

**DESCRIPTION**

The AM0414AD is available in SOP8 Package.

BVDSS	RDS(ON)	ID
40V	13mΩ	8A

APPLICATION

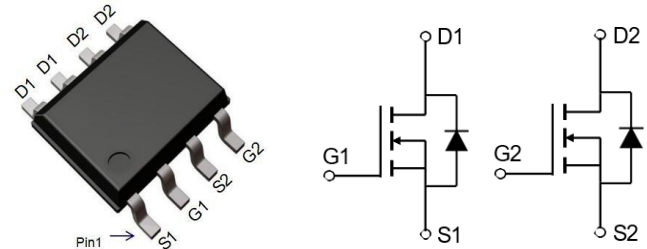
- Load Switch
- PWM Application
- Power Management

ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 4,000pcs/Reel	M8	AM0414ADM8VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

FEATURES

- 40V, 8A
- $R_{DS(ON)}$ Typ = 13mΩ @ $V_{GS} = 10V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

PIN DESCRIPTION

Pin#	Symbol	Function
1,3,4	S	Source
2	G	Gate
5,6,7,8	D	Drain

ABSOLUTE MAXIMUM RATINGS

$T_J = 25^\circ\text{C}$ unless otherwise specified

V_{DS} , Drain-to-Source Voltage		40V
V_{GS} , Gate-to-Source Voltage		$\pm 20V$
I_D , Continuous Drain Current	$T_A = 25^\circ\text{C}$	8A
	$T_A = 100^\circ\text{C}$	4.8A
I_{DM} , Pulsed Drain Current ⁽¹⁾		32A
E_{AS} , Single Pulse Avalanche Energy ⁽²⁾		25mJ
P_D , Power Dissipation	$T_A = 25^\circ\text{C}$	1.9W
$R_{\theta JC}$, Thermal Resistance, Junction to Case		65°C/W
T_J , T_{STG} , Junction & Storage Temperature Range		-55°C ~ +150°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) Repetitive rating, pulse width limited by junction temperature.

(2) E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 20V$, $V_G = 10V$, $R_G = 25\Omega$, $L = 0.5mH$, $I_{AS} = 10A$

(3) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.



ELECTRICAL CHARACTERISTICS

T_J=25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BV)DSS}	V _{GS} =0V, I _D =250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS (th)}	V _{GS} =V _{DS} , I _D =250μA	1	1.5	2	V
Static Drain Source ON-Resistance ⁽³⁾	R _{DS(ON)}	V _{GS} =10V, I _D =8A	-	13	16.9	mΩ
		V _{GS} =4.5V, I _D =6A		17	22.1	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz	-	1000	-	pF
Output Capacitance	C _{oss}		-	84	-	
Reverse Transfer Capacitance	C _{rss}		-	63	-	
Total Gate Charge	Q _g	V _{GS} =0 to 10V, V _{DS} =20V, I _D =5A	-	14	-	nC
Gate Source Charge	Q _{gs}		-	4	-	
Gate-Drain("Miller") Charge	Q _{gd}		-	4.5	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =20V R _{GEN} =3Ω, I _D =5A	-	10	-	ns
Turn-On Rlse Time	t _r		-	12	-	
Turn-Off Delay Time	t _{d(off)}		-	33	-	
Turn-Off Fall Time	t _f		-	10	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	8	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}	-	-	-	32	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =8A	-	-	1.2	V
Body Diode Reverse Recovery Time	T _{rr}	I _F =5A, di/dt =100A/us	-	19	-	nS
Body Diode Reverse Recovery Charge	Q _{rr}		-	11	-	nC

(3) R_{θJA} is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB



TEST CIRCUIT

Fig 1. Gate Charge Test Circuit & Waveform

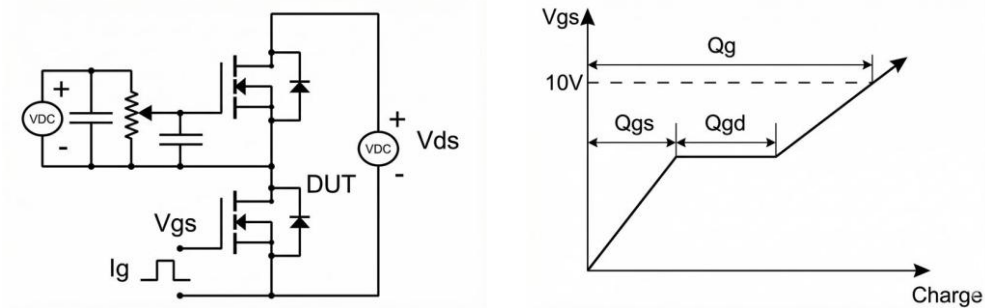


Fig 2. Resistive Switching Test Circuit & Waveform

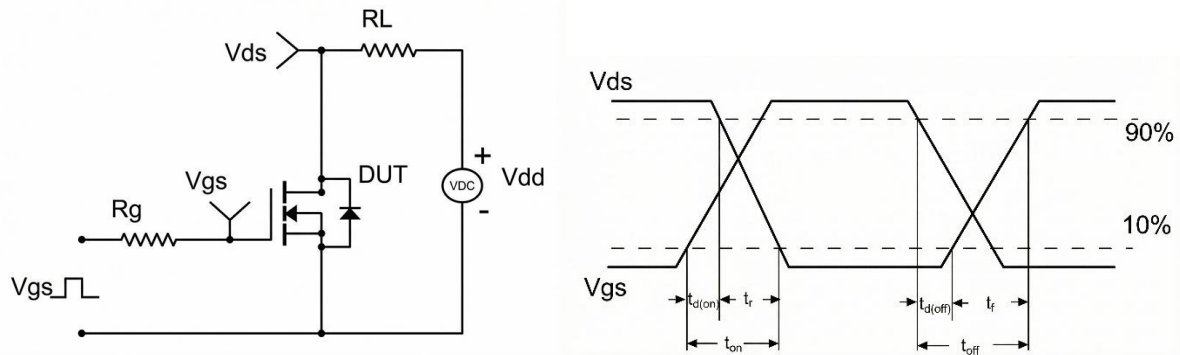


Fig 3. Unclamped Inductive Switching Test Circuit & Waveform

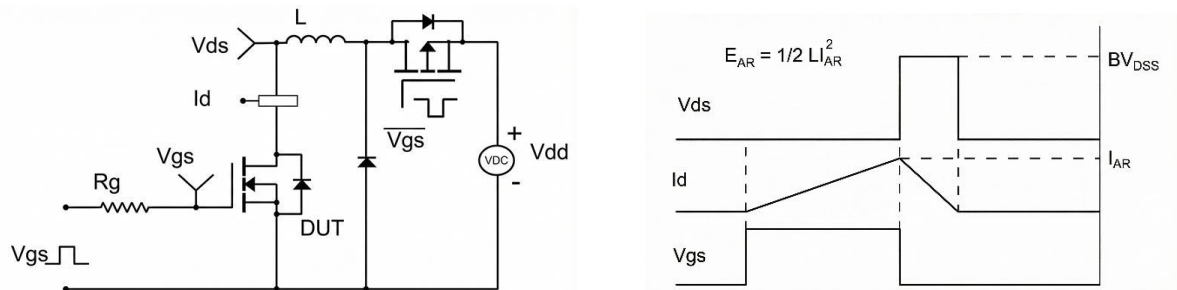
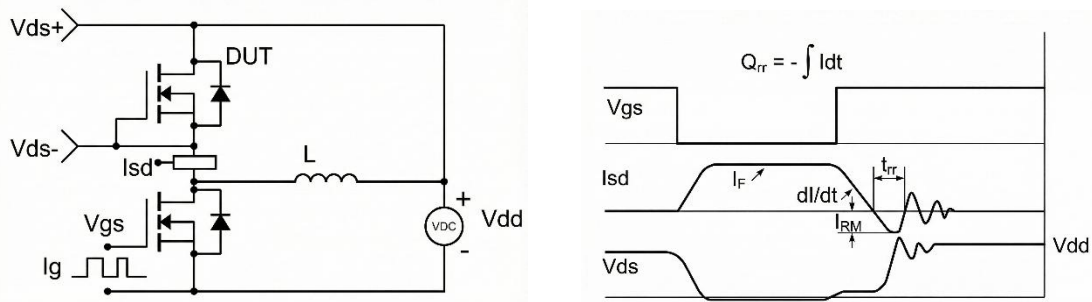


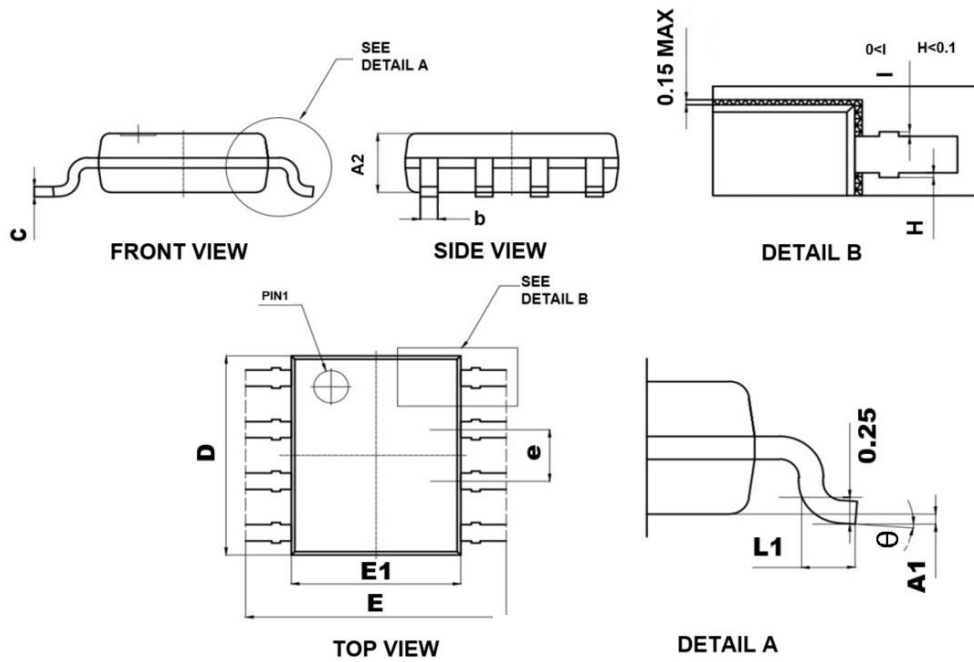
Fig 4. Diode Recovery Test Circuit & Waveform





PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	MILLIMETER	
	Min.	Max.
A	0.030	0.150
A2	1.425	1.475
b	0.300	0.500
c	0.150	0.250
D	4.800	5.200
E	5.800	6.200
E1	3.800	4.200
e	1.270 BSC	
L1	0.400	0.800
H, I	0	0.100
θ	0°	8°

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