



DESCRIPTION

AM3406 is the N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced trench technology devices are well suited for high efficiency fast switching applications, low in-line power loss are needed in small outline surface mount package.

The AM3406 is available in SOT-23 Package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AM3406E3R
		AM3406E3VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS free products		

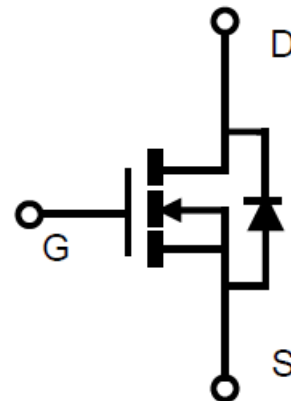
FEATURES

- $V_{DS} = 30V$, $I_D = 6.7A$
 $R_{DS(ON)}=18m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)}=23m\Omega(Typ.)@V_{GS}=4.5V$
- Fast switch
- Low gate drive applications
- High power and current handling capability
- Available in SOT-23 Package

APPLICATIONS

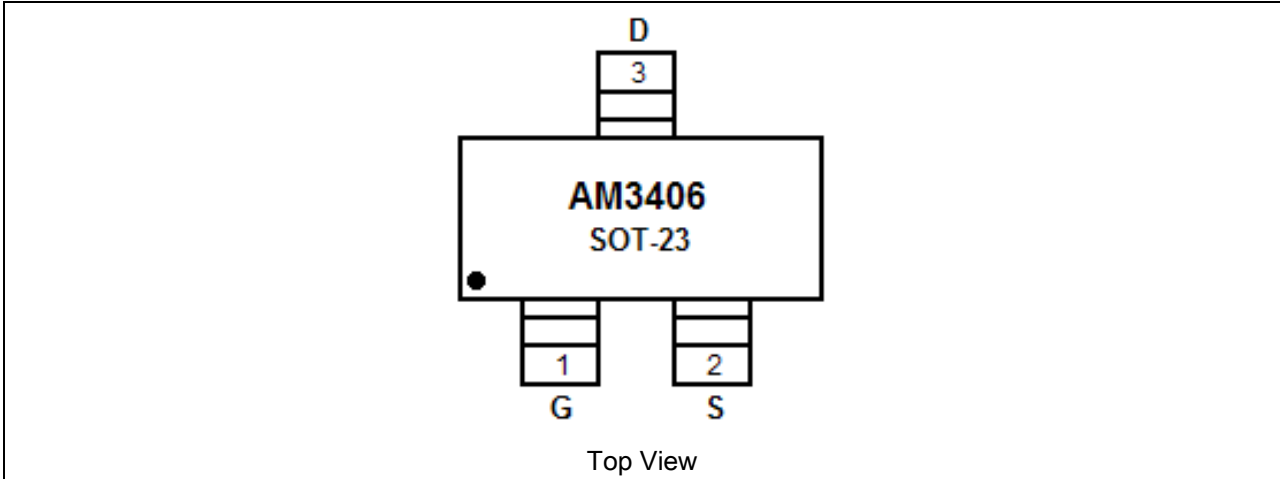
- Power Management in Note book
- Portable Equipment
- DC/DC Converter

PIN CONFIGURATION





PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	G	Gate
2	S	Source
3	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 , Continuous Drain Current	T _A =25°C	6.7A
	T _A =70°C	5.3A
I _{DM} , Pulsed Drain Current ^{NOTE1}		26.8A
P _D , Power Dissipation	T _A =25°C	1.6W
	T _A =70°C	1.0W
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 RESISTANCE

Parameter		Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient ^{NOTE2}	t ≤ 10s	R _{θJA}	-	80	°C/W
Thermal Resistance Junction to Ambient ^{NOTE2,3}	Steady-State		-	120	



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2	V
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =75°C	-	-	10	
Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =6.7A	-	18	22	mΩ
		V _{GS} =4.5V, I _D =4.8A	-	23	30	
		V _{GS} =3.5V, I _D =2A	-	27	34	
Forward Transconductance	G _{FS}	V _{DS} =15V, I _D =6A	-	6	-	S
Diode Characteristics						
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	0.7	1.0	V
Continuous Source Current	I _S		-	-	6.7	A
Reverse Recovery Time	t _{rr}	I _S =6A, di/dt=100A/μs,	-	20	-	ns
Reverse Recovery Charge	Q _{rr}	T _J =25°C	-	1.2	-	nC
Dynamic and Switching Parameters						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V I _D =6A	-	12.7	17.8	nC
Total Gate Charge(4.5V)	Q _g		-	6.2	8.7	
Gate-Source Charge	Q _{gs}		-	2.4	3.4	
Gate-Drain Charge	Q _{gd}		-	2	2.8	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V f=1MHz	-	550	-	pF
Output Capacitance	C _{oss}		-	78	-	
Reverse Transfer Capacitance	C _{rss}		-	62	-	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2.4	-	Ω
Turn-On Time	t _{d(on)}	V _{DD} =15V, V _{GEN} =10V, R _G =6Ω, I _D =1A	-	2.5	5	ns
	t _r		-	7.6	14	
Turn-Off Time	t _{d(off)}		-	19.8	38	
	t _f		-	4.2	8	

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

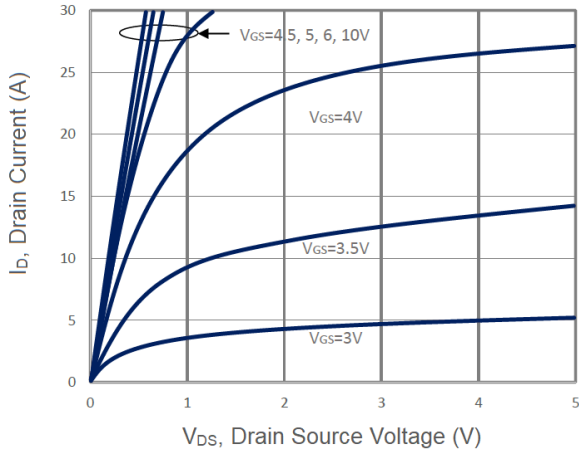
NOTE2: Measure the value in a still air environment at T_A=25°C, using an installation mounted on a 1 in² FR-4 board, maximum junction temperature T_{J(MAX)}=150°C.

NOTE3: T_{J(MAX)}=150°C, using junction-to-case thermal resistance (R_{θJC}) is more useful in additional heat sinking is used.

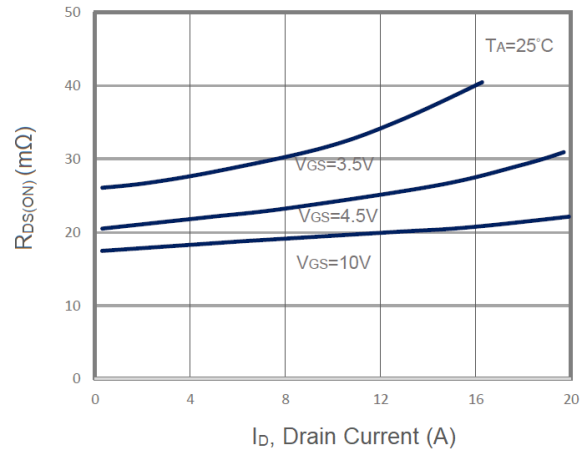


TYPICAL CHARACTERISTICS

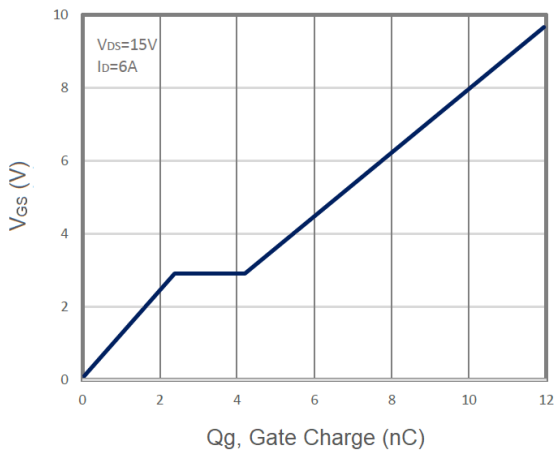
1. Output Characteristics



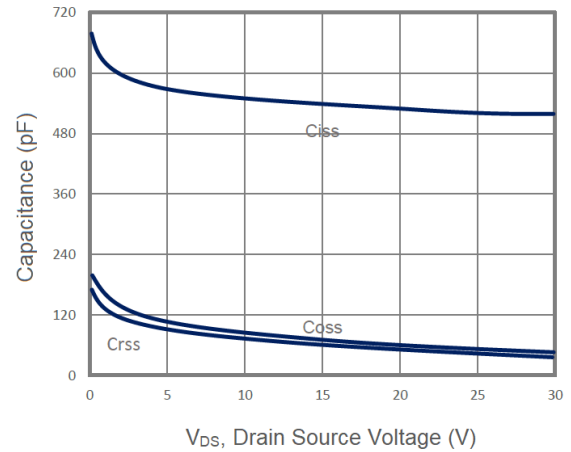
2. Drain-Source On Resistance



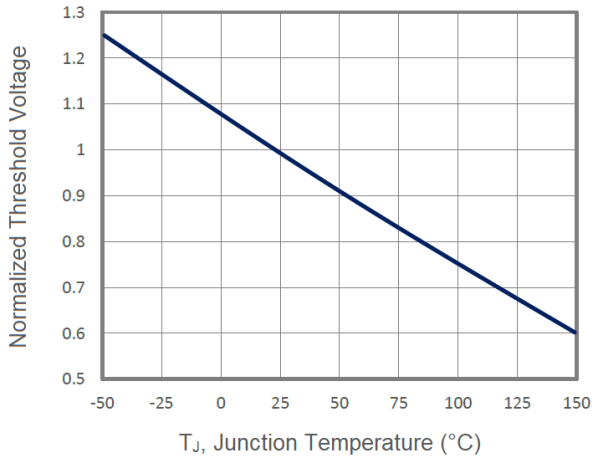
3. Gate Charge



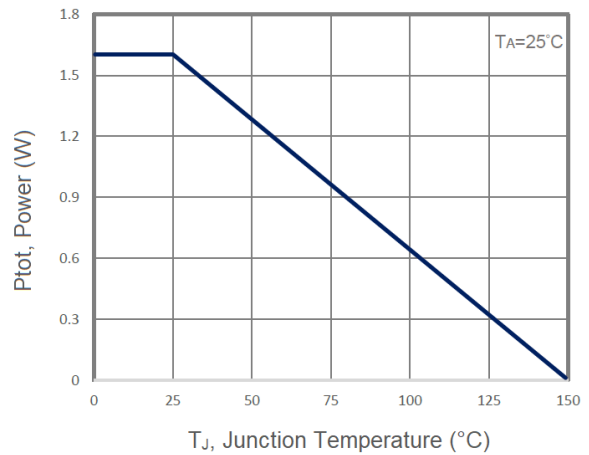
4. Capacitance



5. Gate Threshold Voltage

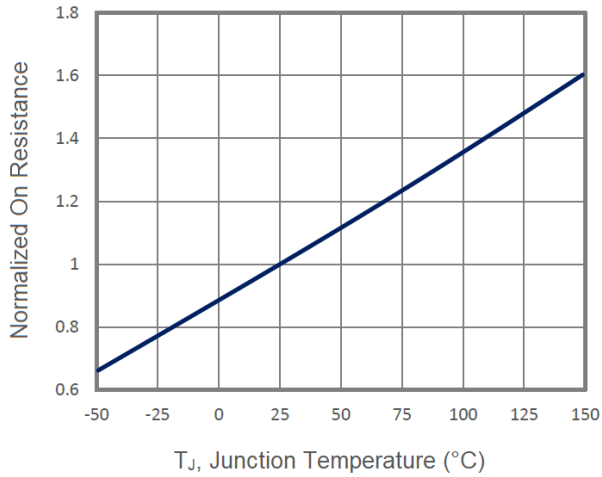


6. Power Dissipation

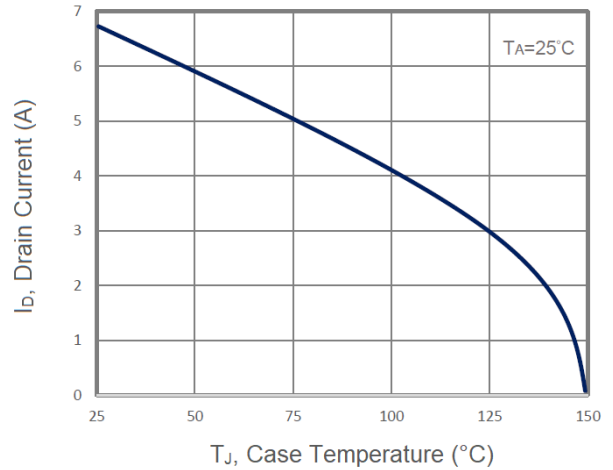




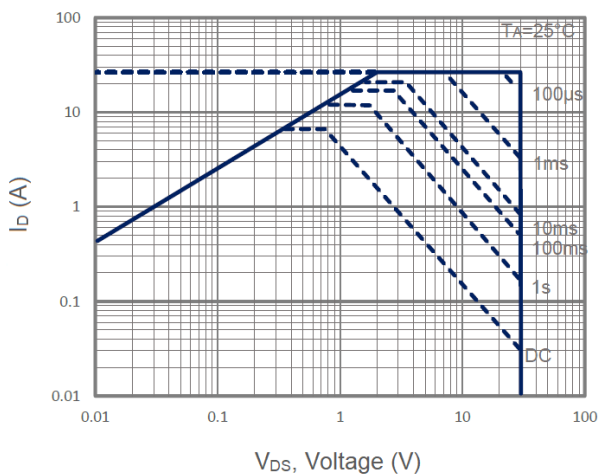
7. $R_{DS(ON)}$ vs Junction Temperature



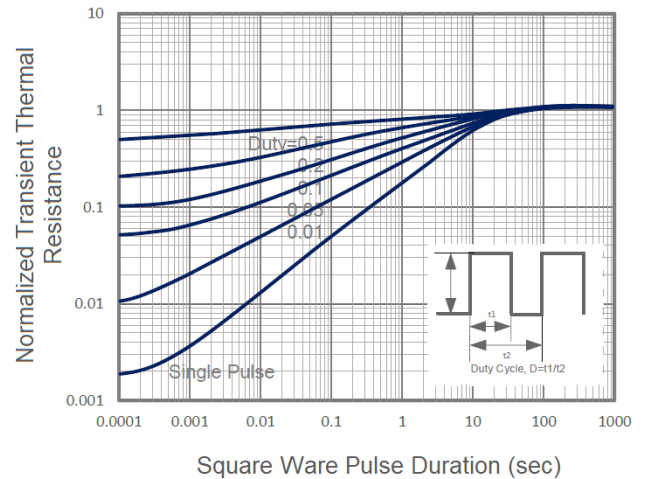
8. Drain Current vs. T_J



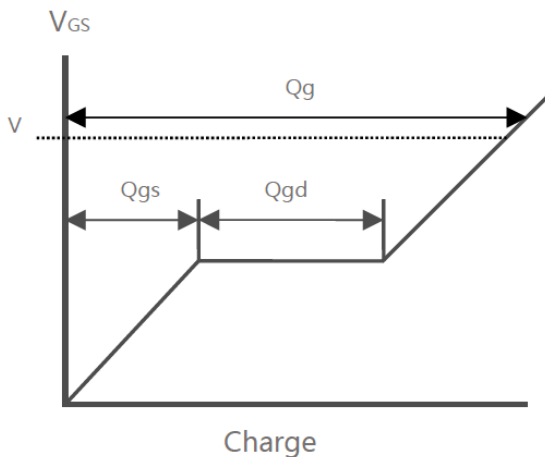
9. Maximum Safe Operation Area



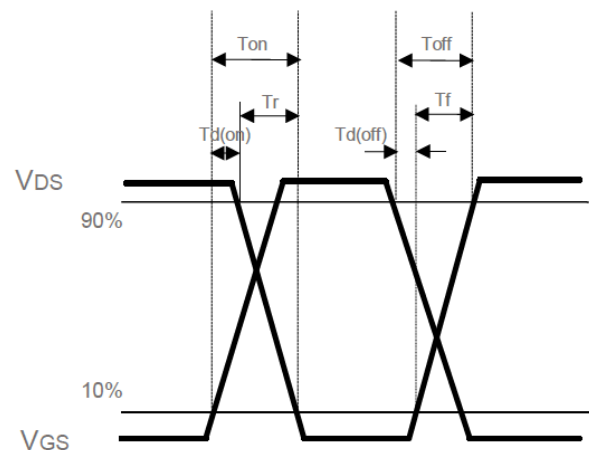
10. Thermal Transient Impedance



11. Gate Charge Waveform



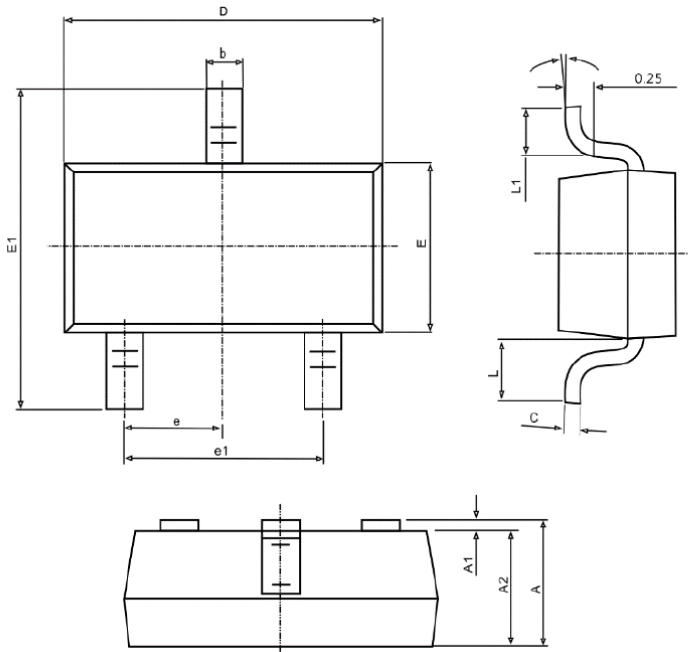
12. Switching Time Waveform



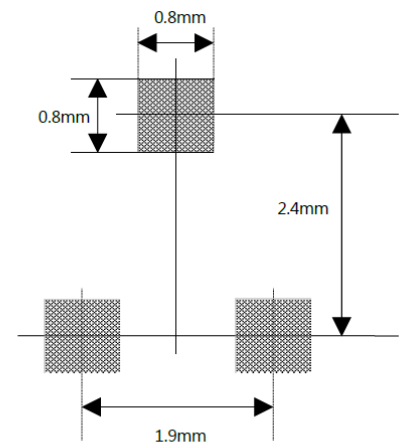


PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



Recommended Minimum Pad(mm)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.000	1.300	0.039	0.049
A1	0.000	0.100	0.000	0.004
A2	1.000	1.200	0.039	0.047
b	0.300	0.500	0.012	0.020
c	0.047	0.207	0.002	0.008
D	2.800	3.000	0.110	0.118
E	1.500	1.700	0.059	0.067
E1	2.600	3.000	0.102	0.118
e	0.950 TYP.		0.037 TYP	
e1	1.900 TYP.		0.075 TYP.	
L1	0.250	0.550	0.010	0.022
θ	0°	8°	0°	8°



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