MLSM MICROELECTRONICS

MLS7252KDW

N-Channel and P-Channel MOSFET

Features

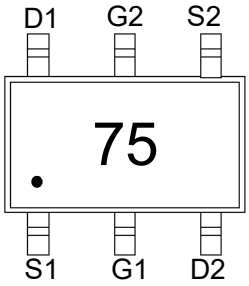
- High-Side Switching
- Low Threshold
- Fast Switching Speed
- ESD Protected

Application

- Load/ Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Product Summary

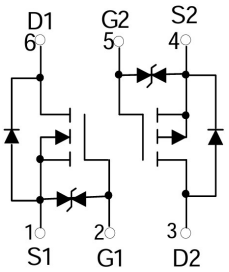
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
60V	5Ω@10V	0.34A
	5.3Ω@4.5V	
-50V	8Ω@-10V	-0.18A
	10Ω@-5V	



75K : Device code

Marking and pin assignment

SOT-363 top view



Schematic diagram

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		60	-50	V
V_{GS}	Gate-Source Voltage		±20	±20	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	0.34	-0.18	A
Mounted on Large Heat Sink					
I_{DM}	Pulse Drain Current Tested	Tc=25°C	1.36	-0.7	A
I_D	Continuous Drain Current	Tc=25°C	0.34	-0.18	A
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		833	833	°C/W
E_{SD}	Gate-Source ESD Rating (HBM, Method 3015)		2000	-2000	V

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLS7252KDW	SOT-363	75	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	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±10	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	1.5	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=0.5A	--	1.6	5.0	Ω
		V_{GS}=4.5V, I_D=0.3A	--	2.1	5.3	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{lSS}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	--	27	--	pF
C_{OSS}	Output Capacitance		--	9	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	4	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=30V, I_D=0.34A, V_{GS}=10V	--	1.2	--	nC
Q_{gs}	Gate-Source Charge		--	0.5	--	nS
Q_{gd}	Gate-Drain Charge		--	0.2	--	nS
$t_{D(on)}$	Turn-on Delay Time	V_{DS}=30V, I_D=0.34A, V_{GS}=10V, R_{GEN}=2.3Ω	--	7	--	nS
t_r	Turn-on Rise Time		--	19	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	20	--	nS
t_f	Turn-Off Fall Time		--	84	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃, Is=0.34A	--	--	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	-50	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-50V，V_{GS}=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V，V_{DS}=0V	--	--	±10	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}，I_D=-250μA	-0.9	-1.5	-2.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-10V，I_D=-0.1A	--	4.1	8.0	Ω
		V_{GS}=-5V，I_D=-0.1A	--	5.5	10.0	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=-30V，V_{GS}=0V， f=1MHz	--	25.2	--	pF
C_{OSS}	Output Capacitance		--	6	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	1.5	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DD}=-30V，I_D=-0.18A，V_{GS}=-10V	--	0.5	--	nC
Q_{gs}	Gate Source Charge		--	0.15	--	nC
Q_{gd}	Gate Drain Charge		--	0.1	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-30V，I_D=-0.18A，V_{GS}=-10V，R_G=3.3Ω	--	1.5	--	nS
t_r	Turn-on Rise Time		--	5.2	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	12	--	nS
t_f	Turn-Off Fall Time		--	6	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=-0.18A	--	--	-1.2	V

N-Ch Typical Operating Characteristics

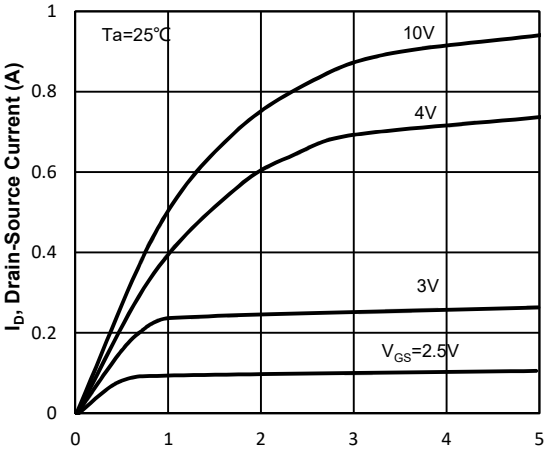


Fig1. Typical Output Characteristics

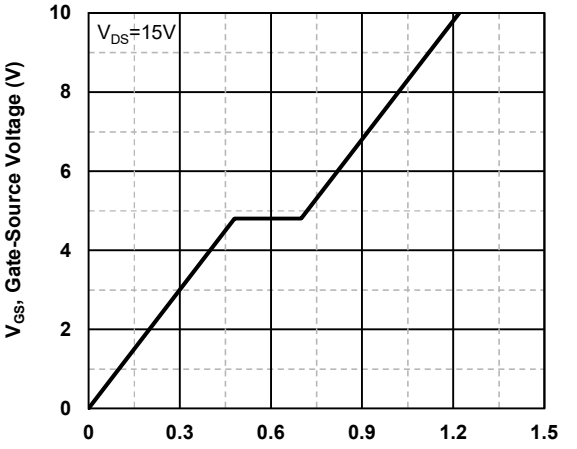


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

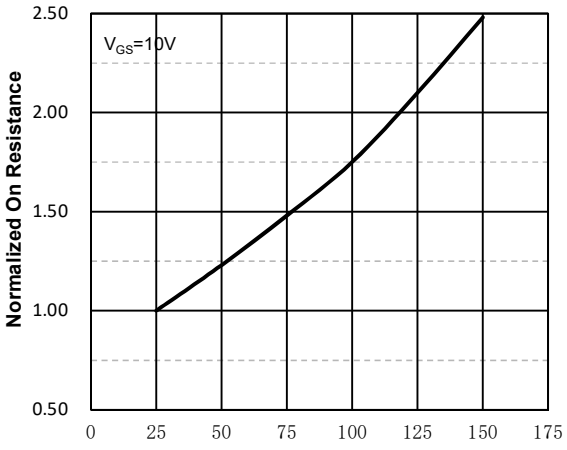


Fig3. Normalized On-Resistance Vs. Temperature

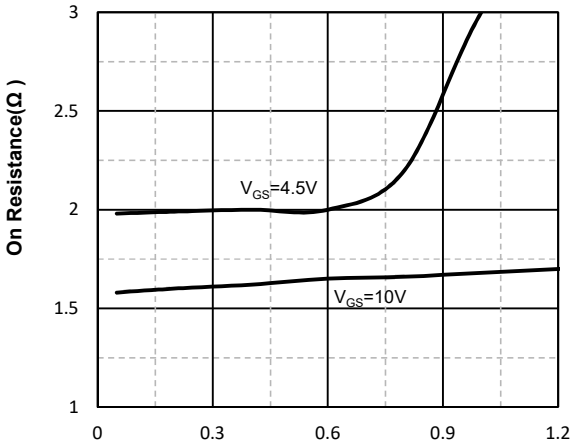


Fig4. On-Resistance Vs. Drain-Source Current

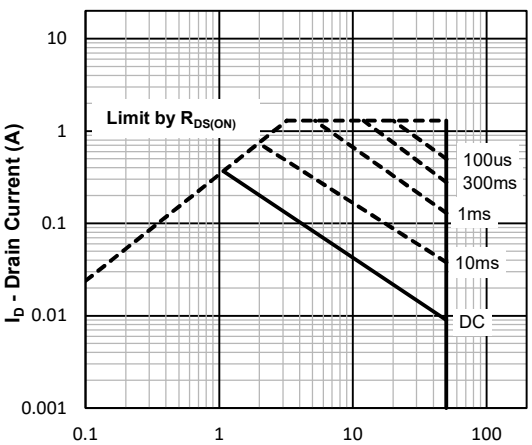


Fig5. Maximum Safe Operating Area

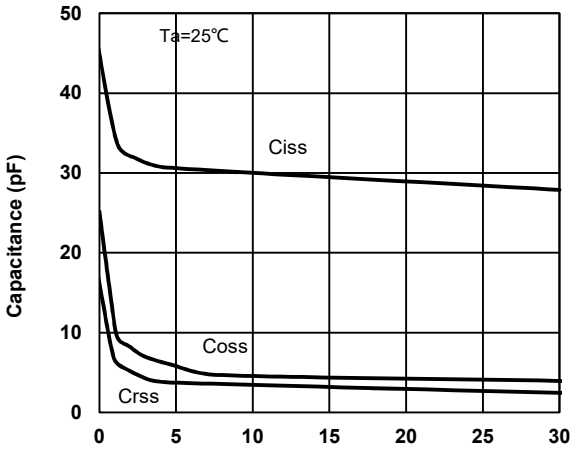


Fig6 Typical Capacitance Vs.Drain-Source

P-Ch Typical Operating Characteristics

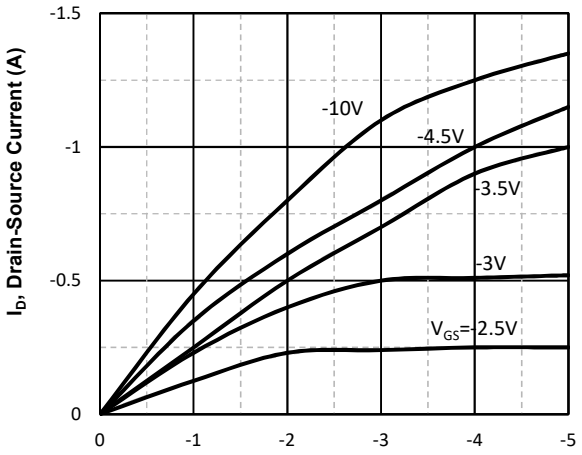


Fig1. Typical Output Characteristics

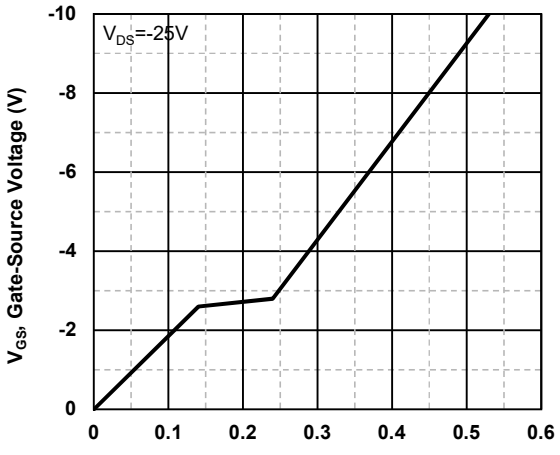


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

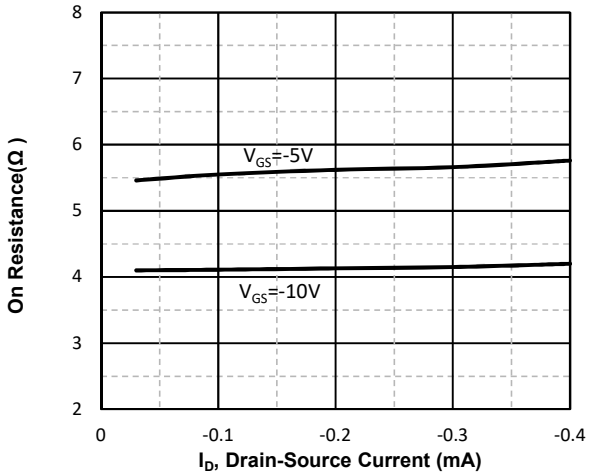


Fig3. Drain-Source on Resistance

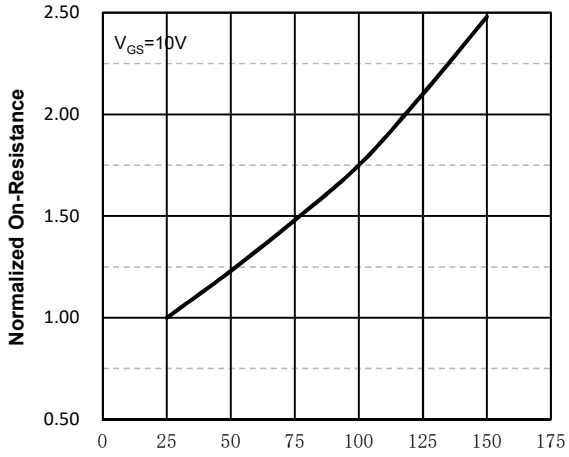


Fig4. Normalized On-Resistance Vs. Temperature

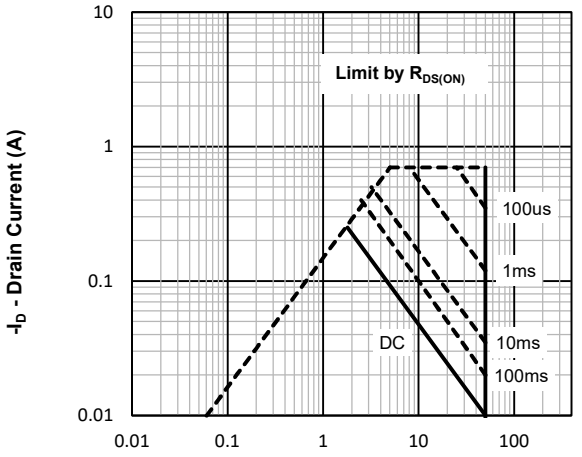


Fig5. Maximum Safe Operating Area

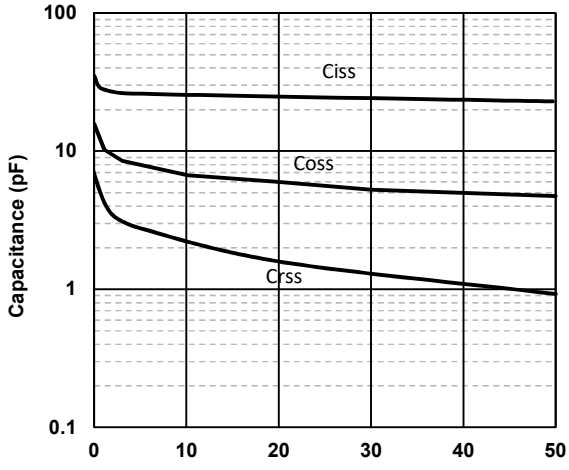
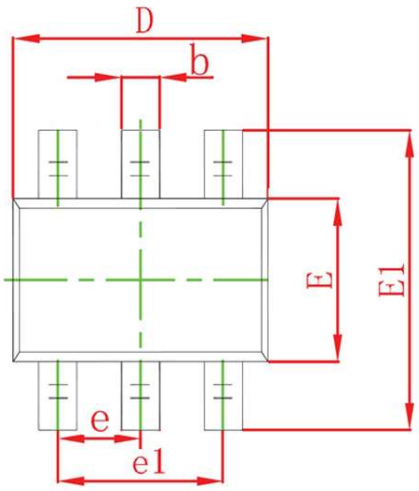
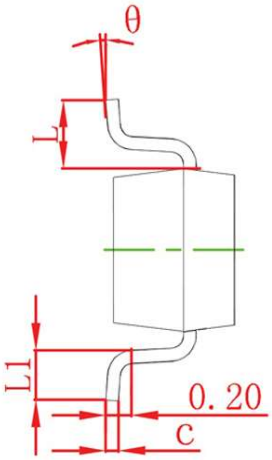
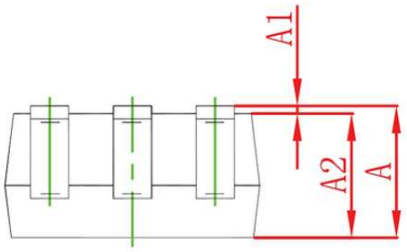


Fig6. Typical Capacitance Vs.Drain-Source Voltage

SOT-363 Package information







Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°