DESCRIPTION

AM7410 is available in DFN8 (3x3) package.

FEATURES

- 63V/31A,
  $R_{DS(ON)}$ = 20mΩ(max.) @ V_{GS} =10V
  $R_{DS(ON)}$ = 24mΩ(max.) @ V_{GS} =4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Available in DFN8 (3x3) package.

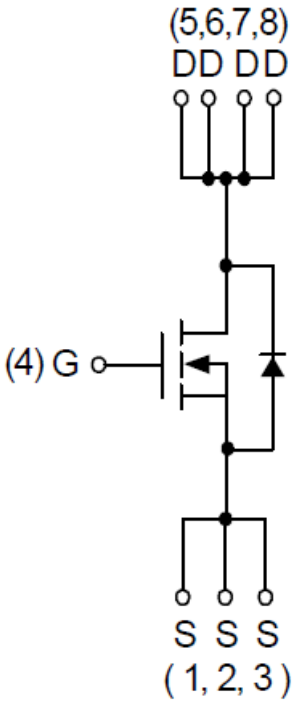
ORDERING INFORMATION

Package Type	Part Number	
DFN8(3x3) SPQ: 5,000pcs/Reel	J8	AM7410J8R
		AM7410J8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

APPLICATION

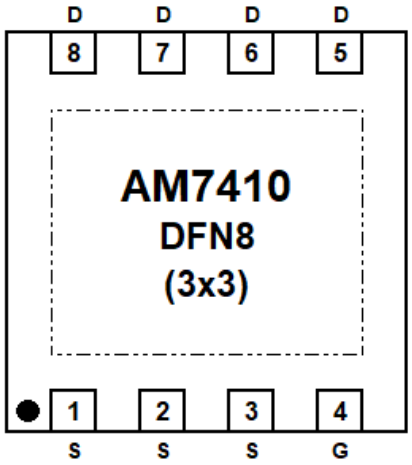
- DC-DC Converter.
- Motor Control.
- Power Tools.
- Load Switching.

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	15A
I_D, Continuous Drain Current	T_C=25°C	31A
	T_C=100°C	20A
I_{DM}[NOTE1], Pulsed Drain Current	T_C=25°C	124A
P_D, Maximum Power Dissipation	T_C=25°C	35W
	T_C=100°C	14W
$R_{\theta JC}$, Thermal Resistance-Junction to Case		3.5°C/W
I_D, Continuous Drain Current	T_A=25°C	7.5A
	T_A=70°C	6A
P_D, Maximum Power Dissipation	T_A=25°C	2W
	T_A=70°C	1.3W
$R_{\theta JA}$[NOTE3], Thermal Resistance-Junction to Ambient		60°C/W
I_{AS}[NOTE2], Avalanche Current, Single Pulse	L=0.5mH	15A
E_{AS}[NOTE2], Avalanche Energy, Single Pulse	L=0.5mH	56mJ

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: Pulse width limited by max. junction temperature.

NOTE2: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).

NOTE3: Surface Mounted on 1in² pad area.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

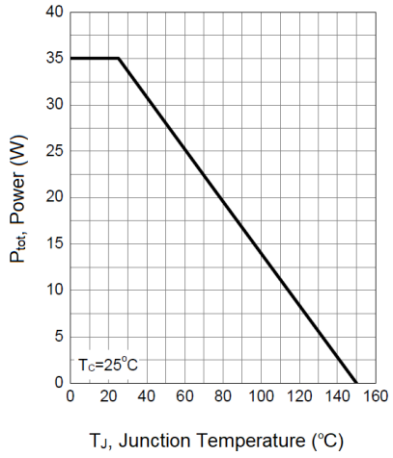
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_{DS}=250μA	63	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1	2	3	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE4	V_{GS}=10V, I_{DS}=15A	-	16	20	mΩ
		V_{GS}=4.5V, I_{DS}=12A	-	18	24	
Diode Characteristics						
Diode Forward Voltage	V_{SD} NOTE4	I_{SD}=15A, V_{GS}=0V	-	0.8	1.3	V
Reverse Recovery Time	t_{rr}	I_{SD}=15A, dI_{SD}/dt=100A/μs	-	23	-	ns
Reverse Recovery Charge	Q_{rr}		-	25	-	nC
Dynamic CharacteristicsNOTE5						
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	2.5	-	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	1370	1780	pF
Output Capacitance	C_{oss}		-	135	-	
Reverse Transfer Capacitance	C_{rss}		-	60	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	14	26	ns
Turn-on Rise Time	t_r		-	8	15	
Turn-off Delay Time	$t_{d(off)}$		-	38	69	
Turn-off Fall Time	t_f		-	12	22	
Gate Charge CharacteristicsNOTE5						
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=4.5V, I_{DS}=15A	-	12	-	nC
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=10V, I_{DS}=15A	-	26	37	
Gate-Source Charge	Q_{gs}		-	5	-	
Gate-Drain Charge	Q_{gd}		-	5	-	

NOTE4: Pulse test; pulse width≤300μs, duty cycle≤2%.

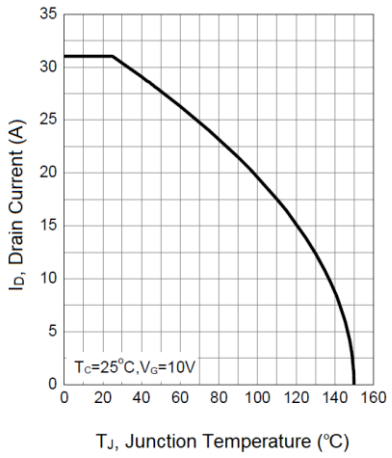
NOTE5: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

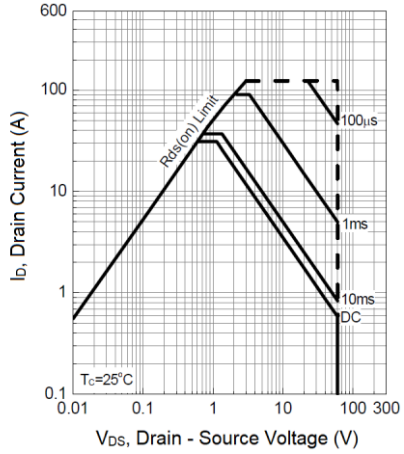
1. Power Dissipation



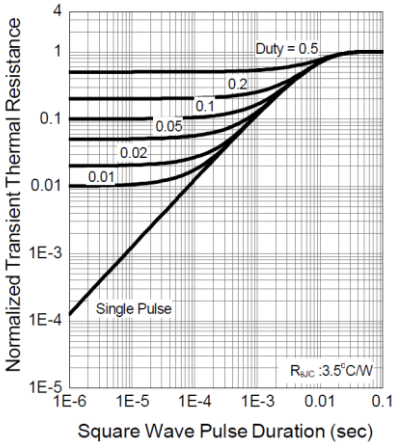
2. Drain Current



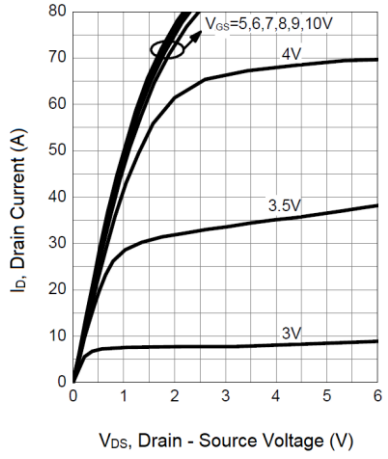
3. Safe Operation Area



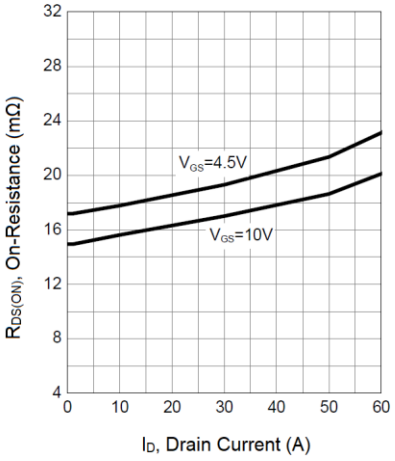
4. Thermal Transient Impedance



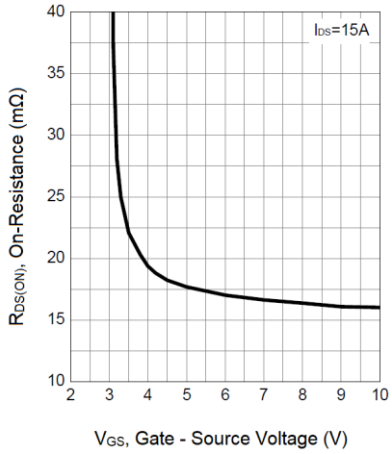
5. Output Characteristics



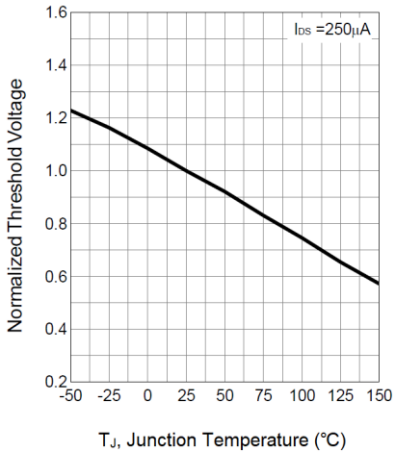
6. Drain-Source On Resistance



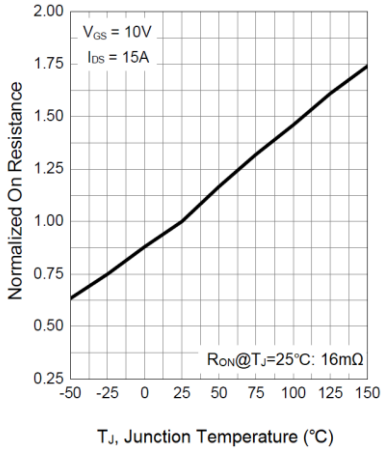
7. Gate-Source On Resistance



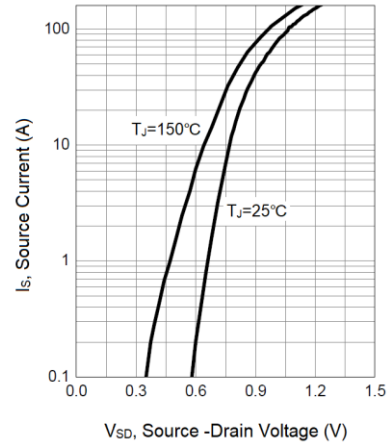
8. Gate Threshold Voltage



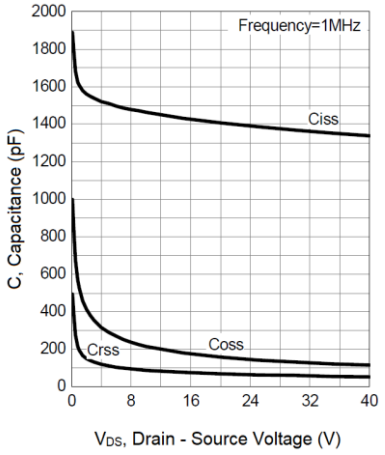
9. Drain-Source On Resistance



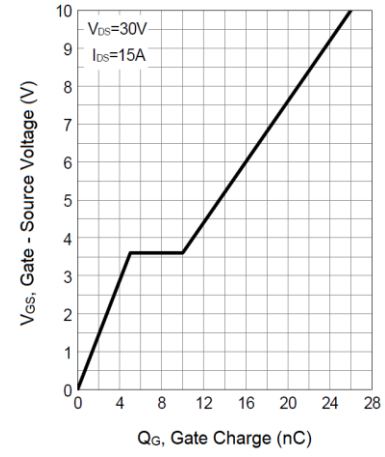
10. Source-Drain Diode Forward



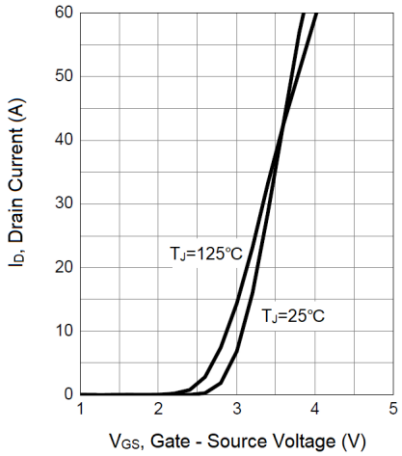
11. Capacitance



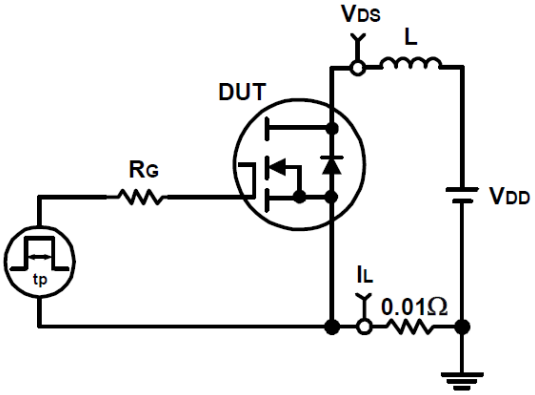
12. Gate Charge

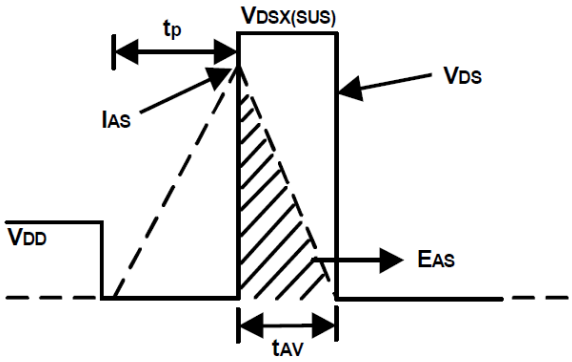


13. Transfer Characteristics

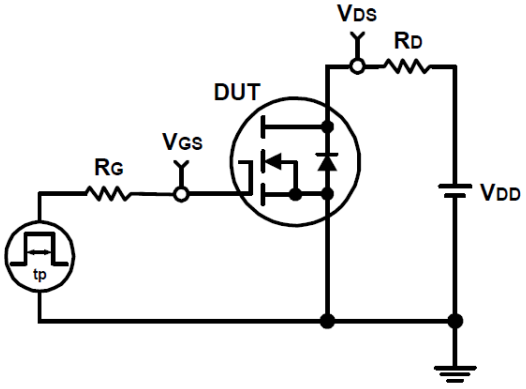


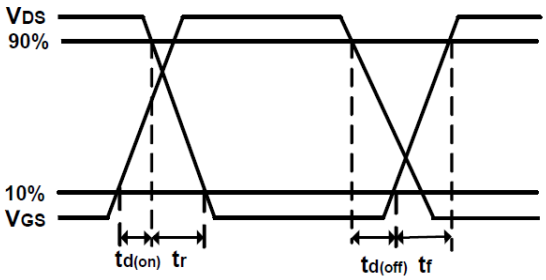
Avalanche Test Circuit and Waveforms





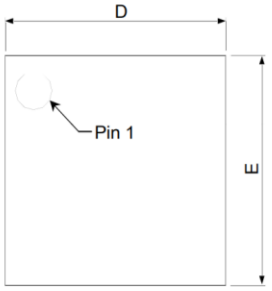
Switching Time Test Circuit and Waveforms



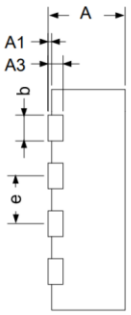


PACKAGE INFORMATION

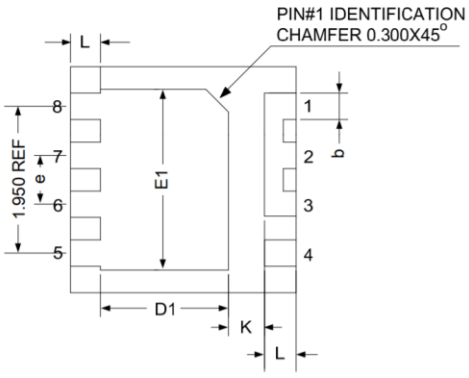
Dimension in DFN8(3x3) Package (Unit: mm)



Top View

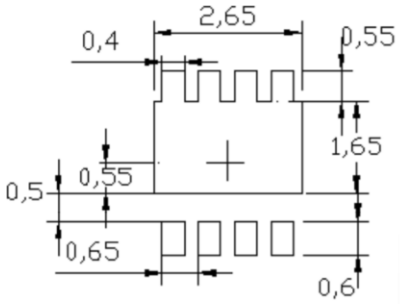


Side View



Bottom View

RECOMMENDED LAND PATTERN



UNIT: mm

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	1.00	0.028	0.039
A1	0.00	0.050	0.000	0.0020
A3	0.203 REF		0.008 REF	
b	0.25	0.40	0.010	0.016
D	2.90	3.10	0.114	0.122
D1	1.65	1.90	0.065	0.075
E	2.90	3.10	0.114	0.122
E1	2.25	2.55	0.089	0.100
e	0.650 BSC		0.026 BSC	
L	0.30	0.50	0.012	0.020
K	0.43	-	0.017	-

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.