DESCRIPTION

AM7246 is available in DFN8 (3.3x3.3) package.

FEATURES

- 63V/41A[NOTE1],
  $R_{DS(ON)}$= 12mΩ(max.) @V_{GS}=10V
  $R_{DS(ON)}$= 14.5mΩ(max.) @V_{GS}=4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Available in DFN8 (3.3x3.3) package.

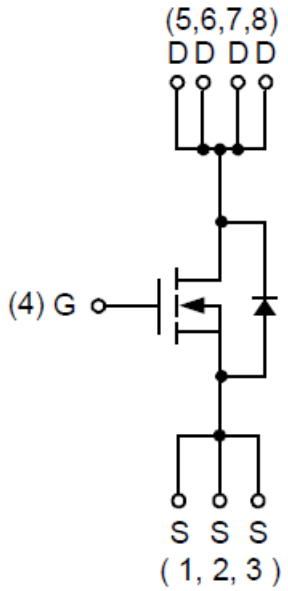
ORDERING INFORMATION

Package Type	Part Number	
DFN8(3.3x3.3) SPQ: 5,000pcs/Reel	J8	AM7246J8R
		AM7246J8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

APPLICATION

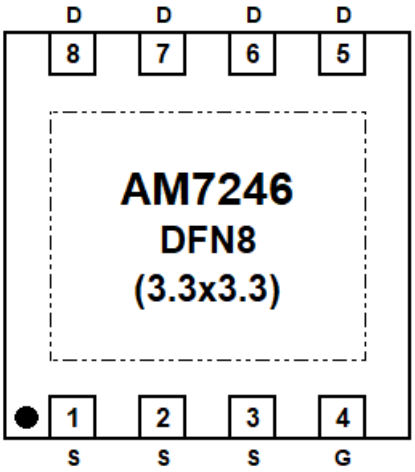
- Secondary Side Synchronous Rectification
- DC-DC Converter
- Motor Control
- Load Switching

PIN DESCRIPTION



N-Channel MOSFET

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℃, unless otherwise noted

V_{DSS}, Drain-Source Voltage		63V
V_{GSS}, Gate-Source Voltage		±20V
T_J, Maximum Junction Temperature		150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
I_S, Diode Continuous Forward Current	T_C=25°C	20A
I_D, Continuous Drain Current	T_C=25°C	41A[NOTE1]
	T_C=100°C	26A
I_{DM}[NOTE2], Pulsed Drain Current	T_C=25°C	172A
P_D, Maximum Power Dissipation	T_C=25°C	44.5W
	T_C=100°C	17.8W
$R_{\theta JC}$, Thermal Resistance-Junction to Case		2.8°C/W
I_D, Continuous Drain Current	T_A=25°C	8.3A
	T_A=70°C	6.7A
P_D, Maximum Power Dissipation	T_A=25°C	1.78W
	T_A=70°C	1.14W
$R_{\theta JA}$[NOTE4], Thermal Resistance-Junction to Ambient	t ≤ 10s	35°C/W
	Steady State	70°C/W
I_{AS}[NOTE3], Avalanche Current, Single Pulse	L=0.5mH	20A
E_{AS}[NOTE3], Avalanche Energy, Single Pulse	L=0.5mH	100mJ

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.

NOTE1: Calculated continuous current based on maximum allowable junction temperature. Bonding wire limitation current is 35A.

NOTE4: Pulse width limited by max. junction temperature.

NOTE3: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).

NOTE4: Surface Mounted on 1in^2 pad area.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

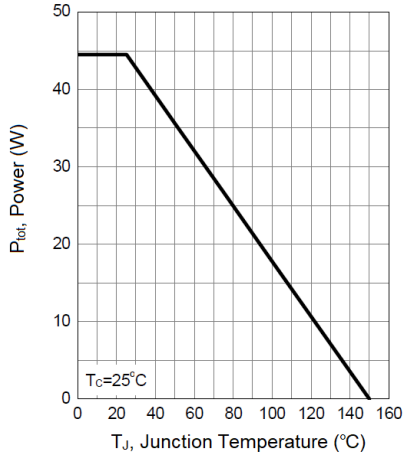
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	63	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	2	3	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE5	V_{GS}=10V, I_{DS}=6A	-	10	12	mΩ
		V_{GS}=4.5V, I_{DS}=5A	-	11	14.5	
Diode Characteristics						
Diode Forward Voltage	V_{SD} NOTE5	I_{SD}=6A, V_{GS}=0V	-	0.8	1.3	V
Reverse Recovery Time	t_{rr}	I_{SD}=6A, dI$_{SD}$/dt=100A/μs	-	28	-	ns
Reverse Recovery Charge	Q_{rr}		-	35	-	nC
Dynamic CharacteristicsNOTE6						
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	1	-	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	2500	3500	pF
Output Capacitance	C_{oss}		-	215	-	
Reverse Transfer Capacitance	C_{rss}		-	105	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	18	33	ns
Turn-on Rise Time	t_r		-	10	18	
Turn-off Delay Time	$t_{d(off)}$		-	73	131	
Turn-off Fall Time	t_f		-	27	49	
Gate Charge CharacteristicsNOTE6						
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=4.5V, I_{DS}=6A	-	22	-	nC
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=10V, I_{DS}=6A	-	45	65	
Gate-Source Charge	Q_{gs}		-	9	-	
Gate-Drain Charge	Q_{gd}		-	8.5	-	

NOTE5: Pulse test; pulse width≤300μs, duty cycle≤2%.

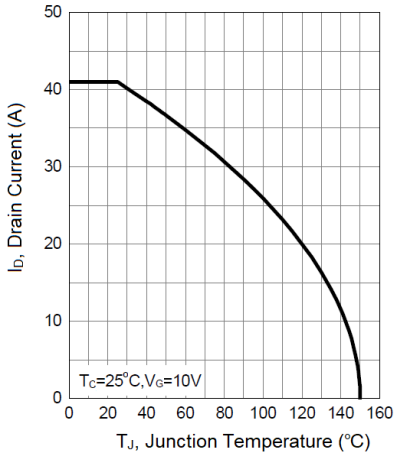
NOTE6: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

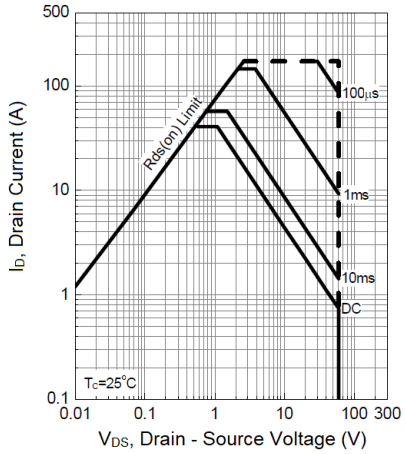
1. Power Dissipation



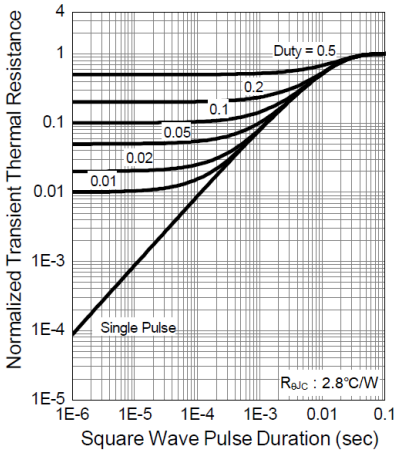
2. Drain Current



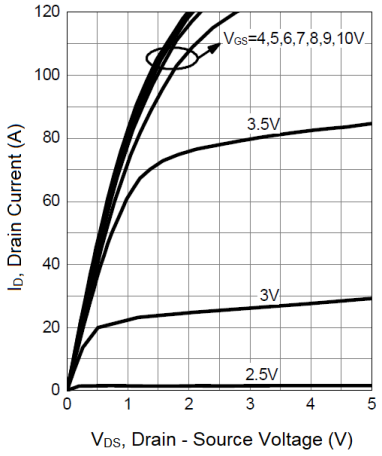
3. Safe Operation Area



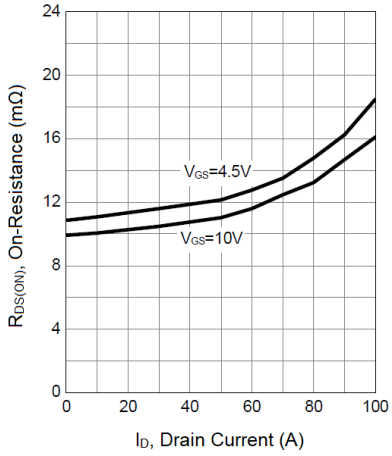
4. Thermal Transient Impedance



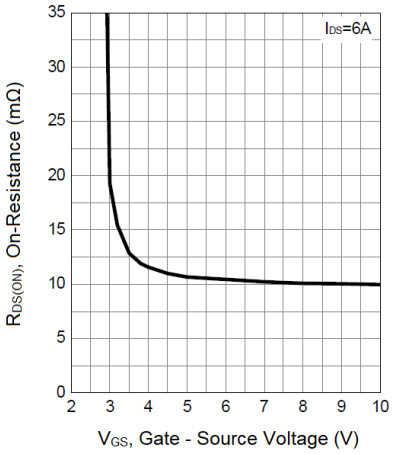
5. Output Characteristics



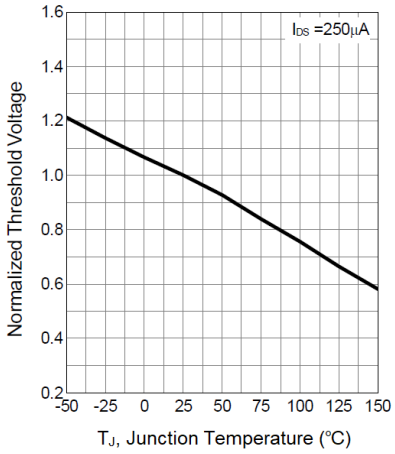
6. Drain-Source On Resistance



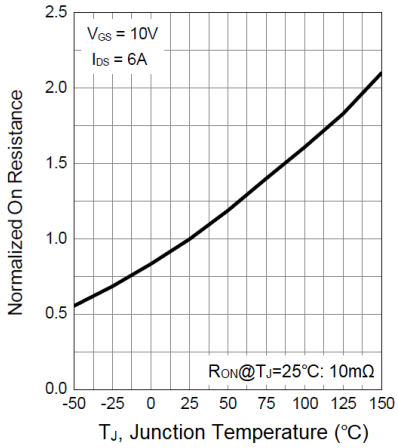
7. Gate-Source On Resistance



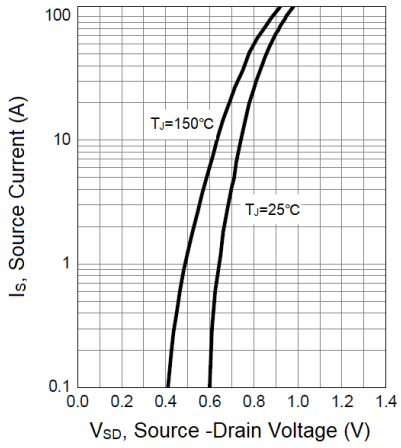
8. Gate Threshold Voltage



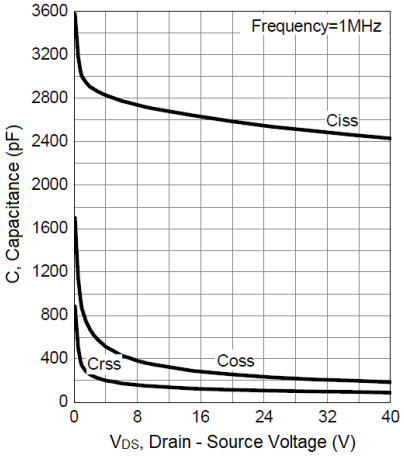
9. Drain-Source On Resistance



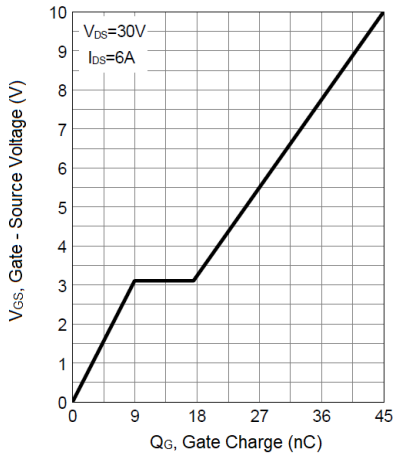
10. Source-Drain Diode Forward



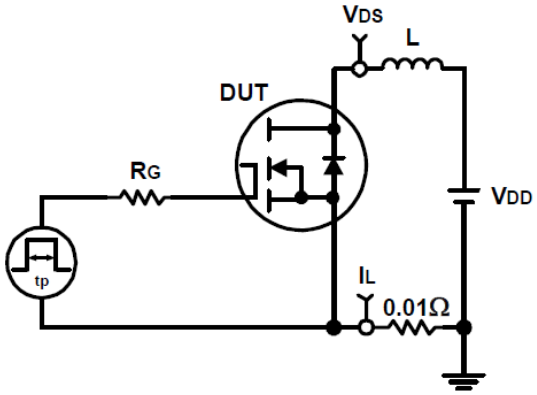
11. Capacitance

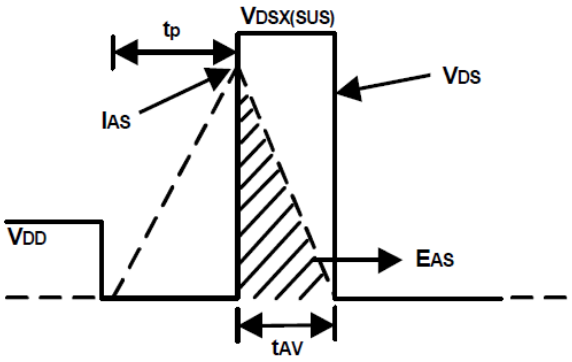


12. Gate Charge

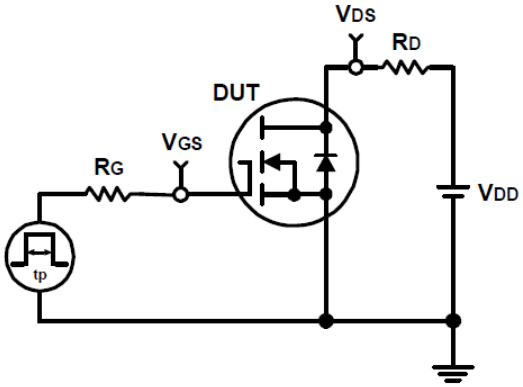


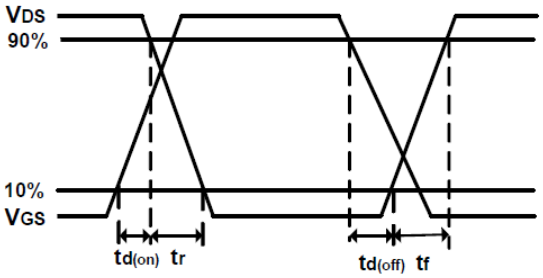
Avalanche Test Circuit and Waveforms





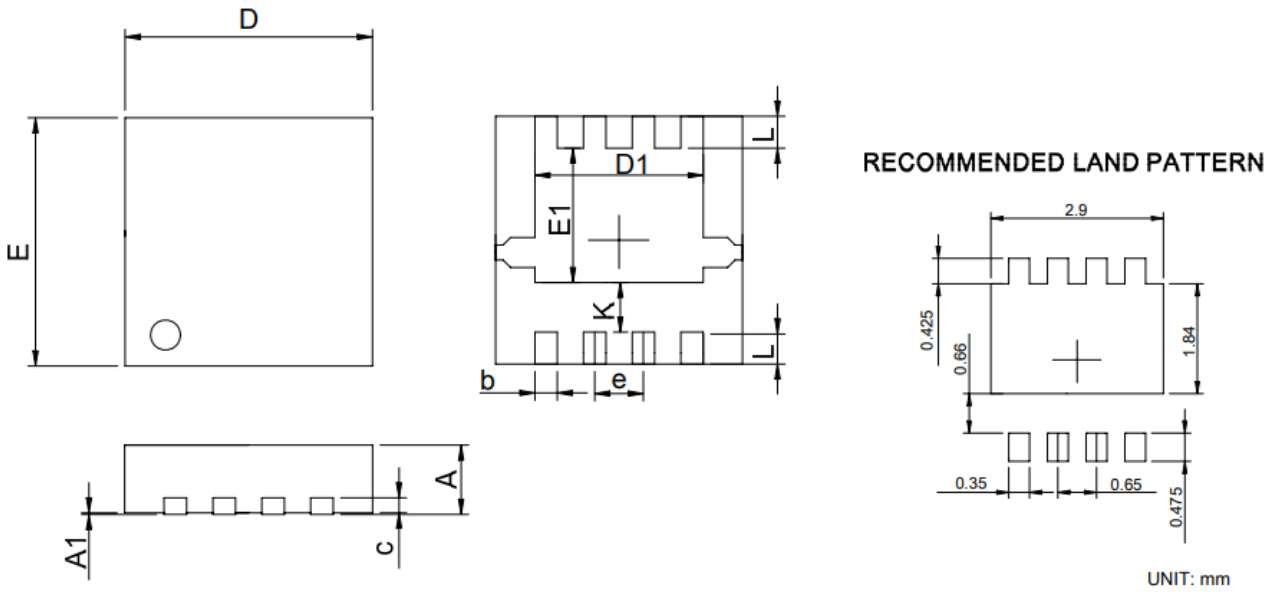
Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

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



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.20	3.40	0.126	0.134
D1	2.05	2.45	0.081	0.096
E	3.20	3.40	0.126	0.134
E1	1.65	1.90	0.065	0.075
e	0.65 BSC		0.026 BSC	
K	0.55	-	0.022	-
L	0.325	0.525	0.013	0.021

IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or server property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.