DESCRIPTION

V_{DS}=20V

V_{GS}=±12V

ID(A)=6A

$R_{DS(ON)}$=26mΩ(Max.) @V_{GS}=4.5V

$R_{DS(ON)}$=37mΩ(Max.) @V_{GS}=2.5V

AM3416 is available in a SOT-23 package.

FEATURES

- ESD Protected
- Reliable and Rugged
- Available in a SOT-23 package.

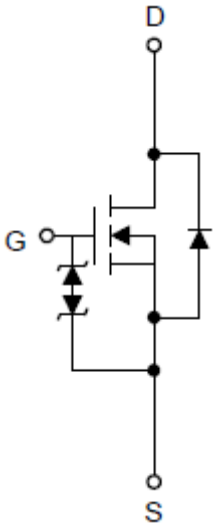
ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AM3416E3R
		AM3416E3VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

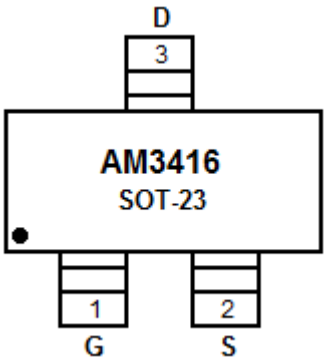
APPLICATION

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

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		20V
V_{GSS}, Gate-Source Voltage		±12V
I_D[NOTE1], Continuous Drain Current(V_{GS}=4.5V)	T_A=25°C	6A
	T_A=100°C	3.7A
I_{DM}[NOTE1], 300μs Pulsed Drain Current(V_{GS}=4.5V)		20A
I_S[NOTE1], Diode Continuous Forward Current		1.4A
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	1.4W
	T_A=100°C	0.5W
$R_{\theta JA}$[NOTE1],Thermal Resistance-Junction to Ambient	t ≤ 10s	90°C/W
	Steady state	150°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.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

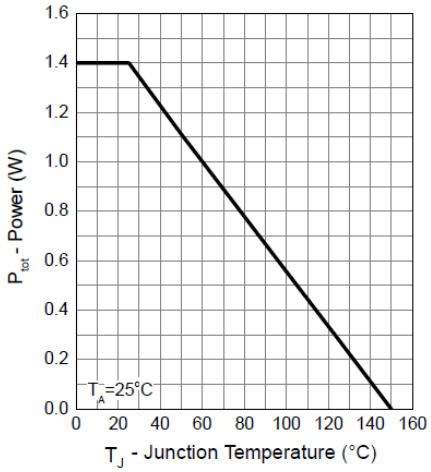
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_{DS}=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	0.7	1.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±10	μA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE2	V_{GS}=4.5V, I_{DS}=6A	-	22	26	mΩ
		V_{GS}=2.5V, I_{DS}=5A	-	29	37	
Diode Characteristics						
Diode Forward Voltage	V_{SD}NOTE2	I_{SD}=1.3A, V_{GS}=0V	-	0.8	1.3	V
Reverse Recovery Time	trrNOTE3	I_{DS}=4A, dI_{SD}/dt=100A/μs	-	16	-	ns
Reverse Recovery Charge	QrrNOTE3		-	10	-	nC
Dynamic CharacteristicsNOTE3						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	4	-	Ω
Input Capacitance	C_{iss}	V_{GS}=0V,	-	600	800	pF
Output Capacitance	C_{oss}	V_{DS}=10V,	-	135	180	
Reverse Transfer Capacitance	C_{rss}	Frequency=1.0MHz	-	125	175	
Turn-on Delay Time	$t_{d(ON)}$	V_{DD}=10V, R_L=10Ω, I_{DS}=1A, V_{GEN}=4.5V, R_G=6Ω	-	5	10	ns
Turn-on Rise Time	t_r		-	9	17	
Turn-off Delay Time	$t_{d(OFF)}$		-	25	46	
Turn-off Fall Time	t_f		-	5	10	
Gate Charge CharacteristicsNOTE3						
Total Gate Charge	Q_g	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=4A	-	12	17	nC
Gate-Source Charge	Q_{gs}		-	1.4	-	
Gate-Drain Charge	Q_{gd}		-	4.4	-	

NOTE2: Pulse test; pulse width≤ 300 μs, duty cycle ≤ 2%.

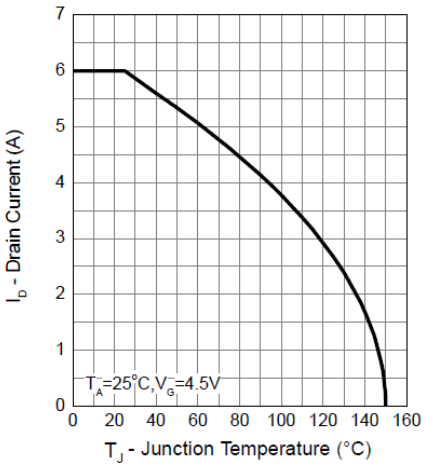
NOTE3: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

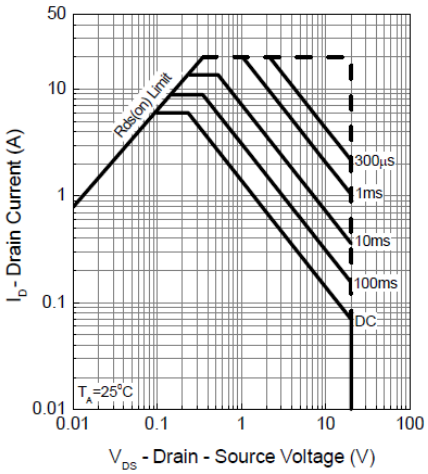
1. Power Dissipation



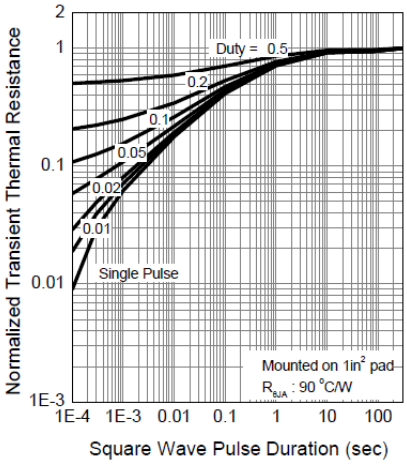
2. Drain Current



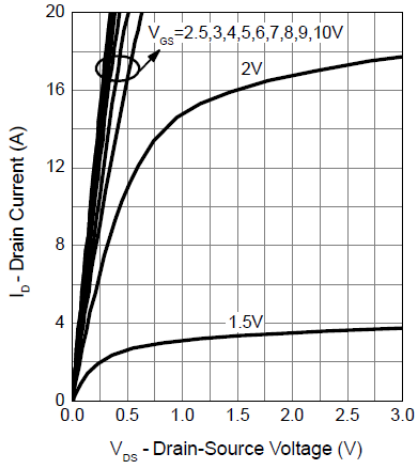
3. Safe Operation Area



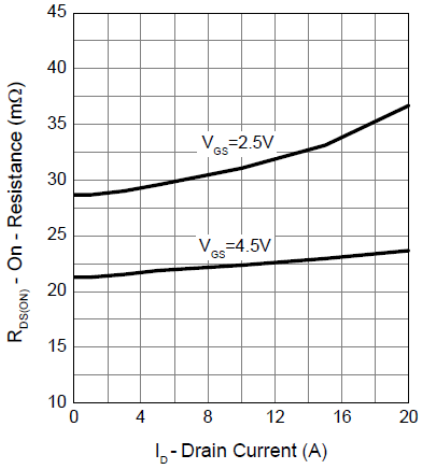
4. Thermal Transient Impedance



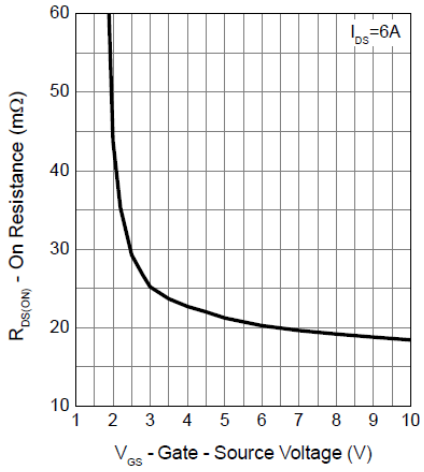
5. Output Characteristics



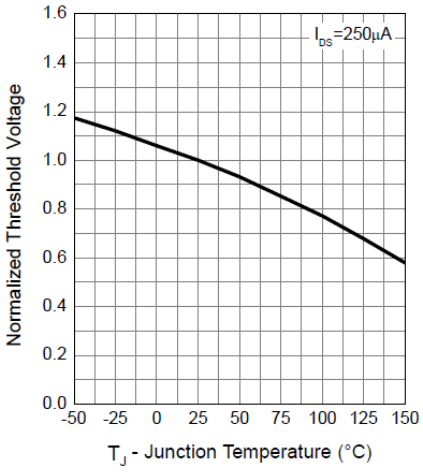
6. Drain-Source On Resistance



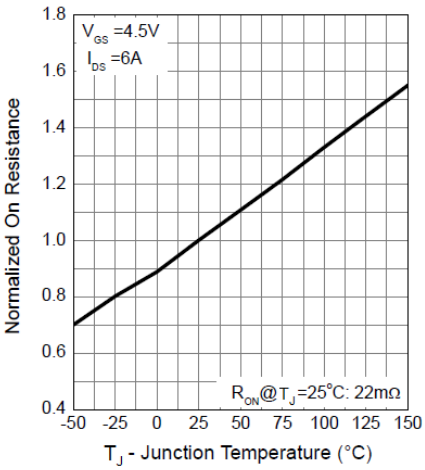
7. Gate-Source On Resistance



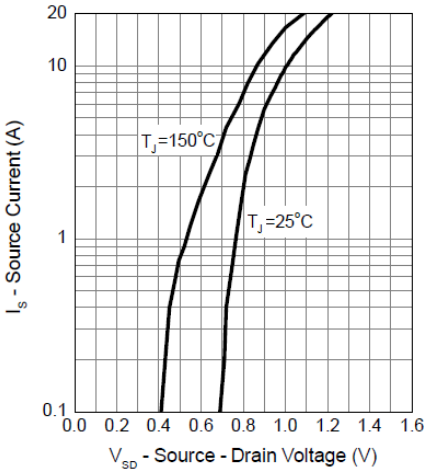
8. Gate Threshold Voltage



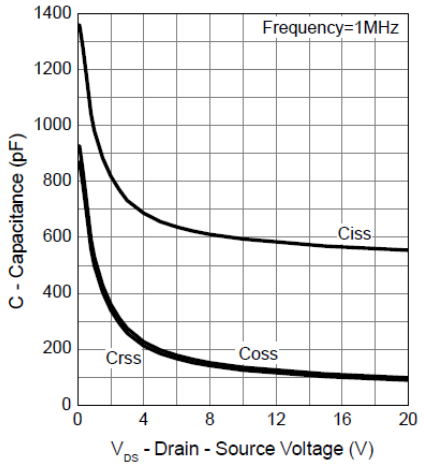
9. Drain-Source On Resistance



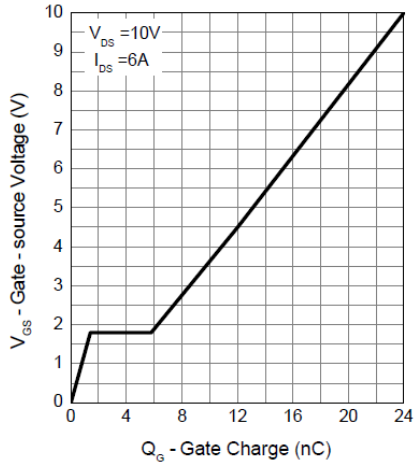
10. Source-Drain Diode Forward



11. Capacitance

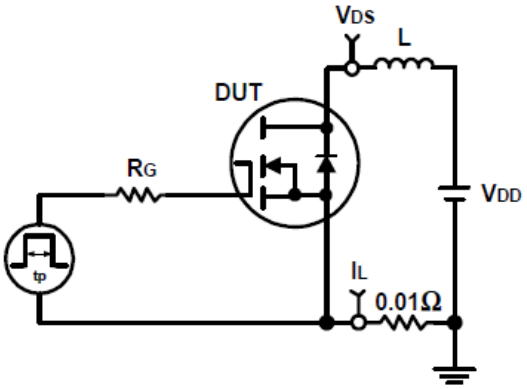


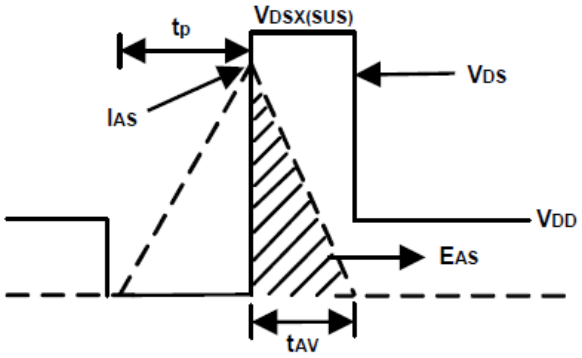
12. Gate Charge



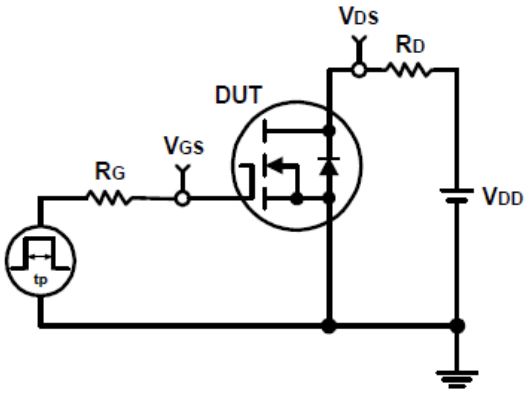
TEST CIRCUIT

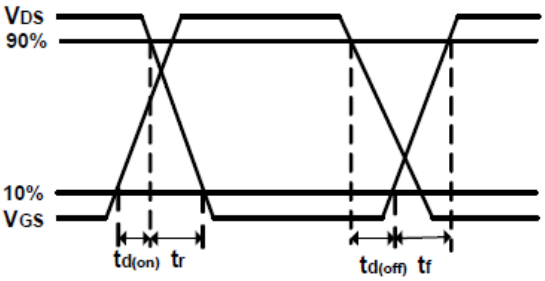
1. Avalanche Test Circuit and Waveforms





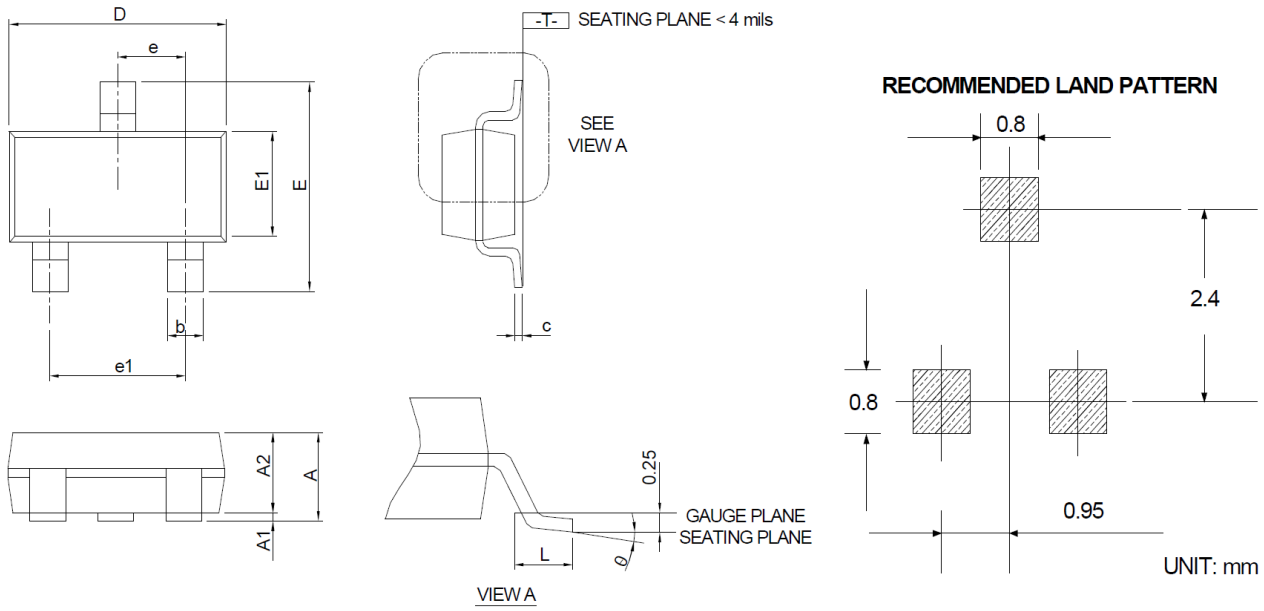
2. Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	-	1.20	-	0.047
A1	0.00	0.08	0.000	0.003
A2	0.90	1.12	0.035	0.044
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.188
E1	1.40	1.80	0.055	0.071
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

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