DESCRIPTION

AM7246A is the N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior, fast switching performance, and withstand high energy pulse in the avalanche and commutation mode.

AM7246A is available in a DFN8(3.3x3.3) package.

FEATURES

- V_{DS} = 60V, I_D = 40A
  $R_{DS(ON)}$=9mΩ(Typ.)@V_{GS}=10V
  $R_{DS(ON)}$=10mΩ(Typ.)@V_{GS}=4.5V
- 100% UIS and Rg tested
- Available in a DFN8(3.3x3.3) package.

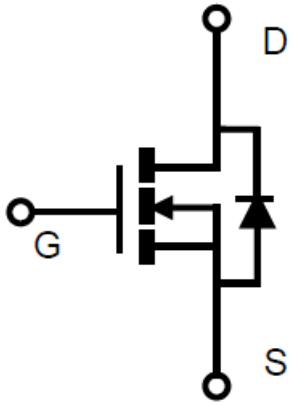
ORDERING INFORMATION

Package Type	Part Number	
DFN8 SPQ: 3,000pcs/Reel	J8	AM7246AJ8R
		AM7246AJ8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

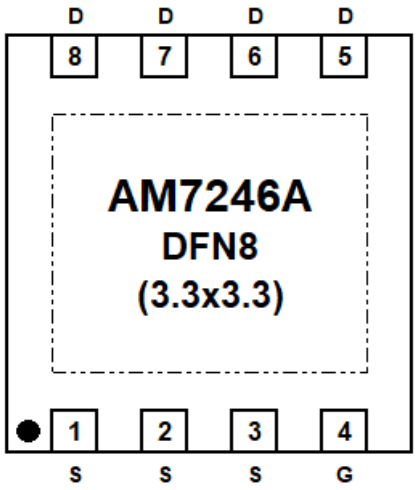
APPLICATION

- Motor Control
- LED Lighting
- DC/DC Converters

PIN DESCRIPTION



PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted

V_{DSS}, Drain-Source Voltage		60V
V_{GSS}, Gate-Source Voltage		±20V
I_D, Continuous Drain Current	T_C=25°C	40A
	T_C=100°C	25A
I_{DM}, Pulsed Drain Current[NOTE1]		160A
I_D, Continuous Drain Current	T_A=25°C	13.5A
	T_A=70°C	10.8A
P_D, Power Dissipation[NOTE2]	T_A=25°C	4.2W
	T_A=70°C	2.7W
I_{AS}, Avalanche Current[NOTE1]		35A
E_{AS}, Single Pulse Avalanche energy L=0.1mH[NOTE1,6]		61mJ
P_D, Power Dissipation[NOTE3]	T_C=25°C	35.7W
	T_C=100°C	14.3W
T_J, Operation Junction Temperature		-55°C~+150°C
T_{STG}, Storage Temperature Range		-55°C~+150°C

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 CHARACTERISTICS

Parameter		Symbol	Typ.	Max.	Units
Thermal Resistance Junction to Ambient[NOTE2]	t≦10s	$R_{\theta JA}$	-	30	°C/W
Thermal Resistance Junction to Ambient[NOTE2,4]	Steady-State		-	65	
Thermal Resistance Junction to Case	Steady-State	$R_{\theta JC}$	-	3.5	

NOTE1: Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$=150°C.

NOTE2: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board in a still air environment with maximum junction temperature $T_{J(MAX)}$=150°C (initial temperature T_A=25°C).

NOTE3: $T_{J(MAX)}$=150°C, using junction-to-ambient thermal resistance, t ≦10sec.

NOTE4: $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance ($R_{\theta JC}$) is more useful in additional heat sinking is used.

NOTE5: The data tested by pulsed , pulse width ≦ 300μs , duty cycle ≦ 2%.

NOTE6: The E_{AS} data shows Max, tested and pulse width limited by $T_{J(MAX)}$=150°C (initial temperature T_J=25°C).

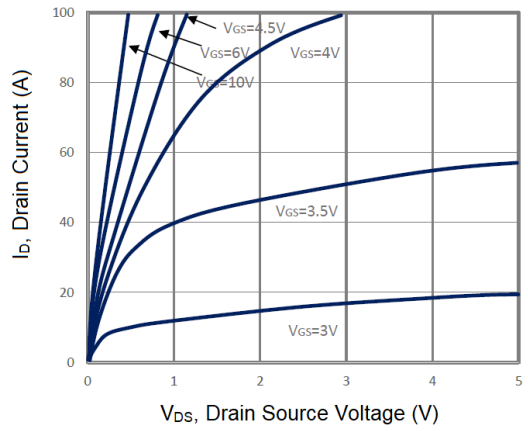
ELECTRICAL CHARACTERISTICS

T_A = 25℃, unless otherwise noted

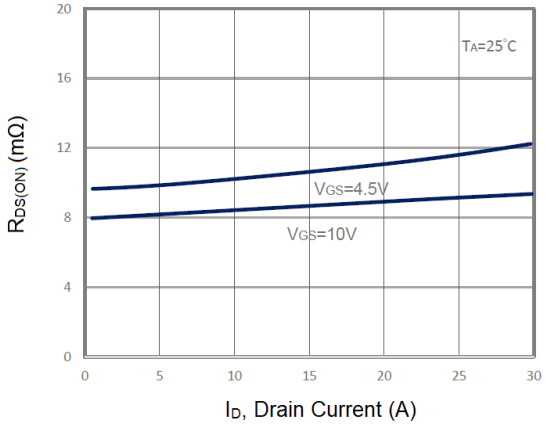
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	1.6	2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V T_J =25°C	-	-	1	μA
		V_{DS}=48V,V_{GS} =0V T_J =75°C	-	-	10	
Drain-source On-Resistance[NOTE5]	$R_{DS(ON)}$	V_{GS} =10V,I_D=13.5A	-	9	12	mΩ
		V_{GS} =4.5V,I_D=8A	-	10	14	
Forward Transconductance	Gfs	V_{DS}=10V, I_D=10A	-	15	-	S
Diode Characteristics						
Diode Forward Voltage[NOTE5]	V_{SD}	I_S=1A, V_{GS}=0V	-	0.7	1	V
Continuous Source Current	I_S		-	-	40	A
Reverse Recovery Time	t_{rr}	I_S=10A, dI/dt=100A/μs	-	18	-	ns
Reverse Recovery Charge	Q_{rr}		-	38	-	nC
Dynamic and Switching Parameters						
Total Gate Charge (10V)	Q_g	V_{DS}=30V, V_{GS}=10V, I_D=10A	-	38.8	54.3	nC
Total Gate Charge (4.5V)	Q_g		-	18.5	25.9	
Gate-Source Charge	Q_{gs}		-	6.2	8.7	
Gate-Drain Charge	Q_{gd}		-	9.3	13	
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V, f=1.0MHz	-	2050	-	pF
Output Capacitance	C_{oss}		-	172	-	
Reverse Transfer Capacitance	C_{rss}		-	72	-	
Gate Resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1MHZ	-	1.6	-	Ω
Turn-On Time[NOTE5]	$t_{d(on)}$	V_{DD}=30V, V_{GS}=10V, R_G=6Ω, I_D=1A	-	14	27	ns
	t_r		-	22	42	
Turn-Off Time[NOTE5]	$t_{d(off)}$		-	38	72	
	t_f		-	11	21	

TYPICAL CHARACTERISTICS

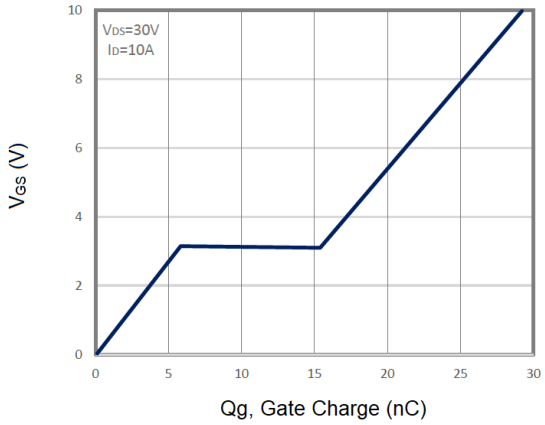
1. Output Characteristics



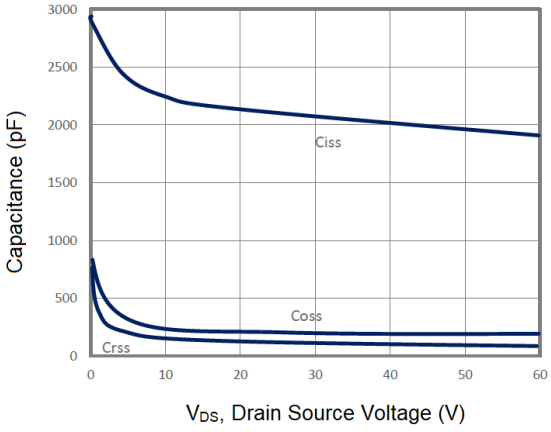
2. Drain-Source On Resistance



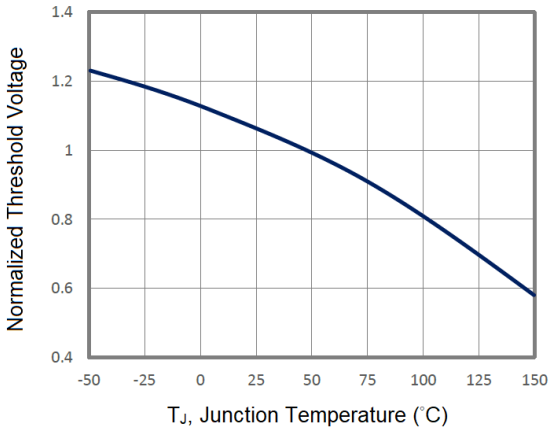
3. Gate Charge



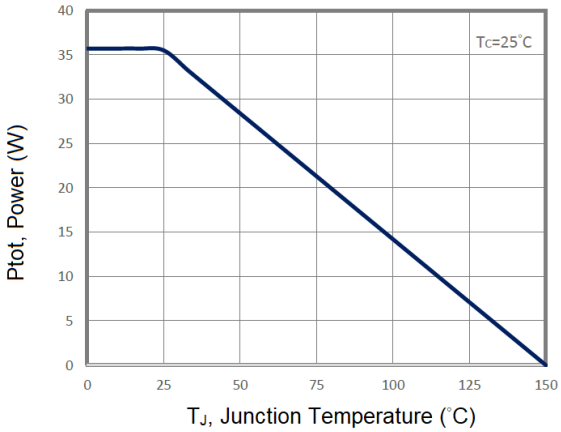
4. Capacitance



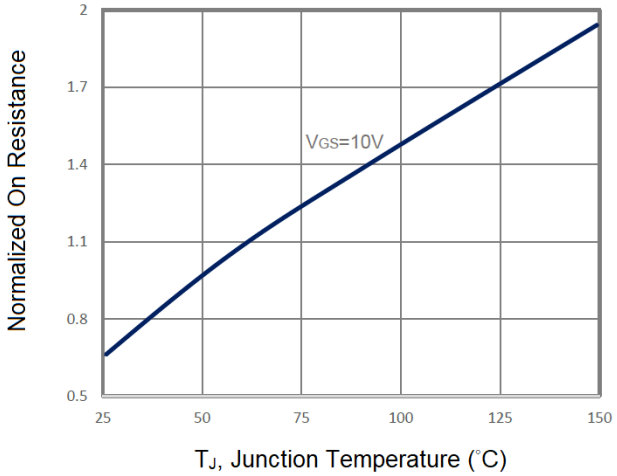
5. Gate Threshold Voltage



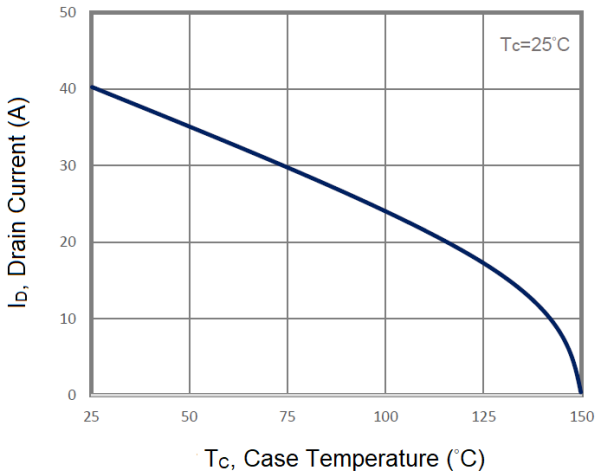
6. Power Dissipation



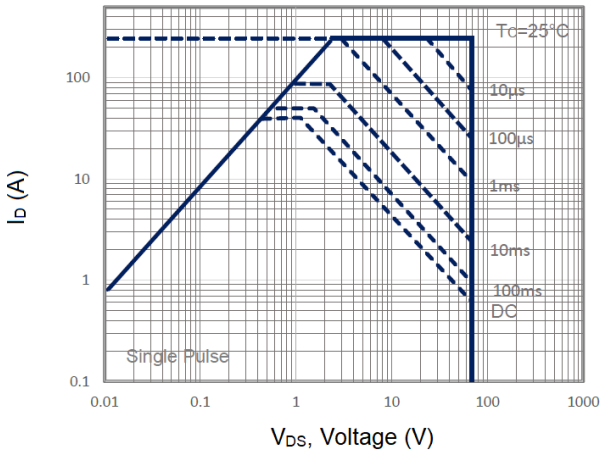
7. $R_{DS(ON)}$ vs. Junction Temperature



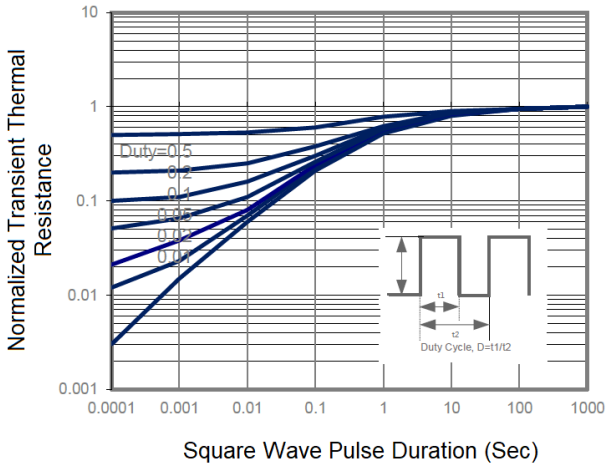
8. Drain Current vs. T_C



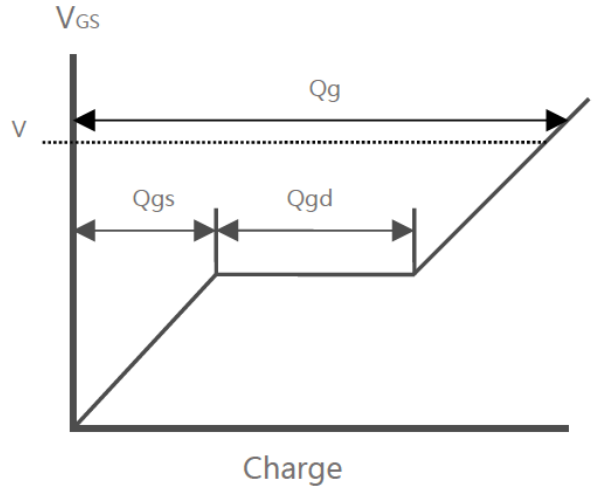
9. Maximum Safe Operation Area



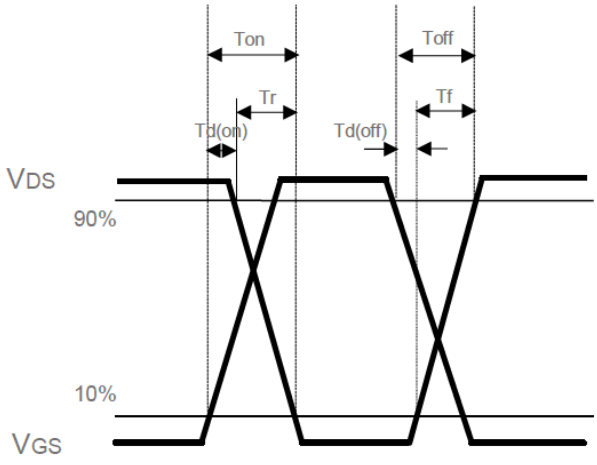
10. Thermal Transient Impedance



11. Gate Charge Waveform

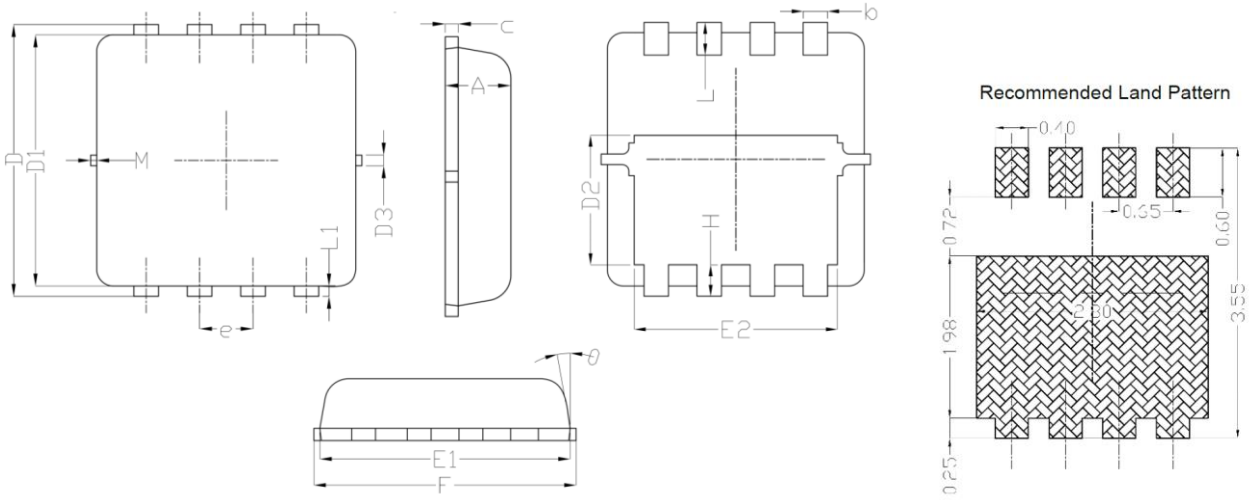


12. Switching Time Waveform



PACKAGE INFORMATION

Dimension in DFN8(3.3x3.3) (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.300	3.400	0.130	0.134
D1	3.250	3.450	0.128	0.136
D2	1.780	1.980	0.070	0.078
D3	-	0.130	-	0.005
E	3.200	3.400	0.126	0.134
E1	3.000	3.200	0.118	0.126
E2	2.390	2.590	0.094	0.102
e	0.65 BSC		0.026 BSC	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	-	0.130	-	0.005
M	-	0.150	-	0.006
θ	0°	12°	0°	15°

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