

SE4953
P-Channel Enhancement-Mode MOSFET

Revision:A

Features

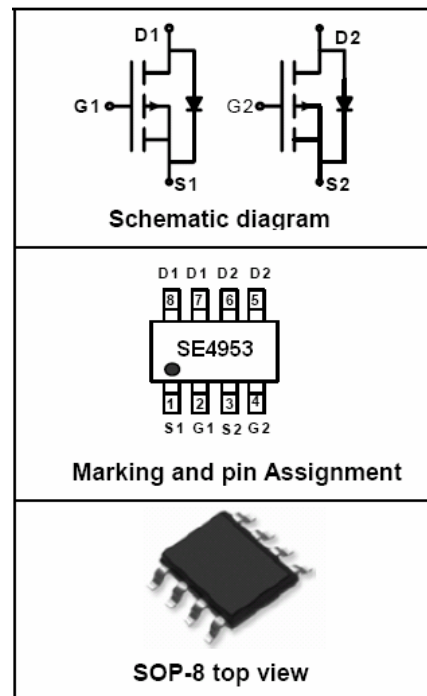
- $V_{DS} = -30V, I_D = -4.9A$
 $R_{DS(ON)} < 85m\Omega @ V_{GS} = -4.5V$
 $R_{DS(ON)} < 55m\Omega @ V_{GS} = -10V$
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

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@ Current-Pulsed (Note 1)	I_D	-4.9	A
	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
OFF CHARACTERISTICS						
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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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	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-4.9A$			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
DYNAMIC CHARACTERISTICS (Note4)						
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
SWITCHING CHARACTERISTICS (Note 4)						
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	$V_{DS}=-15V, I_D=-4.5A,$ $V_{GS}=-10V$		10	13	nC
Gate-Source Charge	Q_{gs}			3.3		nC
Gate-Drain Charge	Q_{gd}			1.8		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
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

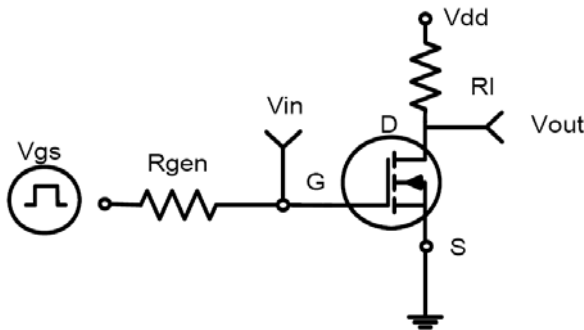


Figure 1: Switching Test Circuit

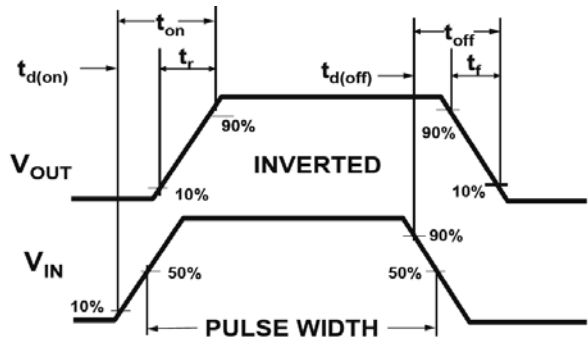


Figure 2: Switching Waveforms

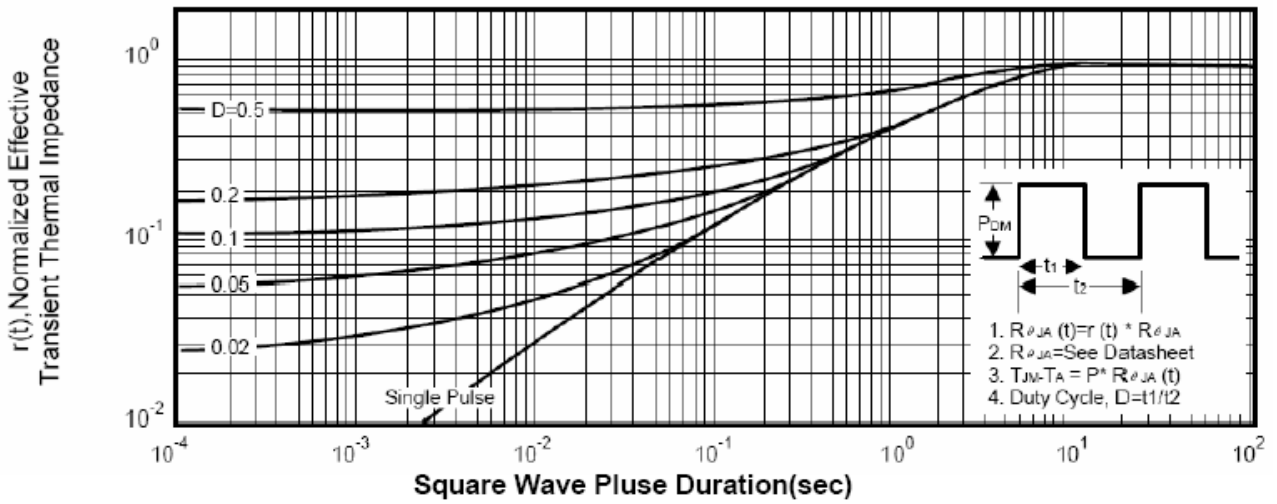
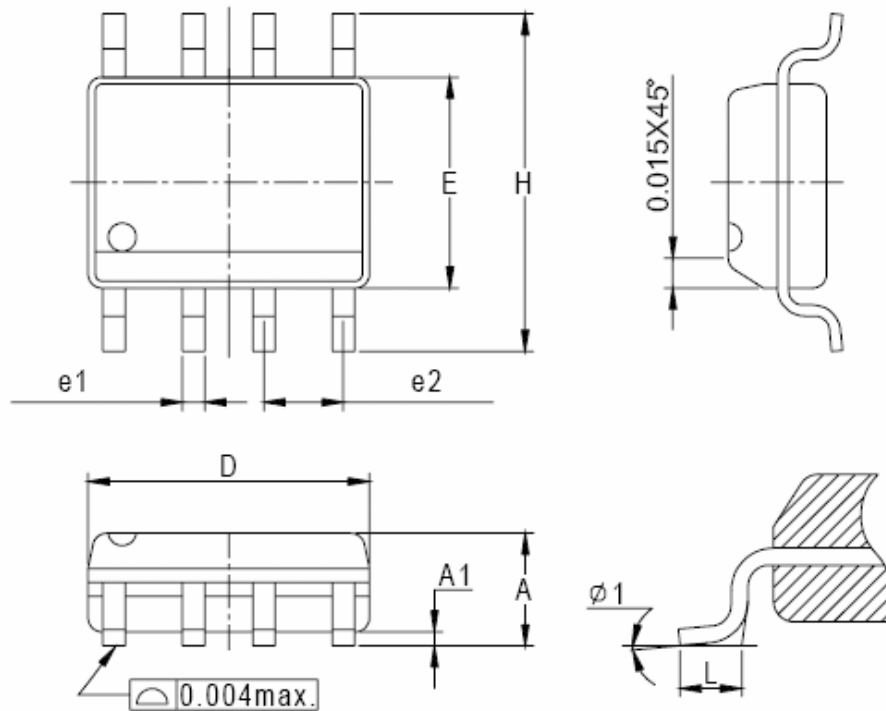


Figure 3: Normalized Maximum Transient Thermal Impedance

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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