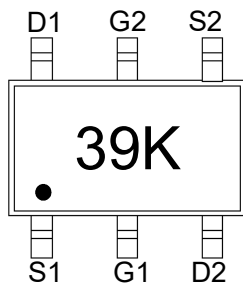


Features

- Lead Free Product is Acquired
- Surface Mount Package
- P-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive

Application

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

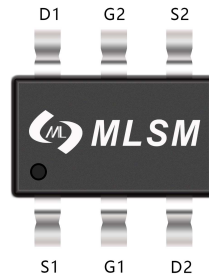


39K: Device code

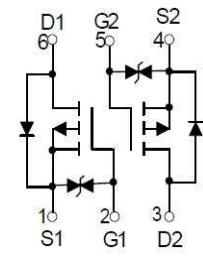
Marking and pin assignment

Product Summary

V_{DS}	$R_{DS(on)}$ MAX	I_D MAX
-20V	520mΩ@-4.5V	-0.66A
	700mΩ@-2.5V	



SOT-363 top view



Schematic diagram



Pb-Free



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	-20	V
V_{GS}	Gate-Source Voltage	±12	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
I_S	Diode Continuous Forward Current	$T_c=25^\circ\text{C}$ -0.66	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ -2.64	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ -0.66	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 0.15	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	833	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLS3139KDW	SOT-363	39K	3,000	45,000	180,000	7"reel

Electrical Characteristics (T_J=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	VGS=0V, ID=-250μA	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-20V, VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±10V, VDS=0V	--	--	±20	μA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-0.35	-0.65	-1.10	V
RDS(on)	Drain-Source On-State Resistance	VGS=-4.5V, ID=-1.0A	--	380	520	mΩ
		VGS=-2.5V, ID=-0.8A	--	520	700	mΩ
		VGS=-1.8V, ID=-0.5A	--	750	--	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	VDS=-10V, VGS=0V, f=1MHz	--	115	--	pF
Coss	Output Capacitance		--	15	--	pF
Crss	Reverse Transfer Capacitance		--	8.8	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDD=-10V, ID=-0.5A, VGS=-4.5V	--	1.25	--	nC
Qgs	Gate Source Charge		--	0.35	--	nC
Qgd	Gate Drain Charge		--	0.29	--	nC
td(on)	Turn-on Delay Time	VDS=-10V, ID=-0.2A, VGS=-4.5V, RG=10Ω	--	9	--	nS
tr	Turn-on Rise Time		--	5.5	--	nS
td(off)	Turn-Off Delay Time		--	30.8	--	nS
tf	Turn-Off Fall Time		--	20	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	TJ=25°C, IS=-0.66A	--	--	-1.2	V

Typical Operating Characteristics

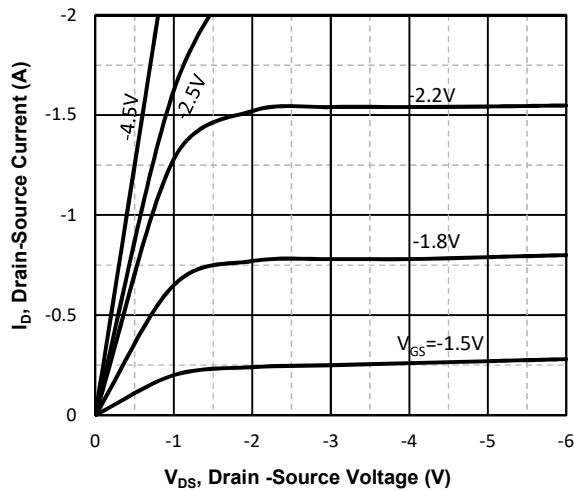


Fig1. Typical Output Characteristics

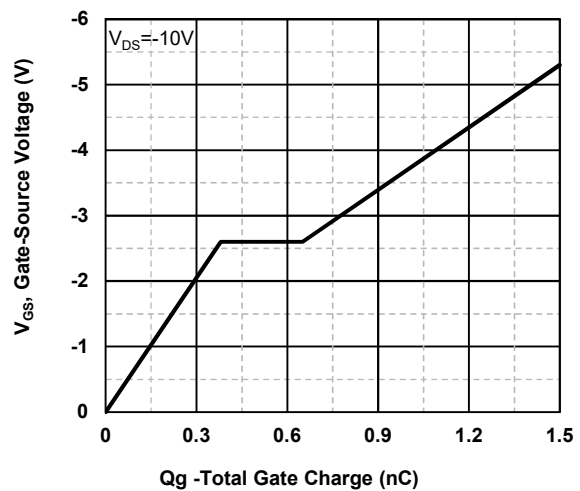


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

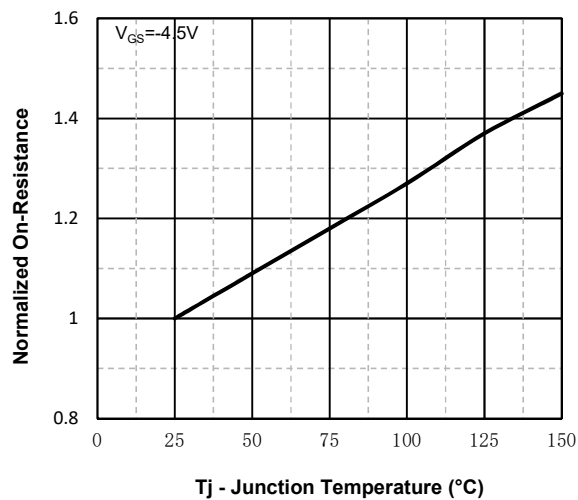


Fig3. Normalized On-Resistance Vs. Temperature

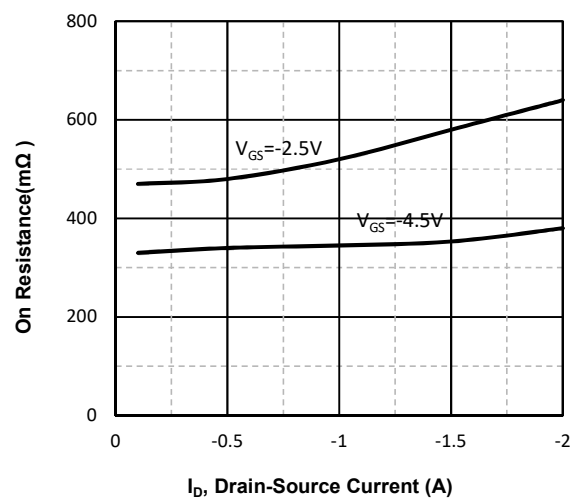


Fig4. On Resistance Vs. Drain-Source Current

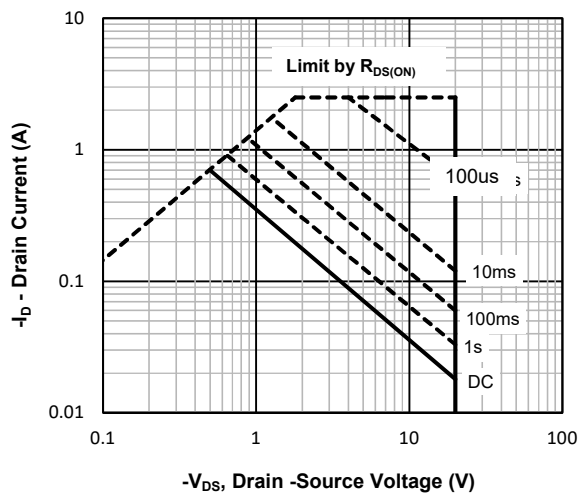


Fig5. Maximum Safe Operating Area

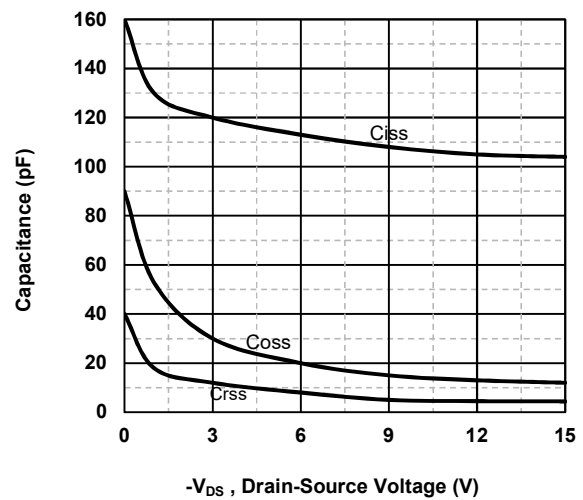
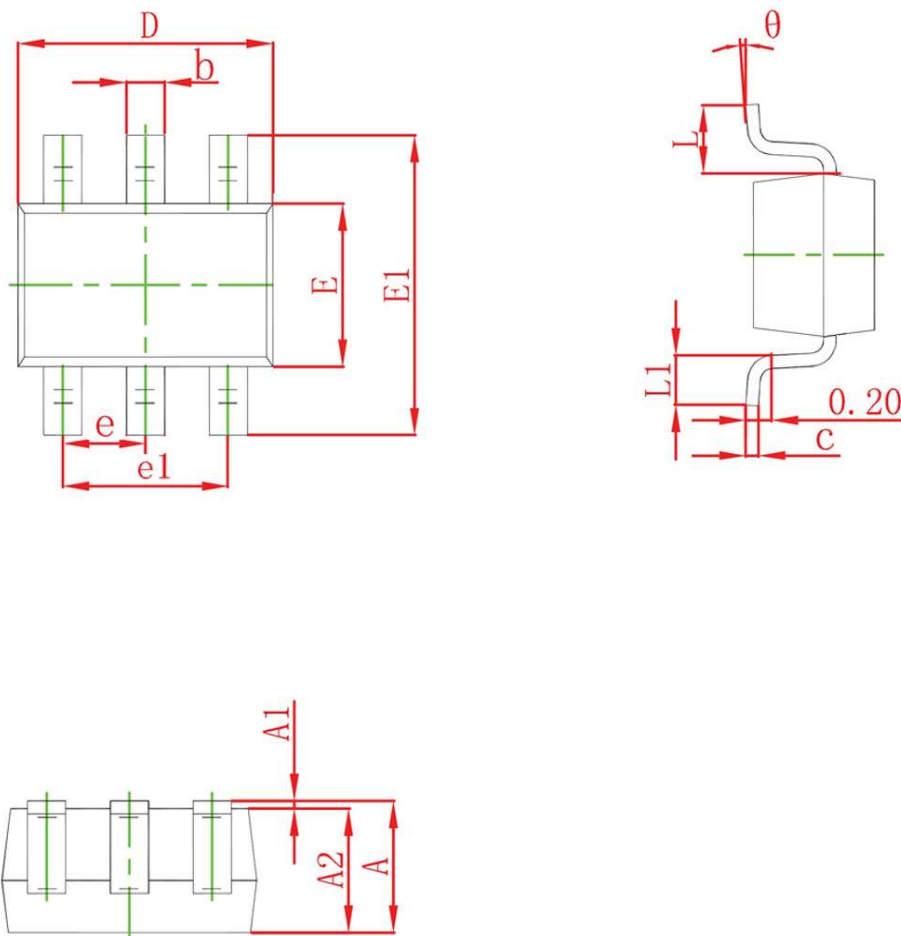


Fig6 Typical Capacitance Vs. Drain-Source Voltage

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°