DESCRIPTION

The AM4920 is the Dual N-Channel logic enhancement mode power field effect transistor is produced using high cell density. Advanced trench technology to provide excellent $R_{DS(ON)}$.

This device is suitable for use as a load switch or in PWM and gate charge for most of the synchronous buck converter applications.

The AM4920 is available in SOP8 package.

FEATURES

- 30V / 7.8A, $R_{DS(ON)}$ =16mΩ (typ.)@V_{GS}=10V
- 30V / 5.8A, $R_{DS(ON)}$ =24mΩ (typ.)@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- Available in SOP8 package

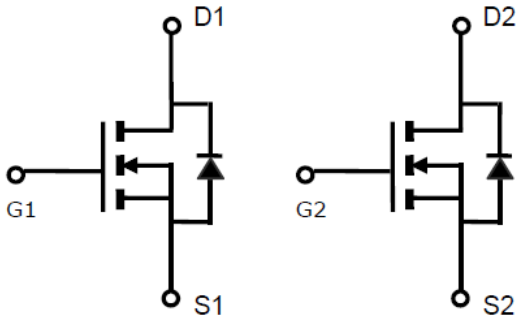
APPLICATIONS

- High Frequency Point-of-Load Synchronous
- New working DC-DC Power System
- Load Switch

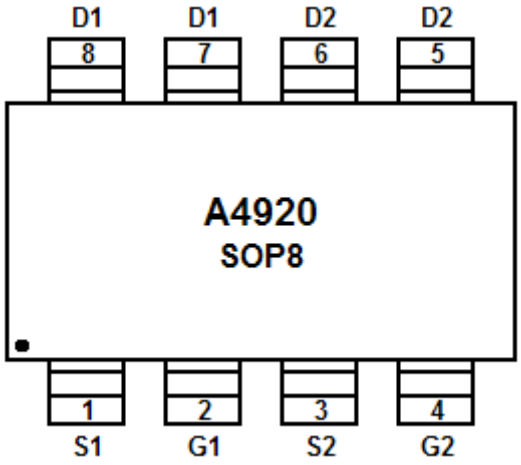
ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 2,500pcs/Reel	M8	AM4920M8R
		AM4920M8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

N- CHANNEL MOSFET



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 specified

V_{DSS}, Drain-Source Voltage		30V
V_{GSS}, Gate-Source Voltage		±20V
I_D, Continuous Drain Current, V_{GS}=10V[NOTE1]	T_A =25℃	7.8A
	T_A =70℃	6.5A
I_{DM}, Pulsed Drain Current[NOTE2]		25A
E_{AS}, Single Pulse Avalanche Energy L=0.1mH[NOTE3]		27mJ
I_{AS}, Avalanche Current		14A
P_D, Power Dissipation	T_A =25℃	2.0W
	T_A =70℃	1.4W
T_J, Operation Junction Temperature		-55℃~150℃
T_{STG}, Storage Temperature Range		-55℃~150℃

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL INFORMATION

Parameter		Symbol	Max	Unit
Thermal Resistance-Junction to Ambient[NOTE1]	Steady-State	$R_{\theta JA}$	85	°C/W
Thermal Resistance Junction to Lead[NOTE1]	Steady-State	$R_{\theta JC}$	50	°C/W

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min	Type	Max	Units
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	-	2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =24V, V_{GS} =0V T_J =25°C	-	-	1	μA
		V_{DS} =24V, V_{GS} =0V T_J =55°C	-	-	5	
Drain-source On-Resistance[NOTE2]	$R_{DS(ON)}$	V_{GS}=10V, I_D=7.8A	-	16	20	mΩ
		V_{GS}=4.5V, I_D=5.8A	-	24	30	
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=6A	-	5.6	-	S
Source-Drain Doide						
Diode Forward Voltage[NOTE2]	V_{SD}	I_S=1.7A, V_{GS}=0V	-	0.75	1.0	V
Continuous Source Current[NOTE1,4]	I_S		-	-	5.8	A
Dynamic Parameters						
Total Gate Charge	Q_g(4.5V)	V_{DS}=15V, V_{GS}=4.5V, I_D=5.8A	-	5	7.2	nC
Gate-Source Charge	Q_{gs}		-	1.6	-	
Gate-Drain Charge	Q_{gd}		-	1.9	-	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	420	586	pF
Output Capacitance	C_{oss}		-	65	-	
Reverse Transfer Capacitance	C_{rss}		-	52	-	
Turn-On Time	$t_{d(on)}$	V_{DD}=15V, V_{GEN}=10V, R_G=3.3Ω	-	2.2	4.4	nS
	t_r		-	38.7	68.8	
Turn-Off Time	$t_{d(off)}$		-	12.5	25	
	t_f		-	4.8	9.6	

NOTE1: The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

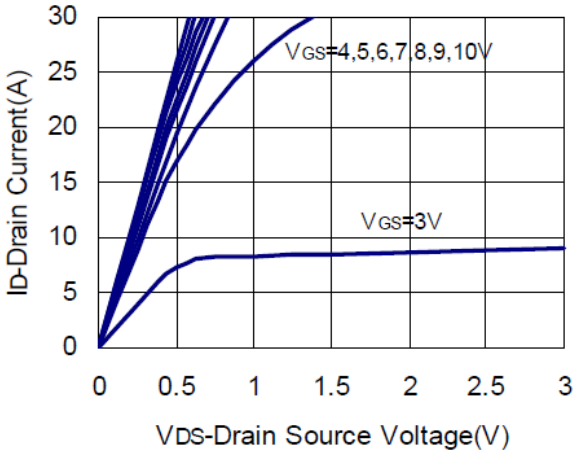
NOTE2: The data tested by pulsed , pulse width ≦300uS , duty cycle ≦2%

NOTE3: The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH.

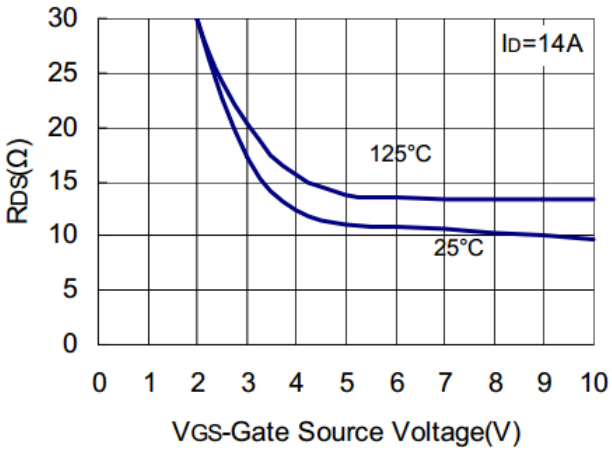
NOTE4: The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

TYPICAL CHARACTERISTICS

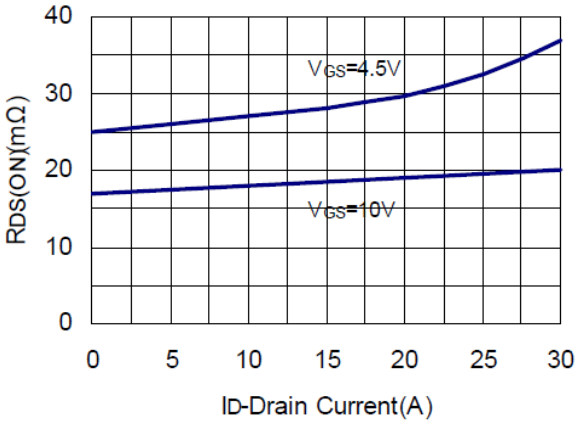
1. Output Characteristics



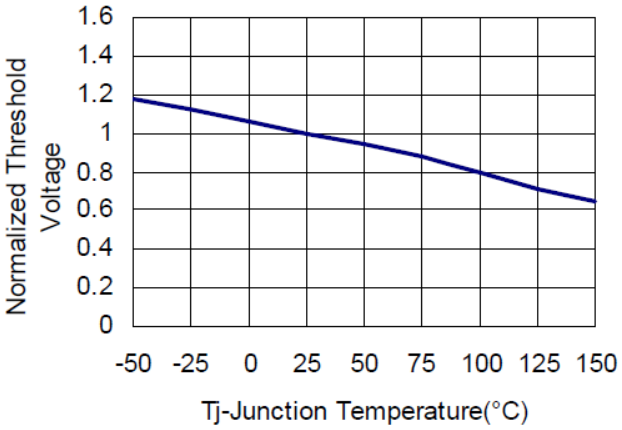
2. On Resistance vs. Gate Source Voltage



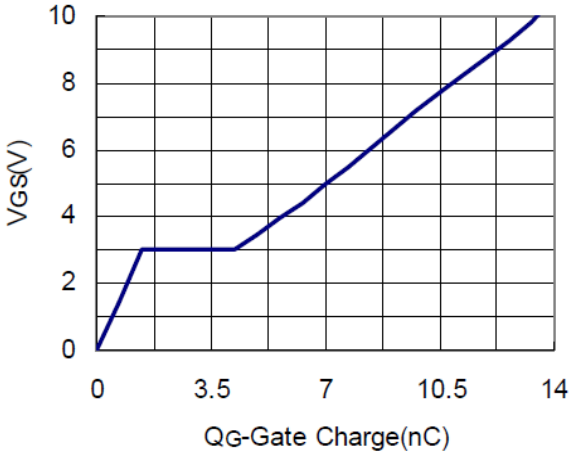
3. Drain Source On Resistance



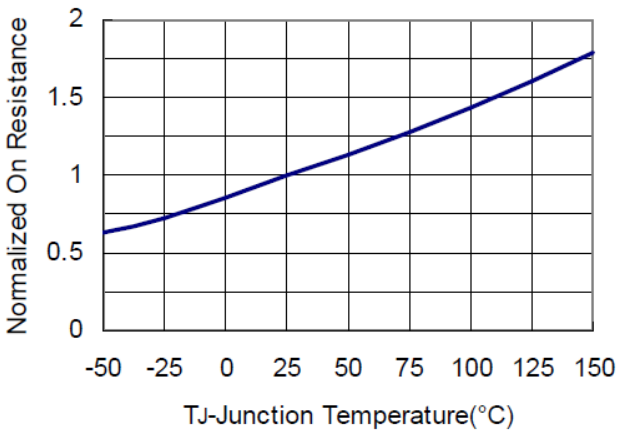
4. Gate Threshold Voltage



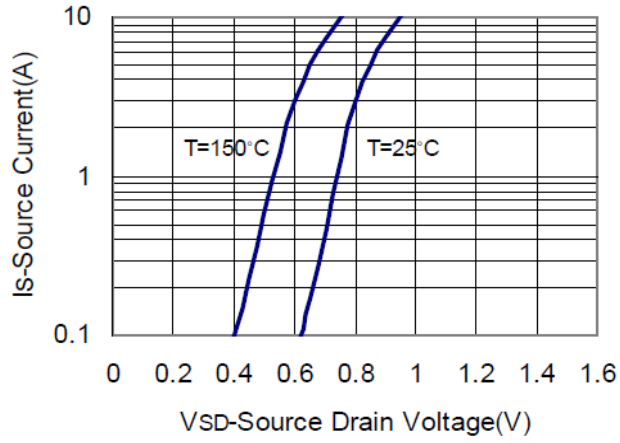
5. Gate Charge



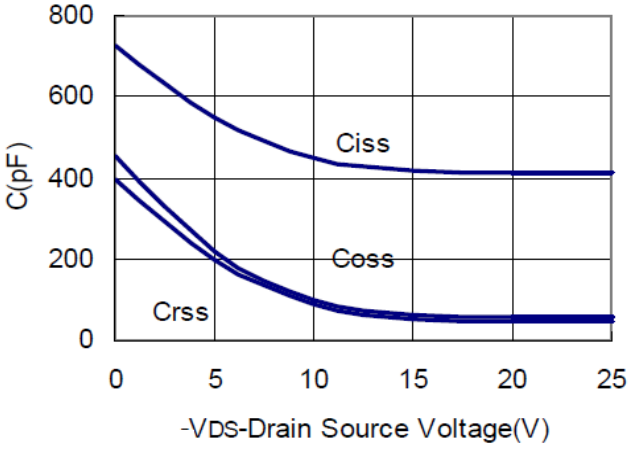
6. Drain Source On Resistance



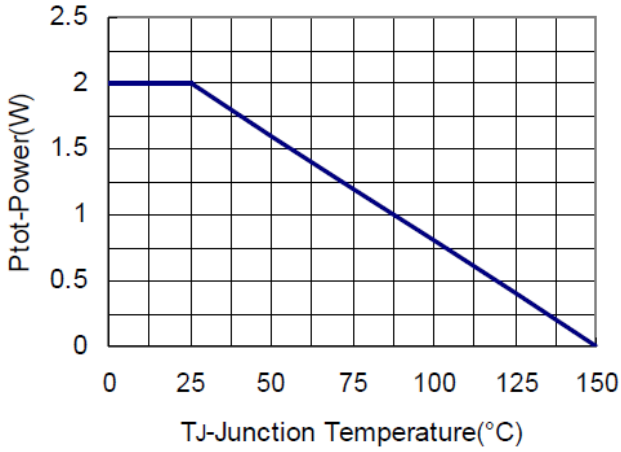
7. Source Drain Diode Forward



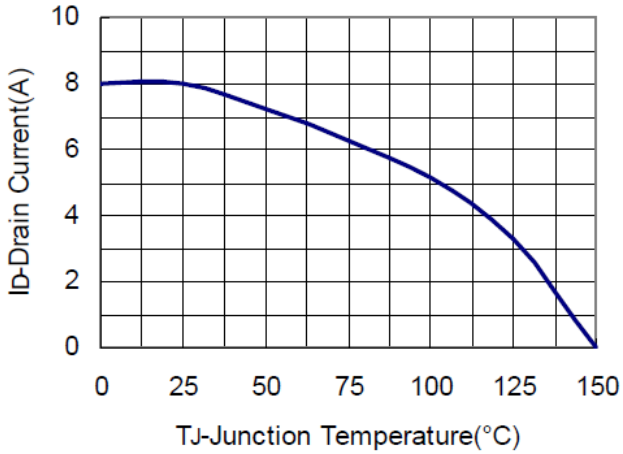
8. Capacitance



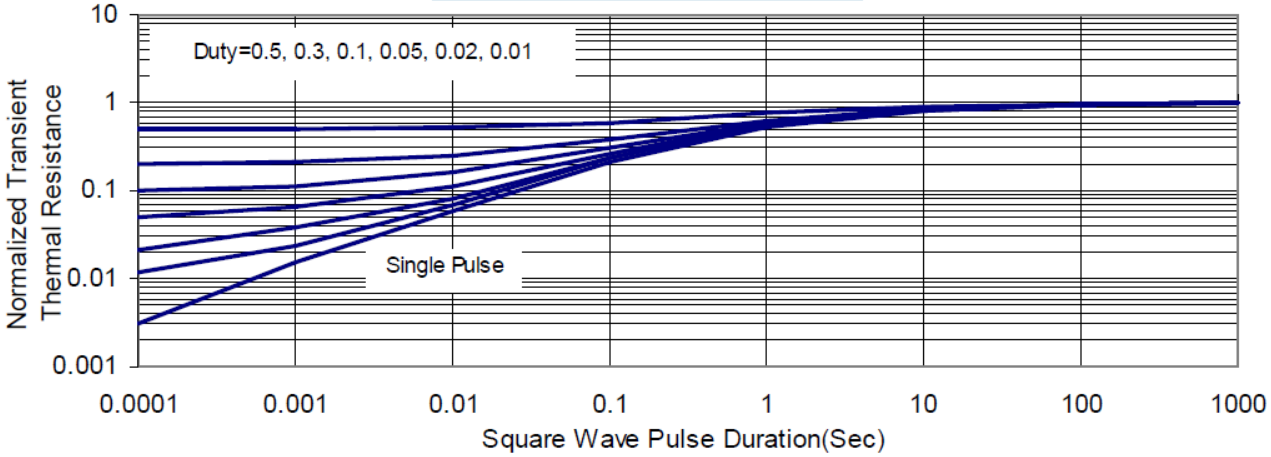
9. Power Dissipation



10. Drain Current

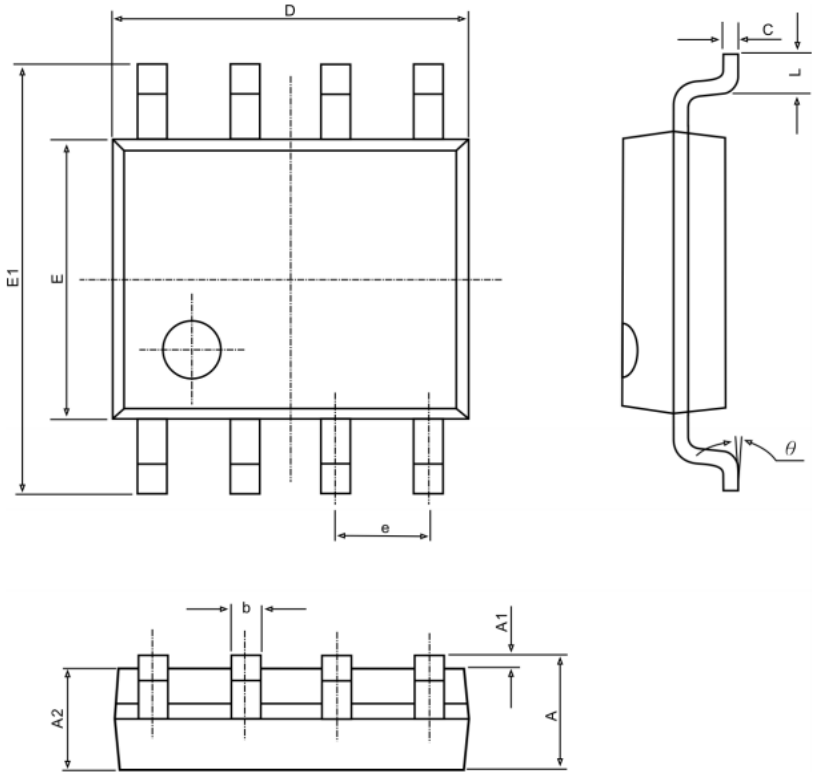


11. Thermal Transient Impedance



PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.040	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	0.288	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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