DESCRIPTION

The AM3405 is available in SOT-23 Package.

VDSS	RDSON	ID
-30V	27mΩ	-5.1A

APPLICATION

- Notebook
- Load Switch
- Battery Protection
- Hand-held Instruments

ORDERING INFORMATION

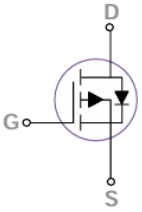
Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AM3405E3R
		AM3405E3VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

FEATURE

- -30V, -5.1A, RDS(ON) =27mΩ@VGS = -10V
- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications
- Available in SOT-23 Package.

PIN DESCRIPTION

SOT-23



Pin#	Symbol	Function
1	G	Gate
2	S	Source
3	D	Drain

ABSOLUTE MAXIMUM RATINGS

T_A=25°C Unless otherwise noted

V_{DS}, Drain-Source Voltage		-30V
V_{GS}, Gate-Source Voltage		±20V
I_D, Drain Current-Continuous	T_A=25℃	-5.1A
	T_A=70℃	-3.2A
I_{DM}, Drain Current-Pulsed *		-20.4A
P_D, Total Power Dissipation	T_A=25℃	1.9W
	Derate above 25°C	0.0125W/℃
T_J, Operating Junction Temperature Range		-55℃~+150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
$R_{\theta JA}$, Thermal Resistance Junction to Ambient (1) (3)		80℃/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

*Repetitive Rating : Pulsed width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS

T_J=25℃, unless otherwise noted.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D= -250μA	-30	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25℃, I_D= -1mA	-	-0.03	-	V/℃
Drain-Source Leakage 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	
Gate-Source Leakage Current	I_{GSS}	V_{GS} =±20V, V_{DS}= 0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS\ (th)}$	V_{GS}=V_{DS}, I_D= -250uA	-1	-1.50	-2.50	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS\ (th)}$		-	4	-	mV/°C
Drain-Source On-Resistance (1)	$R_{DS(ON)}$	V_{GS}= -10V, I_D= -5A	-	27	30	mΩ
		V_{GS}= -4.5V, I_D= -4A	-	37	45	
Forward Transconductance (1)	G_{fs}	V_{DS}= -10V, I_D= -3A	-	9	-	S
Dynamic and switching Characteristics						
Total Gate Charge (1)(2)	Q_g	V_{DS}= -15V, V_{GS}= -4.5V I_D= -5A	-	8	-	nC
Gate-Source Charge (1)(2)	Q_{gs}		-	3.30	-	
Gate-Drain Charge (1)(2)	Q_{gd}		-	2.30	-	
Input Capacitance	C_{iss}	V_{DS}= -15V, V_{GS}=0V, f=1MHz	-	757	-	pF
Output Capacitance	C_{oss}		-	122	-	
Reverse Transfer Capacitance	C_{rss}		-	88	-	
Turn-on Delay Time (1)(2)	$t_{d(on)}$	V_{DD}= -15V, V_{GS}= -10V R_G=6Ω, I_D= -1A	-	4.60	-	ns
Rise Time (1)(2)	t_r		-	14	-	
Turn-Off Time (1)(2)	$t_{d(off)}$		-	34	-	
Fall Time (1)(2)	t_f		-	18	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage (1)	V_{SD}	V_{GS}=0V, I_S=-1A, T_J=25℃	-	-	-1.20	V
Diode Forward Voltage	I_S	V_G=V_D=0V, Force Current	-	-	-5.10	A
Pulsed Source Current	I_{SM}		-	-	-10.20	

(1) The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.

(2) Essentially independent of operating temperature.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Continuous Drain Current vs. T_A

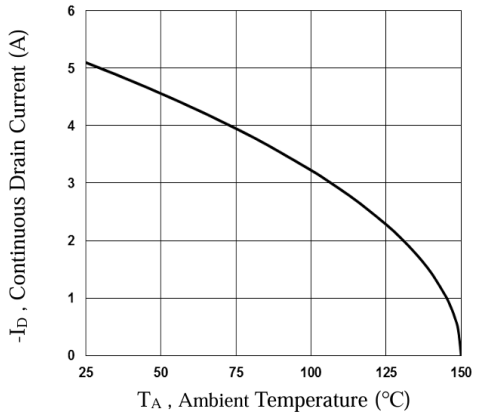


Fig 2. Normalized R_{DSON} vs. T_J

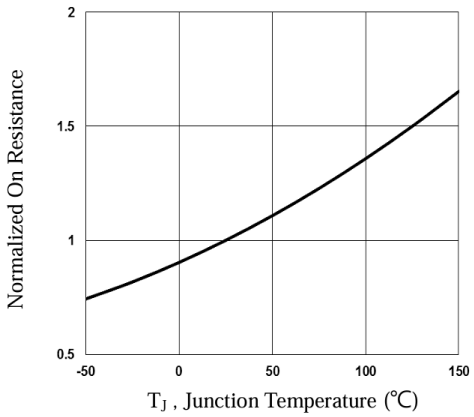


Fig 3. Normalized vs. T_J

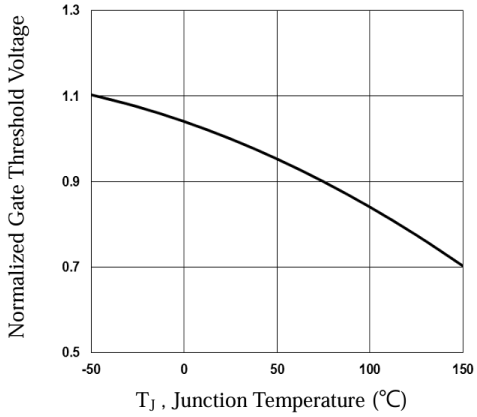


Fig 4. Gate Charge Waveform

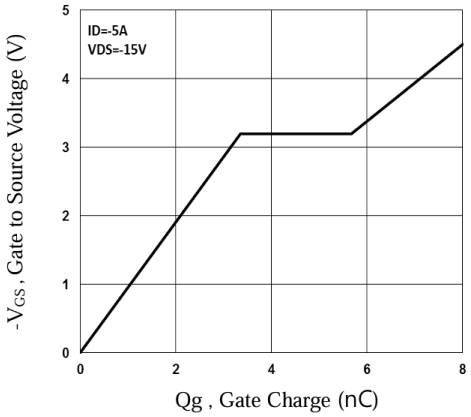


Fig 5. Typical Output Characteristics

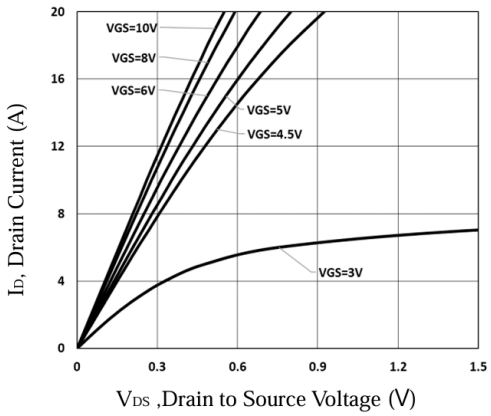


Fig 6. Turn-On Resistance vs. I_D

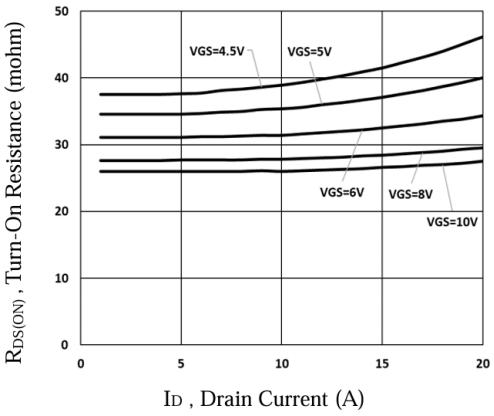


Fig 7. Capacitance Characteristics

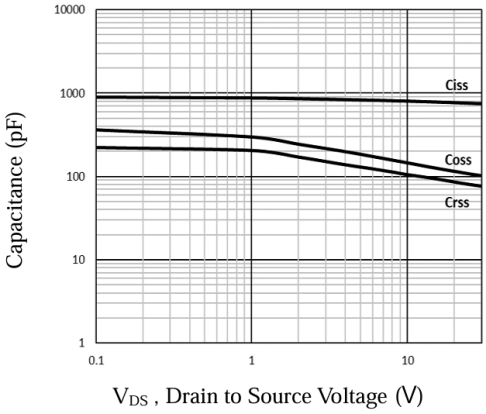


Fig 8. Normalized Transient Impedance

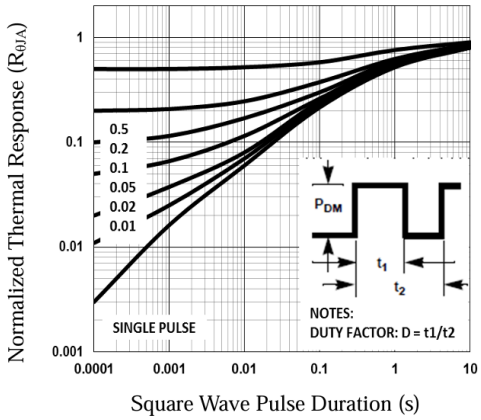


Fig 9. Maximum Safe Operation Area

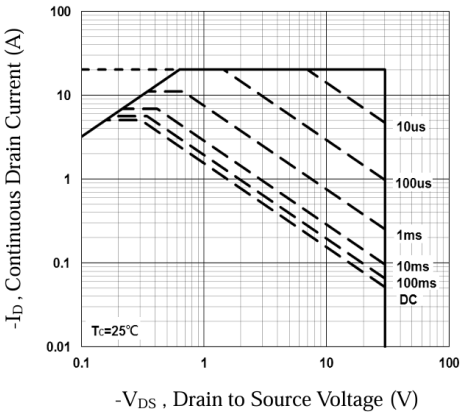


Fig 10. Switching Time Waveform

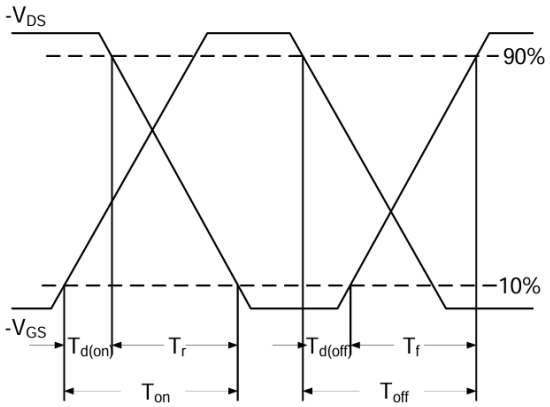
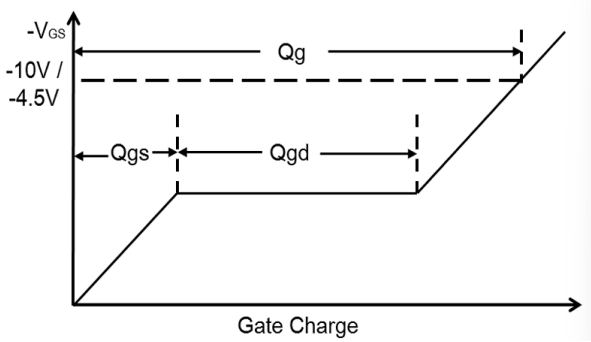
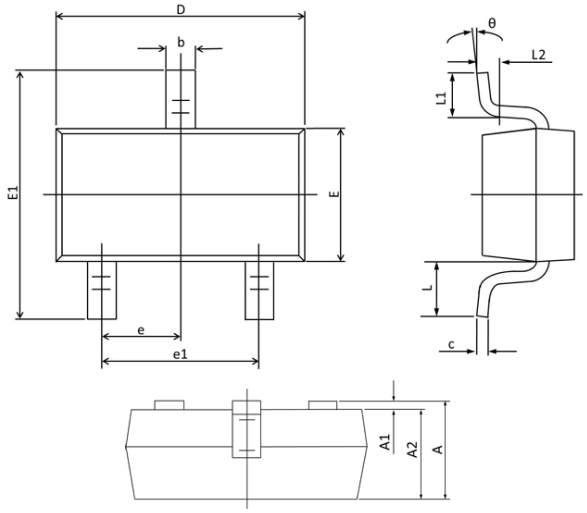


Fig 11. Gate Charge Waveform



PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



Symbol	Millimeters (mm)	
	Min.	Max.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP.	
e1	1.800	2.000
L	0.550 REF.	
L1	0.300	0.500
L2	0.250 TYP.	
θ	0°	8°

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