



DESCRIPTION

AM3422 is available in a SOT-23 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	AM3422E3R
		AM3422E3VR
Note	V: Halogen free Package R: Tape & Reel SPQ: 3,000pcs/Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

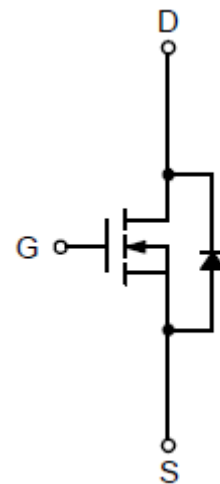
FEATURES

- 55V/2.1A,
 $R_{DS(ON)}=130m\Omega(\text{max.}) @ V_{GS}=4.5V$
 $R_{DS(ON)}=180m\Omega(\text{max.}) @ V_{GS}=2.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Available in a SOT-23 package.

APPLICATION

- Power Management in DC/AC Inverter Systems.

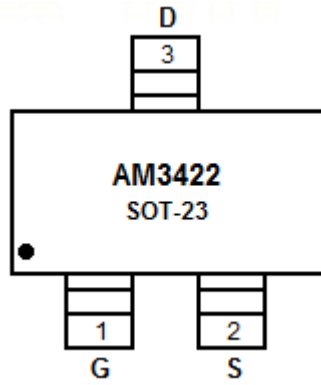
PIN DESCRIPTION



N-Channel MOSFET



PIN DESCRIPTION



Top View

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



ABSOLUTE MAXIMUM RATINGS

$T_A = 25^\circ\text{C}$, unless otherwise noted

V_{DSS} , Drain-Source Voltage	55V
V_{GSS} , Gate-Source Voltage	$\pm 12\text{V}$
I_D ^{NOTE1} , Continuous Drain Current($V_{GS}=4.5\text{V}$)	2.1A
I_{DM} ^{NOTE1} , 300 μs Pulsed Drain Current($V_{GS}=4.5\text{V}$)	8A
I_S ^{NOTE1} , Diode Continuous Forward Current	1A
T_J , Maximum Junction Temperature	150°C
T_{STG} , Storage Temperature Range	-55°C~150°C
P_D ^{NOTE1} , Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 0.83W
	$T_A=100^\circ\text{C}$ 0.3W
$R_{\theta JA}$ ^{NOTE1} , Thermal Resistance-Junction to Ambient	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, $t \leq 10\text{sec}$.



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	55	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =44V, V _{GS} =0V	-	-	1	μA
		T _J =85°C			30	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	0.6	1.3	2	V
Gate Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Drain-Source On-state Resistance	R _{DS(ON)} NOTE2	V _{GS} =4.5V, I _{DS} =2.1A	-	90	130	mΩ
		V _{GS} =2.5V, I _D =1.5A	-	140	180	
Diode Characteristics						
Diode Forward Voltage	V _{SD} NOTE2	I _{SD} =1A, V _{GS} =0V	-	0.8	1.1	V
Reverse Recovery Time	t _{rr}	I _{SD} =2.1A,	-	21	-	ns
Reverse Recovery Charge	Q _{rr}	di _{SD} /dt=100A/μs	-	16	-	nC
Dynamic Characteristics NOTE3						
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2	-	Ω
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz	-	450	-	pF
Output Capacitance	C _{OSS}		-	40	-	
Reverse Transfer Capacitance	C _{RSS}		-	20	-	
Turn-on Delay Time	t _{D(ON)}	V _{DD} =30V, R _L =30Ω I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	7	13	ns
Turn-on Rise Time	t _R		-	9	17	
Turn-off Delay Time	t _{D(OFF)}		-	20	36	
Turn-off Fall Time	t _F		-	3	6	
Gate Charge Characteristics NOTE3						
Total Gate Charge	Q _G	V _{DS} =30V, V _{GS} =10V, I _{DS} ≅2.1A	-	11	16	nC
Gate-Source Charge	Q _{GS}		-	1.3	-	
Gate-Drain Charge	Q _{GD}		-	1.6	-	

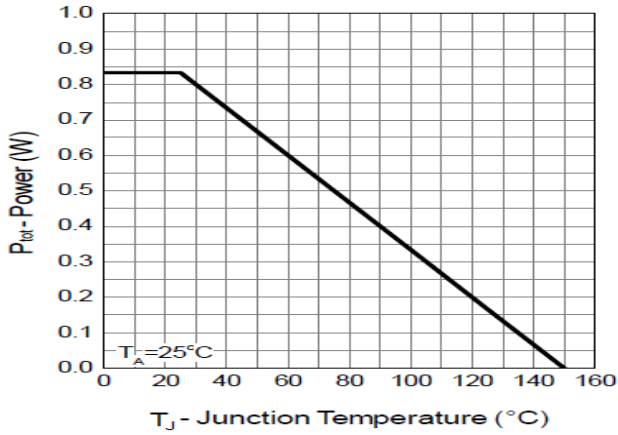
NOTE2: Pulse test; pulse width≤300μs, duty cycle≤2%.

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

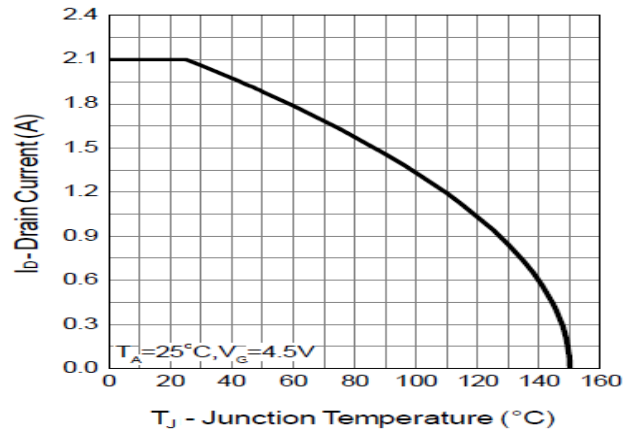


TYPICAL CHARACTERISTICS

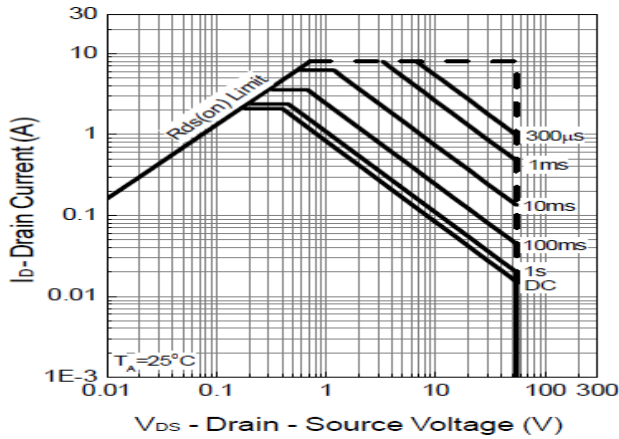
1. Power Dissipation



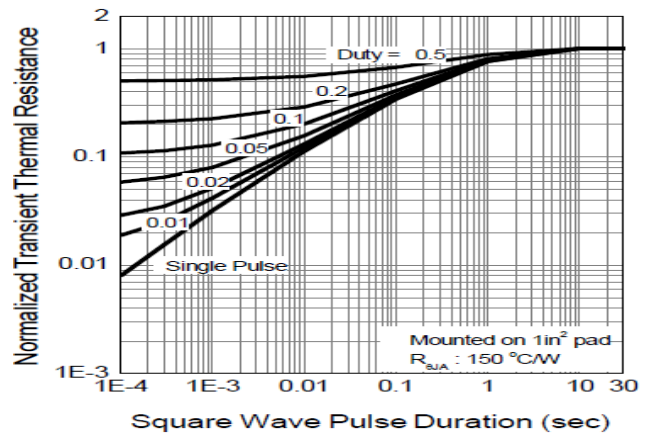
2. Drain Current



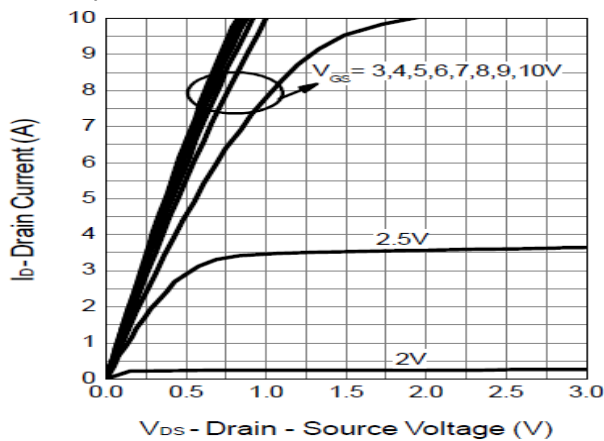
3. Safe Operation Area



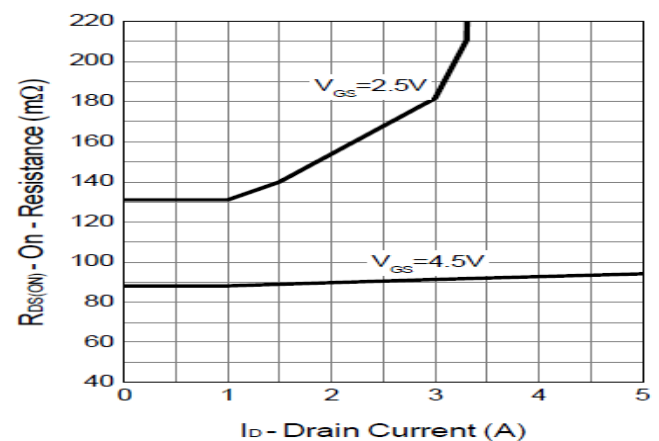
4. Thermal Transient Impedance



5. Output Characteristics

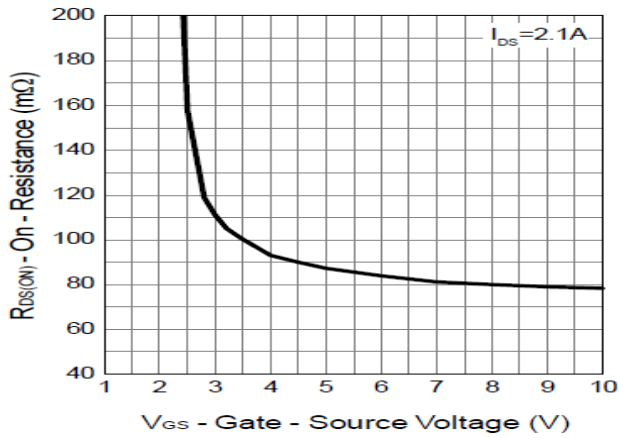


6. Drain-Source On Resistance

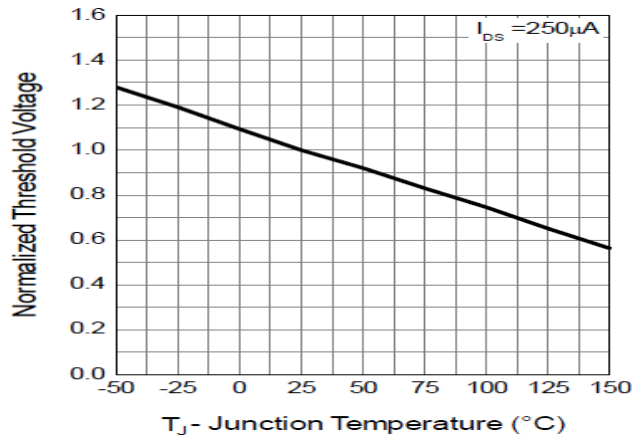




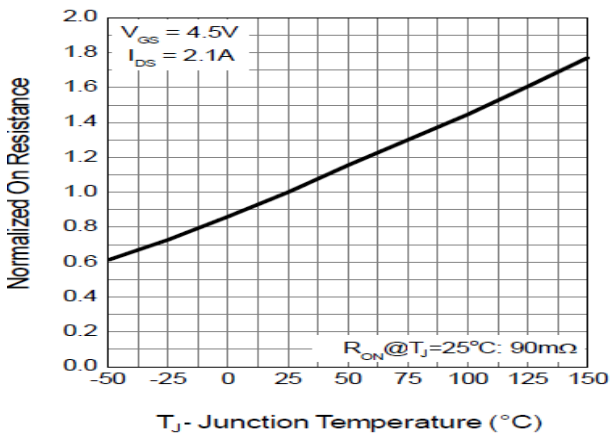
7. Gate-Source On Resistance



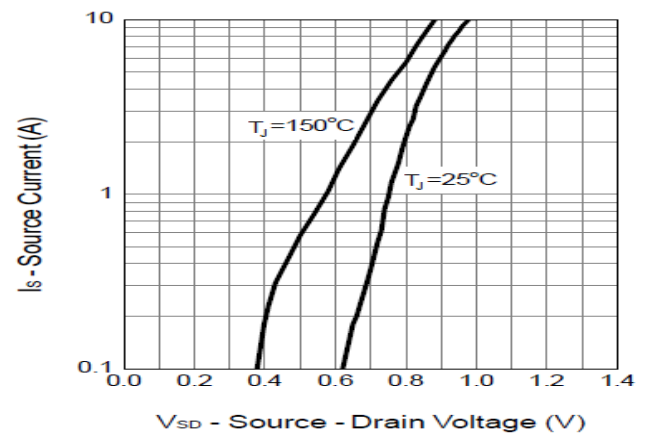
8. Gate Threshold Voltage



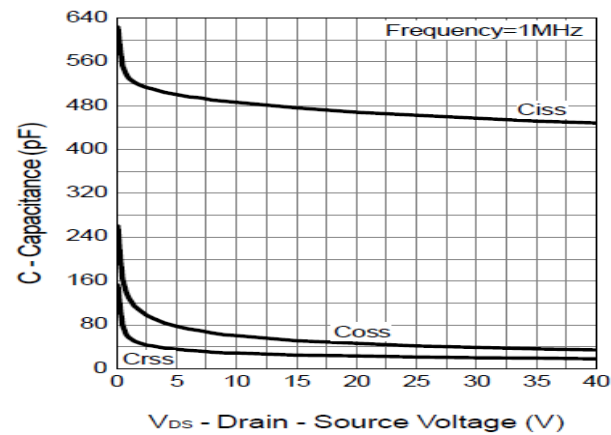
9. Drain-Source On Resistance



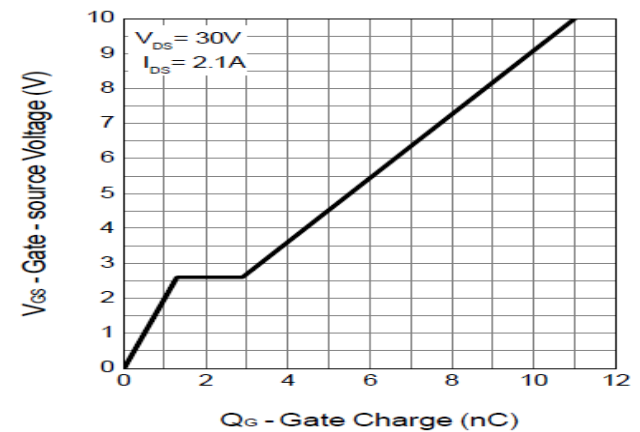
10. Source-Drain Diode Forward



11. Capacitance



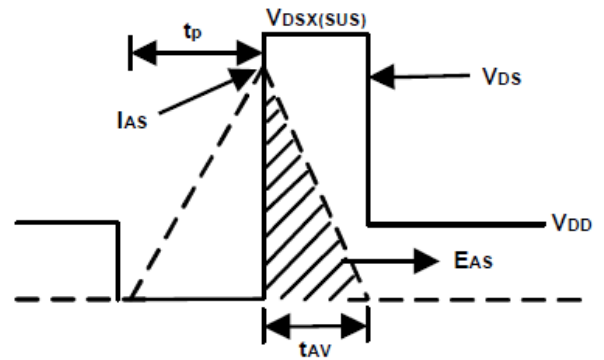
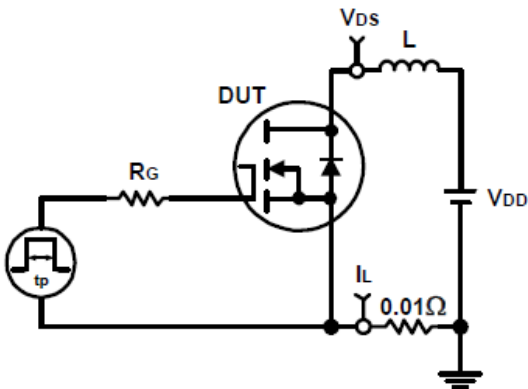
12. Gate Charge



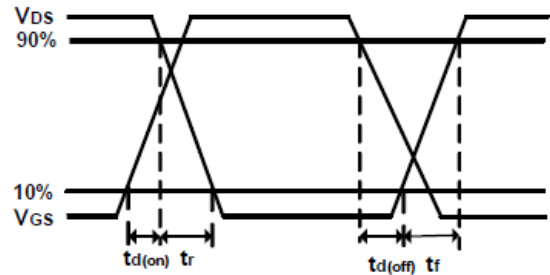
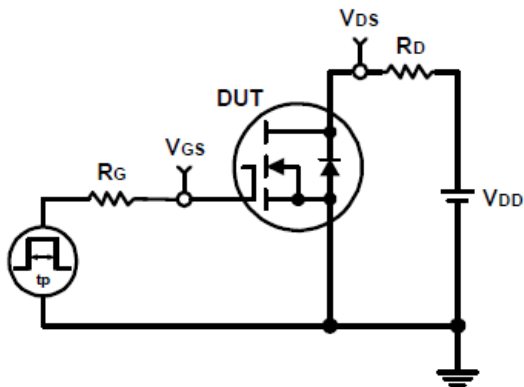


DETAILED INFORMATION

Avalanche Test Circuit and Waveforms



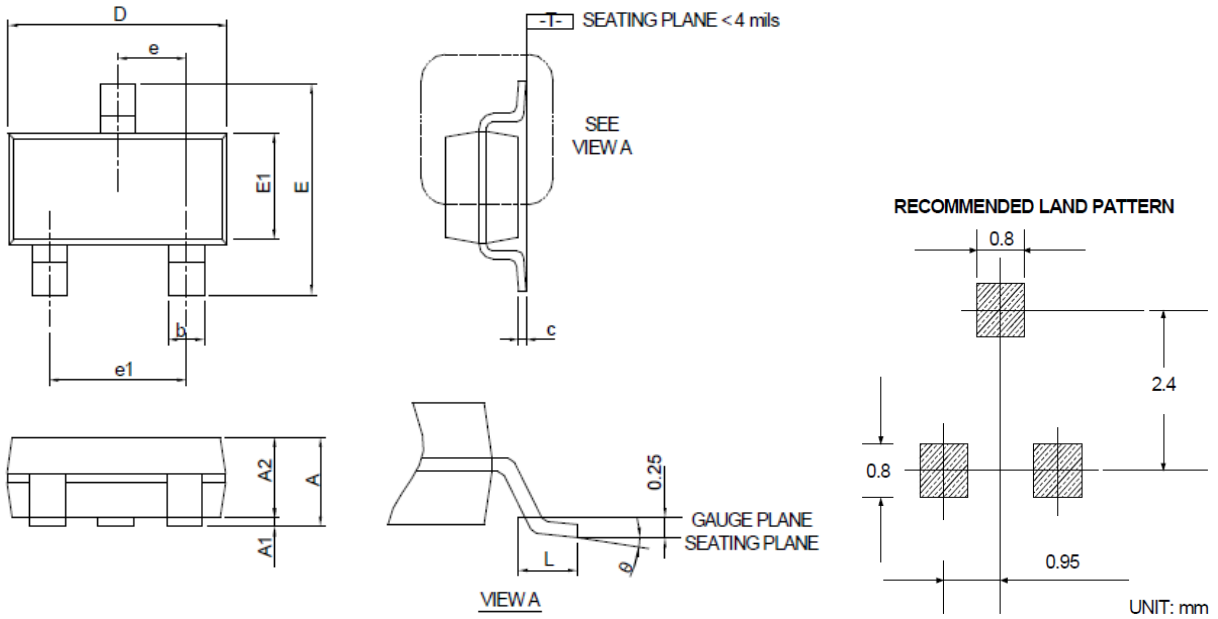
Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in SOT-23 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	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°



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