DESCRIPTION

The AM1013AD is available in SOP8 Package.

BVDSS	RDSON	ID
100V	95mΩ	3.5A

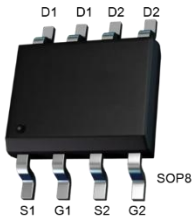
FEATURES

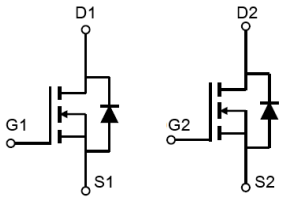
- 100V, 3.5A
  $R_{DS(ON)}$ Typ = 95mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ Typ = 135mΩ @ V_{GS} = 4.5V
- Advanced Trench MOS with Split-Gate Structure
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

APPLICATION

- DC/DC Converter
- LED Backlighting
- Motor Control

PIN DESCRIPTION





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

ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 4,000pcs/Reel	M8	AM1013ADM8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J=25℃, unless otherwise specified.

V_{DS}, Drain-to-Source Voltage		100V
V_{GS}, Gate-to-Source Voltage		±20V
I_D, Continuous Drain Current	T_A = 25℃	3.5A
	T_A = 100℃	2.2A
I_{DM}, Pulsed Drain Current (1)		14A
E_{AS}, Single Pulsed Avalanche Energy (2)		7.2mJ
P_D, Power Dissipation	T_A = 25℃	3.1W
$R_{\theta JA}$, Thermal Resistance, Junction to Ambient (3)		40.3℃/W
T_J, T_{STG}, Junction & Storage Temperature Range		-55℃ ~ +150℃

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 T_J(MAX)=150°C.

(2) The EAS data shows Max. rating. The test condition is T_J=25℃, V_{DD}=25V, V_G=10V, R_G=25Ω, L=0.4mH, I_{AS}=6A

(3) $R_{\theta JA}$ is measured with the device mounted on 1inch² pad of 2oz copper FR4 PCB.

ELECTRICAL CHARACTERISTICS

T_J=25℃, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, 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_{DS}=V_{GS}, I_D=250μA	1	1.65	2.5	V
Static Drain Source ON-Resistance (4)	$R_{DS(ON)}$	V_{GS}=10V, I_D=3A	-	95	130	mΩ
		V_{GS}=4.5V, I_D=1A	-	135	190	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, f=1MHz	-	200	-	pF
Output Capacitance	C_{oss}		-	300	-	
Reverse Transfer Capacitance	C_{rss}		-	3	-	
Total Gate Charge	Q_g	V_{GS}=0 to 10V, V_{DS}=50V, I_D=3A	-	4	-	nC
Gate Source Charge	Q_{gs}		-	0.9	-	
Gate-Drain (“Miller”) Charge	Q_{gd}		-	1.1	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=50V R_{GEN}=3Ω, I_D=3A	-	13	-	ns
Turn-On Rese Time	t_r		-	19	-	
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	
Turn-Off Fall Time	t_f		-	28	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	3.5	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	14	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=3A	-	-	1.2	V

(4) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

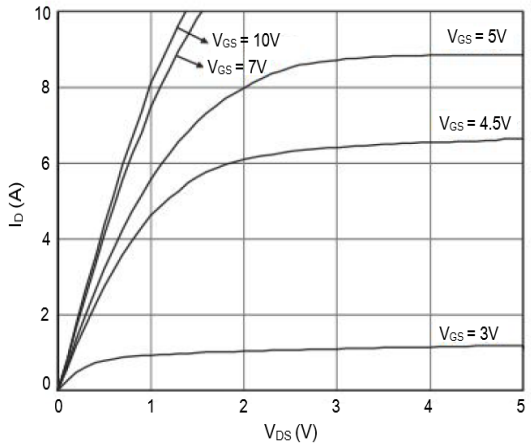


Fig 2. Typical Transfer Characteristics

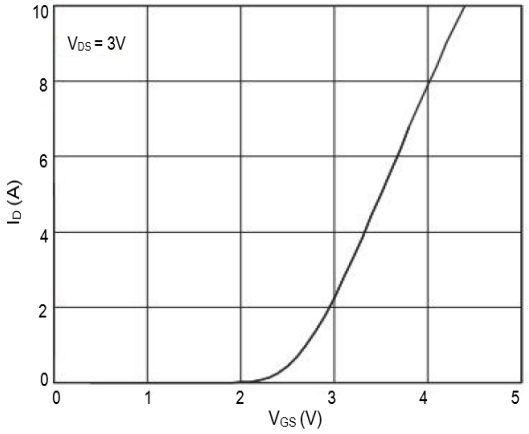


Fig 3. On-resistance vs. Drain Current

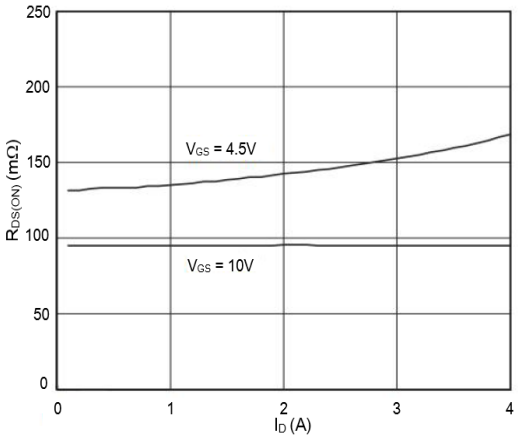


Fig 4. Body Diode Characteristics

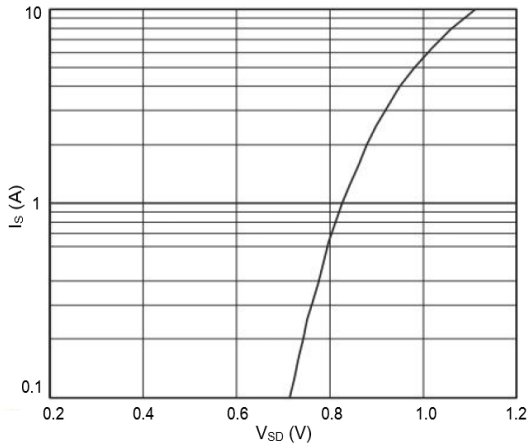


Fig 5. Gate Charge Characteristics

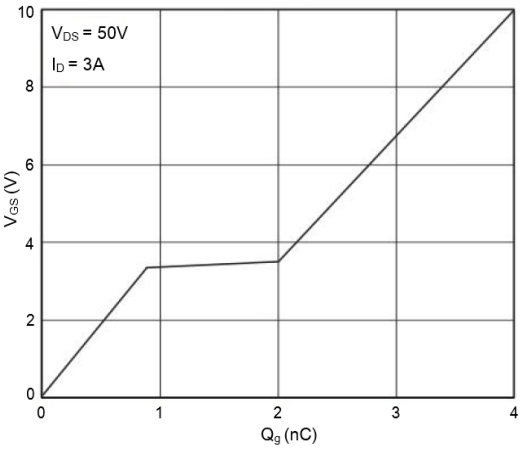


Fig 6. Capacitance Characteristics

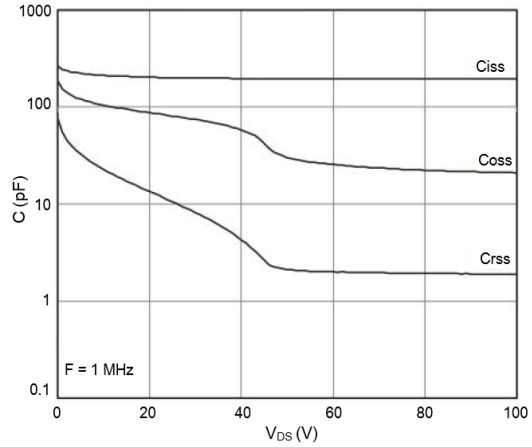


Fig 7. Normalized Breakdown voltage vs. Junction Temperature

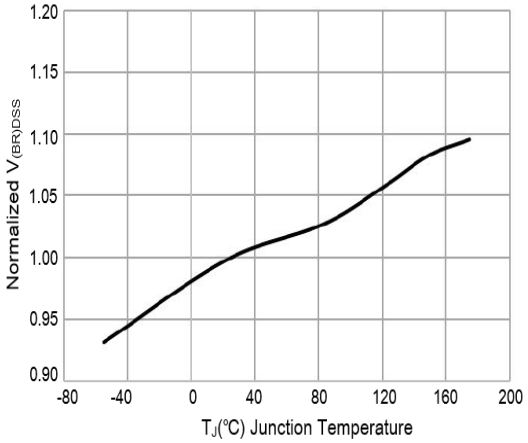


Fig 8. Normalized on Resistance vs. Junction Temperature

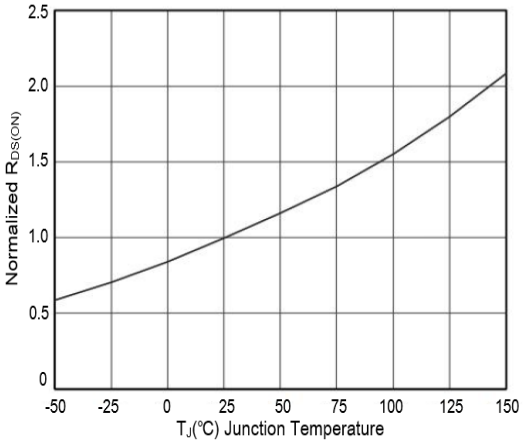


Fig 9. Maximum Safe Operating Area

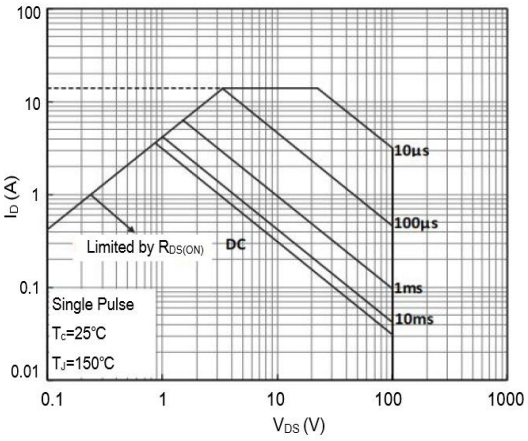


Fig 10. Maximum Continuous Drain Current vs. Case Temperature

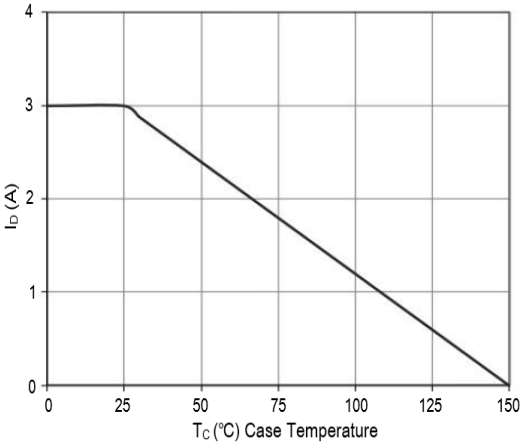


Fig 11. Normalized Maximum Transient Thermal Impedance

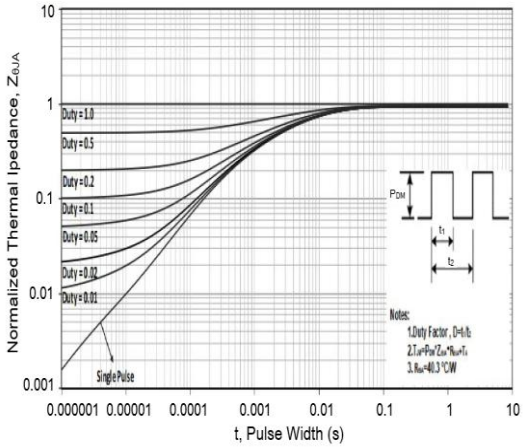
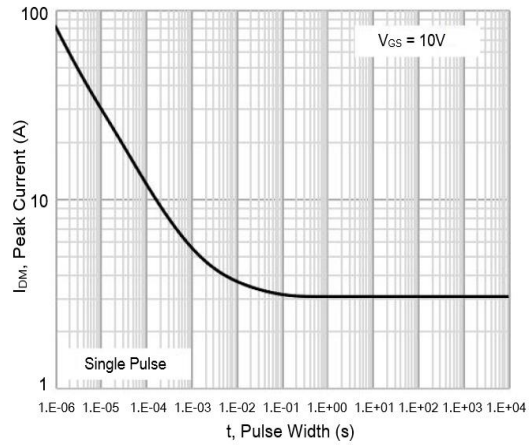


Fig 12. Peak Current Capacity



TEST CIRCUIT

Fig 1. Gate Charge Test Circuit & Waveform

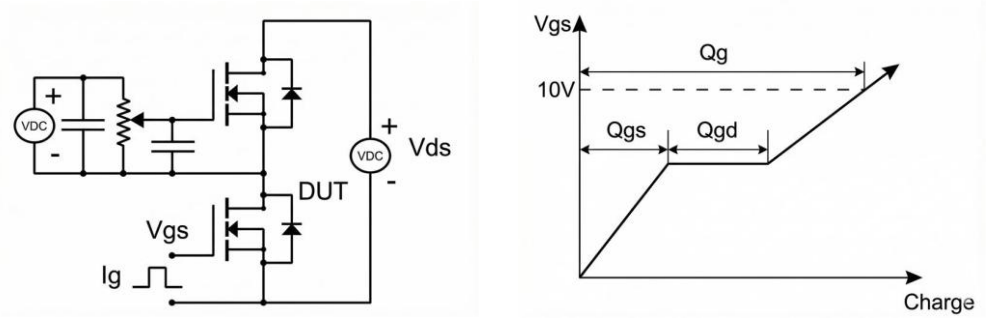


Fig 2. Resistive Switching Test Circuit & Waveform

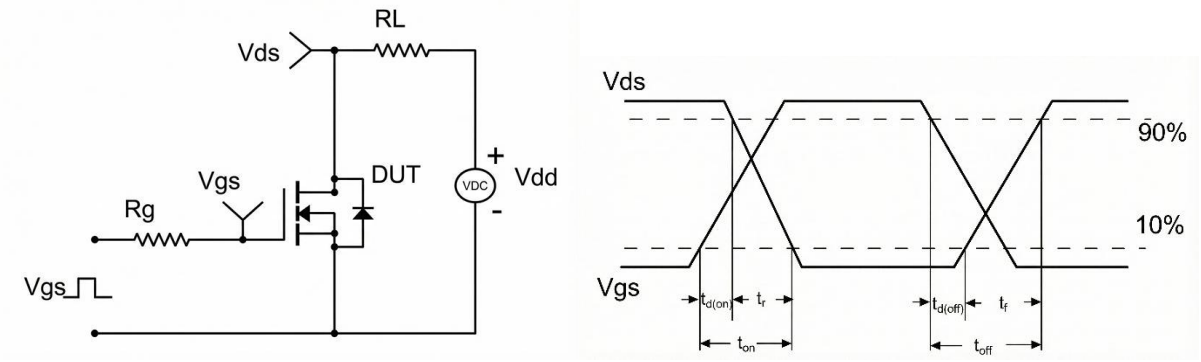


Fig 3. Unclamped Inductive Switching Test Circuit & Waveform

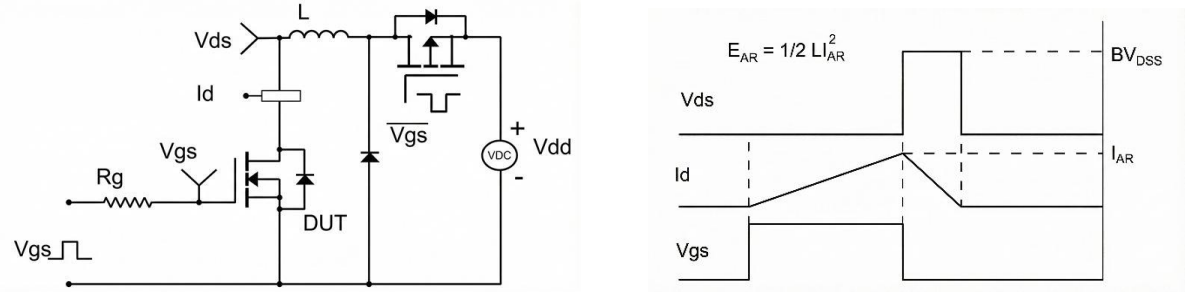
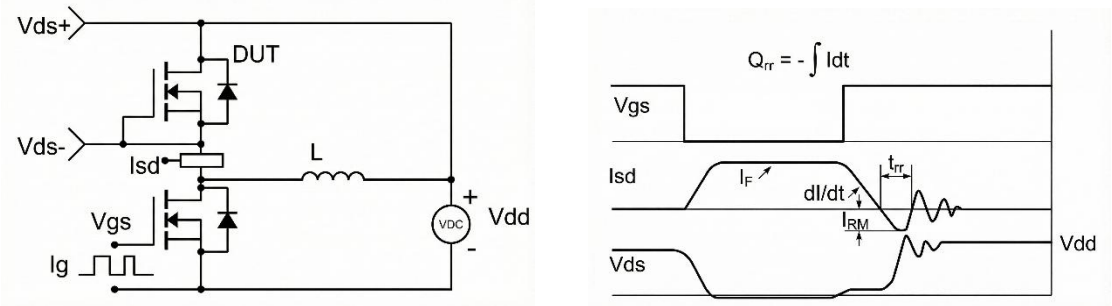
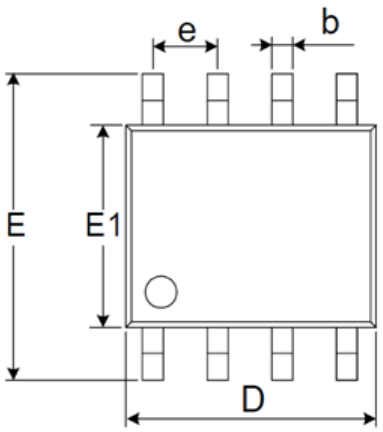


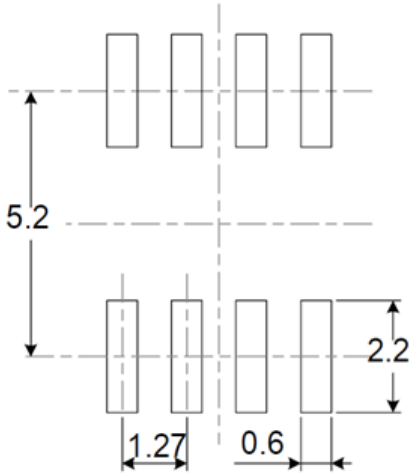
Fig 4. Diode Recovery Test Circuit & Waveform



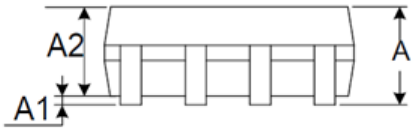
PACKAGE INFORMATION

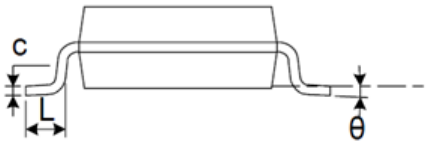
Dimension in SOP8 (Unit: mm)





RECOMMENDED LAND PATTERN (Unit: mm)





Symbol	MILLIMETER	
	Min.	Max.
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	4.800	5.000
e	1.270 BSC	
E	5.800	6.200
E1	3.800	4.000
L	0.400	1.270
θ	0°	8°

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