

**SE4953**  
**P-Channel Enhancement-Mode MOSFET**

Revision:A

**Features**

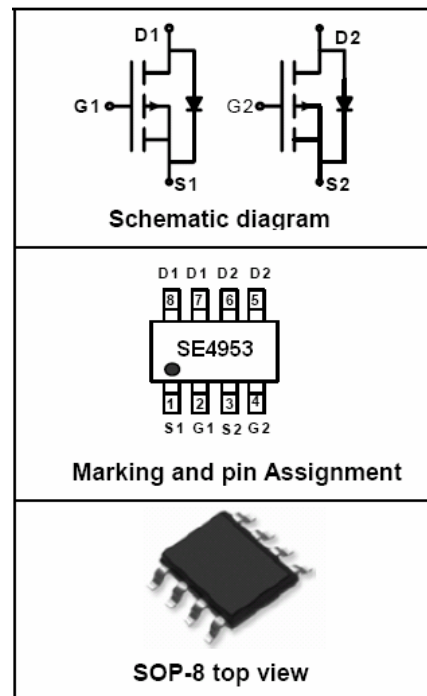
- $V_{DS} = -30V, I_D = -4.9A$   
 $R_{DS(ON)} < 85m\Omega @ V_{GS} = -4.5V$   
 $R_{DS(ON)} < 55m\Omega @ V_{GS} = -10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

**Applications**

- Battery protection
- Load switch
- Power management

**Construction**

- Silicon epitaxial planer



**Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	±20	V
Drain Current-Continuous@	$I_D$	-4.9	A
Current-Pulsed (Note 1)	$I_{DM}$	-30	A
Maximum Power Dissipation	$P_D$	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)	$R_{\theta JA}$	83	°C/W
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**Electrical characteristics (Ta=25°C)**

Parameter	Symbol	Conditions	Min..	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 10V, V_{DS} = 0V$			±100	nA

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<b>ON CHARACTERISTICS (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-4.9A$			55	mΩ
		$V_{GS}=-4.5V,$ $I_D=-3.5A$			85	mΩ
Forward Transconductance	$g_{FS}$	$V_{DS}=-15V, I_D=-4.5A$	5	10		S
<b>DYNAMIC CHARACTERISTICS (Note4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0MHz$		550		PF
Output Capacitance	$C_{oss}$			90		PF
Reverse Transfer Capacitance	$C_{rss}$			60		PF
<b>SWITCHING CHARACTERISTICS (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1A$ $V_{GS}=-10V, R_{GEN}=6\Omega$		12	24	nS
Turn-on Rise Time	$t_r$			3	6	nS
Turn-Off Delay Time	$t_{d(off)}$			22	44	nS
Turn-Off Fall Time	$t_f$			4	8	nS
Total Gate Charge	$Q_g$				10	13
Gate-Source Charge	$Q_{gs}$	$V_{DS}=-15V, I_D=-4.5A,$ $V_{GS}=-10V$		3.3		nC
Gate-Drain Charge	$Q_{gd}$			1.8		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I=-1.7A$		-0.8	-1.2	v
Diode Forward Current (Note 2)	$I_S$			-1.7		A

**NOTES:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing.

**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**

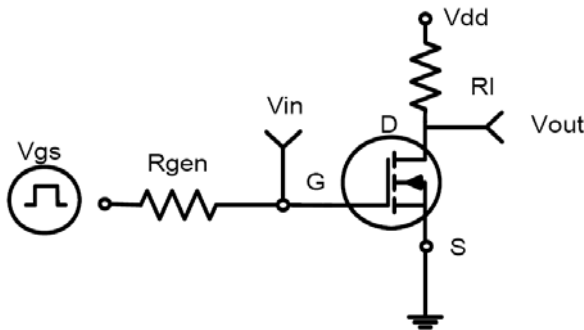


Figure 1: Switching Test Circuit

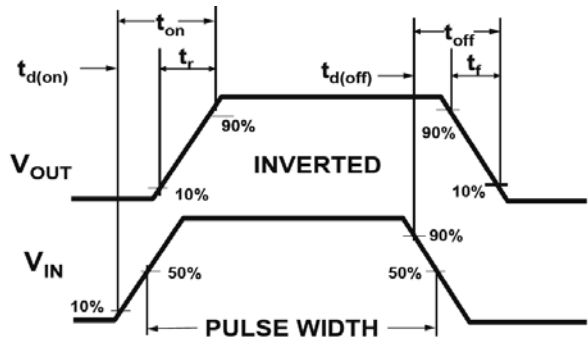


Figure 2: Switching Waveforms

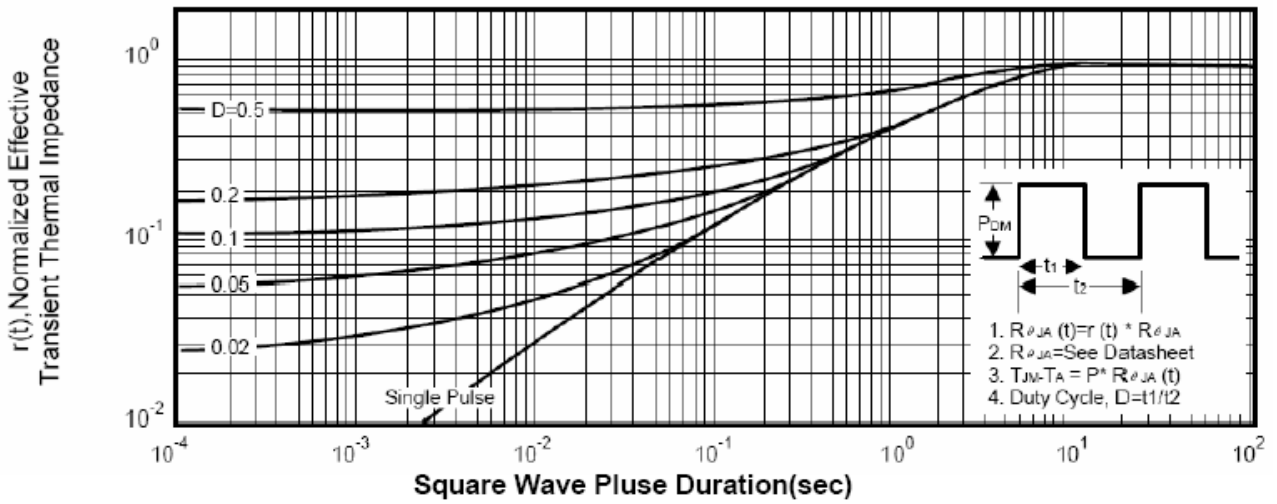
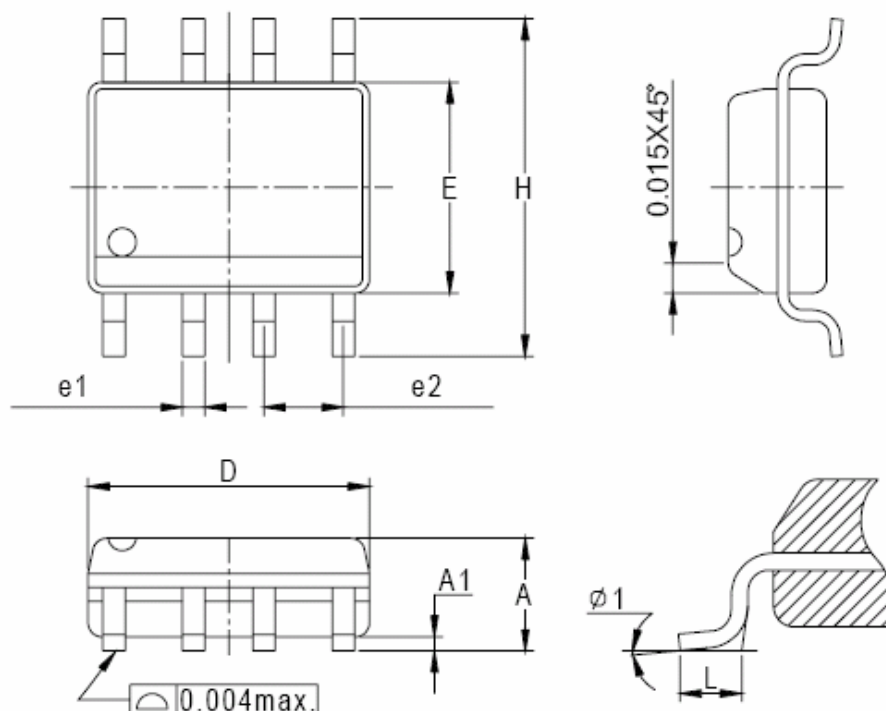


Figure 3: Normalized Maximum Transient Thermal Impedance

## Packaging Information

SOP-8 pin



Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
φ 1	8°		8°	

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