

Features

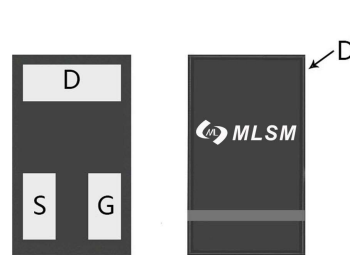
- Lead Free Product is Acquired
- Surface Mount Package
- P-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive

Product Summary

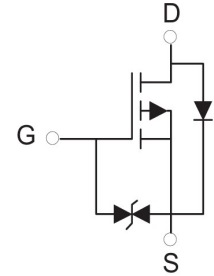
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	520mΩ@-4.5V	-0.66A
	700mΩ@-2.5V	

Application

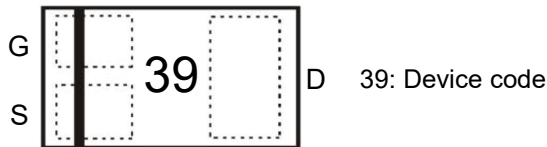
- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics



DFN1006-3L view



Schematic diagram



Marking and pin assignment



Pb-Free



RoHS



HAL

Halogen-Free

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
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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	-0.66	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^{\circ}C$	-1.2	A
I_D	Continuous Drain Current	$T_c=25^{\circ}C$	-0.66	A
P_D	Maximum Power Dissipation	$T_c=25^{\circ}C$	0.275	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		455	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSBA3139K	DFN1006-3L	39	10,000	150,000	600,000	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	--	--	±10	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	--	630	700	mΩ
		VGS=-1.8V, ID=-0.5A	--	5	--	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
CISS	Input Capacitance	VDS=-16V, VGS=0V, f=1MHz	--	113	--	pF
COSS	Output Capacitance		--	15	--	pF
CRSS	Reverse Transfer Capacitance		--	9	--	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℃, Is=-0.66A	--	--	-1.2	V

Typical Operating Characteristics

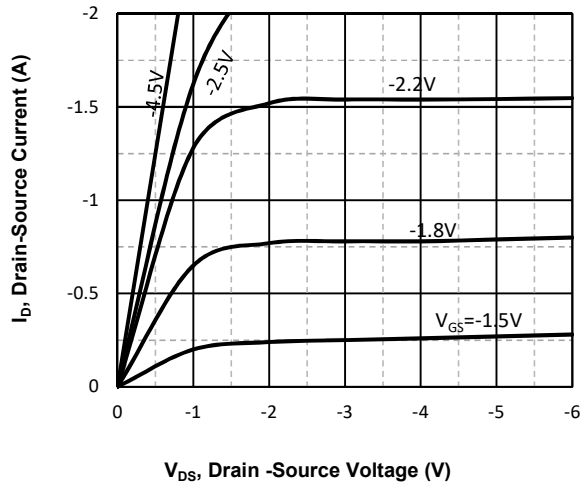


Fig1. Typical Output Characteristics

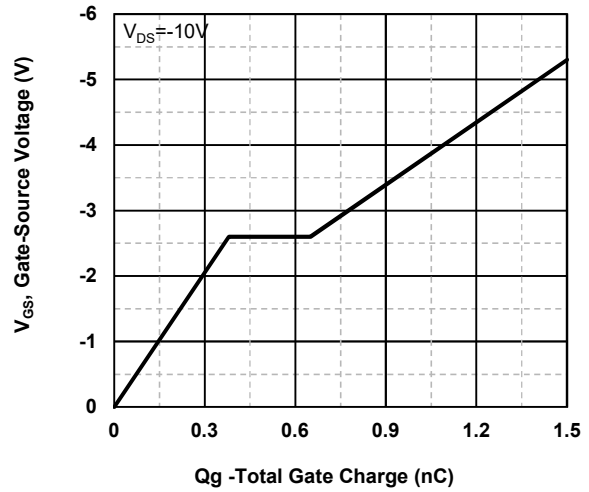


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

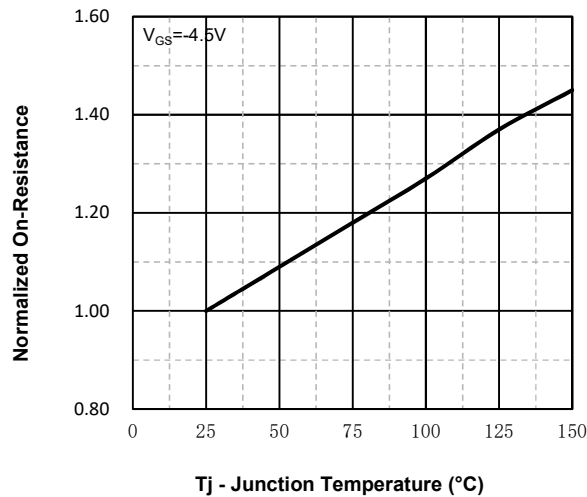


Fig3. Normalized On-Resistance Vs. Temperature

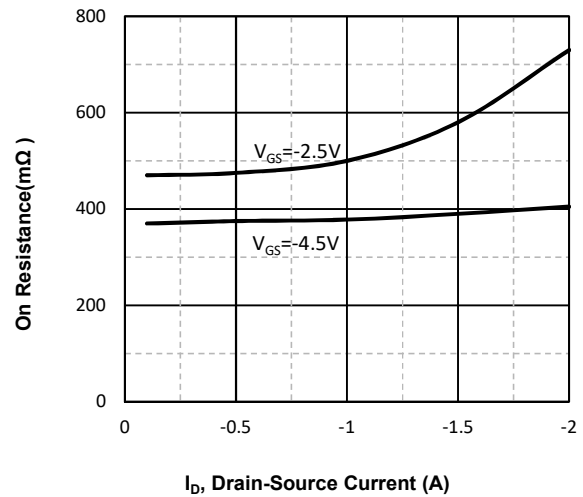


Fig4. On Resistance Vs. Drain-Source Current

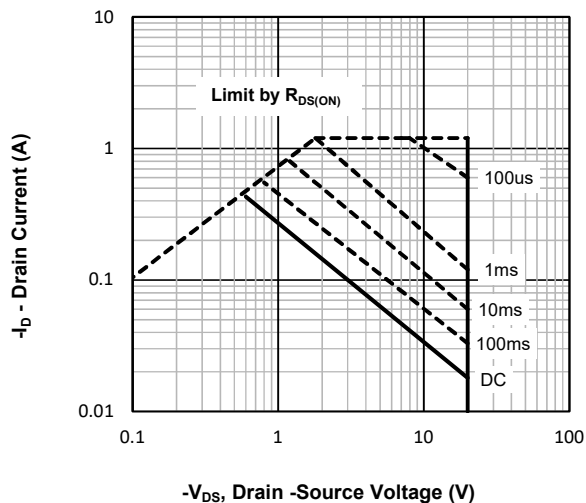


Fig5. Maximum Safe Operating Area

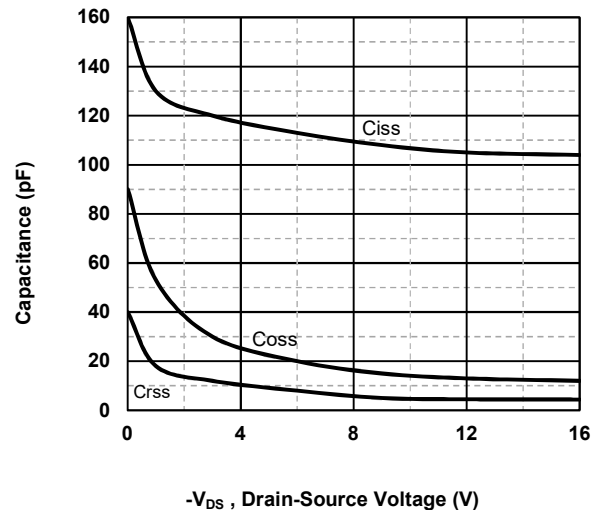
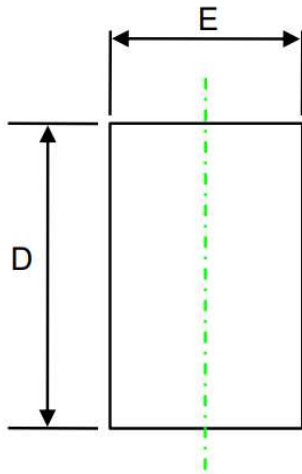
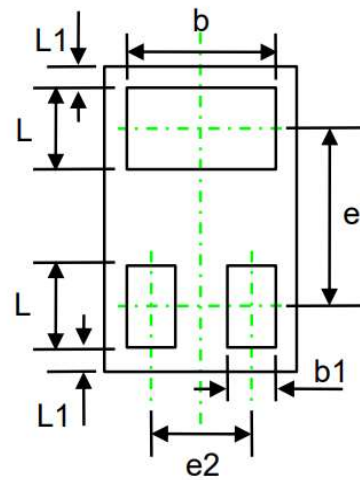


Fig6 Typical Capacitance Vs. Drain-Source Voltage

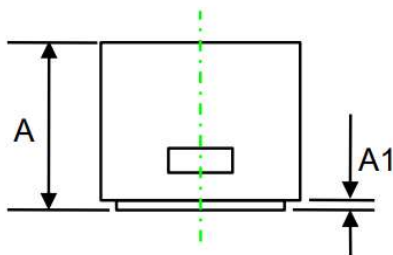
DFN1006-3L Package information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.450	0.550	0.017	0.021
A1	0.000	0.030	0.000	0.001
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.021	0.025
b	0.470	0.550	0.018	0.021
e	0.65TYP		0.025TYP	
e2	0.35TYP		0.013TYP	
L1	0.05TYP		0.001TYP	
L	0.220	0.300	0.008	0.012
b1	0.110	0.190	0.004	0.007