

DESCRIPTION

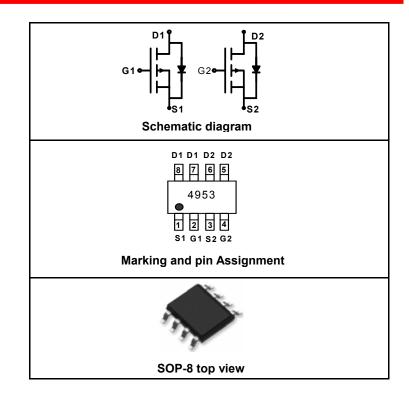
The SSF4953 uses advanced trench technology to provide excellent RDS(ON), low gate charge. It has been optimized for power management applications requiring a wide range of gave drive voltage ratings (4.5V - 25V).

GENERAL FEATURES

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- Battery protection
- Load switch
- Power management



PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
4953	SSF4953	SOP-8	Ø330mm	12mm	2500 units

ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	Vds	-30	V
Gate-Source Voltage	Vgs	±20	V
Drain Current Continuous@ Current Buland (Note 1)	I _D	-5.3	A
Drain Current-Continuous@ Current-Pulsed (Note 1)	I _{DM}	-20	A
Maximum Power Dissipation	PD	2.0	W
Operating Junction and Storage Temperature Range	T _J ,T _{STG}	-55 To 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	62.5	°C/W	
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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Тур	Max	Unit	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V Ι _D =-250μΑ	-30			V	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V,V _{GS} =0V			-1	μA	
Gate-Body Leakage Current	I _{GSS}	V_{GS} =±25V, V_{DS} =0V			±100	nA	

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ON CHARACTERISTICS (Note 3)							
Gate Threshold Voltage	V _{GS(th)}	$V_{DS}=V_{GS}$, $I_D = -250 \mu A$	-1		-2	V	
Drain-Source On-State Resistance	В	V _{GS} =-10V, I _D =-5.3A		46	53	mΩ	
	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-4A		70	85	- 1112	
Forward Transconductance	g fs	V _{DS} =-5V, I _D =-5.3A		8		S	
DYNAMIC CHARACTERISTICS (Note4)							
Input Capacitance	C _{lss}			525		PF	
Output Capacitance	C _{oss}	V _{DS} =-15V,V _{GS} =0V, F=1.0MHz		135		PF	
Reverse Transfer Capacitance	C _{rss}			70		PF	
SWITCHING CHARACTERISTICS (Note 4)							
Turn-on Delay Time	t _{d(on)}			7	14	nS	
Turn-on Rise Time	tr	V _{DD} =-15V, I _D =-1A		13	24	nS	
Turn-Off Delay Time	t _{d(off)}	V_{GS} =-10V,R _{GEN} =6 Ω		14	25	nS	
Turn-Off Fall Time	t _f			9	17	nS	
Total Gate Charge	Qg			12		nC	
Gate-Source Charge	Q _{gs}	V _{DS} =-15V, I _D =-4.5A,V _{GS} =-10V		2		nC	
Gate-Drain Charge	Q _{gd}			3		nC	
DRAIN-SOURCE DIODE CHARACTERISTIC	S						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V,I _S =-2.1A		-0.8	-1.2	V	
Diode Forward Current (Note 2)	Is				-2.1	А	

NOTES:

Repetitive Rating: Pulse width limited by maximum junction temperature.
 Surface Mounted on FR4 Board, t ≤ 10 sec.
 Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production testing.



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

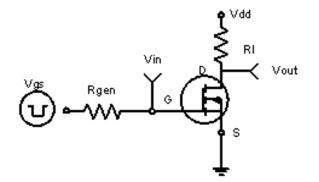


Figure 1:Switching Test Circuit

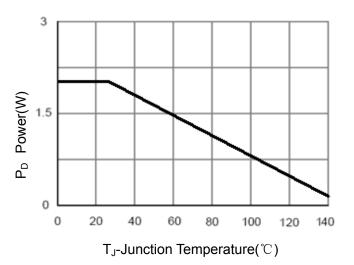


Figure 3 Power Dissipation

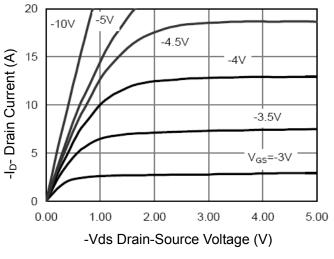


Figure 5 Output CHARACTERISTICS

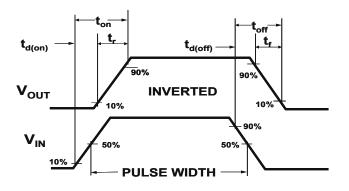


Figure 2:Switching Waveforms

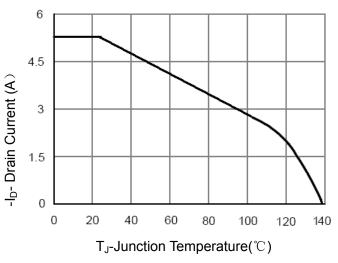


Figure 4 Drain Current

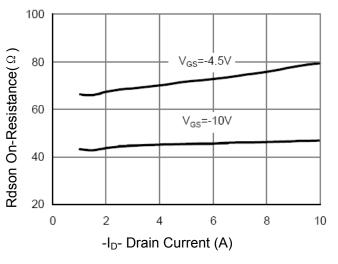
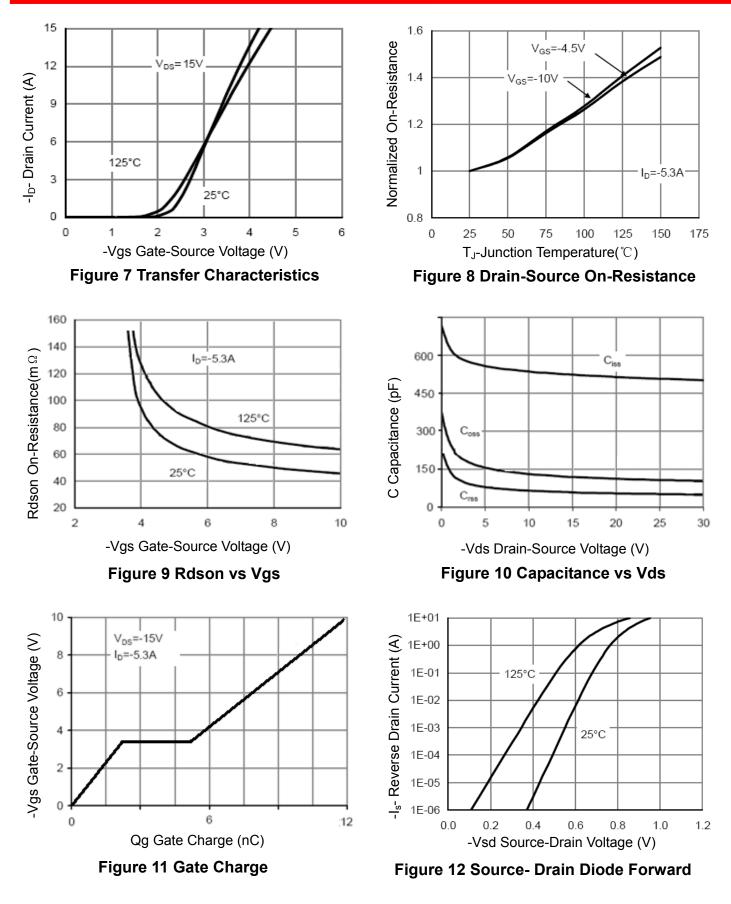


Figure 6 Drain-Source On-Resistance



SSF4953



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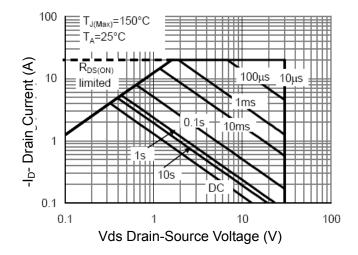
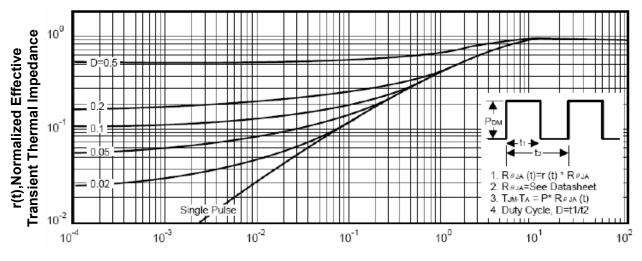


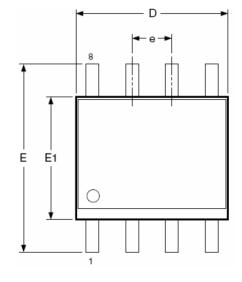
Figure 13 Safe Operation Area

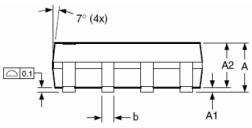


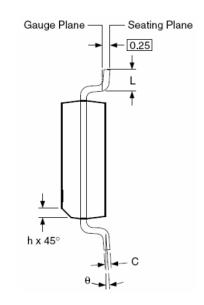
Square Wave Pluse Duration(sec) Figure 3: Normalized Maximum Transient Thermal Impedan



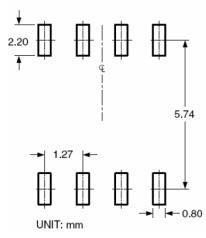
SOP-8 PACKAGE INFORMATION







RECOMMENDED LAND PATTERN



Dimensions in millimeters						
Symbols	Min. Nom. Max					
A	1.35	1.65	1.75			
A1	0.10	—	0.25			
A2	1.25	1.50	1.65			
b	0.31	—	0.51			
с	0.17	_	0.25			
D	4.80	4.90	5.00			
E1	3.80	3.90	4.00			
е	1.27 BSC					
E	5.80	6.00	6.20			
h	0.25		0.50			
L	0.40	_	1.27			
θ	0°	—	8°			

Dimensions in inches

Symbols	Min.	Nom.	Max.	
Α	0.053	0.065	0.069	
A1	0.004	—	0.010	
A2	0.049	0.059	0.065	
b	0.012	—	0.020	
с	0.007	—	0.010	
D	0.189	0.193	0.197	
E1	0.150	0.154	0.157	
е	0.050 BSC			
E	0.228	0.236	0.244	
h	0.010	_	0.020	
L	0.016	—	0.050	
θ	0 °	—	8°	

NOTES:

- Dimensions are inclusive of plating
 Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
- 3. Dimension L is measured in gauge plane.
- 4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.



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