



## DESCRIPTION

The AM3419 is available in SOT-23 Package

## ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	AM3419E3R
		AM3419E3VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

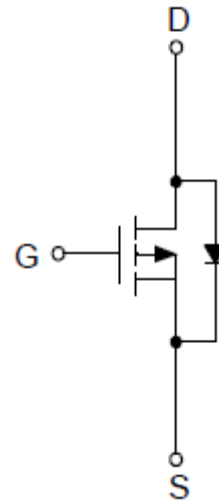
## FEATURES

- -20V/-3.5A,  
 $R_{DS(ON)} = 73m\Omega(\text{max.}) @ V_{GS} = -4.5V$   
 $R_{DS(ON)} = 110m\Omega(\text{max.}) @ V_{GS} = -2.5V$   
 $R_{DS(ON)} = 193m\Omega(\text{max.}) @ V_{GS} = -1.8V$
- Reliable and Rugged
- Available in SOT-23 Package

## APPLICATION

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

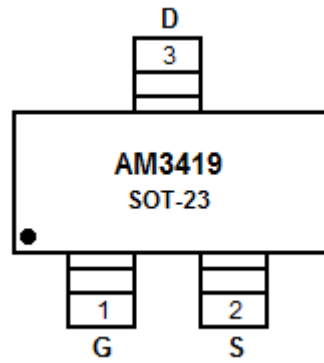
## PIN DESCRIPTION



P-Channel MOSFET



## PIN DESCRIPTION



Top View

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



## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub> = 25°C, unless otherwise noted

V <sub>DSS</sub> , Drain-Source Voltage		-20V
V <sub>GSS</sub> , Gate-Source Voltage		±12V
I <sub>D</sub> <sup>NOTE1</sup> , Continuous Drain Current	T <sub>A</sub> =25°C	-3.5A
	T <sub>A</sub> =70°C	-2.8A
I <sub>DM</sub> <sup>NOTE1</sup> , 300µs Pulsed Drain Current	T <sub>A</sub> =25°C	-14.2A
	T <sub>A</sub> =70°C	-11.4A
I <sub>S</sub> <sup>NOTE1</sup> , Diode Continuous Forward Current		-1A
T <sub>J</sub> , Maximum Junction Temperature		150°C
T <sub>STG</sub> , Storage Temperature Range		-55°C~150°C
P <sub>D</sub> <sup>NOTE1</sup> , Maximum Power Dissipation	T <sub>A</sub> =25°C	1W
	T <sub>A</sub> =70°C	0.7W
R <sub>θJA</sub> <sup>NOTE1</sup> , Thermal Resistance-Junction to Ambient	t ≤10s	90°C/W
	Steady State	125°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 1in<sup>2</sup> pad area, t ≤10sec.



## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V	-	-	-1	μA
		T <sub>J</sub> =85°C	-	-	-30	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =-250μA	-0.5	-0.7	-1	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	±100	nA
Drain-Source On-state Resistance	R <sub>DS(ON)</sub> NOTE2	V <sub>GS</sub> =-4.5V, I <sub>DS</sub> =-3.5A	-	58	73	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>DS</sub> =-2.2A	-	82	110	
		V <sub>GS</sub> =-1.8V, I <sub>DS</sub> =-0.9A	-	130	193	
Diode Forward Voltage	V <sub>SD</sub> NOTE2	I <sub>SD</sub> =-1A, V <sub>GS</sub> =0V	-	-0.7	-1	V
<b>Gate Charge Characteristics</b> NOTE3						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>DS</sub> =-3.5A	-	5.2	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.7	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.8	-	
<b>Dynamic Characteristics</b> NOTE3						
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	-	4.2	-	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, Frequency=1.0MHz	-	357	-	pF
Output Capacitance	C <sub>oss</sub>		-	72	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	61	-	
Turn-on Delay Time	t <sub>d(ON)</sub>	V <sub>DD</sub> =-10V, R <sub>L</sub> =10Ω, I <sub>DS</sub> =-1A, V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =6Ω	-	5.6	-	ns
Turn-on Rise Time	t <sub>r</sub>		-	13.2	-	
Turn-off Delay Time	t <sub>d(OFF)</sub>		-	21	-	
Turn-off Fall Time	t <sub>f</sub>		-	4.5	-	
Reverse Recovery Time	t <sub>rr</sub>	I <sub>SD</sub> =-3.5A, dI <sub>SD</sub> /dt=100A/μs	-	12	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	6.6	-	nC

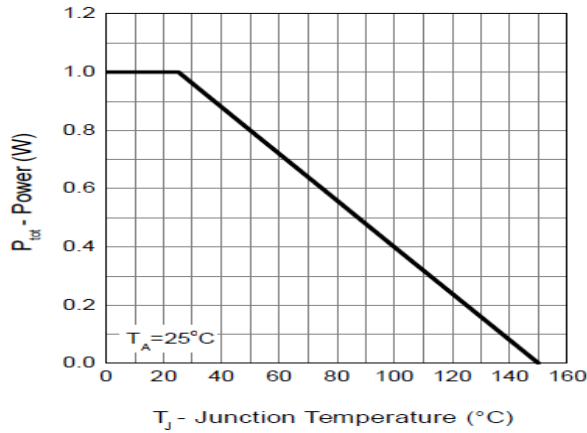
NOTE2: Pulse test: pulse width ≤300us, duty cycle ≤ 2%

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

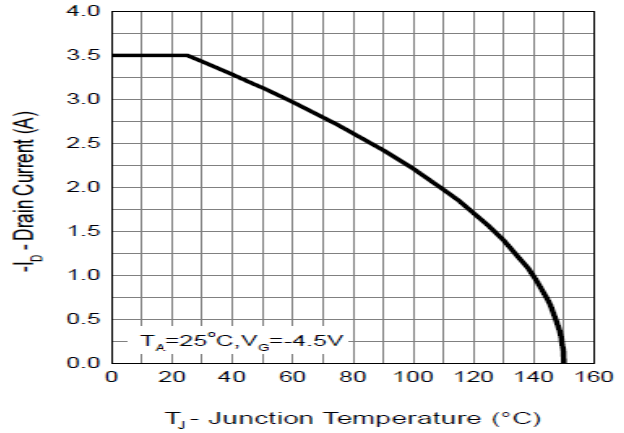


## TYPICAL CHARACTERISTICS

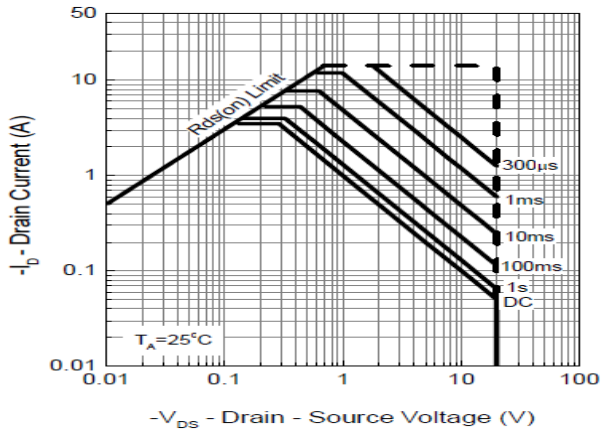
### 1. Power Dissipation



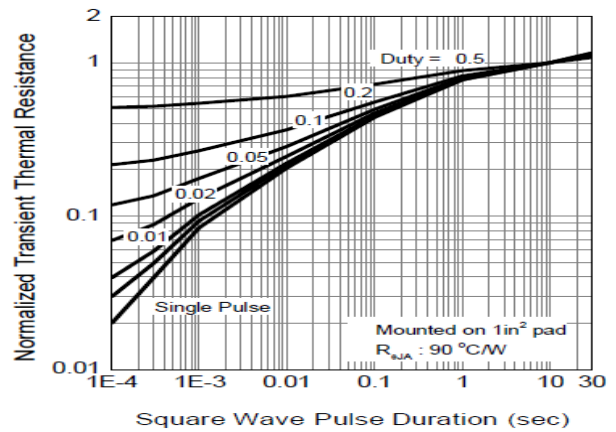
### 2. Drain Current



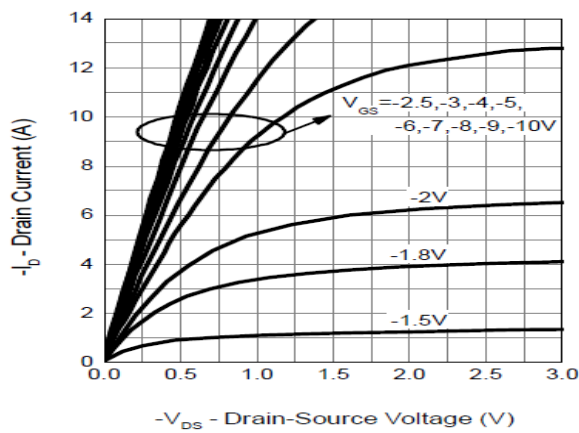
### 3. Safe Operation Area



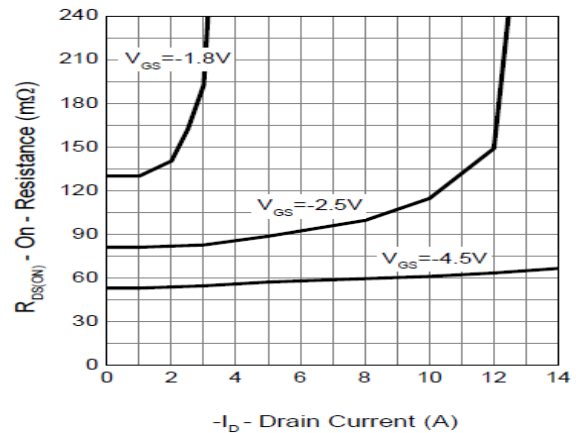
### 4. Thermal Transient Impedance



### 5. Output Characteristics

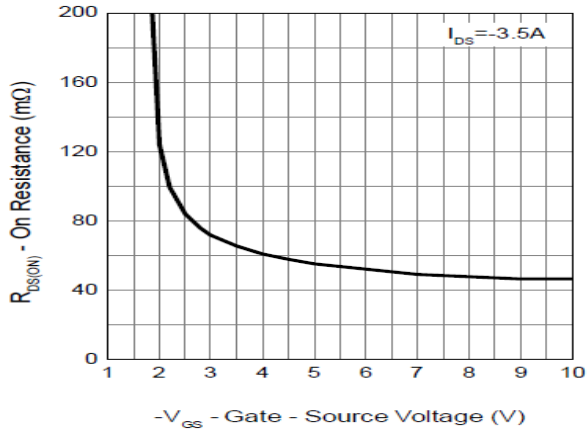


### 6. Drain-Source On Resistance

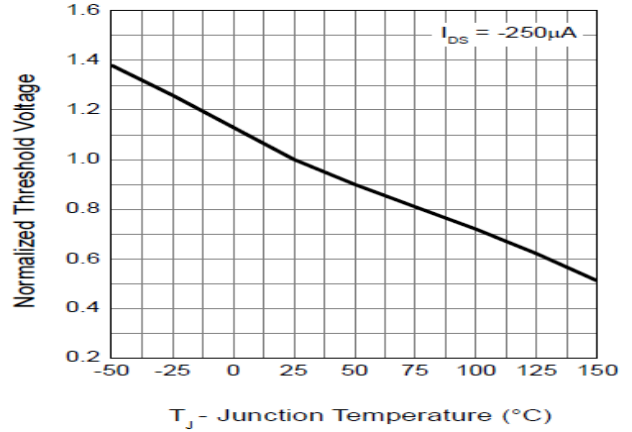




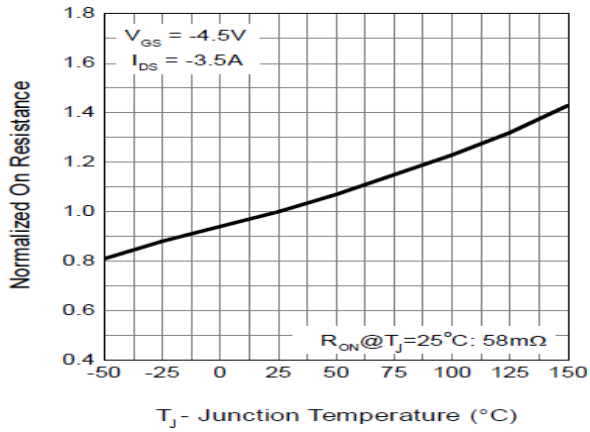
7. Gate-Source On Resistance



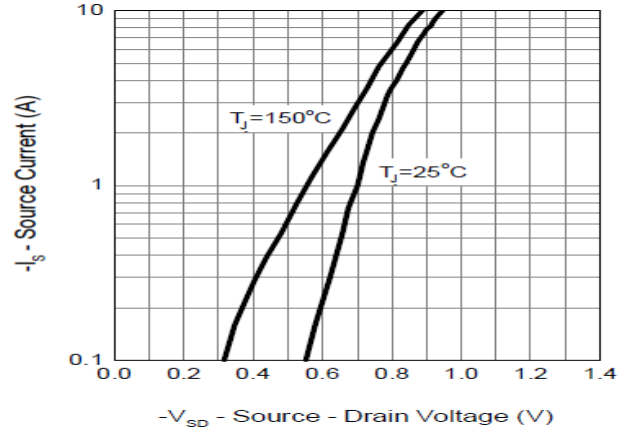
8. Gate Threshold Voltage



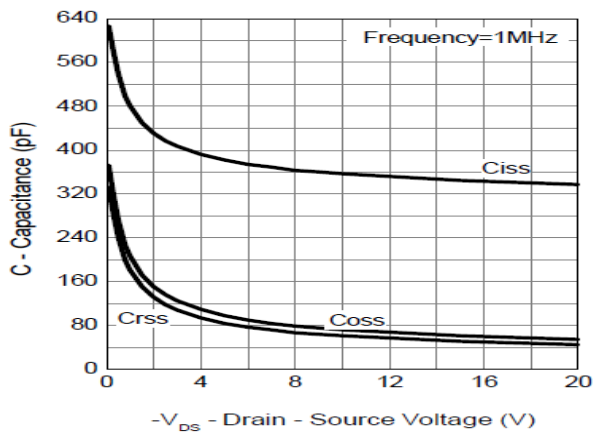
9. Drain-Source On Resistance



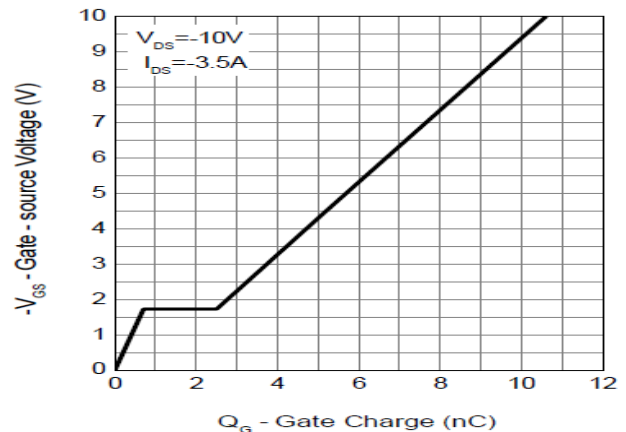
10. Source-Drain Diode Forward



11. Capacitance



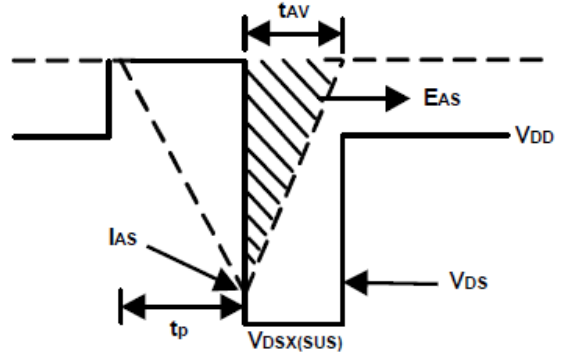
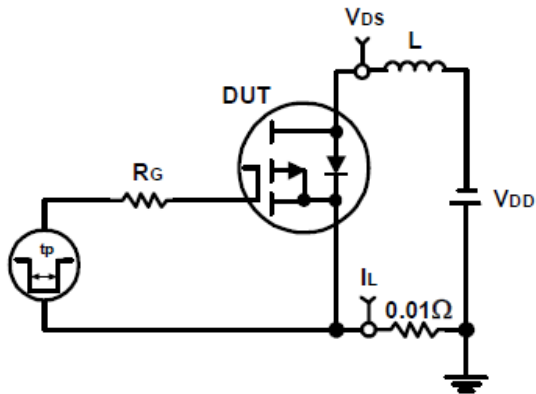
12. Gate Charge



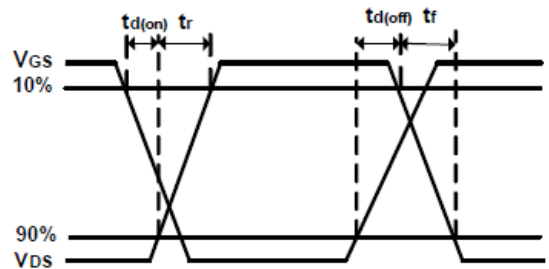
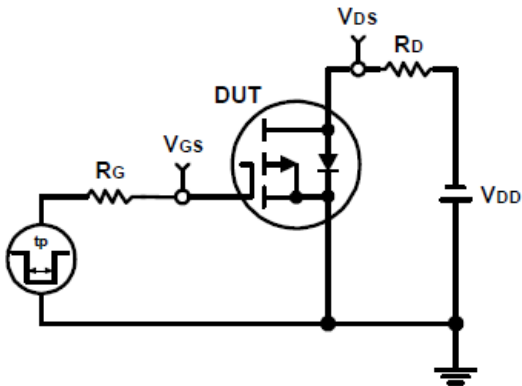


## DETAILED INFORMATION

### Avalanche Test Circuit and Waveforms



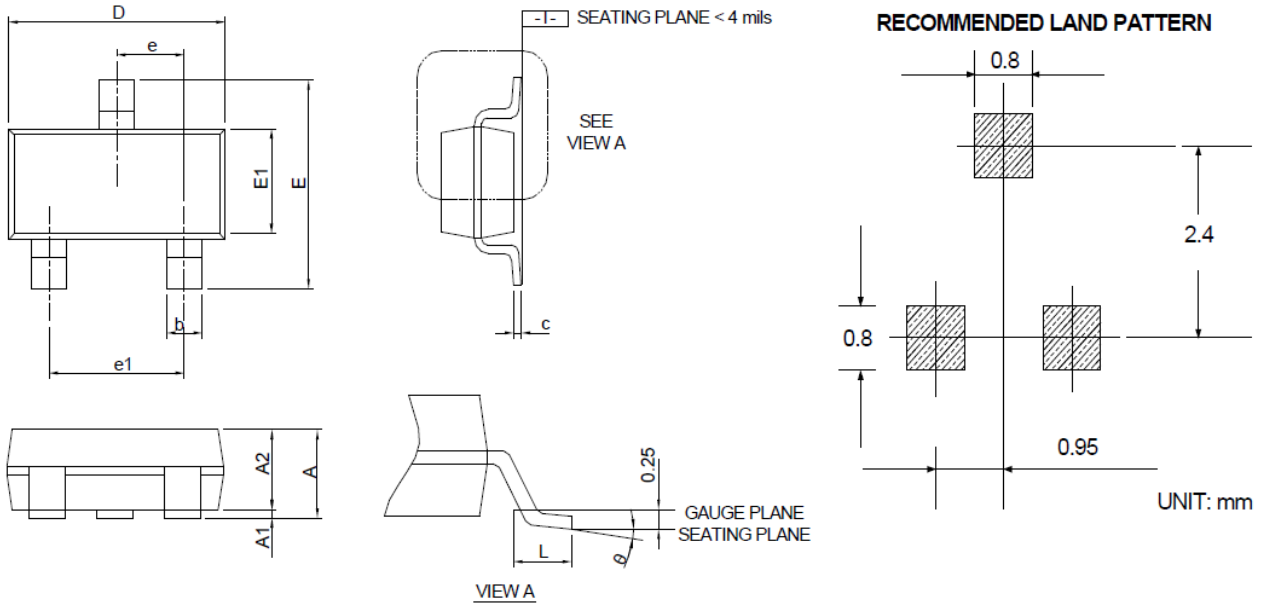
### Switching Time Test Circuit and Waveforms





**PACKAGE INFORMATION**

Dimension in SOT-23 (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	2.600	3.000
E1	1.400	1.800
e	0.950 ( BSC)	
e1	1.900 (BSC)	
L	0.300	0.600
θ	0°	8°





## IMPORTANT NOTICE

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