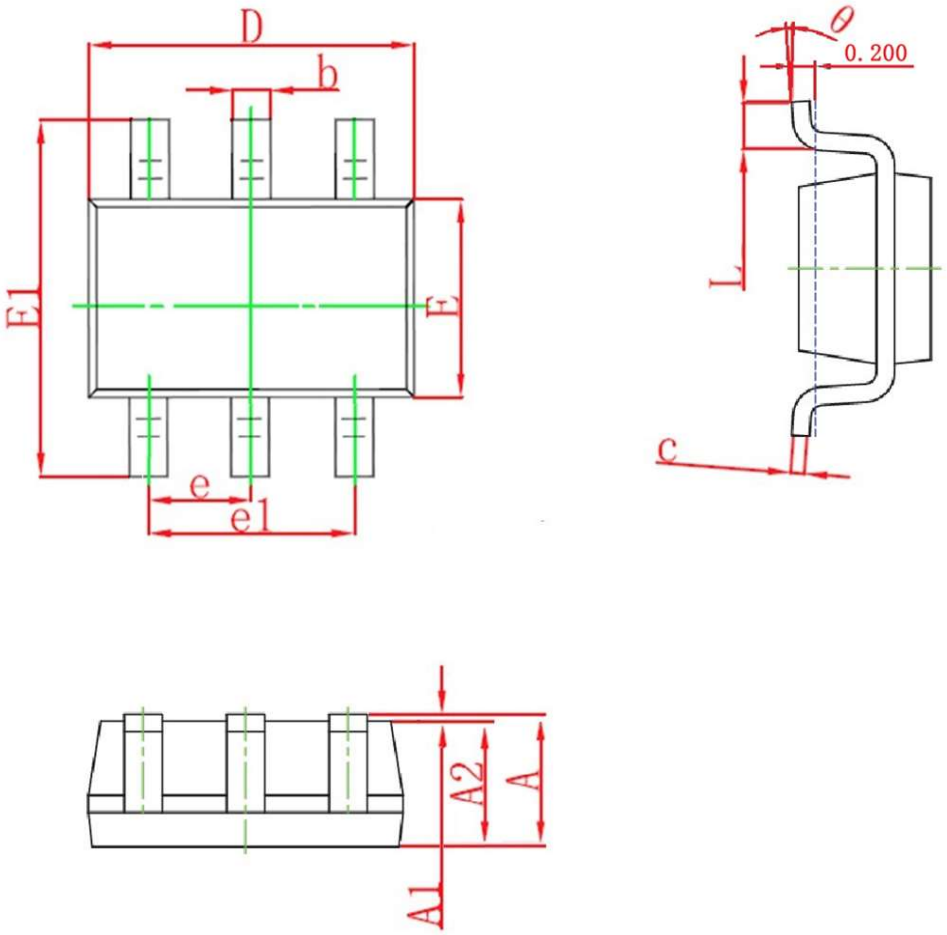


$-V_{DS}$, Drain -Source Voltage (V)
Fig11. Maximum Safe Operating Area



V_{DS} , Drain-Source Voltage (V)
Fig12. Typical Capacitance Vs.Drain-Source Voltage

SOT-23-6L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.000	1.200	0.039	0.047
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.600	3.000	0.102	0.118
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
K	0°	8°	0°	8°