



DESCRIPTION

AM3416 is available in a SOT-23 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	AM3416E3R
		AM3416E3VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products Suffix “ V ” means Halogen free Package		

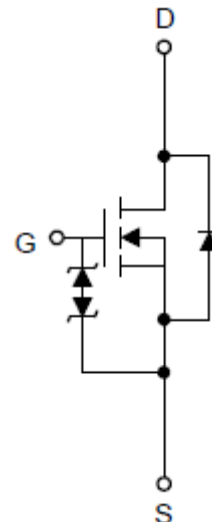
FEATURES

- 20V/6A ,
 $R_{DS(ON)}=26m\Omega(\text{Max.}) @V_{GS}=4.5V$
 $R_{DS(ON)}=37m\Omega(\text{Max.}) @V_{GS}=2.5V$
- ESD Protected
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- Available in a SOT-23 Package.

APPLICATION

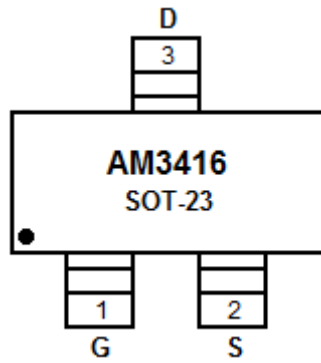
- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

N CHANNEL MOSFET





PIN DESCRIPTION



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		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 _{θJA} ^{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

$T_A = 25^\circ\text{C}$, 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)}	V _{GS} =4.5V, I _{DS} =6A	-	22	26	mΩ
	NOTE2	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	t _{rr} NOTE3	I _{DS} =4A, dI _{SD} /dt=100A/μs	-	16	-	ns
Reverse Recovery Charge	Q _{rr} NOTE3		-	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, V _{DS} =10V, Frequency=1.0MHz	-	600	800	pF
Output Capacitance	C _{oss}		-	135	180	
Reverse Transfer Capacitance	C _{rss}		-	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 Characteristics NOTE3						
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	-	

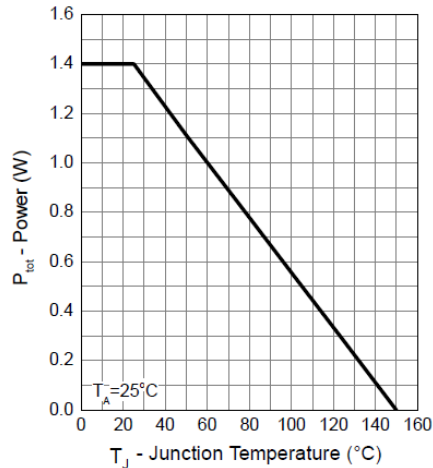
NOTE2: Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.

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

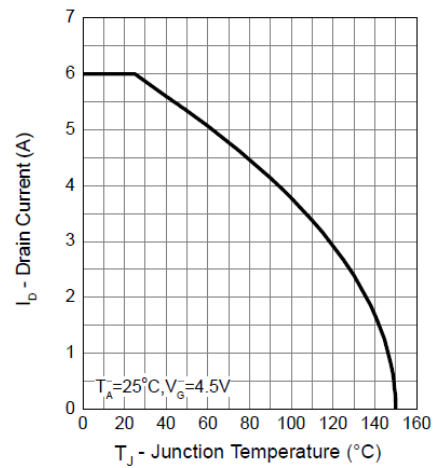


TYPICAL CHARACTERISTICS

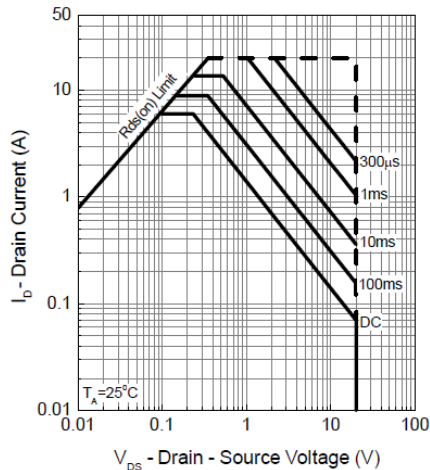
1. Power Dissipation



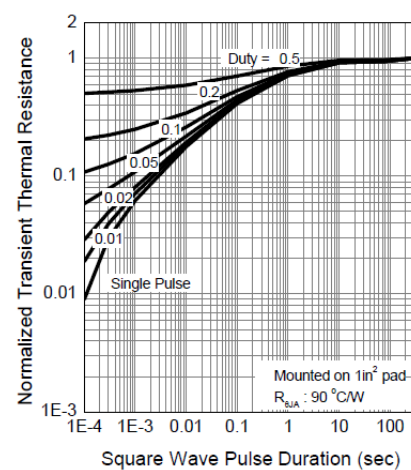
2. Drain Current



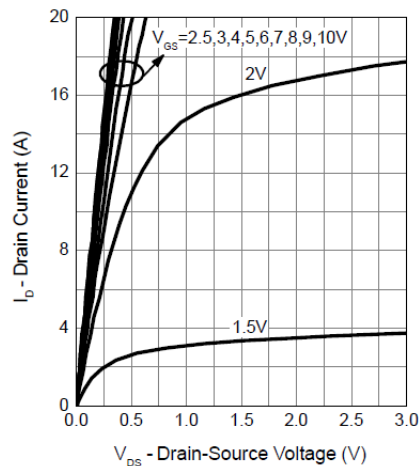
3. Safe Operation Area



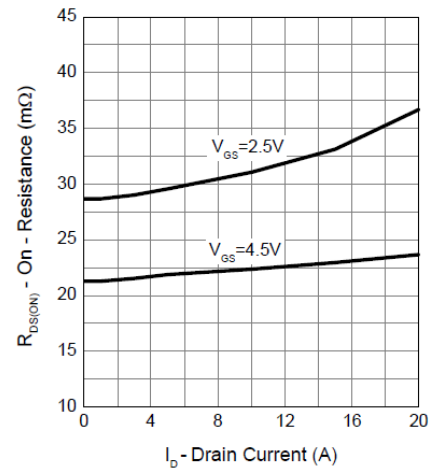
4. Thermal Transient Impedance



5. Output Characteristics

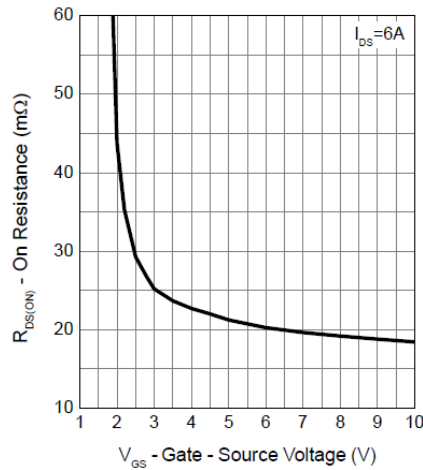


6. Drain-Source On Resistance

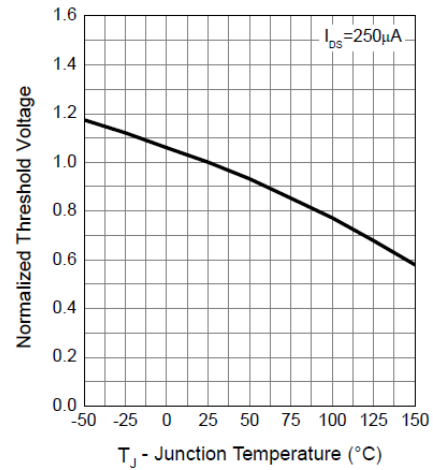




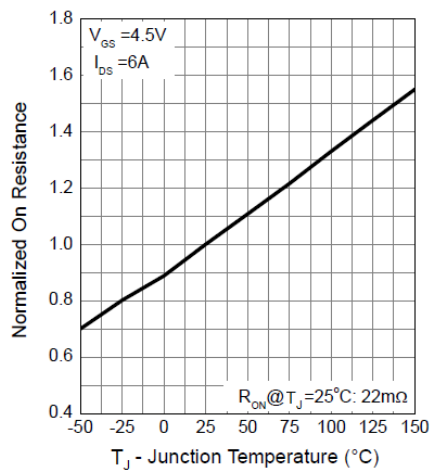
7. Gate-Source On Resistance



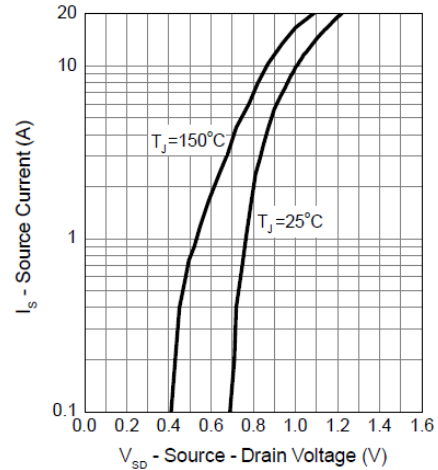
8. Gate Threshold Voltage



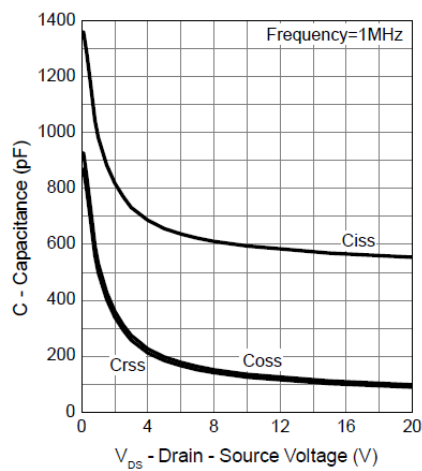
9. Drain-Source On Resistance



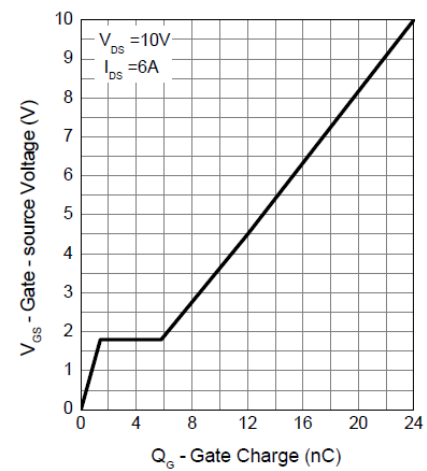
10. Source-Drain Diode Forward



11. Capacitance



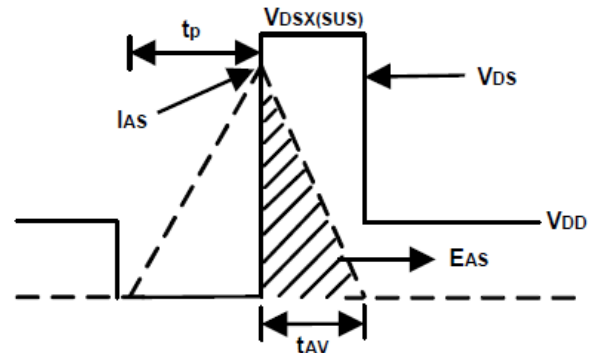
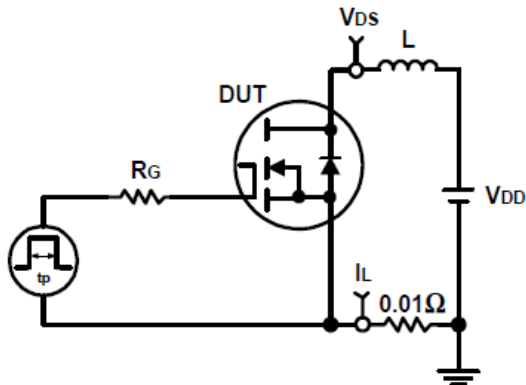
12. Gate Charge



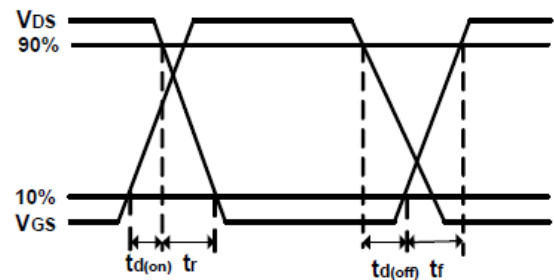
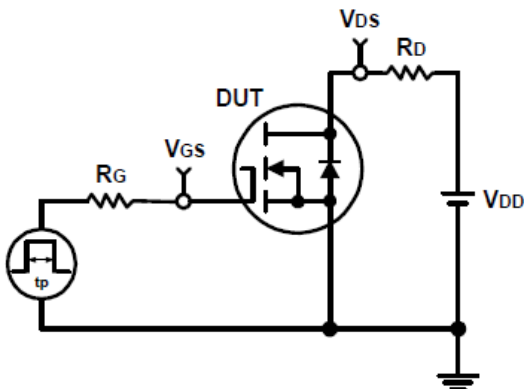


TEST CIRCUIT

1. Avalanche Test Circuit and Waveforms



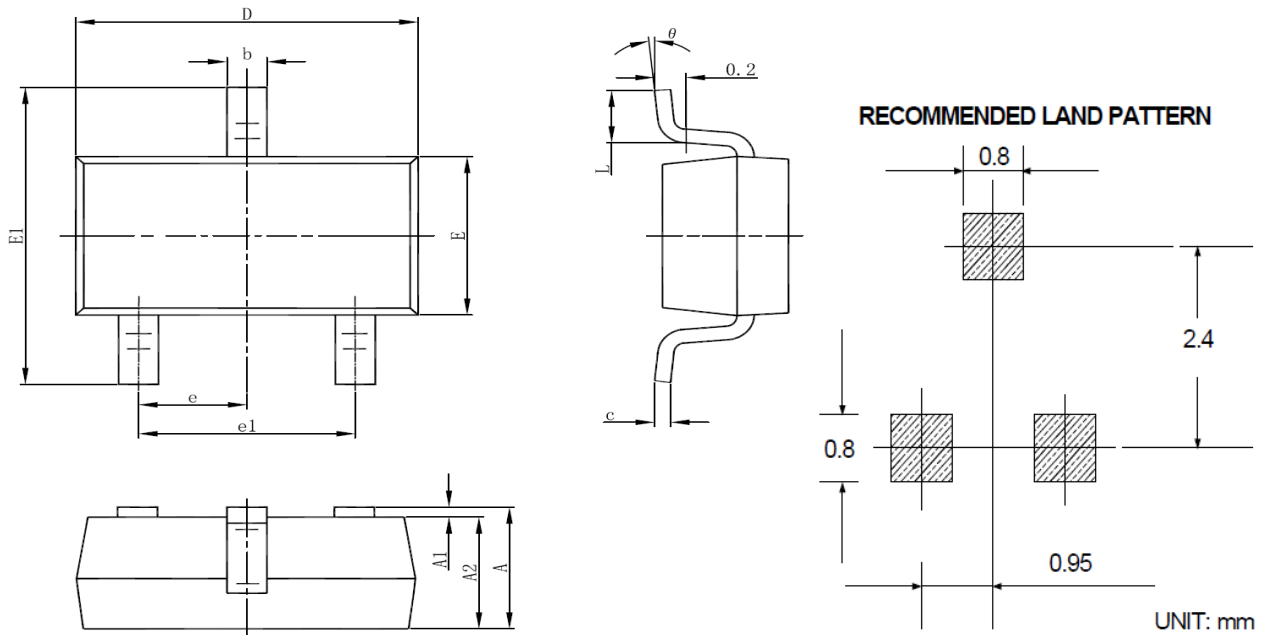
2. Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



SYMBOL	MIN	MAX
A	-	1.200
A1	0.000	0.080
A2	0.900	1.120
b	0.300	0.500
c	0.080	0.220
D	2.700	3.100
E	1.400	1.800
E1	2.600	3.000
e	0.950(BSC)	
e1	1.900(BSC)	
L	0.300	0.600
θ	0°	8°



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