DESCRIPTION

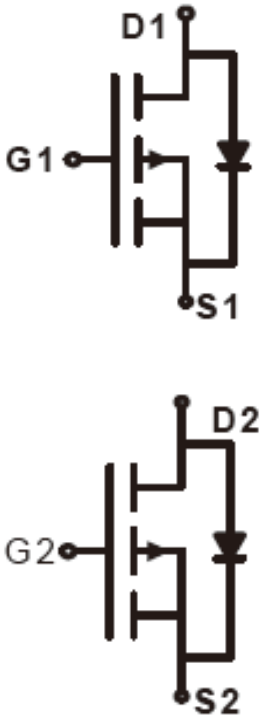
The AM4953 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a load switch or in PWM applications.

The AM4953 is available in SOP8 package.

FEATURES

- V_{DS} = -30V,I_D = -5.1A
  $R_{DS(ON)}$ <105mΩ @ V_{GS}=-4.5V
  $R_{DS(ON)}$ < 55mΩ @ V_{GS}=-10V
- High Power and current handing capability
- Surface Mount Package
- Available in SOP8 Package

P CHANNEL MOSFET



Schematic diagram

APPLICATION

- PWM applications
- Load switch
- Power management

ORDERING INFORMATION

Package Type	Part Number	
SOP8	M8	AM4953M8R
		AM4953M8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

PIN DESCRIPTION

Top View

Pin #	Symbol	Function
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

ABSOLUTE MAXIMUM RATINGS

T_A=25℃, unless otherwise noted

V_{DS}, Drain-Source Voltage	-30V
V_{GS}, Gate-Source Voltage	±20V
I_D, Drain Current-Continuous	-5.1A
I_{DM}, Drain Current-Pulsed[NOTE1]	-20A
P_D, Maximum Power Dissipation	2.5W
T_J, T_{STG}, Operating Junction and Storage Temperature Range	-55°C ~150°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Ambient[NOTE2]	$R_{\theta JA}$	50	°C/W

ELECTRICAL CHARACTERISTICS

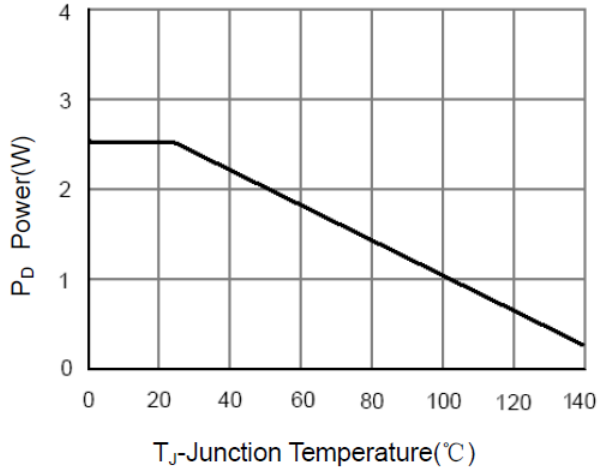
T_A=25℃, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V,I_D=-250μA	-30	-33	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics NOTE 3						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1	-1.6	-3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V,I_D=-5.1A	-	48	55	mΩ
		V_{GS}=-4.5V,I_D=-4.2A	-	73	105	
Forward Transconductance	g_{FS}	V_{DS}=-15V,I_D=-4.5A	4	7	-	S
Dynamic Characteristics NOTE 4						
Input Capacitance	C_{lss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz	-	520	-	pF
Output Capacitance	C_{oss}		-	130	-	
Reverse Transfer Capacitance	C_{rss}		-	70	-	
Switching Characteristics NOTE 4						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V, I_D=-1A V_G=-10V, R_{GEN}=6Ω	-	15	-	ns
Turn-on Rise Time	t_r		-	13	-	
Turn-Off Delay Time	$t_{d(off)}$		-	58	-	
Turn-Off Fall Time	t_f		-	21	-	
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-5.3A, V_{GS}=-10V	-	12	-	nC
Gate-Source Charge	Q_{gs}		-	2.2	-	
Gate-Drain Charge	Q_{gd}		-	3	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage NOTE3	V_{SD}	V_{GS}=0V, I_S=-1.7A	-	-	-1.2	V

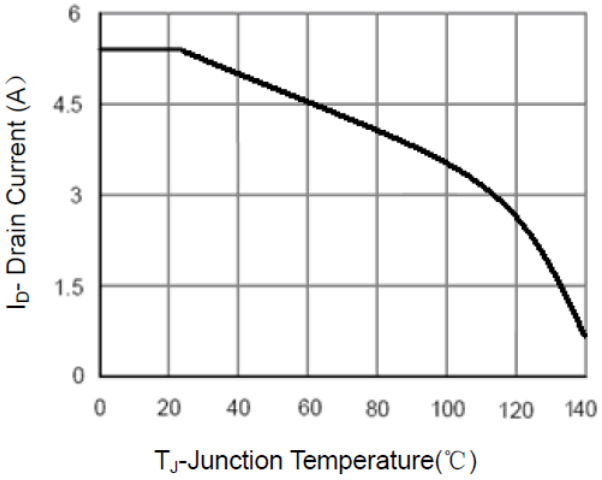
NOTE1: Repetitive Rating: Pulse width limited by maximum junction temperature.
NOTE2: Surface Mounted on FR4 Board, t ≤ 10 sec.
NOTE3: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
NOTE4: Guaranteed by design, not subject to production

TYPICAL PERFORMANCE CHARACTERISTICS

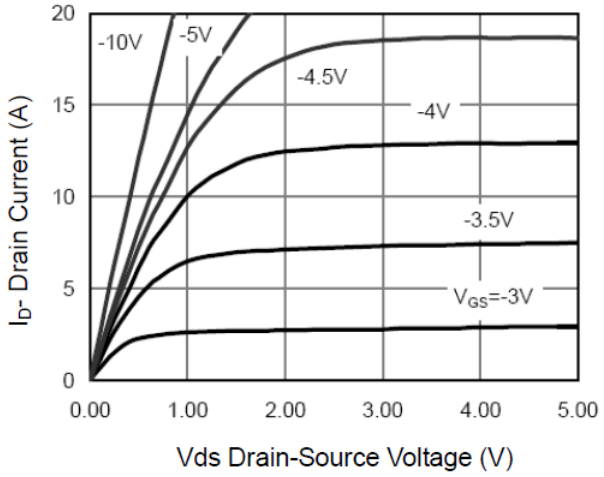
1. Power Dissipation



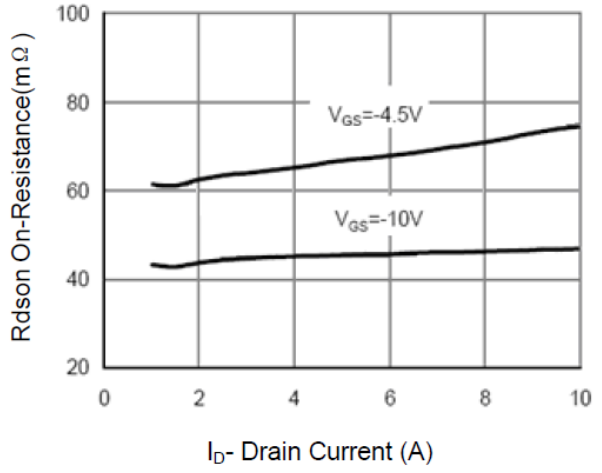
2. Drain Current



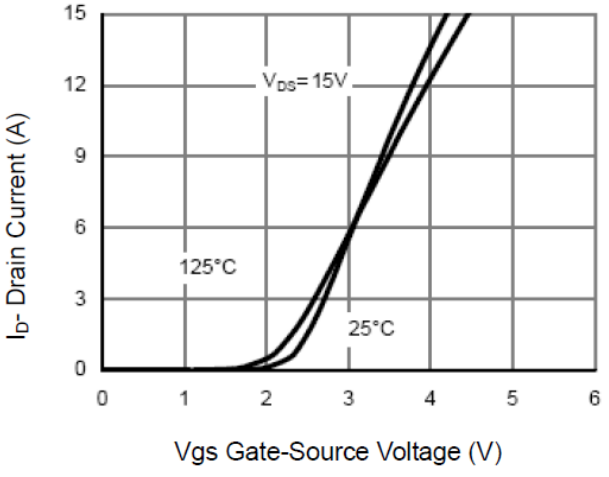
3. Output Characteristics



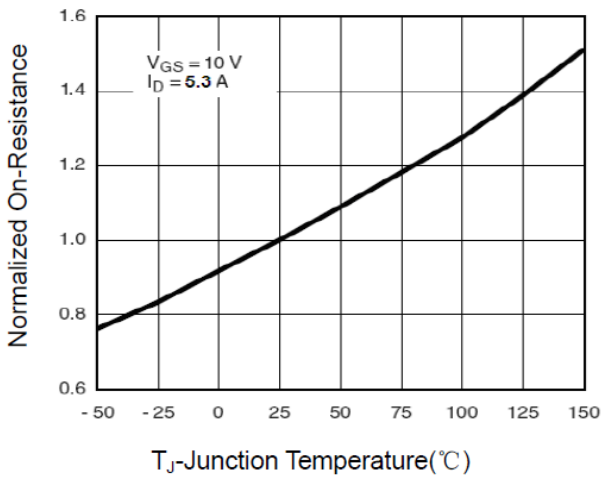
4. Drain-Source On-Resistance



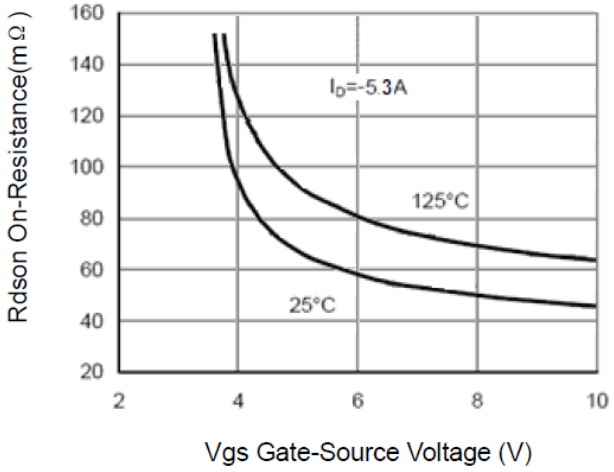
5. Transfer Characteristics



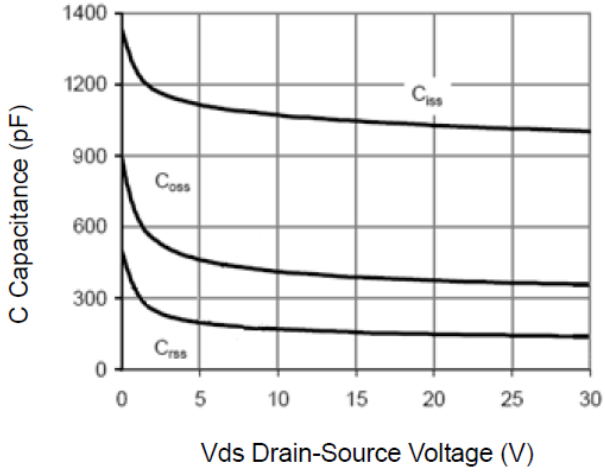
6. Drain-Source On-Resistance



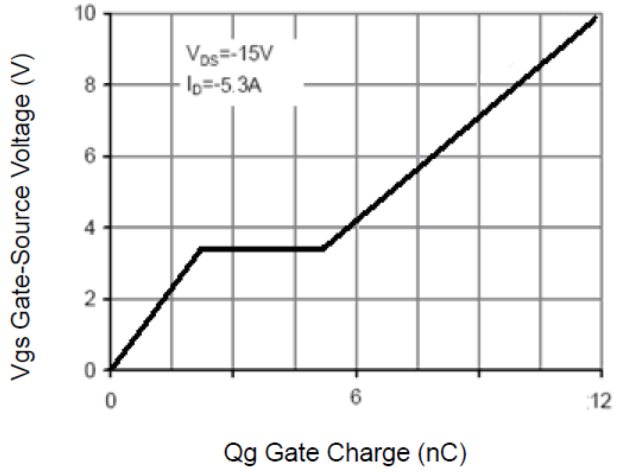
7. Rdson vs. Vgs



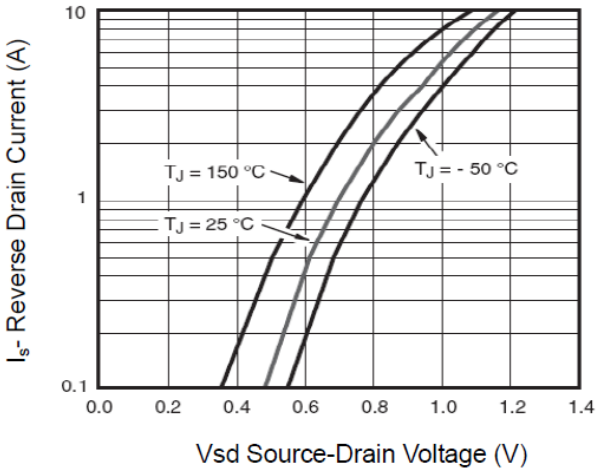
8. Capacitance vs. Vds



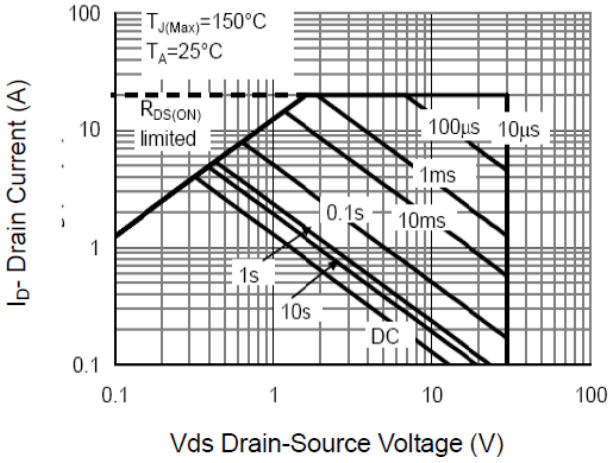
9. Gate Charge



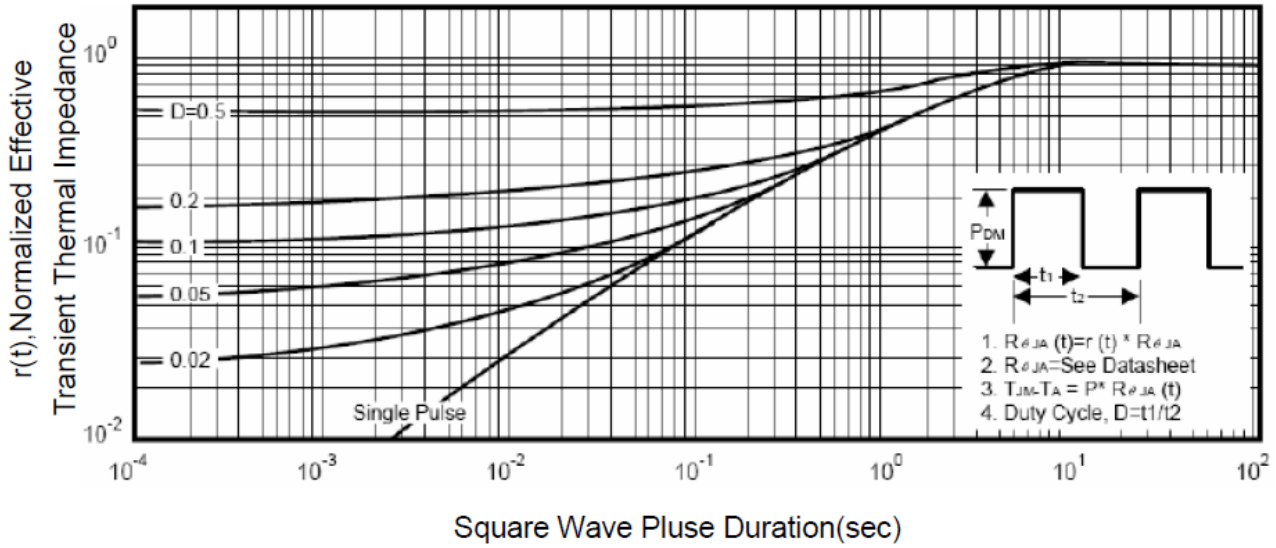
10. Source- Drain Diode Forward



11. Safe Operation Area

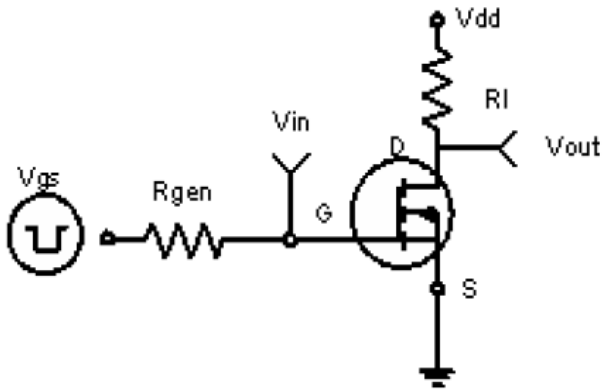


12. Normalized Maximum Transient Thermal Impedance

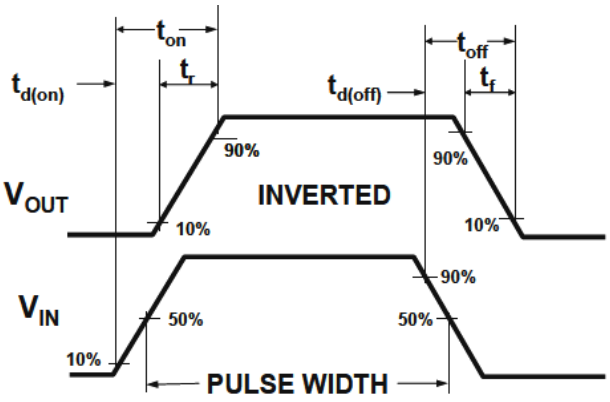


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

1. Switching Test Circuit

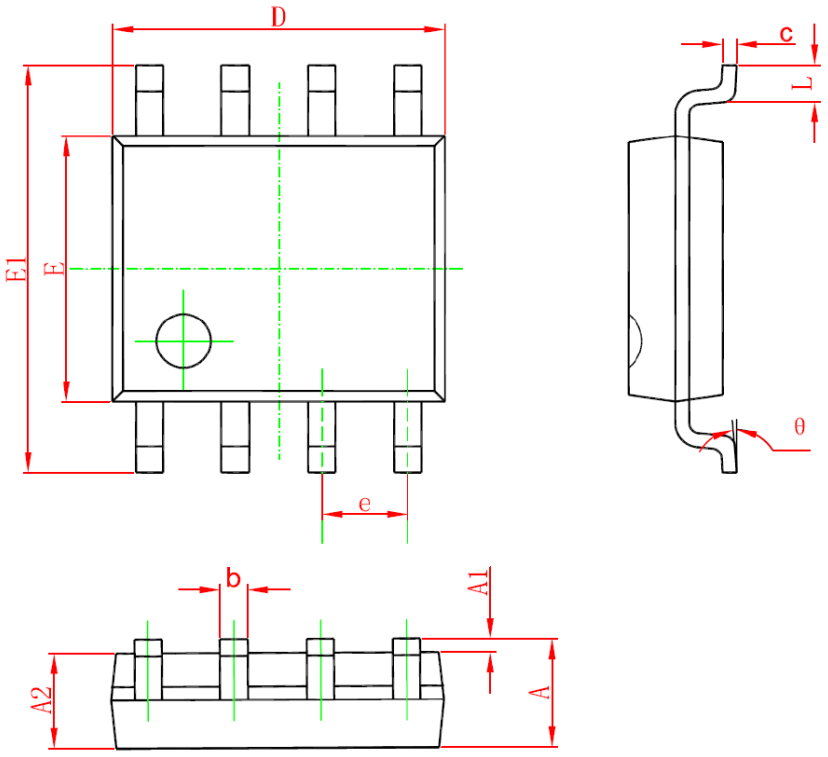


2. Switching Waveforms



PACKAGE INFORMATION

Dimension in SOP8 Package (Unit: mm)



Symbol	Millimeters		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°

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