DESCRIPTION

AM3422 is available in a SOT-23 package.

FEATURES

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

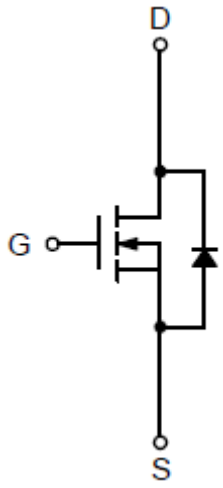
ORDERING INFORMATION

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		

APPLICATION

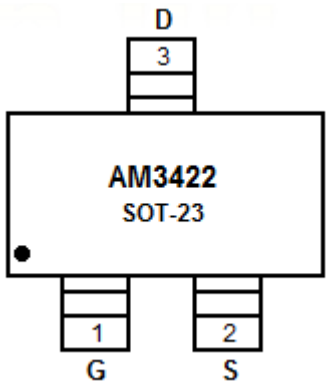
- Power Management in DC/AC Inverter Systems.

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℃, unless otherwise noted

V_{DSS}, Drain-Source Voltage		55V
V_{GSS}, Gate-Source Voltage		±12V
I_D NOTE1, Continuous Drain Current(V_{GS}=4.5V)		2.1A
I_{DM} NOTE1, 300μs Pulsed Drain Current(V_{GS}=4.5V)		8A
I_S NOTE1, Diode Continuous Forward Current		1A
T_J, Maximum Junction Temperature		150℃
T_{STG}, Storage Temperature Range		-55℃~150℃
P_D NOTE1, Maximum Power Dissipation	T_A=25°C	0.83W
	T_A=100℃	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 ≤ 10sec.

ELECTRICAL CHARACTERISTICS

T_A = 25℃, unless otherwise noted

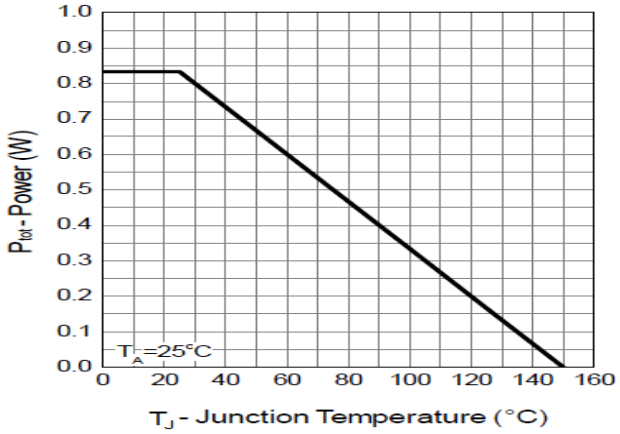
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250μA	55	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=44V,V_{GS}=0V	-	-	1	μA
		T_J=85°C			30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	0.6	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,	-	450	-	pF
Output Capacitance	C_{OSS}	V_{DS}=30V,	-	40	-	
Reverse Transfer Capacitance	C_{RSS}	Frequency=1.0MHz	-	20	-	
Turn-on Delay Time	$t_{D(ON)}$	V_{DD}=30V, R_L=30Ω	-	7	13	ns
Turn-on Rise Time	t_R	I_{DS}=1A, V_{GEN}=10V,	-	9	17	
Turn-off Delay Time	$t_{D(OFF)}$	R_G=6Ω	-	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,	-	11	16	nC
Gate-Source Charge	Q_{GS}	I_{DS}≡2.1A	-	1.3	-	
Gate-Drain Charge	Q_{GD}		-	1.6	-	

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

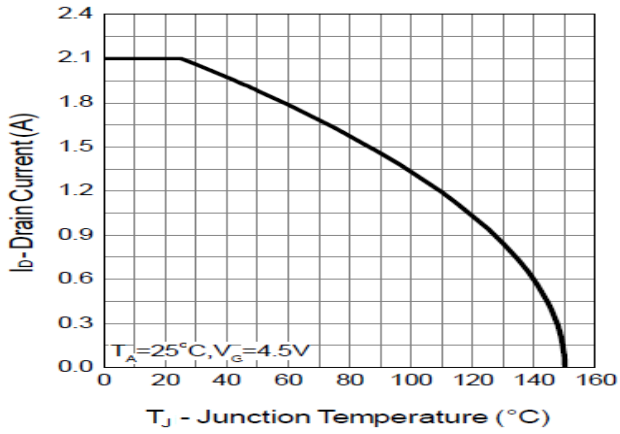
NOTE3: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

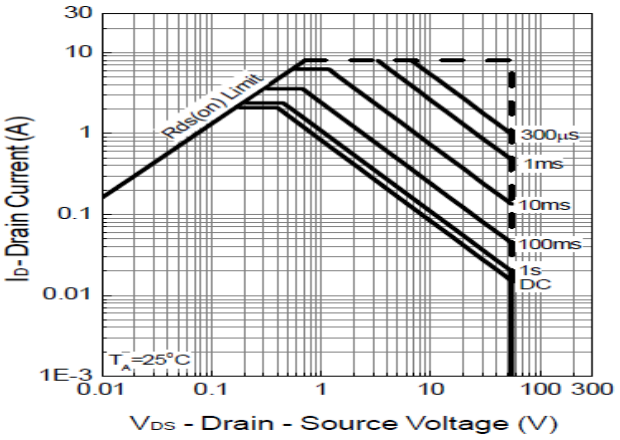
1. Power Dissipation



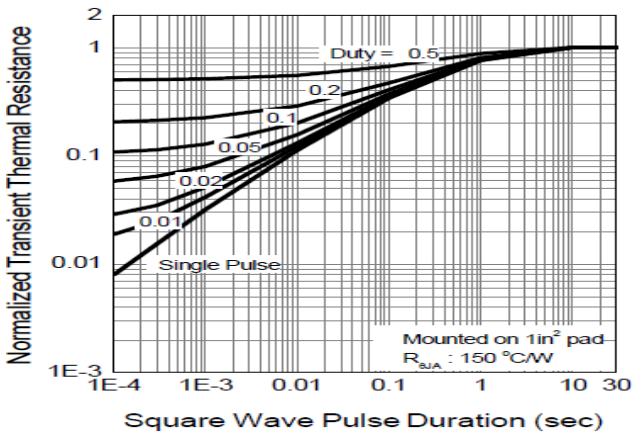
2. Drain Current



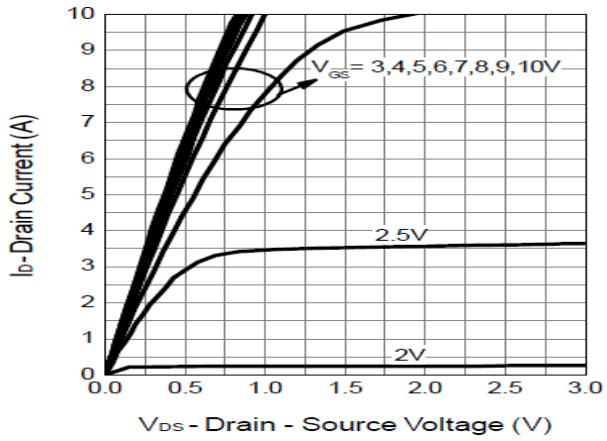
3. Safe Operation Area



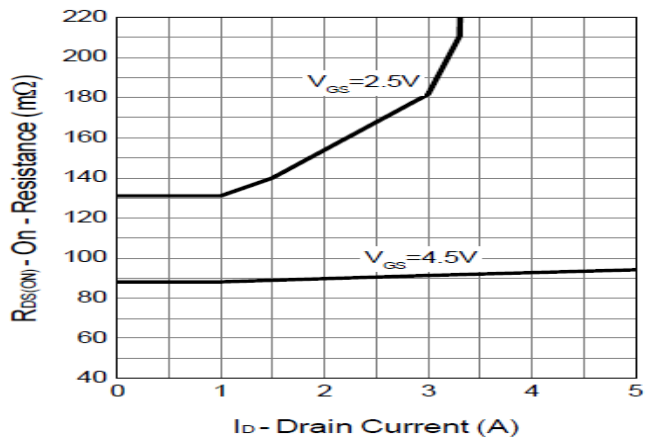
4. Thermal Transient Impedance



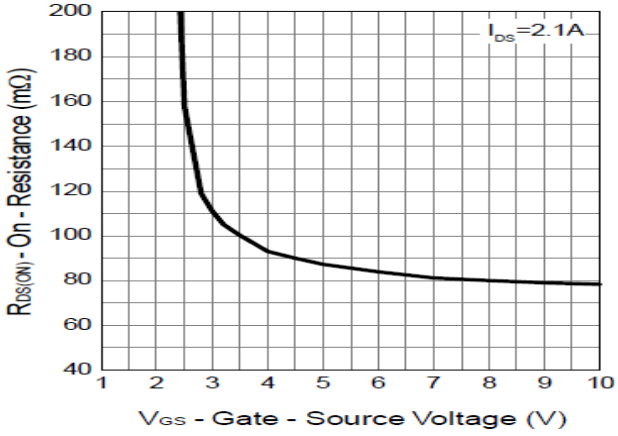
5. Output Characteristics



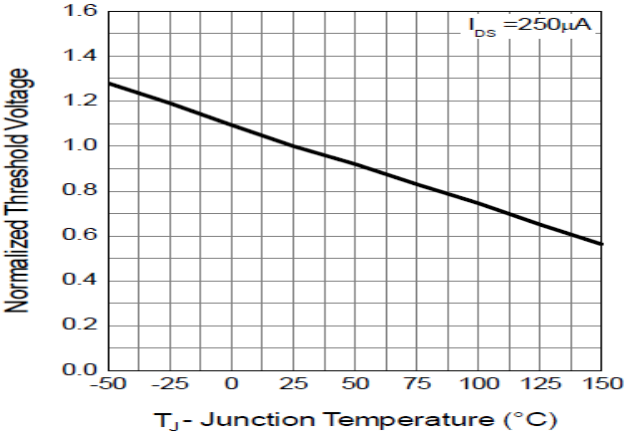
6. Drain-Source On Resistance



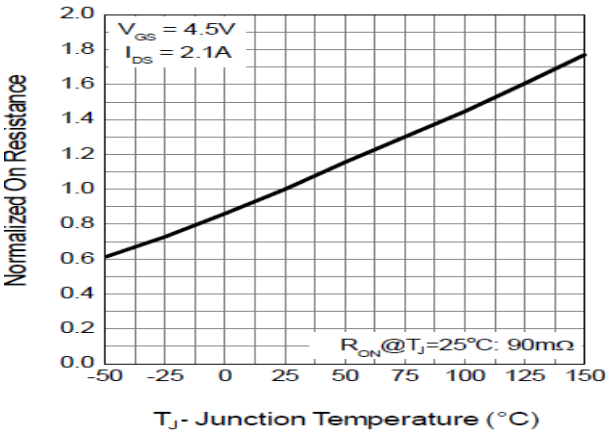
7. Gate-Source On Resistance



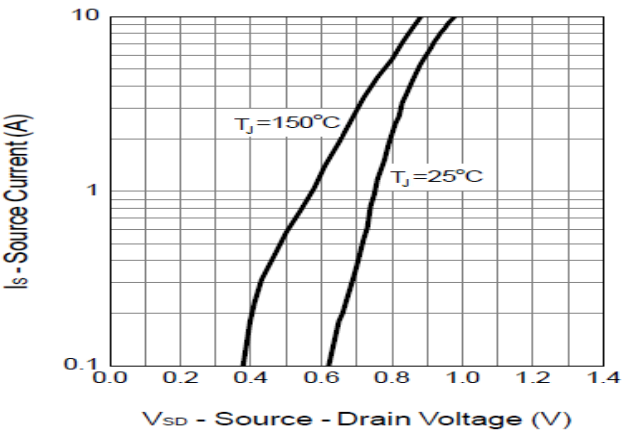
8. Gate Threshold Voltage



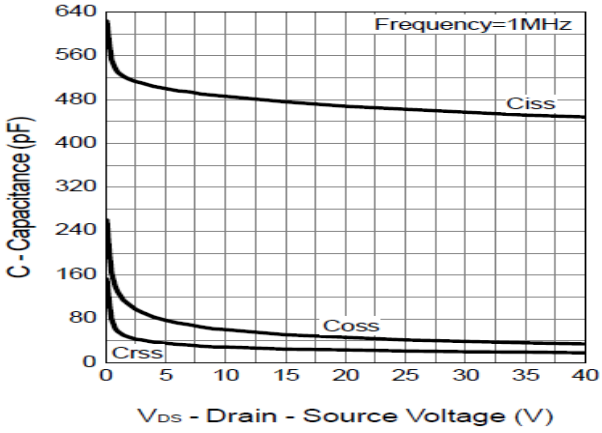
9. Drain-Source On Resistance



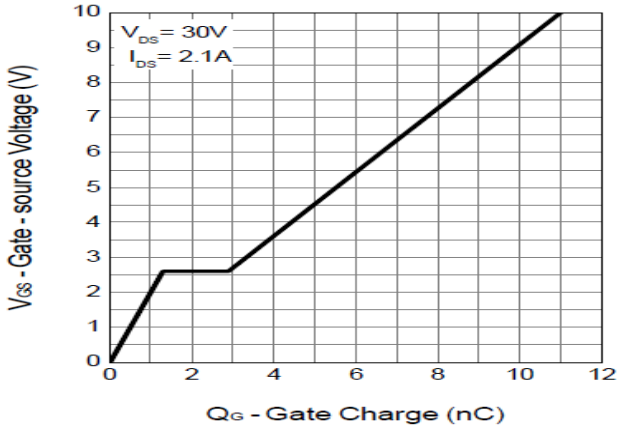
10. Source-Drain Diode Forward



11. Capacitance

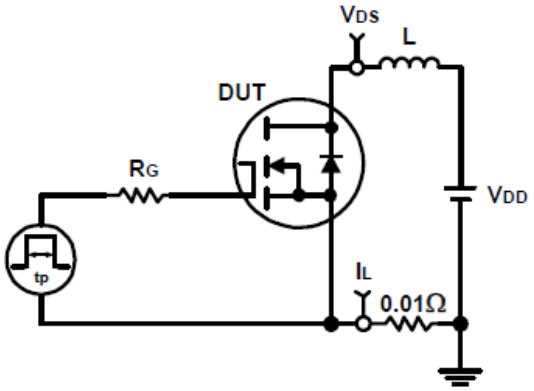


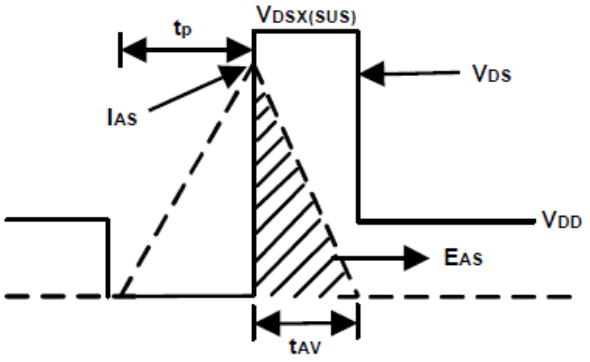
12. Gate Charge



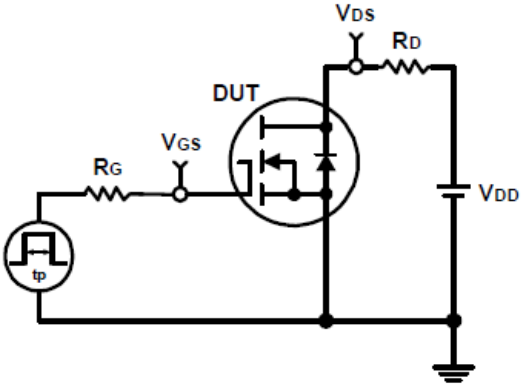
DETAILED INFORMATION

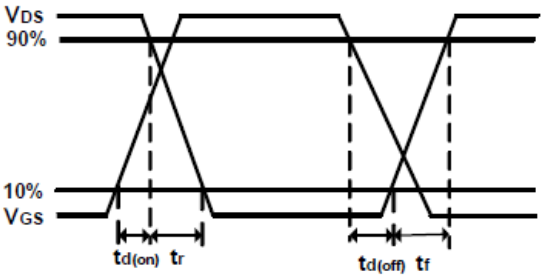
Avalanche Test Circuit and Waveforms





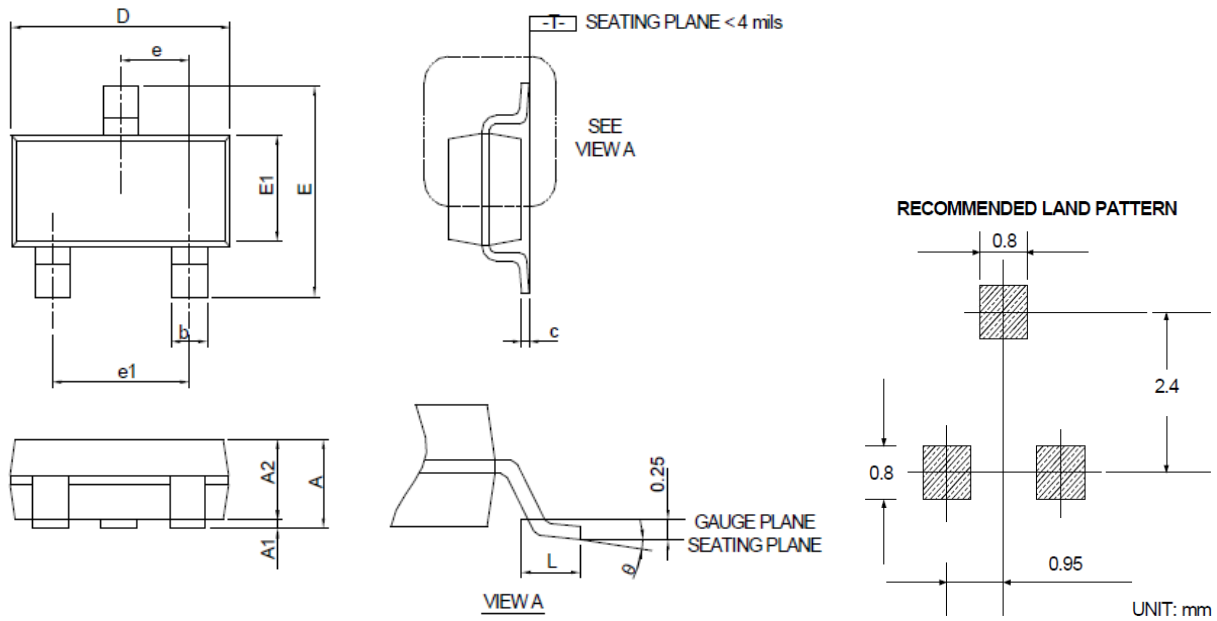
Switching Time Test Circuit and Waveforms





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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