MLSL2007P

-20V/-7A P-Channel MOSFET

Features

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

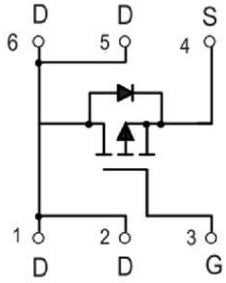
Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	35mΩ@-4.5V	-7A
	45mΩ@-2.5V	

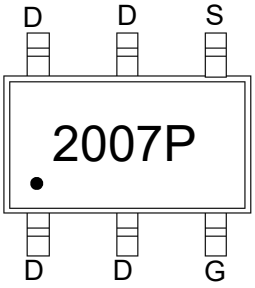
Application

- Battery protection
- Load switch
- Power management

SOT-23-6L top view



Schematic diagram



2007P: Device code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

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

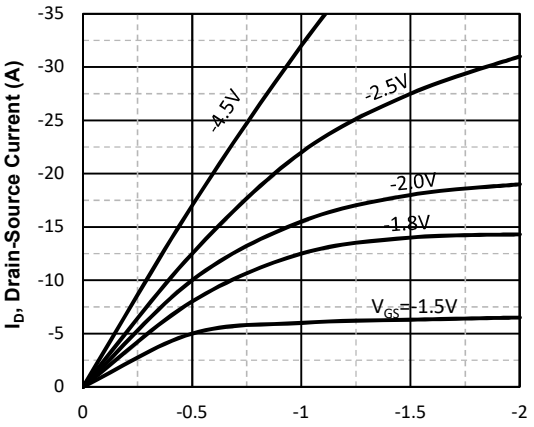
Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		-20	V
V_{GS}	Gate-Source Voltage		±10	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	-7	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	-25	A
I_D	Continuous Drain Current	Tc=25°C	-7	A
P_D	Maximum Power Dissipation	Tc=25°C	1.2	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		105	°C/W

Ordering Information (Example)

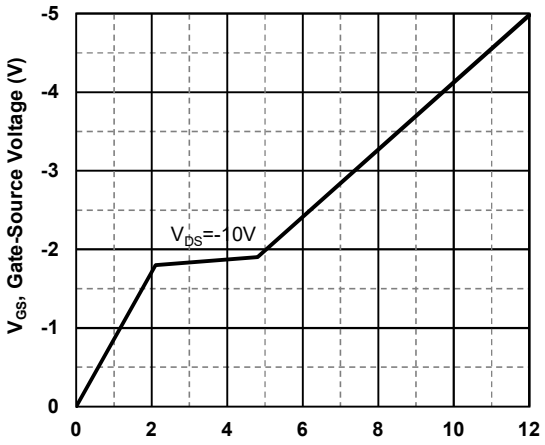
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSL2007P	SOT-23-6L	2007P	3,000	45,000	180,000	7"reel

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	-0.35	-0.7	-0.9	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-7A	--	27.8	35	mΩ
		V_{GS}=-2.5V, I_D=-2A	--	35.6	45	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=-9V, 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}=-9V, I_D=-5.6A, V_{GS}=-4.5V	--	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}=-9V, I_D=-1A, V_{GS}=-4.5V, 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=-7A	--	--	-1.2	V

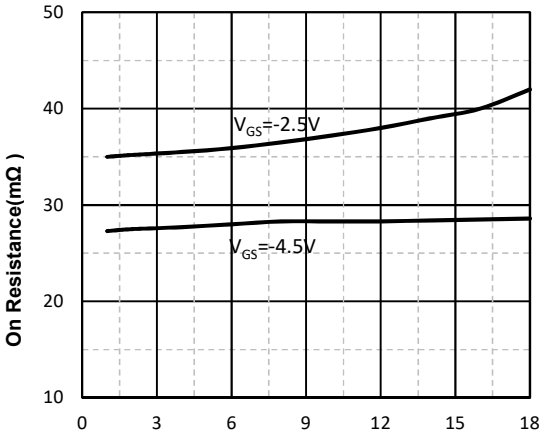
Typical Operating Characteristics



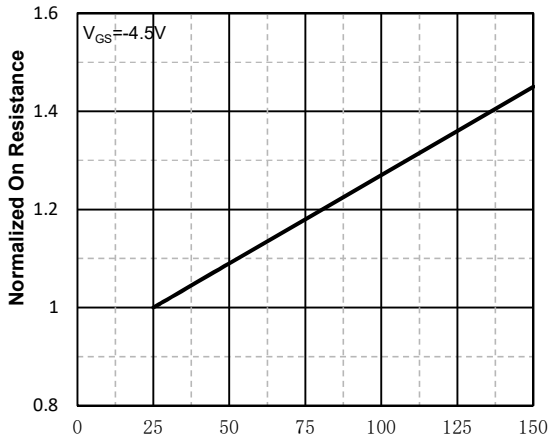
V_{DS}, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



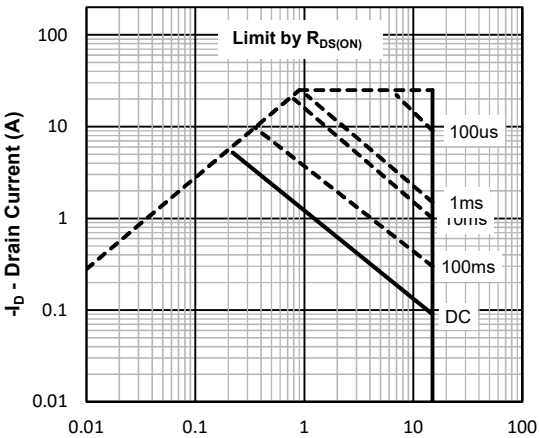
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



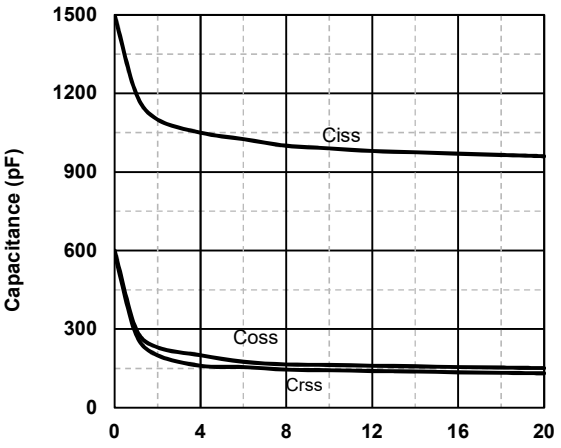
- I_D, Drain-Source Current (A)
Fig3. Drain-Source on Resistance



Tj - Junction Temperature (°C)
Fig4. Normalized On-Resistance Vs. Temperature

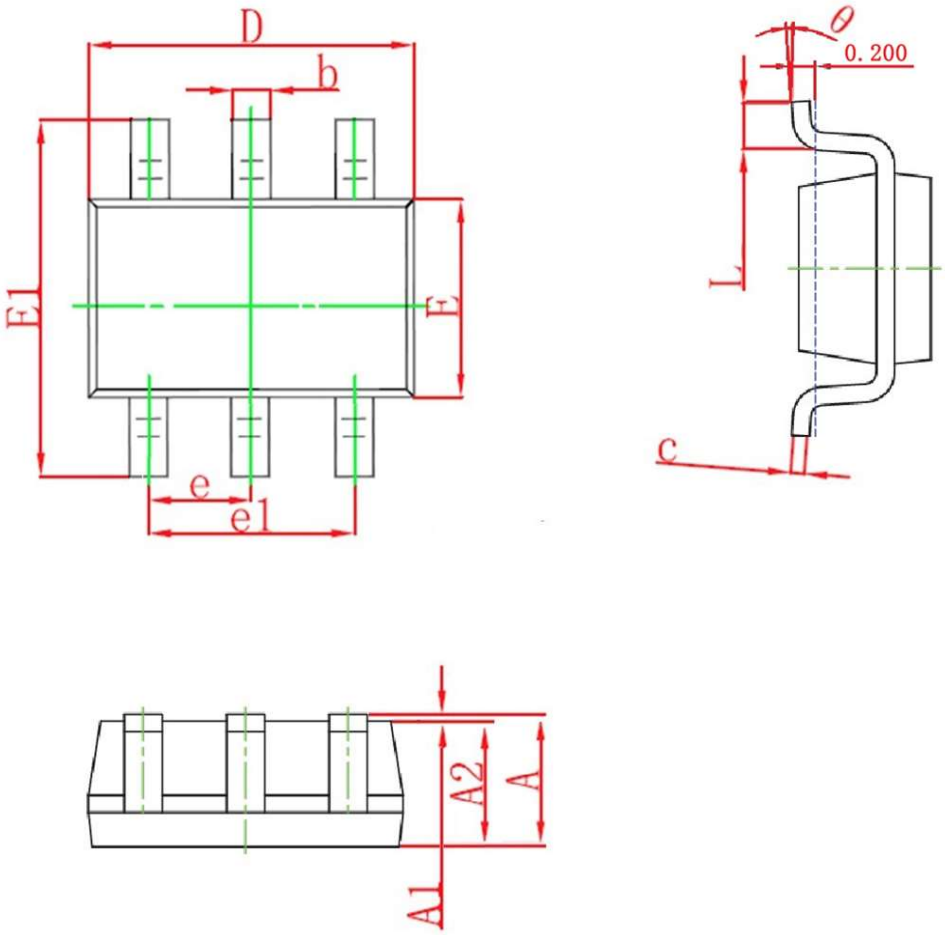


-V_{DS}, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



-V_{DS} , Drain-Source Voltage (V)
Fig6 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°