

**P-CHANNEL MOS FIELD EFFECT TRANSISTOR****DESCRIPTION**

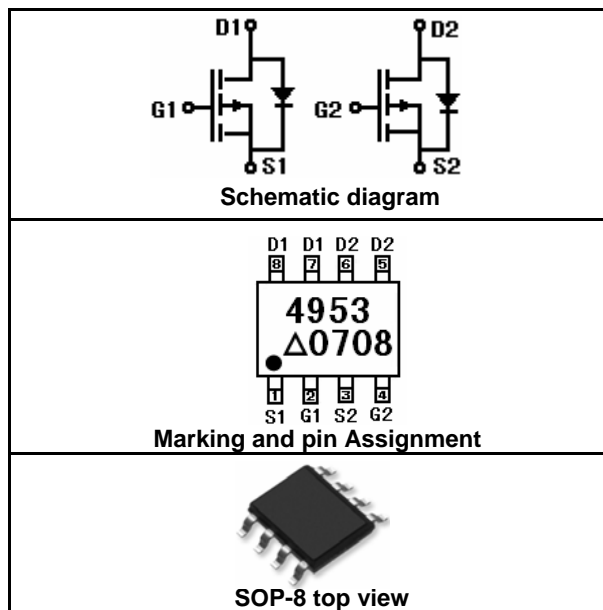
The GE4953 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge. It has been optimized for power management applications requiring a wide range of gate drive voltage ratings (4.5V – 25V).

**GENERAL FEATURES**

- $V_{DS} = -30V, I_D = -4.9A$   $R_{DS(ON)} < 85m\Omega$  @  $V_{GS} = -4.5V$   
 $R_{DS(ON)} < 53m\Omega$  @  $V_{GS} = -10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

**APPLICATIONS**

- Battery protection
- Load switch
- Power management

**PACKAGE MARKING AND ORDERING INFORMATION**

Device Marking	Device	Package	Reel Size	Tape width	Quantity
4953	GE4953	SOP-8	Ø330mm	12mm	3000 units

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

Parameter	Symbol	Limit	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)	$R_{\theta JA}$	62.5	°C/W
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**ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)**

Parameter	Symbol	Condition	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	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			±100	nA
<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	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-4.9A$		43	53	$m\Omega$
		$V_{GS}=-4.5V, I_D=-3.5A$		64	85	$m\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-15V, I_D=-4.5A$	5	10		S

DYNAMIC CHARACTERISTICS		(Note 4)					
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V,V <sub>GS</sub> =0V, F=1.0MHz		550		PF	
Output Capacitance	C <sub>oss</sub>			90		PF	
Reverse Transfer Capacitance	C <sub>rss</sub>			60		PF	
SWITCHING CHARACTERISTICS		(Note 4)					
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-15V,I <sub>D</sub> =-1A V <sub>GS</sub> =-10V,R <sub>GEN</sub> =6Ω		12	24	nS	
Turn-on Rise Time	t <sub>r</sub>			3	6	nS	
Turn-Off Delay Time	t <sub>d(off)</sub>			22	44	nS	
Turn-Off Fall Time	t <sub>f</sub>			4	8	nS	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-15V,I <sub>D</sub> =-4.5A, V <sub>GS</sub> =-10V		10	13	nC	
Gate-Source Charge	Q <sub>gs</sub>			3.3		nC	
Gate-Drain Charge	Q <sub>gd</sub>			1.8		nC	
DRAIN-SOURCE DIODE CHARACTERISTICS							
Diode Forward Voltage	(Note 3)	V <sub>SD</sub>	V <sub>GS</sub> =0V,I <sub>S</sub> =-1.7A		-0.8	-1.2	V
Diode Forward Current	(Note 2)	I <sub>S</sub>				-1.7	A

NOTES:

- 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2. Surface Mounted on FR4 Board, t ≤ 10 sec.
- 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

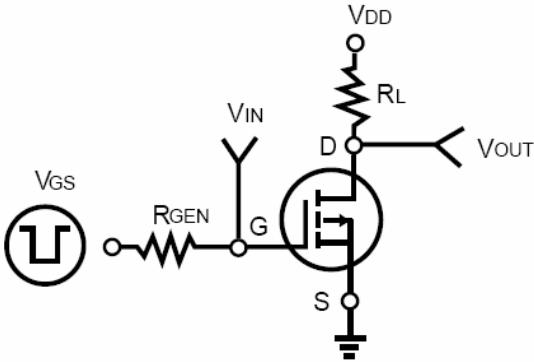


Figure 1: Switching Test Circuit

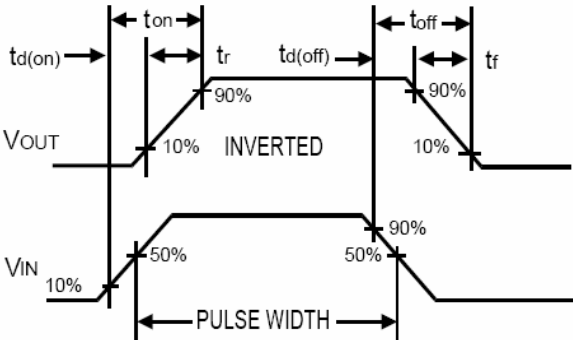


Figure 2: Switching Waveforms

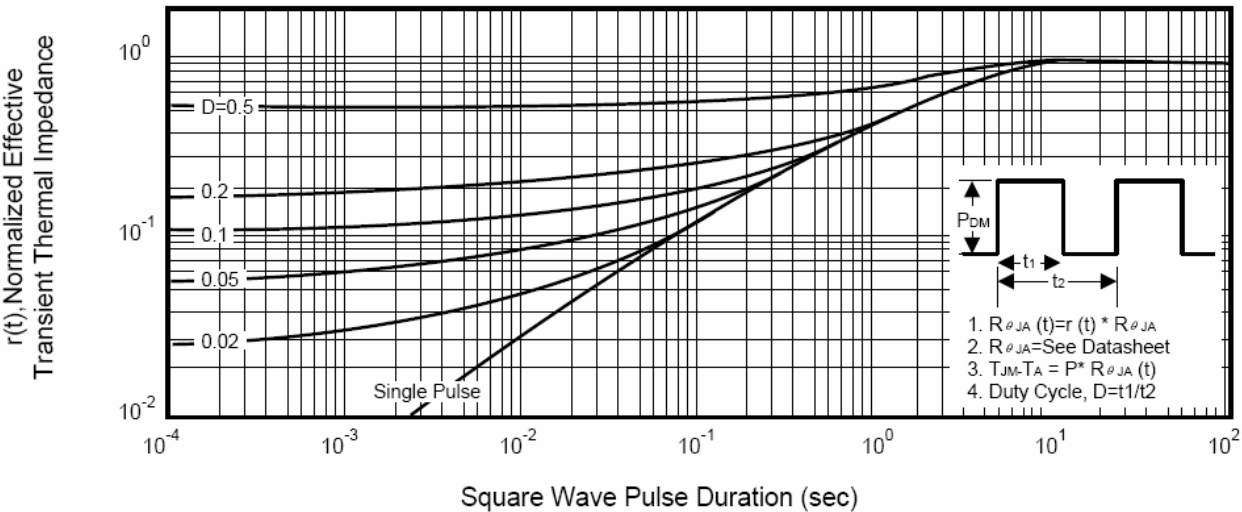
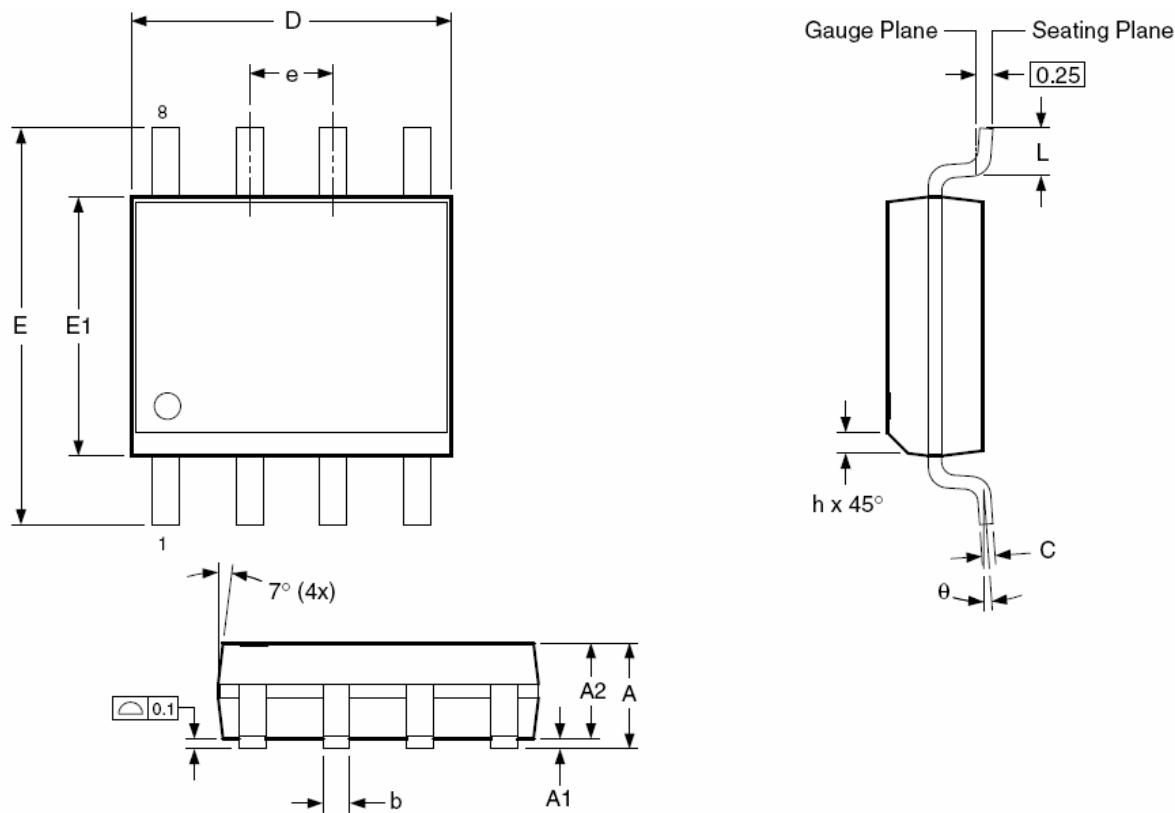


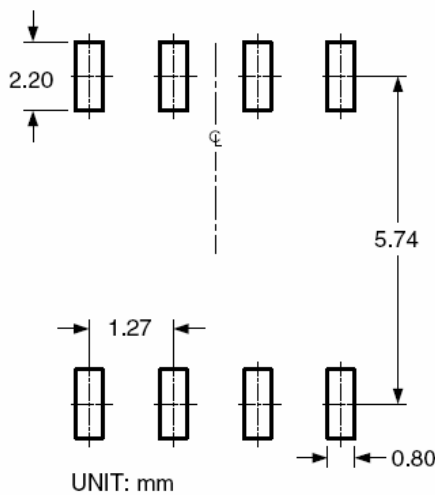
Figure 3: Normalized Maximum Transient Thermal Impedance

SOP-8 PACKAGE INFORMATION

Dimensions in Millimeters (UNIT:mm)



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
c	0.17	—	0.25
D	4.80	4.90	5.00
E1	3.80	3.90	4.00
e	1.27 BSC		
E	5.80	6.00	6.20
h	0.25	—	0.50
L	0.40	—	1.27
$\theta$	0°	—	8°

Dimensions in inches

Symbols	Min.	Nom.	Max.
A	0.053	0.065	0.069
A1	0.004	—	0.010
A2	0.049	0.059	0.065
b	0.012	—	0.020
c	0.007	—	0.010
D	0.189	0.193	0.197
E1	0.150	0.154	0.157
e	0.050 BSC		
E	0.228	0.236	0.244
h	0.010	—	0.020
L	0.016	—	0.050
$\theta$	0°	—	8°

NOTES:

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

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