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 $R_{DS(ON)}$.

The 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, $R_{DS(ON)}$ =28mΩ (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

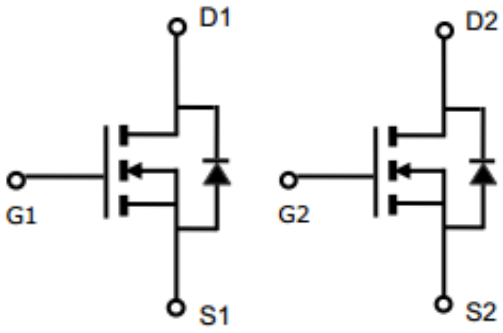
APPLICATIONS

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

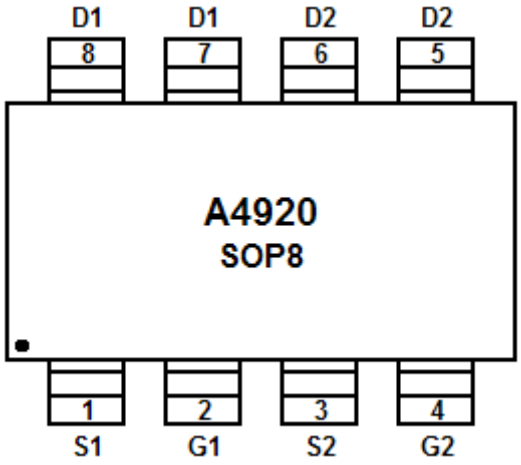
ORDERING INFORMATION

Package Type	Part Number	
SOP8	M8	AM4920M8R
		AM4920M8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

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℃	6A
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℃

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 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	-	28	36	
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}		-	16	-	
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 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C

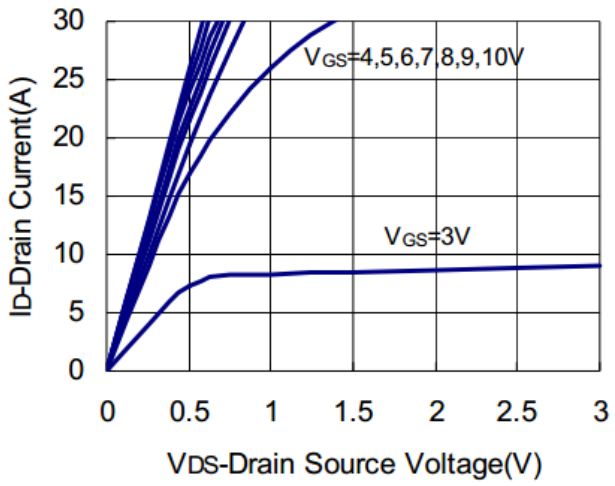
NOTE2: The data tested by pulsed, pulse with ≤300uS, duty cycle ≤2%

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

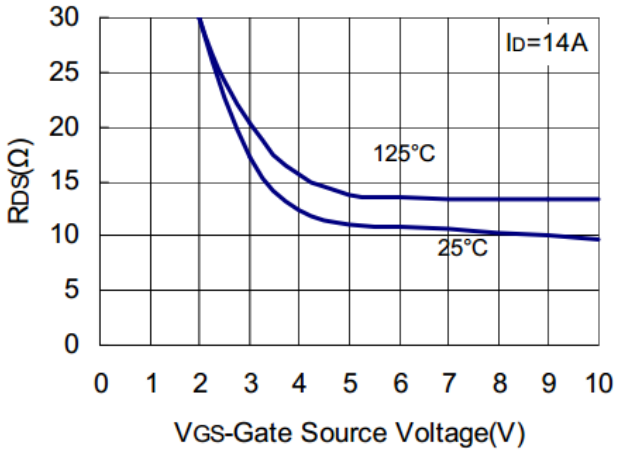
NOTE4: The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.

TYPICAL CHARACTERISTICS

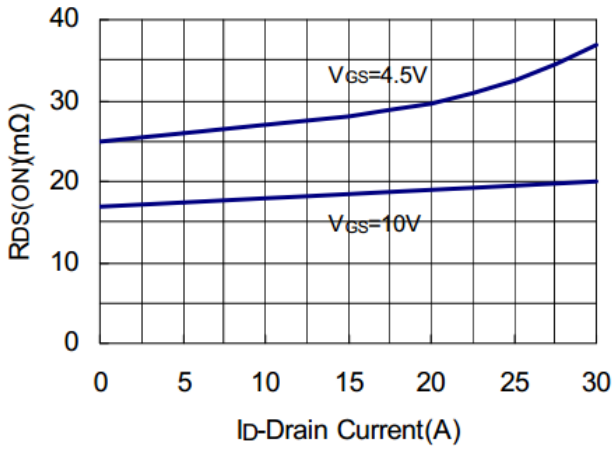
1. Output Characteristics



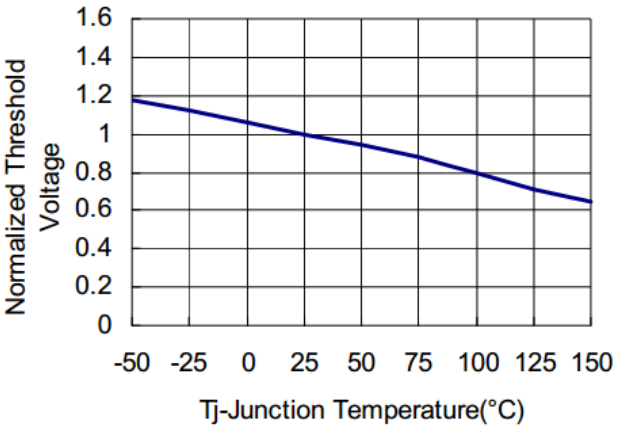
2. On Resistance vs. Gate Source Voltage



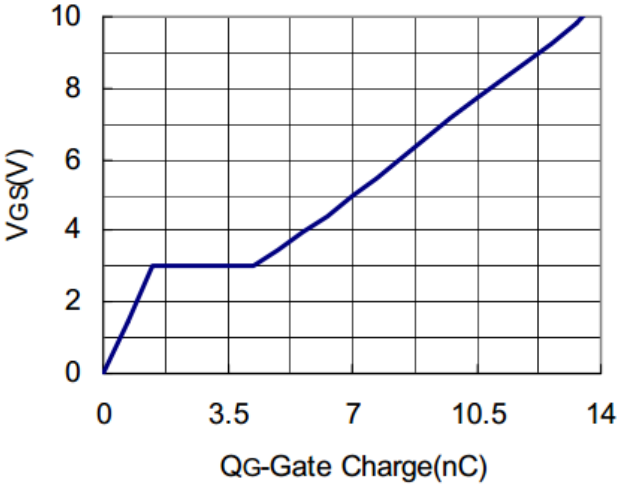
3. Drain Source On Resistance



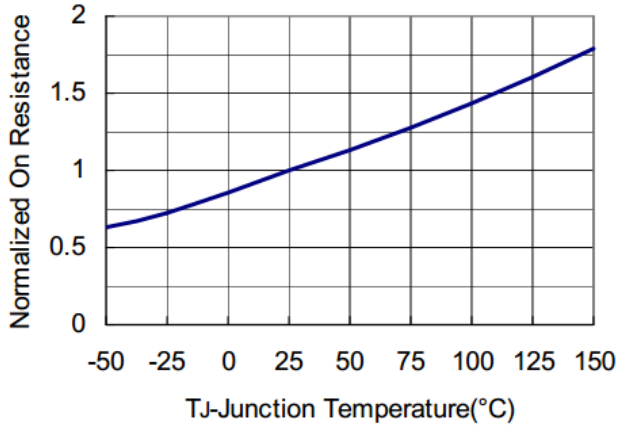
4. Gate Threshold Voltage



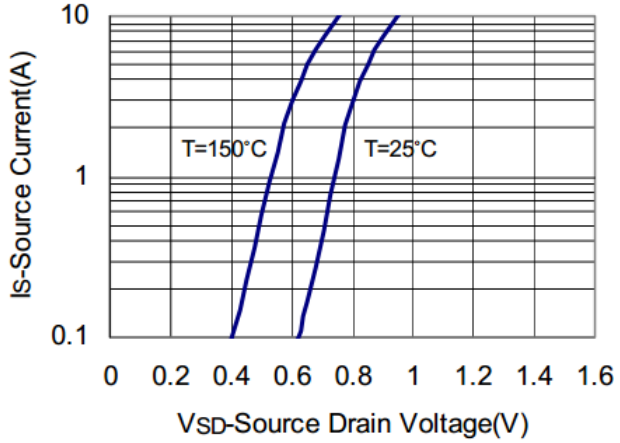
5. Gate Charge



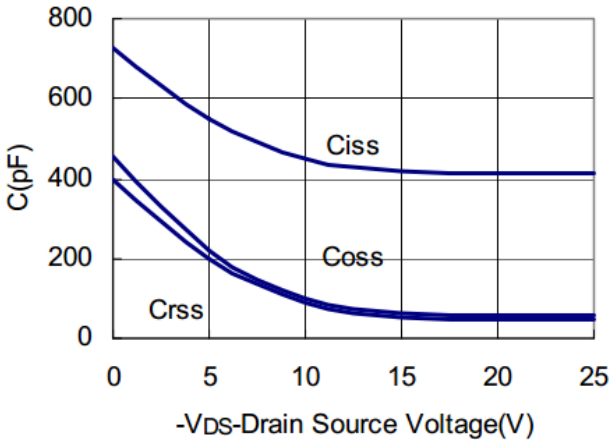
6. Drain Source On Resistance



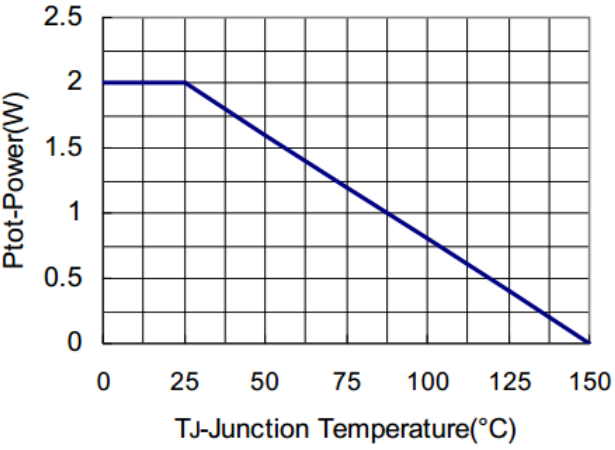
7. Source Drain Diode Forward



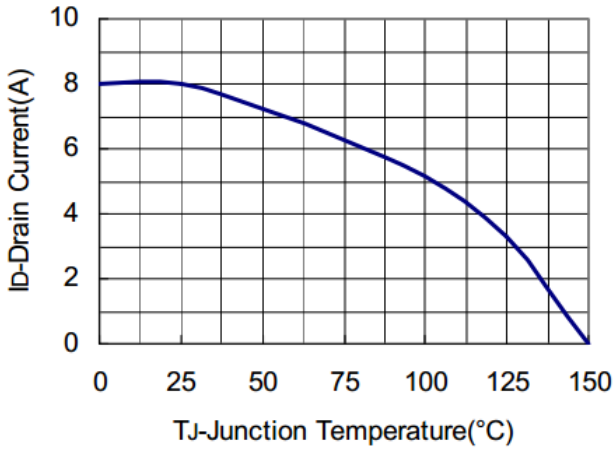
8. Capacitance



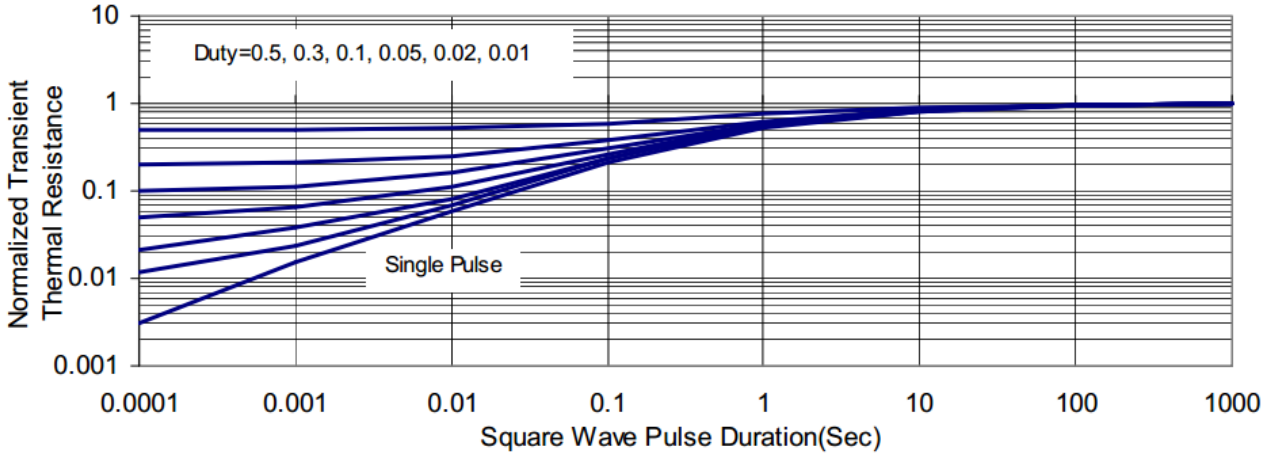
9. Power Dissipation



10. Drain Current

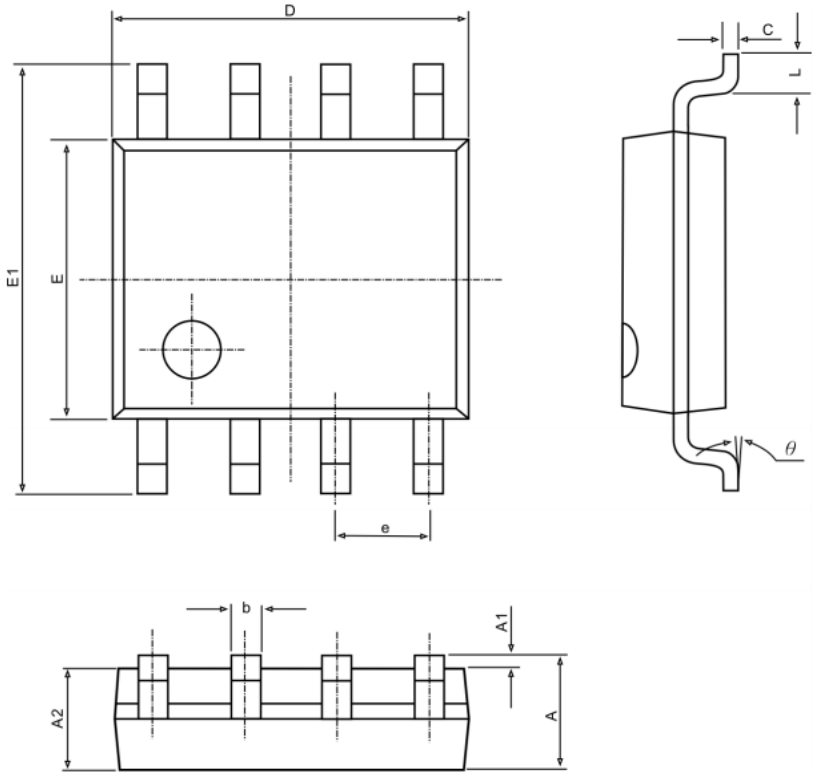


11. Thermal Transient Impedance



PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	Min	Max
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	4.700	5.100
E	3.800	4.000
E1	5.800	6.200
e	1.270(BSC)	
L	0.400	1.270
θ	0°	8°

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