



DESCRIPTION

The AM4406 is available in SOP8 Package

ORDERING INFORMATION

Package Type	Part Number	
SOP8	M8	AM4406M8R
		AM4406M8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

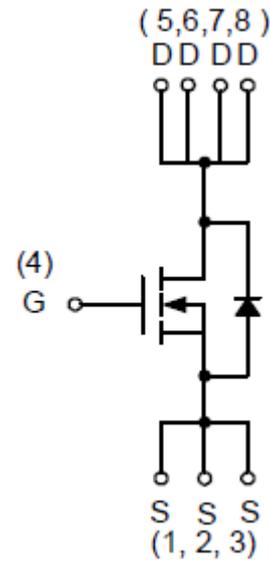
FEATURES

- 30V/12A,
 $R_{DS(ON)} = 11.5m\Omega(max.) @ V_{GS} = 10V$
 $R_{DS(ON)} = 15.5m\Omega(max.) @ V_{GS} = 4.5V$
- Reliable and Rugged
- Available in SOP8 Package

APPLICATION

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

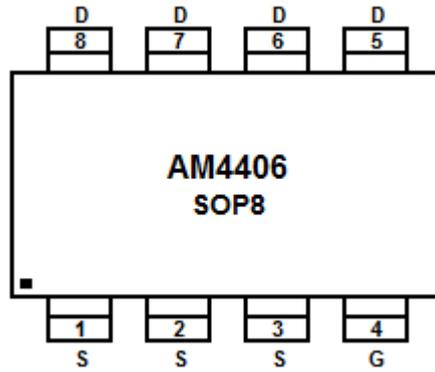
PIN DESCRIPTION



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°C Unless Otherwise Noted

V _{DSS} , Drain-Source Voltage		30V
V _{GSS} , Gate-Source Voltage		±20V
I _D ^{NOTE1} , Continuous Drain Current (V _{GS} =10V)	T _A =25°C	12A
	T _A =70°C	10A
I _{DM} ^{NOTE1} , 300µs Pulsed Drain Current (V _{GS} =10V)		40A
I _S ^{NOTE1} , Diode Continuous Forward Current		1A
I _{AS} ^{NOTE2} , Avalanche Current (Single Pulse)		23A
E _{AS} ^{NOTE2} , Avalanche Energy, Single Pulse (L=0.1mH)		25mJ
T _J , Maximum Junction Temperature		150°C
T _{STG} , Storage Temperature Range		-55°C~150°C
P _D ^{NOTE1} , Maximum Power Dissipation	T _A =25°C	3.1W
	T _A =70°C	2.0W
R _{θJA} ^{NOTE1,3} , Thermal Resistance-Junction to Ambient	t ≤10s	32°C/W
	Steady State	65°C/W
R _{θJL} , Thermal Resistance-Junction to Lead	Steady State	20°C/W

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: Surface Mounted on 1in² pad area, t ≤10sec. Maximum Power dissipation is calculated from R_{θJA} (worst)=40°C/W under t ≤10s.

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

NOTE3: Maximum under Steady State conditions is 75°C/W.



ELECTRICAL CHARACTERISTICS

T_A = 25°C Unless Otherwise Noted

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V	-	-	1.0	μA
		T _J =85°C	-	-	30	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	1.3	1.9	2.5	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} =12A	-	9.5	11.5	mΩ
		V _{GS} =4.5V, I _{DS} =10A	-	12.5	15.5	
Forward Transconductance	G _{fs}	V _{DS} =5V, I _{DS} =20A	-	50	-	S
Diode Characteristics						
Diode Forward Voltage	V _{SD} NOTE4	I _{SD} =1A, V _{GS} =0V	-	0.7	1.1	V
Reverse Recovery Time	t _{rr} NOTE5	I _{SD} =12A, dI _{SD} /dt=100A/μs	-	19	-	ns
Reverse Recovery Charge	Q _{rr} NOTE5		-	10	-	nC
Dynamic Characteristics NOTE5						
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.5	-	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	770	-	pF
Output Capacitance	C _{oss}		-	130	-	
Reverse Transfer Capacitance	C _{rss}		-	76	-	
Turn-on Delay Time	t _{d(ON)}	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	8	14	ns
Turn-on Rise Time	t _r		-	10	17	
Turn-off Delay Time	t _{d(OFF)}		-	23	42	
Turn-off Fall Time	t _f		-	4.5	12	
Gate Charge Characteristics NOTE5						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _{DS} =12A	-	14	18	nC
Total Gate Charge		V _{DS} =15V, V _{GS} =4.5V, I _{DS} =12A	-	6.3	-	
Gate-Source Charge	Q _{gs}	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =12A	-	2.9	-	
Gate-Drain Charge	Q _{gd}		-	2	-	

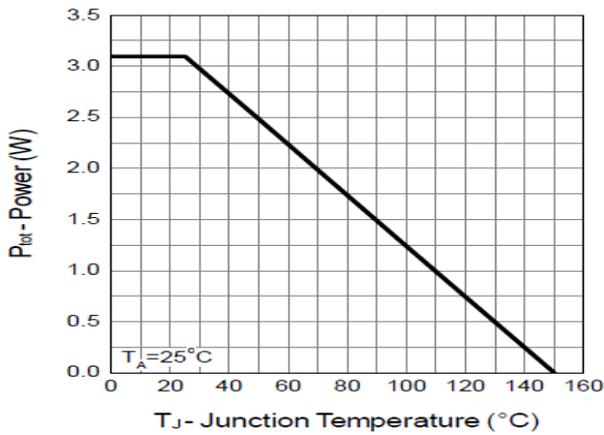
NOTE4: Pulse test: pulse width ≤300us, duty cycles ≤ 2%

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

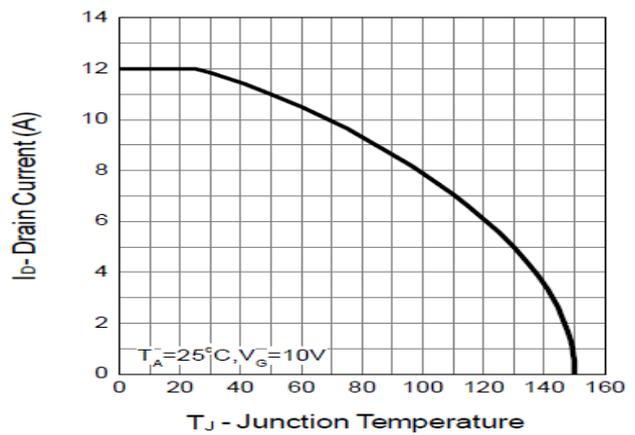


TYPICAL CHARACTERISTICS

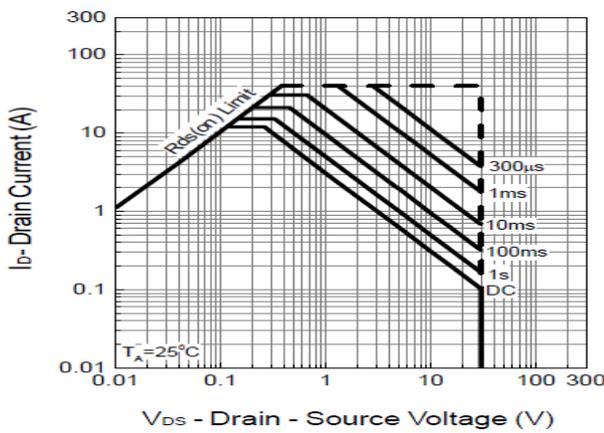
1. Power Dissipation



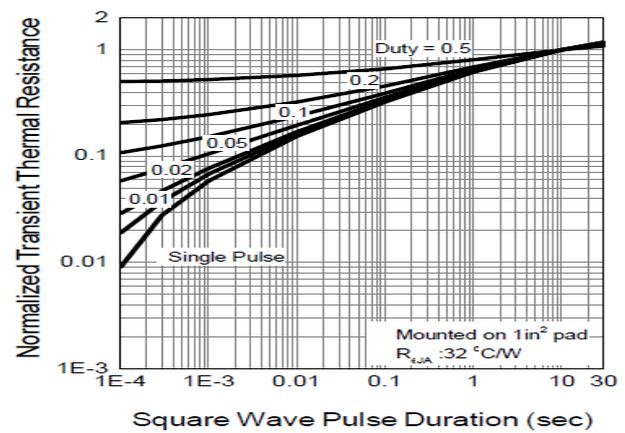
2. Drain Current



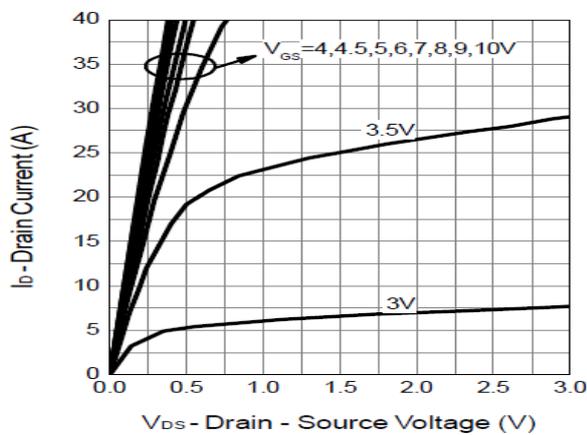
3. Safe Operation Area



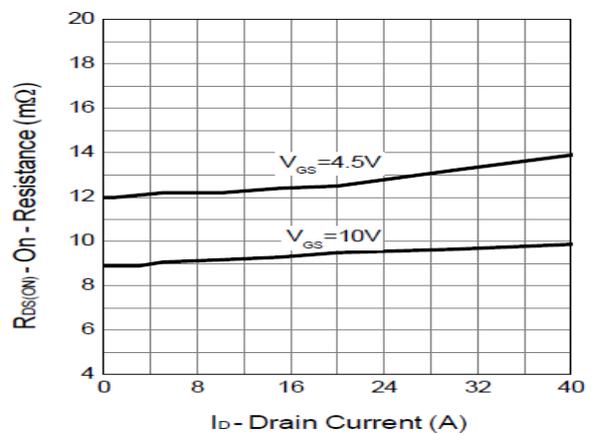
4. Thermal Transient Impedance



5. Output Characteristics

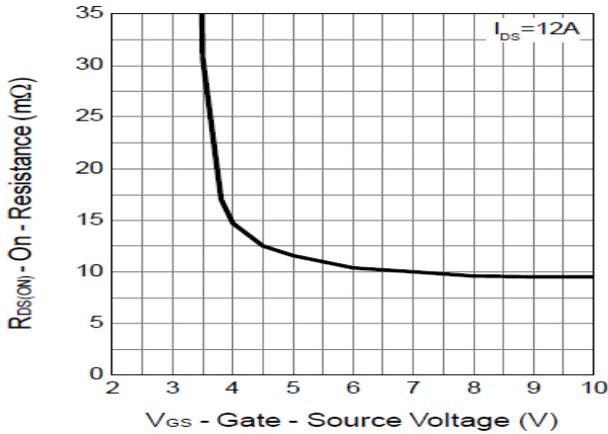


6. Drain-Source On Resistance

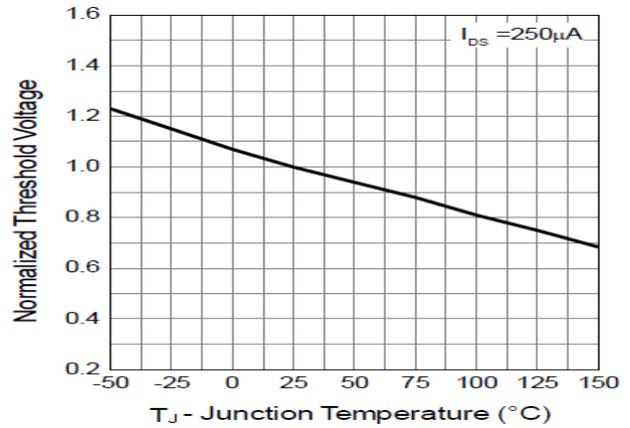




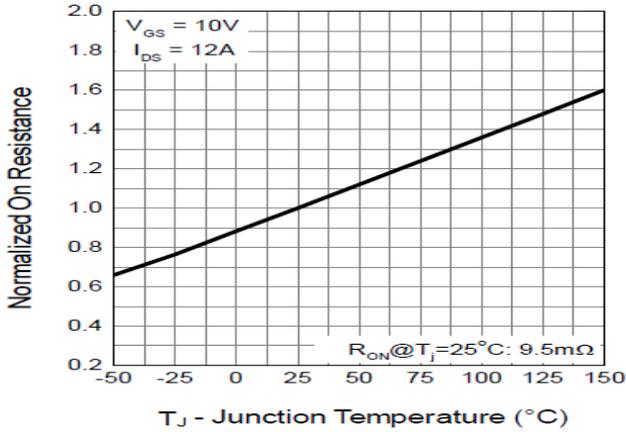
7. Gate-Source On Resistance



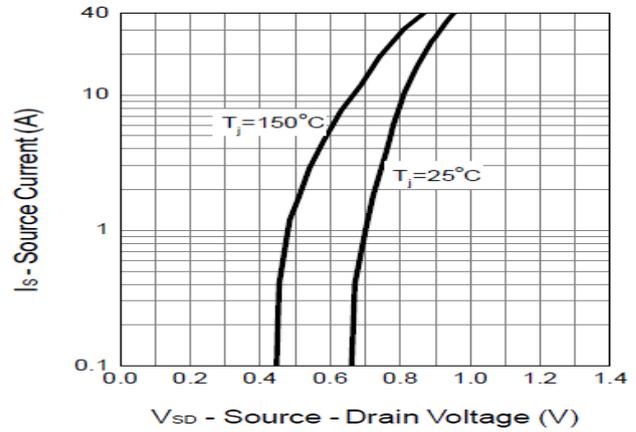
8. Gate Threshold Voltage



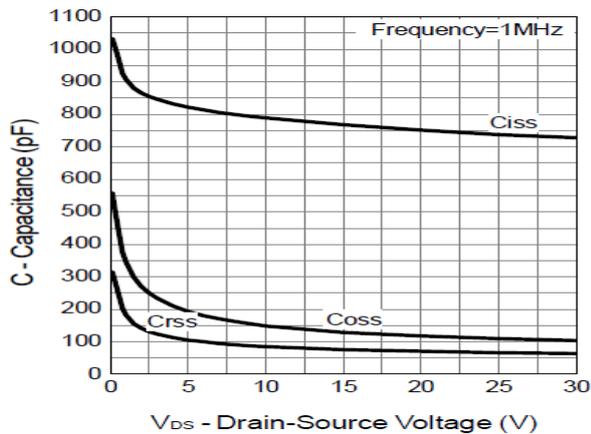
9. Drain-Source On Resistance



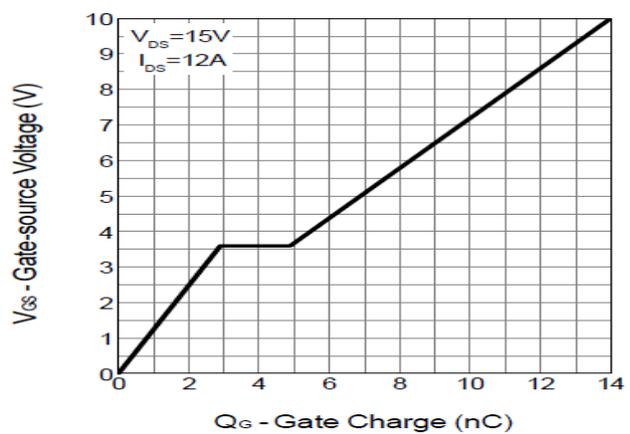
10. Source-Drain Diode Forward



11. Capacitance



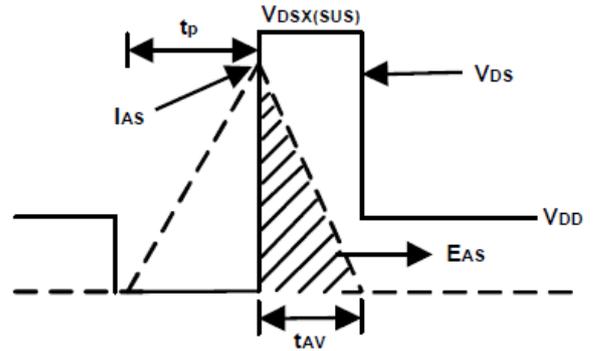
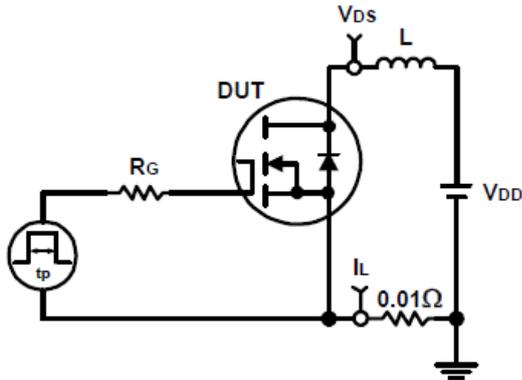
12. Gate Charge



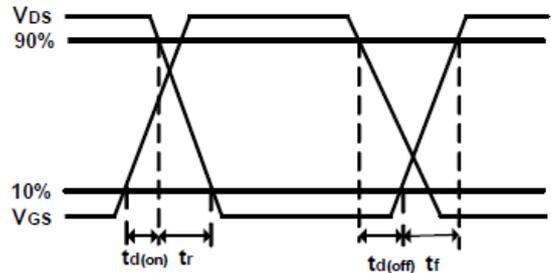
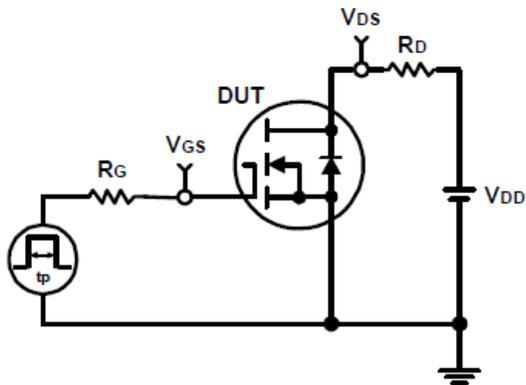


DETAILED INFORMATION

Avalanche Test Circuit and Waveforms



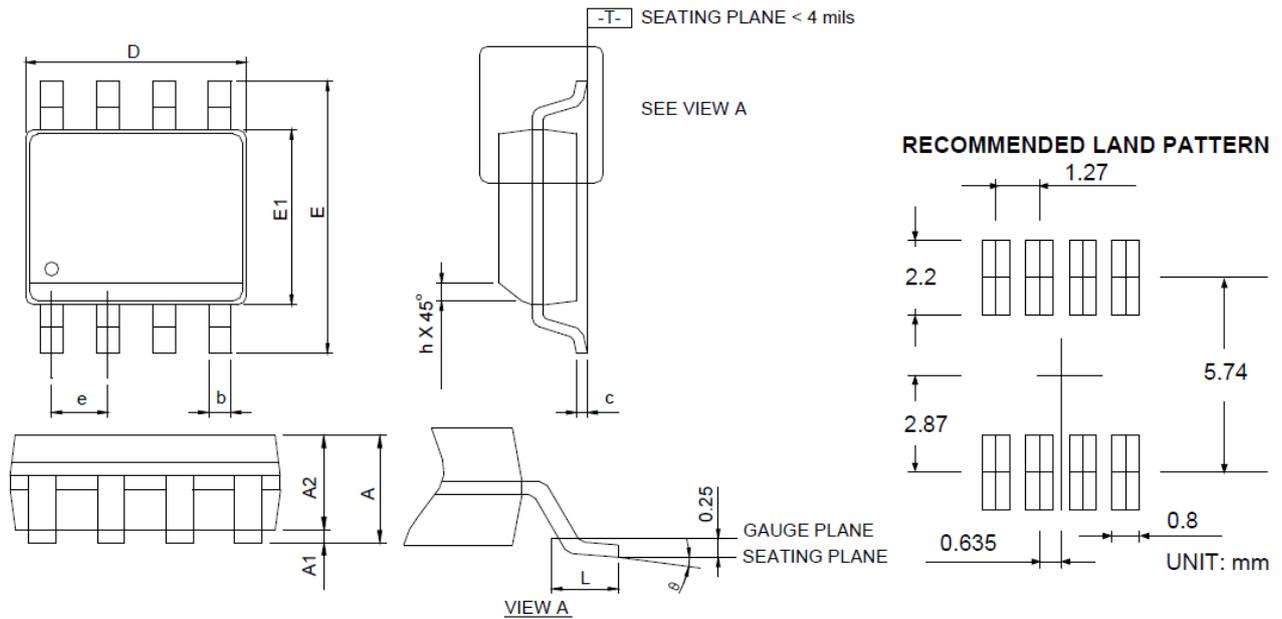
Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	Min	Max
A	-	1.750
A1	0.100	0.250
A2	1.250	-
b	0.310	0.510
c	0.170	0.250
D	4.800	5.000
E	5.800	6.200
E1	3.800	4.000
e	1.270(BSC)	
h	0.250	0.500
L	0.400	1.270
θ	0°	8°



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