DESCRIPTION

V_{DS}=30V

V_{GS}=±20V

ID(A)=5.5A

$R_{DS(ON)}$=22mΩ(Typ.) @V_{GS}=10V

$R_{DS(ON)}$=32mΩ(Typ.) @V_{GS}=4.5V

AM2304A is available in a SOT-23 package.

FEATURES

- Fast switch
- Available in a SOT-23 package.

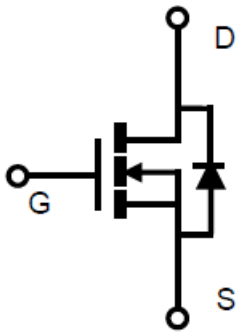
ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AM2304AE3R
		AM2304AE3VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

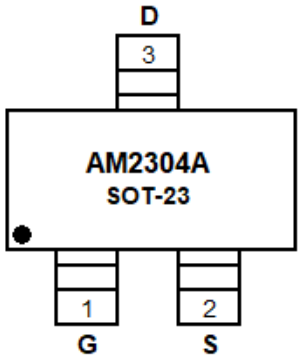
APPLICATION

- Hand-Held Instruments
- Load Switch
- DC/DC Converter

N CHANNEL MOSFET



PIN DESCRIPTION



Top View

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

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃, unless otherwise noted

V_{DSS}, Drain-Source Voltage		30V
V_{GSS}, Gate-Source Voltage		±20V
I_D, Continuous Drain Current[NOTE1]	T_A=25℃	5.5A
	T_A=70℃	4.4A
I_{DM}, Pulsed Drain Current[NOTE2]		22A
I_{AS}, Avalanche Current[NOTE2]		8A
E_{AS}, Single Pulse Avalanche Energy L=0.1mH[NOTE2]		3.2mJ
P_D, Power Dissipation[NOTE1]	T_A=25℃	1.3W
	T_A=70℃	0.84W
T_J, Operation Junction Temperature		-55℃~150℃
T_{STG}, Storage Temperature Range		-55℃~150℃

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 CHARACTERISTICS

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction to Ambient [NOTE1]	t≦10s	$R_{\theta JA}$	-	95	℃/W
Thermal Resistance Junction to Ambient [NOTE1, 3]	Steady-State		-	130	

ELECTRICAL CHARACTERISTICS

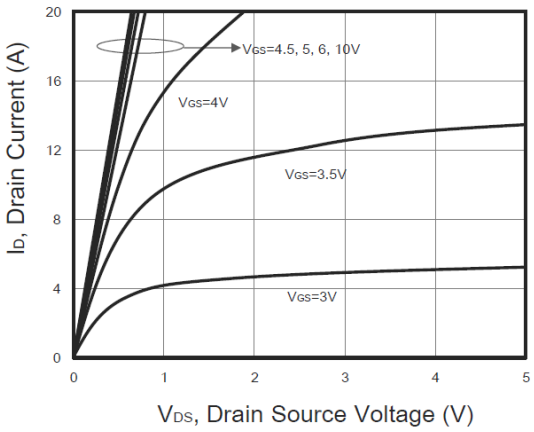
T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_S=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[NOTE4]	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.5A	-	22	26	mΩ
		V_{GS}=4.5V, I_D=4.5A	-	32	42	
Forward Transconductance	G_{fs}	V_{DS}=10V, I_D=3A	-	6.8	-	S
Diode Characteristics						
Diode Forward Voltage[NOTE4]	V_{SD}	I_S=1A, V_{GS}=0V	-	-	1	V
Diode Continuous Forward Current	I_S		-	-	2.8	A
Dynamic and Switching Parameters[NOTE5]						
Total Gate Charge	Q_g	V_{DS}=15V, V_{GS}=10V, I_D=5A	-	7.6	10.6	nC
Total Gate Charge (4.5V)	Q_g		-	3.7	5.2	
Gate-Source Charge	Q_{gs}		-	1.5	2.1	
Gate-Drain Charge	Q_{gd}		-	1.6	2.2	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	320	-	pF
Output Capacitance	C_{oss}		-	55	-	
Reverse Transfer Capacitance	C_{rss}		-	42	-	
Turn-On Time	$t_{d(on)}$	V_{DD}=15, V_{GEN}=10V R_G=6Ω, I_D=1A	-	2.65	5	ns
	t_r		-	8.5	16	
Turn-Off Time	$t_{d(off)}$		-	18.2	35	
	t_f		-	5	10	

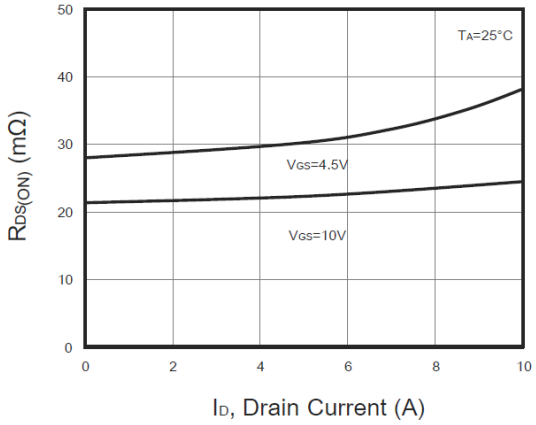
NOTE1: Surface mounted on FR4 board using 1 in^2 pad size.
NOTE2: Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$=150°C.
NOTE3: Using ≤ 10s junction-to-ambient thermal resistance is base on $T_{J(MAX)}$=150°C.
NOTE4: Pulse test width ≤300μs and duty cycle ≤ 2%.
NOTE5: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

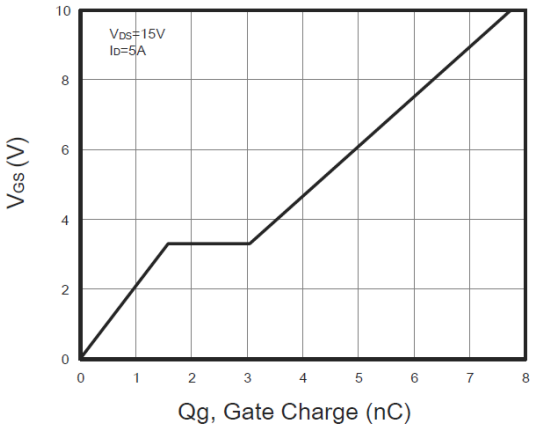
1. Output Characteristics



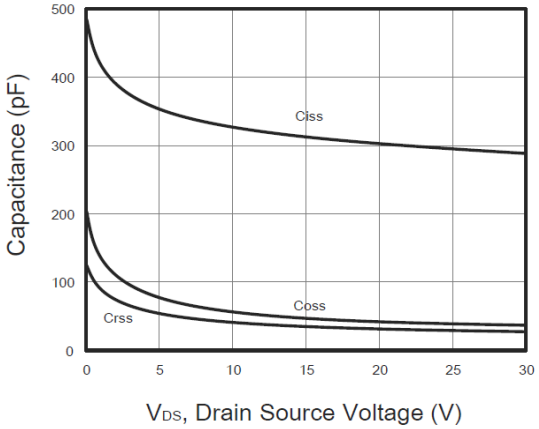
2. Drain-Source On Resistance



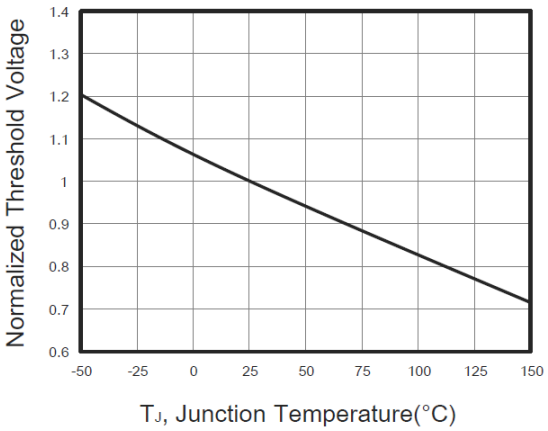
3. Gate Charge



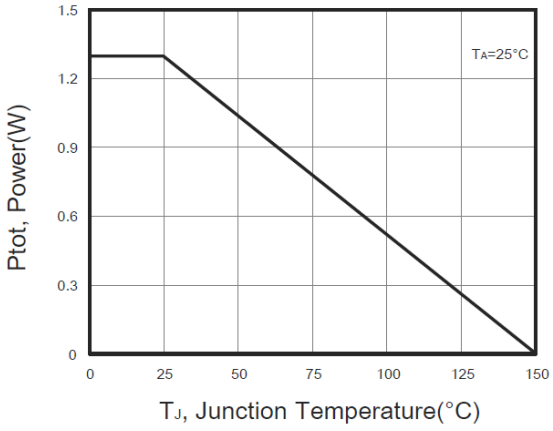
4. Capacitance



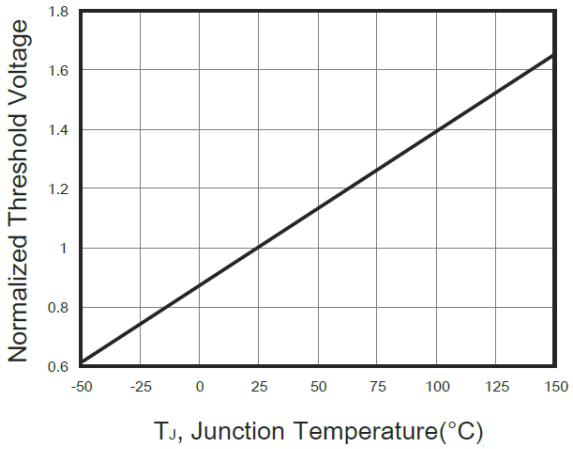
5. Gate Threshold Voltage



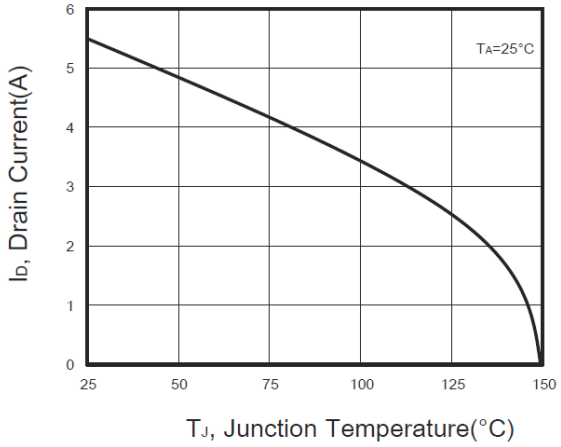
6. Power Dissipation



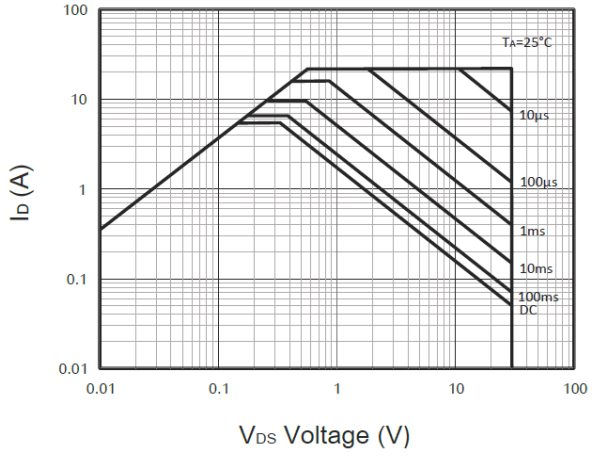
7. Gate Threshold Voltage



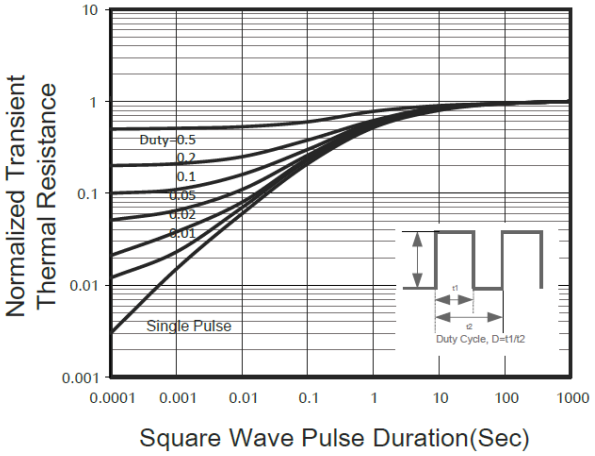
8. Drain Current vs. T_J



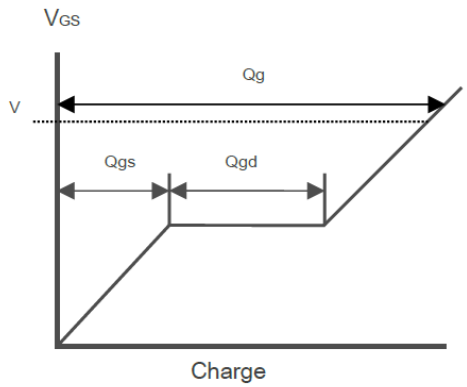
9. Maximum Safe Operation Area



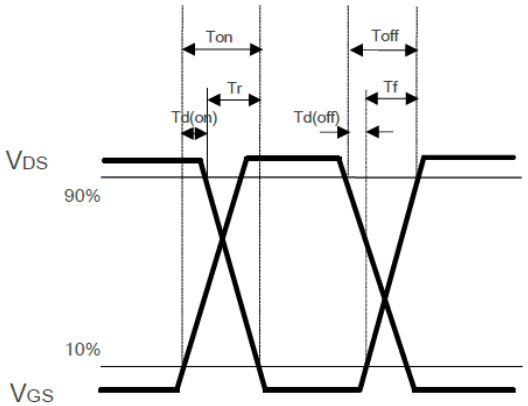
10. Thermal Transient Impedance



11. Gate Charge Waveform

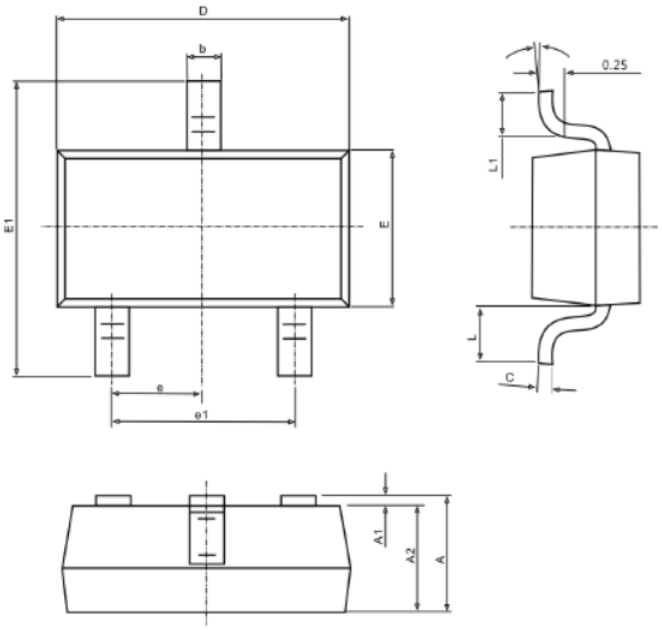


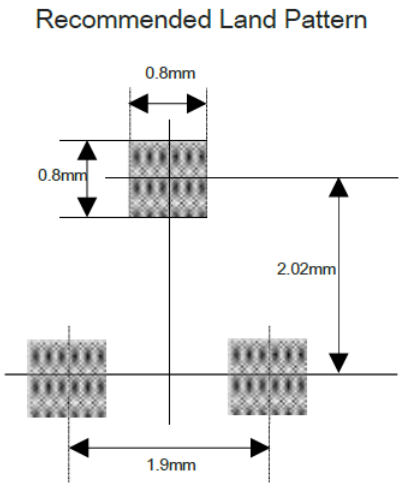
12. Switching Time Waveform



PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)





Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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