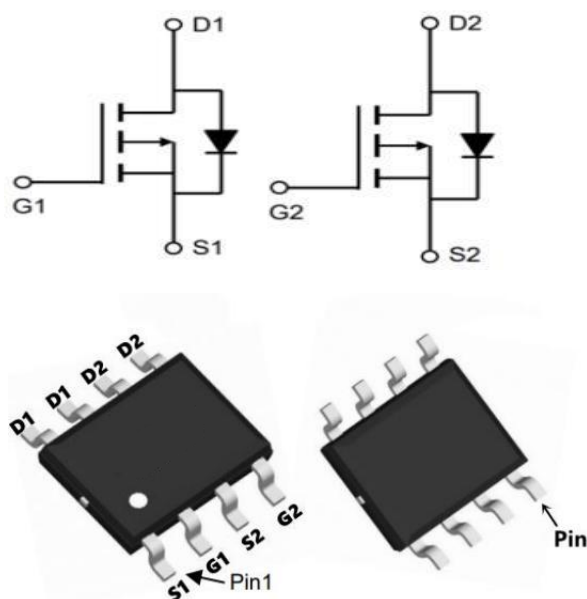


Description

The SX4953A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

$V_{DS} = -30V$ $I_D = -7A$

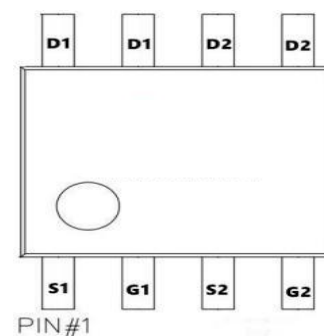
$R_{DS(ON)} < 48m\Omega$ @ $V_{GS}=10V$

Application

Lithium battery protection

Wireless impact

Mobile phone fast charging



Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A=25^\circ C$	Continuous Drain Current, $-V_{GS}$ @ -10V ¹	-7	A
$I_D @ T_A=70^\circ C$	Continuous Drain Current, $-V_{GS}$ @ -10V ¹	-4.3	A
I_{DM}	Pulsed Drain Current ²	-21	A
EAS	Single Pulse Avalanche Energy ³	81.2	mJ
$P_D @ T_A=25^\circ C$	Total Power Dissipation ⁴	1.5	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	85	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	25	$^\circ C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	μA
IGSS	Gate-Source Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
VGS(th)	Gate-Source Threshold Voltage ³	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.6	-2.5	V
RDS(on)	Drain-Source on-State Resistance ³	$V_{GS}=-10V, I_D=-4.1A$	-	37	48	m Ω
		$V_{GS}=-4.5V, I_D=-3.0A$	-	58	65	
Ciss	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V, f=1.0MHz$	-	530	-	pF
Coss	Output Capacitance		-	70	-	
Crss	Reverse Transfer Capacitance		-	56	-	
td(on)	Turn-on Delay Time ⁴	$V_{GS}=-10V, V_{DS}=-15V, R_L=15\Omega, R_{GEN}=2.5\Omega$	-	14	-	nS
tr	Rise Time ⁴		-	61	-	
td(off)	Turn-off Delay Time ⁴		-	19	-	
tf	Fall Time ⁴		-	10	-	
Qg	Total Gate Charge ⁴	$V_{GS}=-10V, V_{DS}=-15V, I_D=-4.1A$	-	6.8	-	nC
Qgs	Gate-Source Charge ⁴		-	1.0	-	
Qgd	Gate-Drain Charge ⁴		-	1.4	-	
VSD	Diode Forward Voltage	$I_S=-4.1A, V_{GS}=0V$	-	-	-1.2	V

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

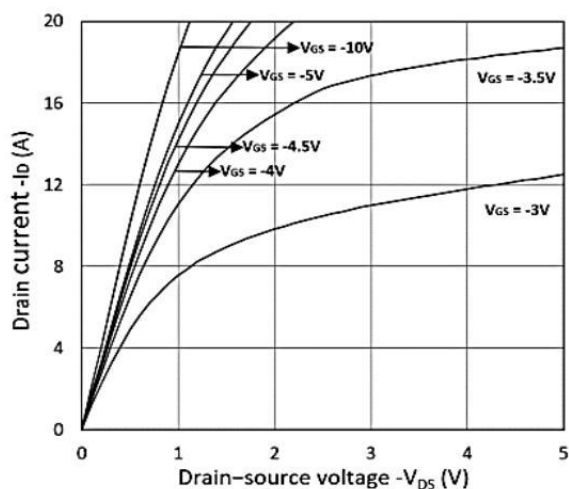


Figure 1. Output Characteristics

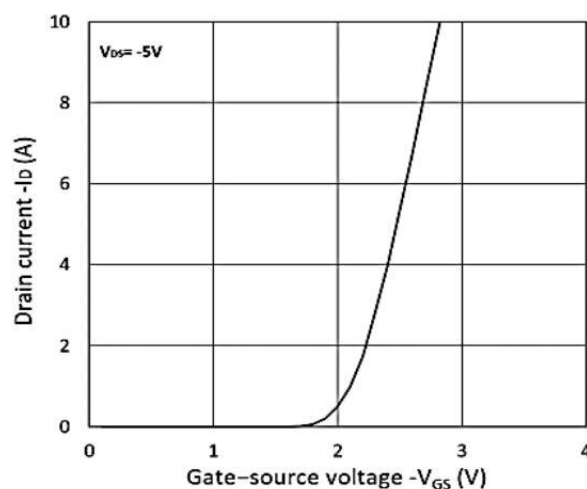


Figure 2. Transfer Characteristics

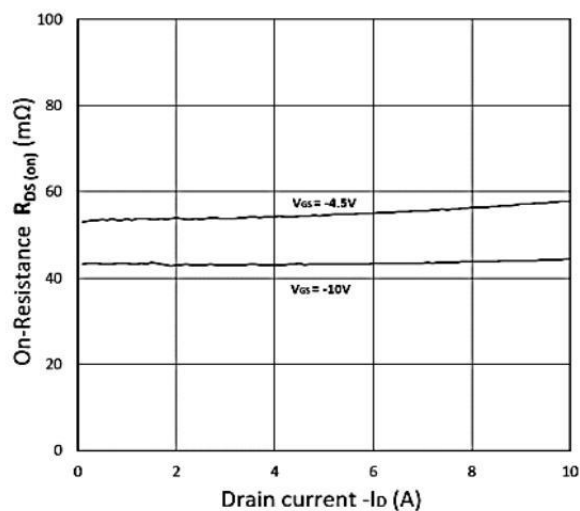


Figure 3. $R_{DS(ON)}$ vs. I_D

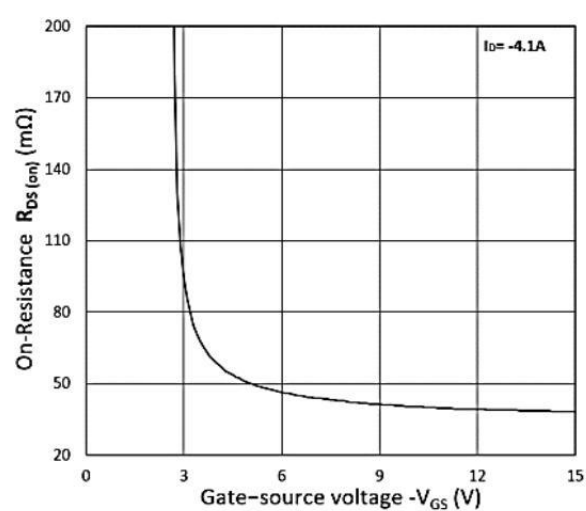


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

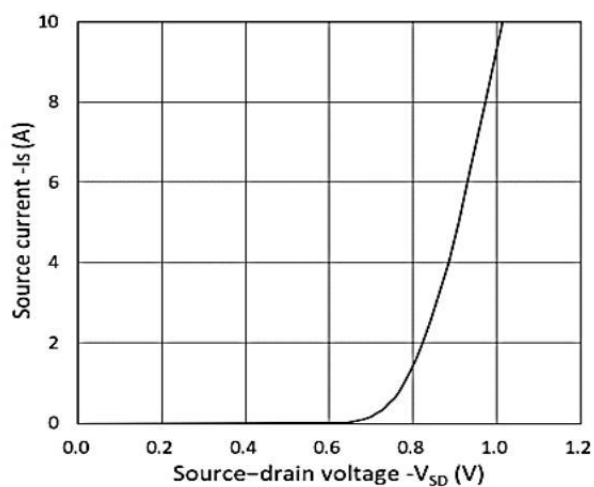


Figure 5. I_S vs. V_{SD}

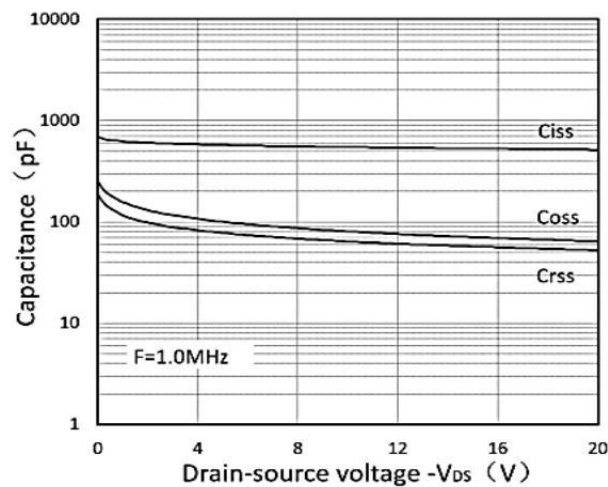


Figure 6. Capacitance Characteristics

Typical Characteristics

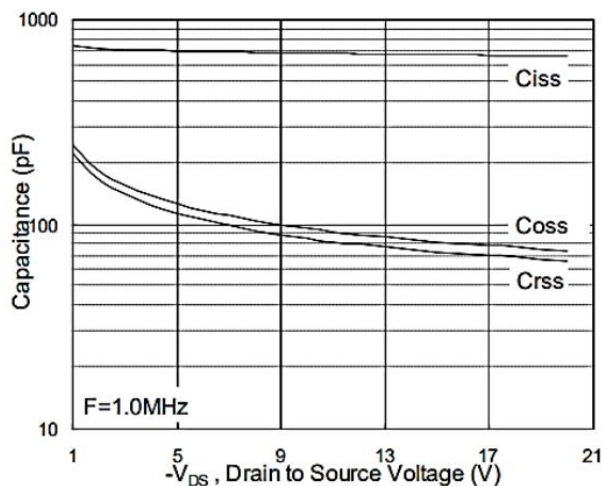


Figure 7 Capacitance

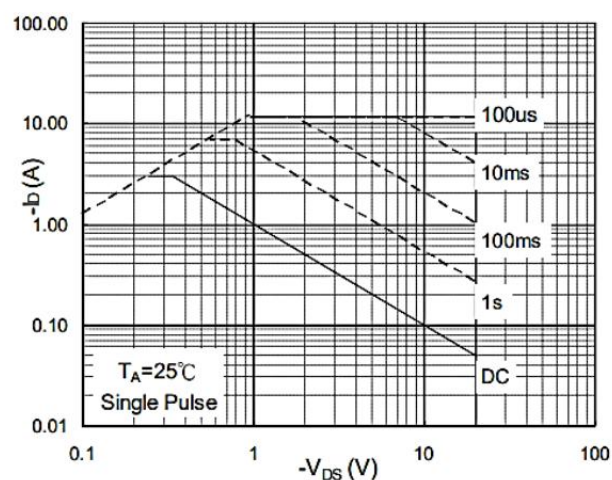


Figure 8 Safe Operating Area

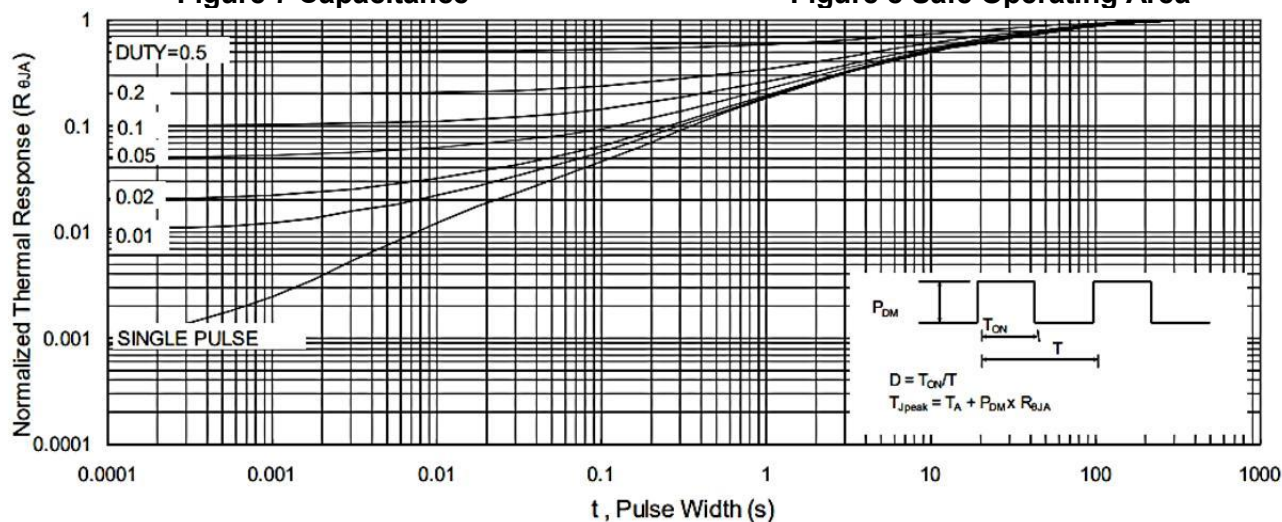


Figure 9 Normalized Maximum Transient Thermal Impedance

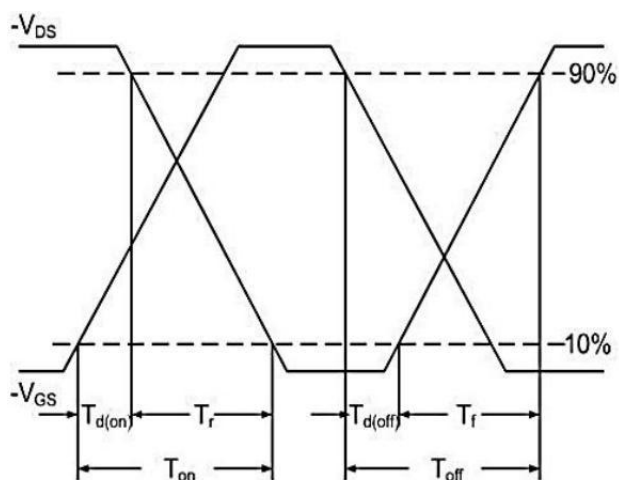


Figure 10 Switching Time Waveform

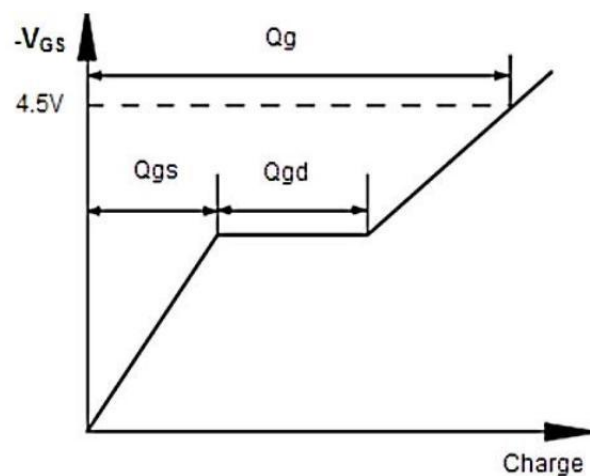
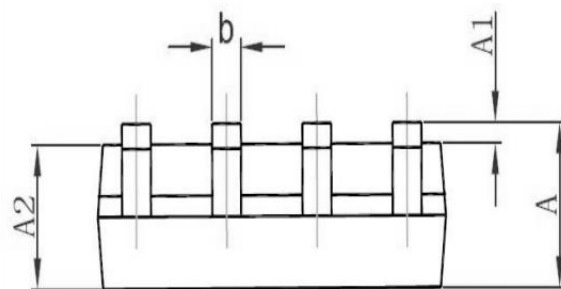
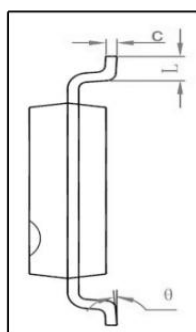
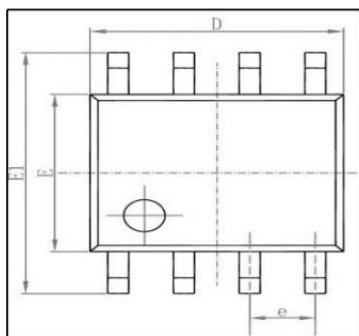
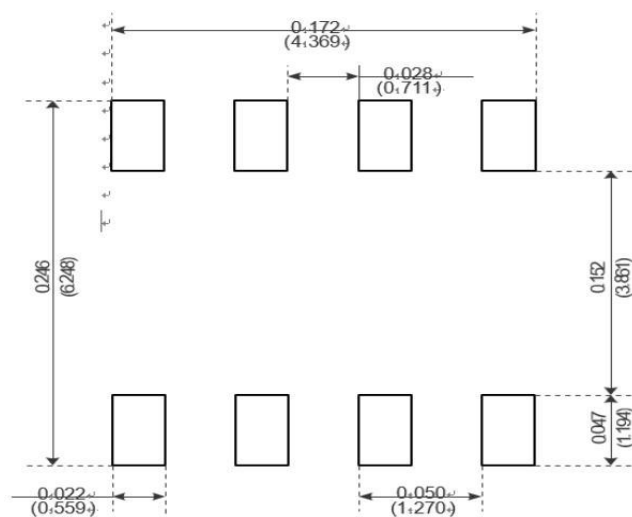


Figure 11 Gate Charge Waveform

Package Mechanical Data-SOP-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	SOP-8L		3000