

**Features**

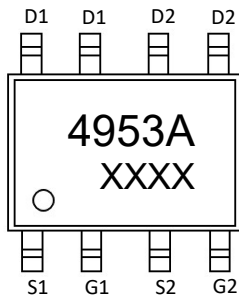
- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low  $R_{DS(ON)}$

**Product Summary**

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

**Application**

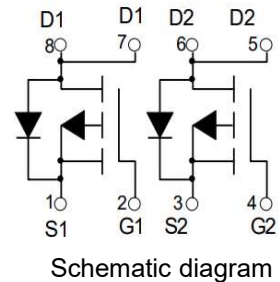
- DC-DC Converters
- Power management functions



Marking and pin assignment

 4953A : Device code  
 XXXX : Code


SOP-8 top view



Schematic diagram



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	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$T_J$	Maximum Junction Temperature	150	°C
$T_{STG}$	Storage Temperature Range	-50 to 155	°C
$I_S$	Diode Continuous Forward Current	$T_c=25^\circ\text{C}$ -5	A

**Mounted on Large Heat Sink**

$I_{DM}$	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ -20	A
$I_D$	Continuous Drain Current	$T_c=25^\circ\text{C}$ -5	A
$P_D$	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 2.5	W
$R_{\theta JA}$	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
MLSQ4953A	SOP-8	4953A	3,000	6,000	42,000	13"reel

Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
BV <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-30	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V	--	--	-1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0	-1.5	-2.5	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-5A	--	35	60	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.7A	--	50	90	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz	--	520	--	pF
C <sub>OSS</sub>	Output Capacitance		--	130	--	pF
C <sub>RSS</sub>	Reverse Transfer Capacitance		--	70	--	pF
<b>Switching Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-15V, I <sub>D</sub> =-5A, V <sub>GS</sub> =-10V	--	12	--	nC
Q <sub>gs</sub>	Gate Source Charge		--	2	--	nC
Q <sub>gd</sub>	Gate Drain Charge		--	2.9	--	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =-15V, I <sub>D</sub> =-5A, V <sub>GS</sub> =-10V, R <sub>G</sub> =3Ω	--	7	--	nS
t <sub>r</sub>	Turn-on Rise Time		--	13	--	nS
t <sub>d(off)</sub>	Turn-Off Delay Time		--	14	--	nS
t <sub>f</sub>	Turn-Off Fall Time		--	9	--	nS
<b>Source- Drain Diode Characteristics</b>						
V <sub>SD</sub>	Forward on voltage	T <sub>J</sub> =25°C, I <sub>S</sub> =-5A	--	--	-1.2	V

Typical Operating Characteristics

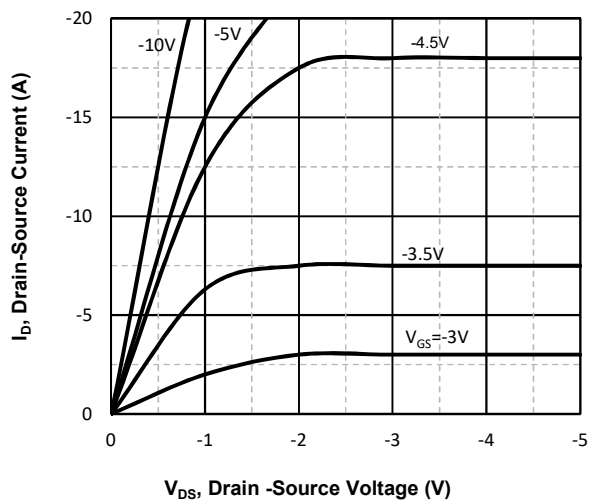


Fig1. Typical Output Characteristics

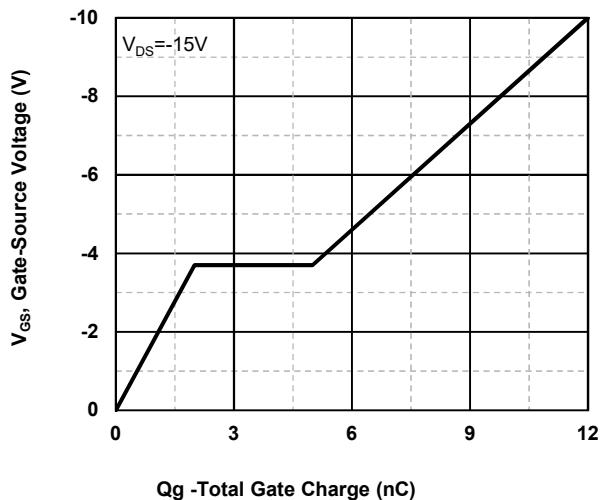


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

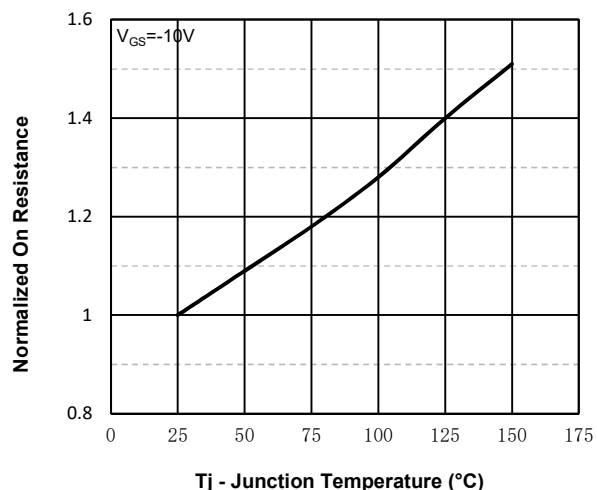


Fig3. Normalized On-Resistance Vs. Temperature

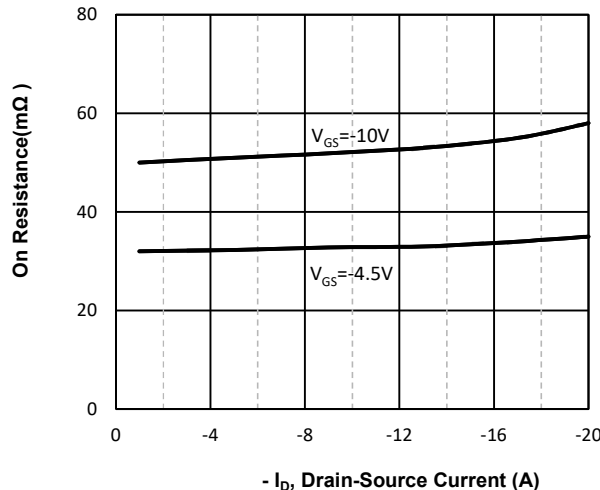


Fig4. On-Resistance Vs. Drain-Source Current

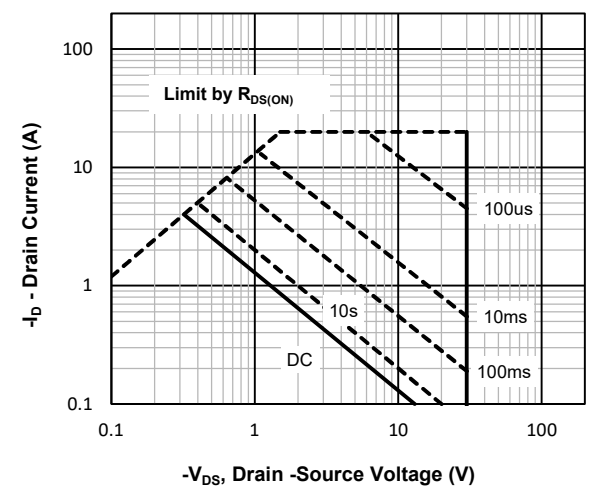


Fig5. Maximum Safe Operating Area

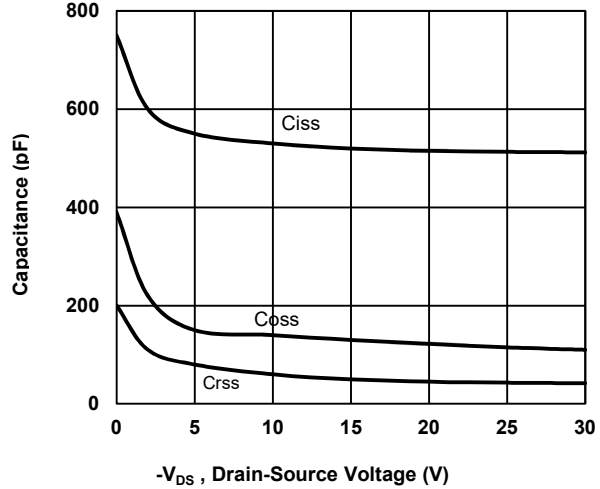
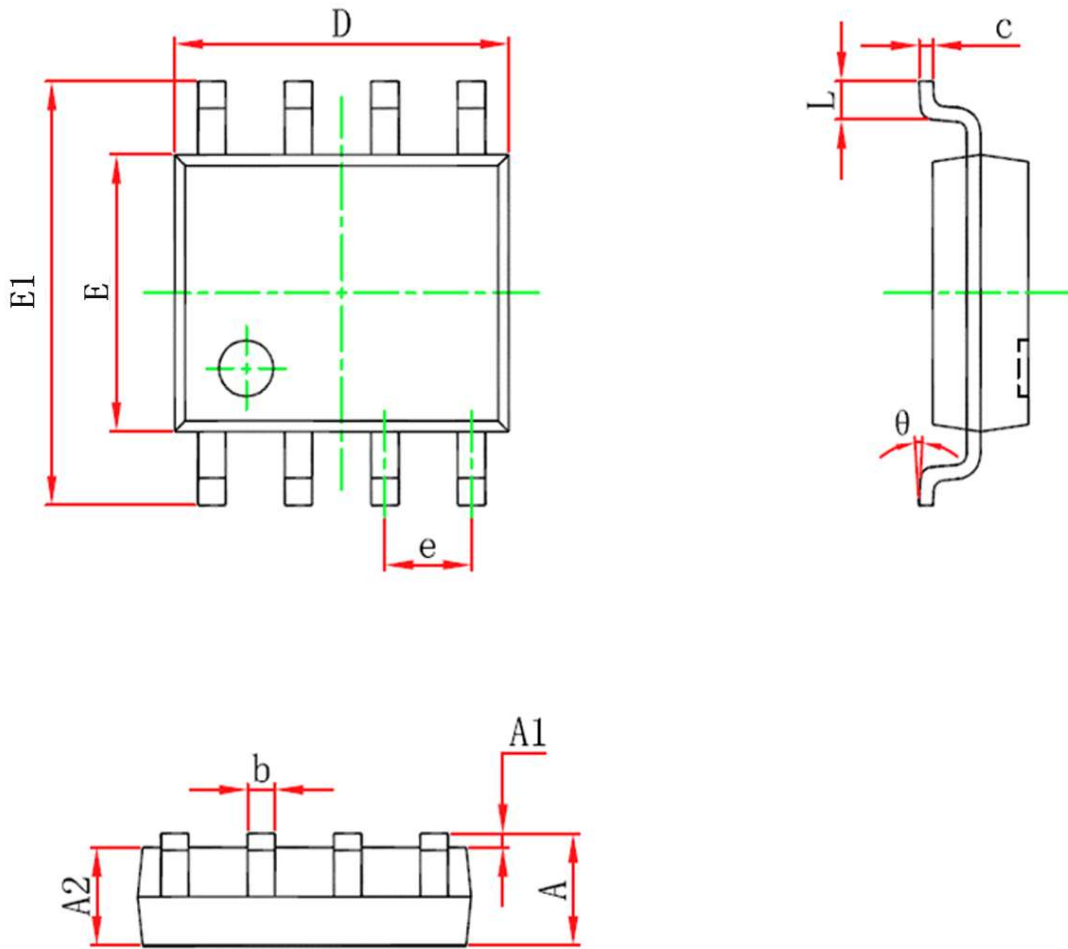


Fig6. Typical Capacitance Vs. Drain-Source Voltage

**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
$\theta$	0°	8°	0°	8°