AM21-5W12V User Manual

5W AC-DC Voltage Reduction Power Module



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Contents

Disclaimer.....3
1 Introduction.....4
1.1. Brief Introduction.....4
1.2. Features.....4
1.3. Applications.....4
2 Specification and parameter.....5
2.1 Limit parameter.....5
2.2 Operating parameter.....5
2.3 Working Efficiency and Load.....6
2.4 Booting Time.....6
2.5 Full load working ripple.....7
2.6 Operating frequency.....7
2.7 Characteristic curve-derating design.....8
3 Basic operation.....8
3.1 Safety Cautions.....8
3.2 Typical application.....8
4 Size and Pin definition.....9
4.1 Size.....9
4.2 Pin definition.....9
5 Product Models.....9
Revision history.....9
About us.....10

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1 Introduction

1.1. Brief Introduction

AM21-5W12V is an ultra-small switching power supply module, AC and DC dual purpose, Input voltage 85~264Vac/100~370Vdc, ultra-low ripple, ultra-low power consumption, high efficiency, Safe isolation, high reliability, etc.; in line with IEC60950, EN60950, UL60950 certification standards, peripherals do not need to add EMI-related components, greatly reducing user design gates threshold; users do not need to consider the stability, even in the extremely complex voltage environment, can also stabilize the output.



1.2. Features

- Ultra-low ripple: full load ripple is less than 30mV;
- Ultra-small size: 34.7x20.6x15.5mm.
- Input voltage: global voltage 85 ~ 264Vac/100 ~ 370Vdc;
- Certification standards: Comply with IEC60950, EN60950, UL60950 certification standards,
- Peripherals do not need to add EMI related components;
- Protection measures: over voltage protection, over current protection, short circuit protection, over temperature protection;
- High-quality solution: greatly improve its work efficiency, with an average efficiency of 78%;

1.3. Applications

- Car charging pile;
- Security alarm;
- Smart home
- Industry, power, instrumentation;
- Single chip microcomputer main board (MCU);
- Smart street lights, energy-saving lamps;
- Smart switch, socket;
- RF communication equipment.

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2 Specification and parameter

2.1 Limit parameter

No.	Parameters	Min.	Max.	Note
1	Input voltage（Vac）	85	264	Vac
2	Input voltage（Vdc）	100	370	Vdc
3	Output Power（W）	0	5	W
4	Operating temperature（℃）	-40	+85	**ta=40℃,tc=85℃**

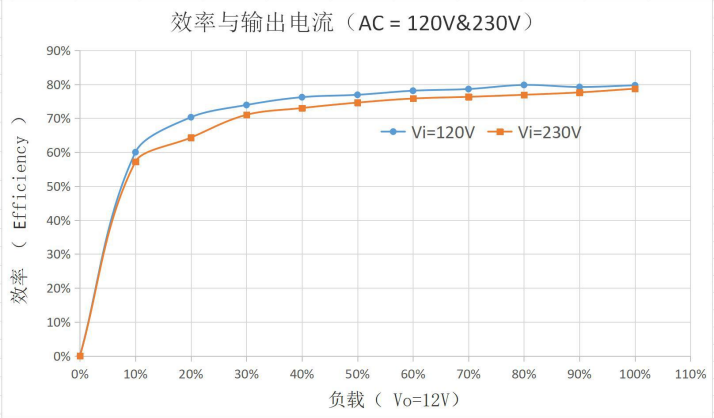
2.2 Operating parameter

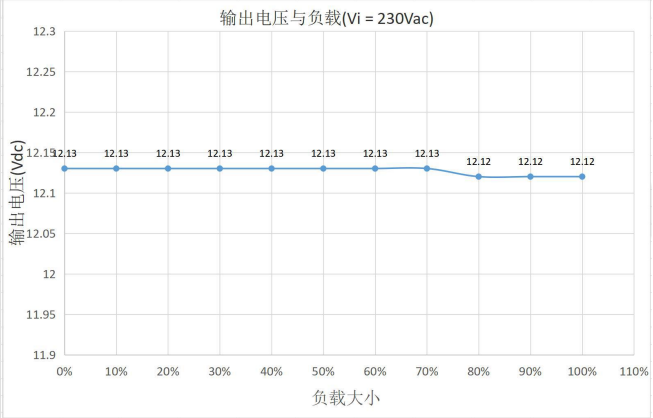
No.	Parameters	Min.	Typical	Max.	Note
1	Input voltage (Vac)	100	220	250	Vac
2	Input voltage (Vdc)	120	-	350V	Vdc
3	Working frequency (Hz)	-	50/60	-	Hz
4	Output power(W)	0	-	5	W
5	Operating temperature (℃)	-40	25	85	**ta=40℃,tc=85℃**
6	Power factor	0.4	-	0.55	>0.55 at 120Vac / >0.4 at 230Vac full load
7	Inrush current (Max)	-	-	10	10 A at 230 Vac
8	Static power (W)	-	-	0.1	< 0.1W
9	Output voltage(Vdc)	11.9	12	12.2	V
10	Continuous current (A)	0	-	416	mA
11	Ripple noise (mV)	12	-	30	mV
12	Average efficiency(n%)	-	78	-	%
13	Overcurrent protection (%)	110	-	150	%
14	Short circuit protection	-	-	-	Hiccup mode, automatic recovery after a failed state eliminated
15	Operating humidity (RH%)	20	-	90	No condensation
16	Storage temperature (℃)	-40	+25	+85	Dry storage at room temperature
17	Storage humidity (RH%)	10	-	90	Dry storage at room temperature
18	Voltage-endurance	-	-	3000	I/P - O/P: 3000VAC
19	Insulation resistance	-	-	100	I/P - O/P: 100M ohms / 500VDC at 25 ℃

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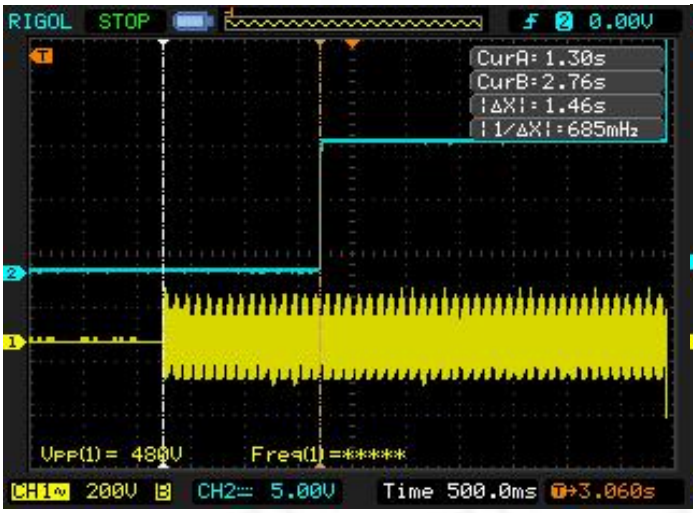
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2.3 Working Efficiency and Load

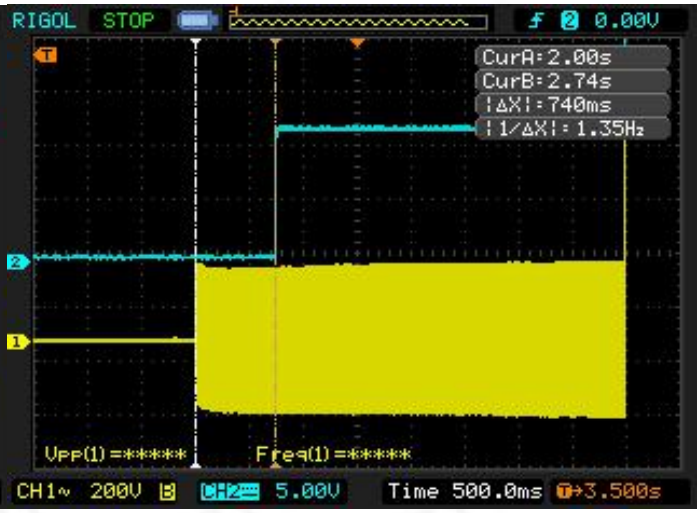




2.4 Booting Time



INPUT:AC 120V OUTPUT:5V 1A

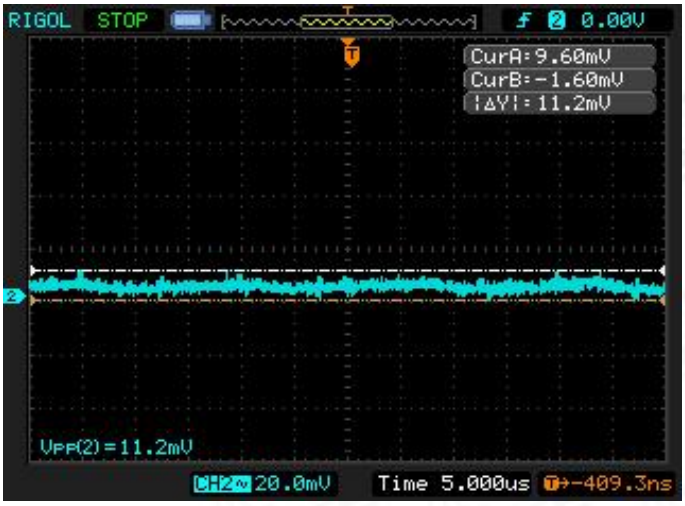


INPUT:AC 230V OUTPUT:5V 1A

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2.5 Full load working ripple

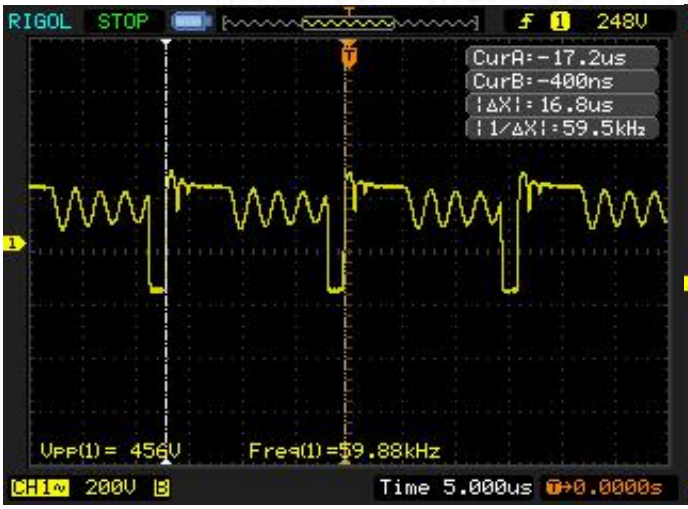


INPUT:AC 120V OUTPUT:5V 1A

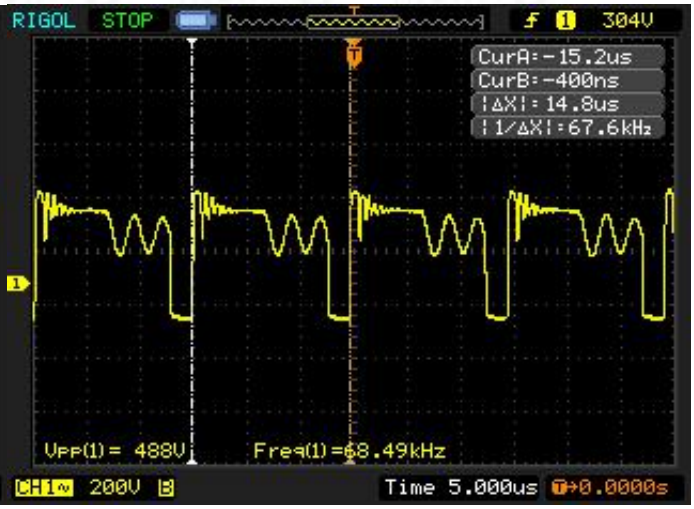


INPUT:AC 230V OUTPUT:5V 1A

2.6 Operating frequency



INPUT:AC 120V OUTPUT:5V 1A

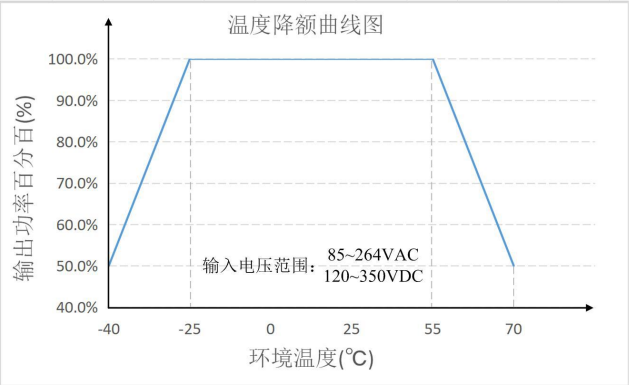


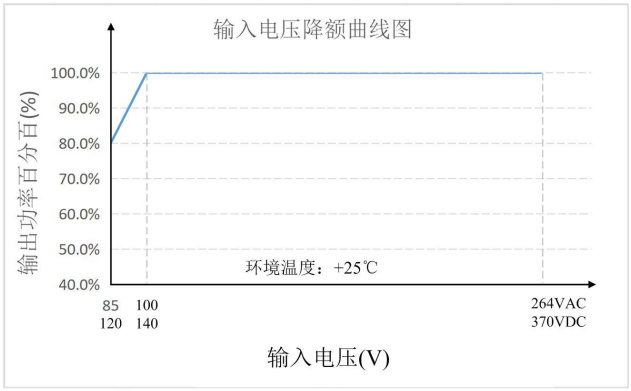
INPUT:AC 230V OUTPUT:5V 1A

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2.7 Characteristic curve-derating design





Note: ① For the input voltage of 85-100VAC/120-140VDC, the input voltage must be derated on the basis of temperature derating; ② This product is suitable for use in a natural air cooling environment. If it is used in a closed environment, please consult our FAE.

3 Basic operation

3.1 Safety Cautions

1.Operation of this module requires certain professional skills, rigorous non-professional life to operate it!
2.Be sure to carefully study the knowledge of safe use before use.
3.Strict human body contact with L and N power lines after power-on to prevent accidents due to electric shock, it is recommended to increase isolation at the input front end.
4.The maximum input voltage must not exceed 250Vac, otherwise it may cause permanent damage to the module.
5.During daily maintenance, the input power should be disconnected to prevent accidents caused by electric shock.

3.2 Typical application



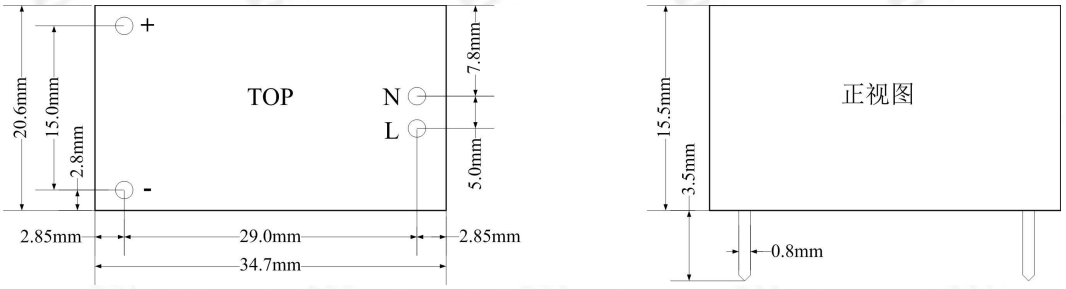
* Remarks: There is no need to add any components for input and output to meet the requirements of safety certification.

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4 Size and Pin definition

4.1 Size



4.2 Pin definition

No.	Name	Direction	Functions
1	L	Input	AC power input
2	N	Input	AC power input
3	-	Output	DC output, power ground
4	+	Output	DC output, power supply positive

5 Product Models

Model	Input Power	Output V	Output I	Efficiency	Installation method
AM21-3W033V	100 ~ 250Vac	3.3Vdc	0.9A	75%	Plastic plug-in
AM21-3W05V	100 ~ 250Vac	5.0V	0.6A	78%	Plastic plug-in
AM21-3W12V	100 ~ 250Vac	12V	0.25A	80%	Plastic plug-in
AM21-5W05V	100 ~ 250Vac	5.0V	1A	78%	Plastic plug-in
AM21-5W12V	100 ~ 250Vac	12V	0.416A	80%	Plastic plug-in

Revision history

Version	Date	Description	Issued by
V1.0	20181203	Initial version	LJ

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