MLSM
MICROELECTRONICS

MLSQ9435A

-30V/-5A P-Channel MOSFET

Features

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

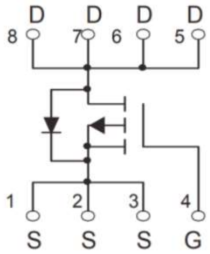
Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-30V	60mΩ@-10V	-5A
	90mΩ@-4.5V	

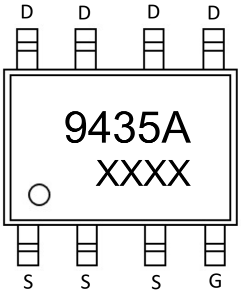
Application

- DC-DC Converters
- Power management functions

SOP-8 top view



Schematic diagram



9435A : Device code
XXXX : 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		-30	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 155	°C
I_S	Diode Continuous Forward Current	Tc=25°C	-5	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	-20	A
I_D	Continuous Drain Current	Tc=25°C	-5	A
P_D	Maximum Power Dissipation	Tc=25°C	2.5	W
$R_{θJA}$	Thermal Resistance Junction-Ambient		50	°C/W

Ordering Information (Example)

Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
MLSQ9435A	SOP-8	9435A	3,000	6,000	42,000	13"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	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V, V_{GS}=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1.0	-1.5	-2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-4.9A	--	40	60	mΩ
		V_{GS}=-4.5V, I_D=-3.7A	--	56	90	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	--	520	--	pF
C_{OSS}	Output Capacitance		--	130	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	70	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=-15V, I_D=-5A, V_{GS}=-10V	--	12	--	nC
Q_{gs}	Gate Source Charge		--	2	--	nC
Q_{gd}	Gate Drain Charge		--	2.9	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=-15V, I_D=-5A, V_{GS}=-10V, R_G=3Ω	--	7	--	nS
t_r	Turn-on Rise Time		--	13	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	14	--	nS
t_f	Turn-Off Fall Time		--	9	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃, Is=-5A	--	--	-1.2	V

Typical Operating Characteristics

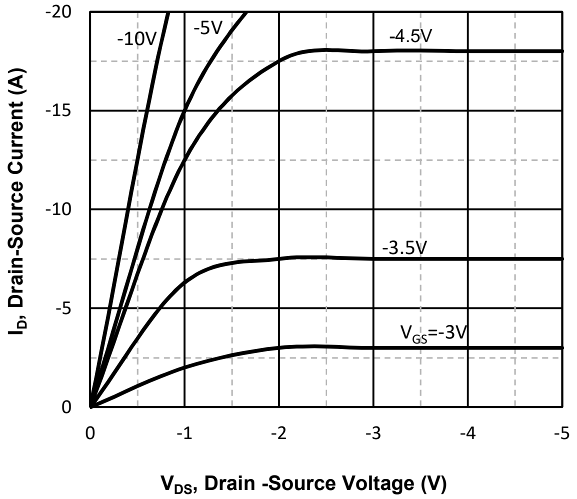


Fig1. Typical Output Characteristics

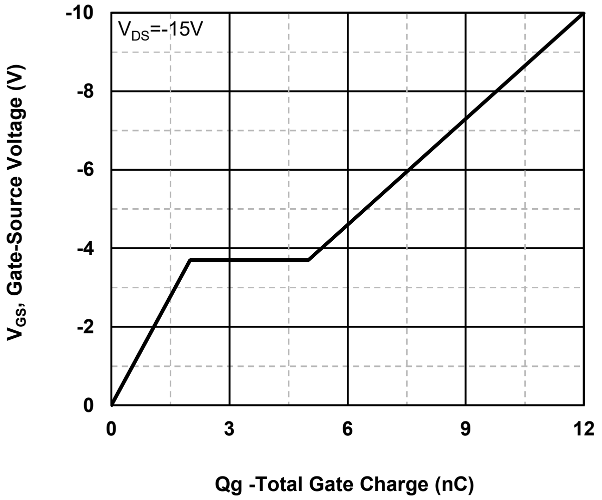


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

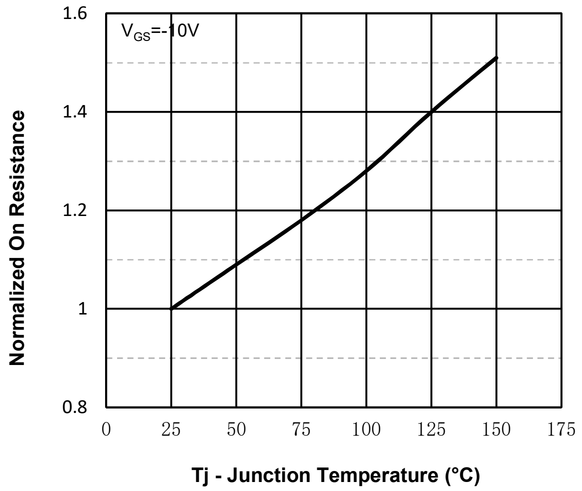


Fig3. Normalized On-Resistance Vs. Temperature

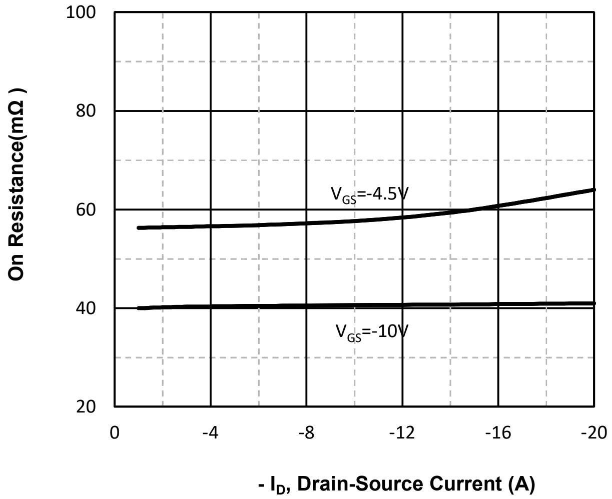


Fig4. On-Resistance Vs. Drain-Source Current

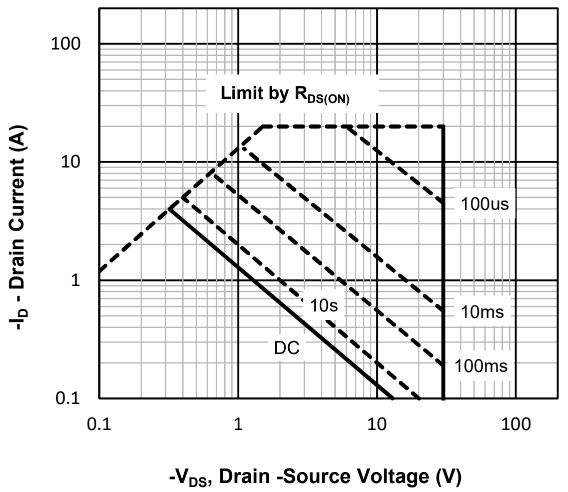


Fig5. Maximum Safe Operating Area

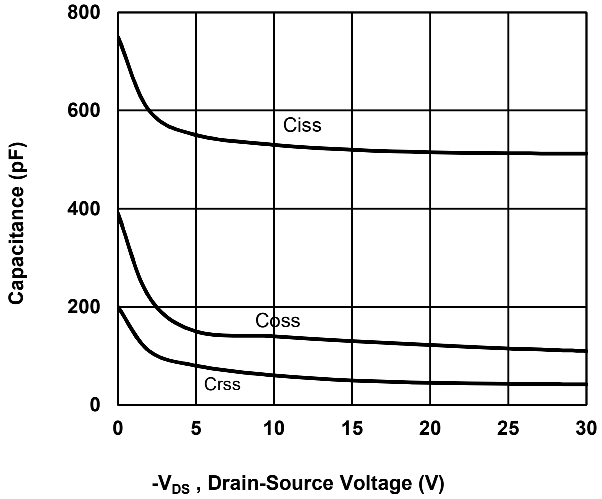
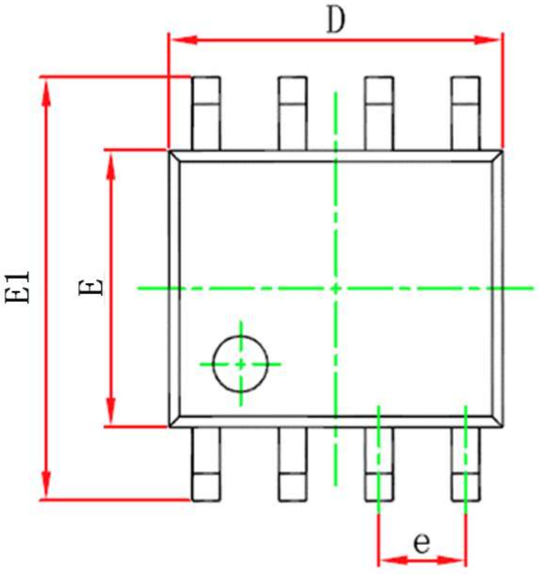
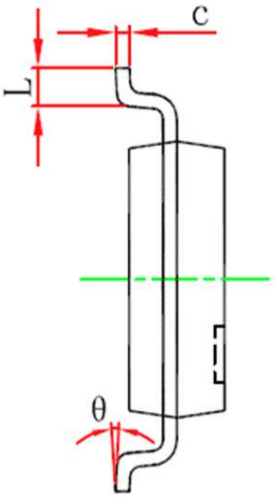
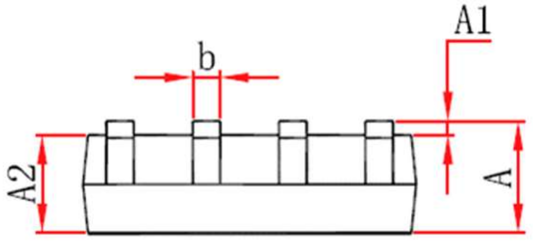


Fig6 Typical Capacitance Vs.Drain-Source Voltage

SOP-8 Package information







Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.057	0.068
A1	0.100	0.250	0.003	0.009
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.012	0.020
c	0.170	0.250	0.006	0.009
D	4.700	5.100	0.185	0.200
e	1.270(BSC)		0.050(BSC)	
E	3.800	4.000	0.149	0.157
E1	5.800	6.200	0.228	0.244
L	0.400	1.270	0.015	0.050
θ	0°	8°	0°	8°