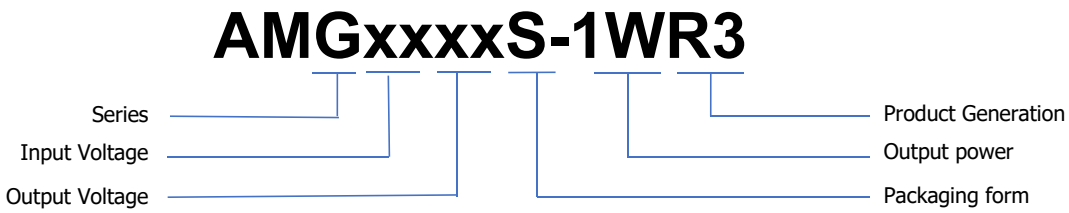
Features

1. Wide operating temperature range: -40℃ to +105℃
2. Up to 85% efficiency
3. No load current as low as 5MA
4. Ripple as low as 30mVp-p
5. Sustainable short-circuit protection
6. Isolation:6000VDC
7. Fixed voltage input, Output 1W, Isolated, Non stabilized voltage, Dual output, SIP package.

RoHS CE 3 years Warranty

Model Numbering



Selection Guide

Product model	Input Voltage Standard value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
AMG0303S-1WR3	3.3VDC(2.97-3.63)	±3.3	±150/10	69/73	470
AMG0305S-1WR3		±5	±100/10	74/78	470
AMG0309S-1WR3		±9	±56/5	72/78	220
AMG0312S-1WR3		±12	±42/4	72/81	220
AMG0315S-1WR3		±15	±34/3	72/81	100
AMG0324S-1WR3		±24	±21/2	72/81	100

Product model	Input Voltage Standard value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
AMG0503S-1WR3	5VDC (4.5-5.5)	±3.3	±150/10	69/73	470
AMG0505S-1WR3		±5	±100/10	74/78	470
AMG0509S-1WR3		±9	±56/5	72/78	220
AMG0512S-1WR3		±12	±42/4	72/81	220
AMG0515S-1WR3		±15	±34/3	72/81	100
AMG0524S-1WR3		±24	±21/2	72/81	100
AMG0903S-1WR3	9VDC (8.1-9.9)	±3.3	±150/10	69/73	470
AMG0905S-1WR3		±5	±100/10	74/78	470
AMG0909S-1WR3		±9	±56/5	72/78	220
AMG0912S-1WR3		±12	±42/4	72/81	220
AMG0915S-1WR3		±15	±34/3	72/81	100
AMG0924S-1WR3		±24	±21/2	72/81	100
AMG1203S-1WR3	12VDC (10.8-13.2)	±3.3	±150/10	69/73	470
AMG1205S-1WR3		±5	±100/10	74/78	470
AMG1209S-1WR3		±9	±56/5	72/78	220
AMG1212S-1WR3		±12	±42/4	72/81	220
AMG1215S-1WR3		±15	±34/3	72/81	100
AMG1224S-1WR3		±24	±21/2	72/81	100
AMG1503S-1WR3	15VDC (13.5-16.5)	±3.3	±150/10	69/73	470
AMG1505S-1WR3		±5	±100/10	74/78	470
AMG1509S-1WR3		±9	±56/5	72/78	220
AMG1512S-1WR3		±12	±42/4	72/81	220
AMG1515S-1WR3		±15	±34/3	72/81	100
AMG1524S-1WR3		±24	±21/2	72/81	100
AMG2403S-1WR3	24VDC (21.6-26.4)	±3.3	±150/10	69/73	470
AMG2405S-1WR3		±5	±100/10	74/78	470
AMG2409S-1WR3		±9	±56/5	72/78	220
AMG2412S-1WR3		±12	±42/4	72/81	220
AMG2415S-1WR3		±15	±34/3	72/81	100
AMG2424S-1WR3		±24	±21/2	72/81	100

Input Characteristics

Parameter	Conditions		Min.	Typ.	Max.	Units
Input current (Rated Load)	Nominal voltage input@3.3VDC	3.3VDC Output	- -	375	421	mA
		5VDC/7.2VDC Output	- -	250	282	mA
		9VDC/12VDC Output	- -	106	116	mA
		15VDC Output	- -	90	100	mA
		24VDC Output	- -	27	28	mA
	Nominal voltage input@5VDC	3.3VDC Output	- -	375	421	mA
		5VDC/7.2VDC Output	- -	250	282	mA
		9VDC/12VDC Output	- -	106	116	mA
		15VDC Output	- -	90	100	mA
		24VDC Output	- -	27	28	mA
	Nominal voltage input@12VDC	3.3VDC Output	- -	190	200	mA
		5VDC/7.2VDC Output	- -	126	133	mA
		9VDC/12VDC Output	- -	71	75	mA
		15VDC Output	- -	42	44	mA
		24VDC Output	- -	27	28	mA
	Nominal voltage input@15VDC	3.3VDC Output	- -	195	203	mA
		5VDC/7.2VDC Output	- -	130	136	mA
		9VDC/12VDC Output	- -	53	56	mA
		15VDC Output	- -	42	44	mA
		24VDC Output	- -	27	28	mA
	Nominal voltage input@24VDC	3.3VDC Output	- -	197	209	mA
		5VDC/7.2VDC Output	- -	133	141	mA
		9VDC/12VDC Output	- -	75	79	mA
		15VDC Output	- -	45	47	mA
		24VDC Output	- -	27	28	mA
Input current (No-load)			- -	5	20	mA
Reflected ripple current			- -	200	- -	mA
Input impulse voltage	1sec. max.	3.3VDC/5VDC Input	-0.7	- -	9	VDC
		9VDC Input	-0.7	- -	12	VDC
		12VDC Input	-0.7	- -	18	VDC
		15VDC Input	-0.7	- -	21	VDC
		24VDC Input	-0.7	- -	30	VDC
Input filter	Capacitive filtering					
Remarks: **This product does not support hot plug**						

Output Characteristic

Parameter	Conditions		Min.	Typ.	Max.	Units
Output voltage accuracy			See Figure 3 (envelope curve)			
Linear regulation rate	Input voltage variation+/- 1%	3.3VDC Output	- -	- -	+/-1.5	%
		Other outputs	- -	- -	+/-1.2	%
Load regulation rate	10% to 100% load	3.3VDC Output	- -	- -	20	%
		5VDC Output	- -	- -	15	%
		9VDC Output	- -	- -	10	%
		12VDC Output	- -	- -	10	%
		15VDC Output	- -	- -	10	%
		24VDC Output	- -	- -	10	%
Ripple & Noise	20MHz bandwidth		- -	80	150	mVp-p
Temperature drift coefficient	100% load		- -	+/-0.03	- -	%/℃
Short circuit protection	Sustainable, Self-healing					

Note: The testing method for ripple and noise is the parallel line testing method.

General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Input-output, Test time 1 minute, Leakage current less than 1 mA	6000	- -	- -	VDC
		5000	- -	- -	VDC
Insulation resistance	Input-output, Insulation voltage 500VDC	1000	- -	- -	MΩ
Isolation capacitance	Input-output, 100KHz/0.1V	- -	20	50	pF
Working temperature	Temperature ≥ 85 ℃ for derating (See Figure 4)	-40	- -	+105	℃
Storage temperature		-55	- -	+125	℃
Storage humidity	Non condensing	- -	- -	95	%RH

Parameter	Conditions	Min.	Typ.	Max.	Units
Housing temperature rise during operation	Ta=25 ℃, Nominal input, Full output	- -	15	25	℃
Soldering temperature resistance of pins	The distance from the welding spot to the shell is 1.5mm, 10 seconds	- -	- -	300	℃
	REFLOW:Peak temperature Tc ≤ 245 ℃, maximum time above 217 ℃ for 60 seconds.	- -	- -	245	℃
Switching frequency	Full load, Nominal input voltage	- -	270	- -	kHz
Mean time between failures【MTBF】	MIL-HDBK-217F@25℃	3500	- -	- -	kHours

Physical Characteristics

Parameter	Content
Housing material	Black flame retardant and heat-resistant plastic (UL94V-0)
Overall dimensions	19.50*9.80*12.50 mm
Weight	4.2g(Typ.)
Cooling mode	Natural air cooling

EMC Characteristics

Parameter	Category	Content
EMI	Conductive disturbance	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 2)
	Radiation disturbance	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 2)
EMS	Electrostatic discharge	IEC/EN61000-4-2 Contact ±4KV perf. Criteria B

Circuit Design and Application

Figure 1: Application circuit

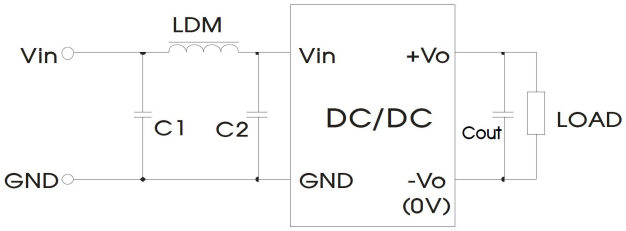


Figure 2: EMC Typical Recommended Circuits

Table 1:
Recommended Capacitive Load Values

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout(μF)
5	10μF /10V	±3.3	4.7μF /16V
12	10μF /25V	±5/±9	4.7μF /16V
15	1μF /25V	±12/±15	1μF /25V
24	2.2μF /50V	±24	0.47μF /50V

Table 2:
Recommended Circuit Parameter Values

Category	Component	Value
EMI	C1	22μF /16V
	C2	22μF /16V
	Cout	Refer to Cout parameter in Table 1
	LDM	22μH

1. Typical application: If further reduction of input and output ripple is required, a capacitor filter network can be connected at the input and output ends. The application circuit is shown in Figure 1. However, suitable filter capacitors should be selected. If the capacitance is too large, it may cause overcurrent or poor startup of the power supply. For each output, while ensuring safe and reliable operation, the recommended capacitance load values are shown in Table 1.
2. EMC requirements: For situations with high EMC requirements, a typical EMC recommended circuit is shown in Figure 2.
3. Input requirements: Ensure that the fluctuation range of the input voltage does not exceed the upper and lower limits of the input voltage specified in this data sheet, and the input power must be greater than the output power specified in this data sheet. For situations with a 24V input voltage, it is recommended to connect a TVS tube between the positive and negative input pins for protection (recommended parameters for TVS tubes: 30V, bidirectional, SOD-123 packaging).
4. Output load requirements: Try to avoid using it without load as much as possible; When the actual power of the load is less than 10% of the rated output power in this data sheet, or when it needs to be used in no-load situations, it is recommended to connect a load resistor externally at the output end. The load resistor can be calculated according to 5-10% of the rated power in this data sheet. The calculation formula for the load resistor value is $RL=Uout^2/(Pout*10\%)$.
5. Overload protection: Under normal working conditions, the output circuit of this product has no protection function for overload situations. The simplest method is to connect a self recovery fuse in series at the input end, or add a circuit breaker outside the circuit; Or during design and selection, the actual power of the circuit should be around 60-80% of the rated power in this data sheet.

Product Characteristic Curve

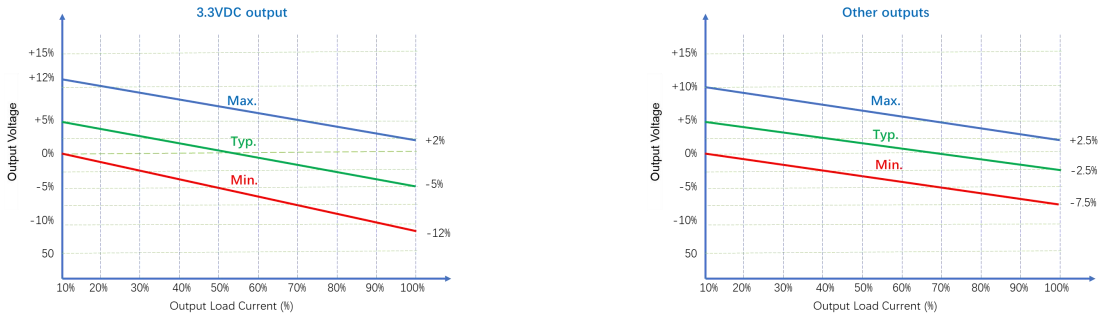


Figure 3: Voltage tolerance envelope

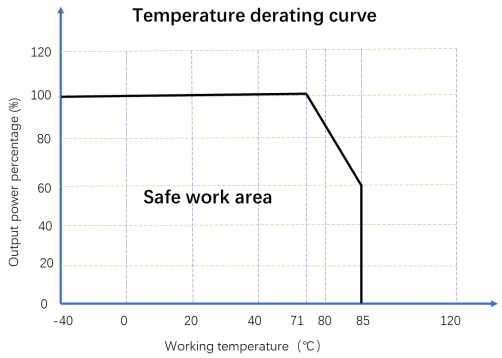


Figure 4: Temperature Derating Curve

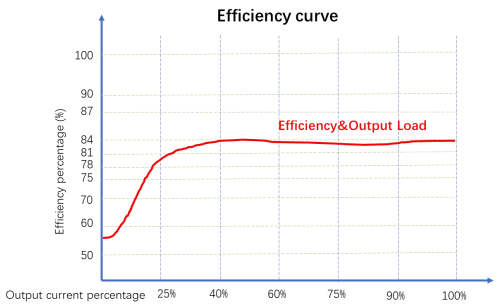


Figure 5: Efficiency VS Output Load (Nominal Voltage Input)

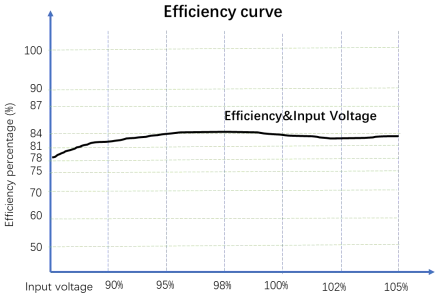


Figure 6: Efficiency VS Input Voltage (100% Load)

Overall Dimensions and Pin Functions

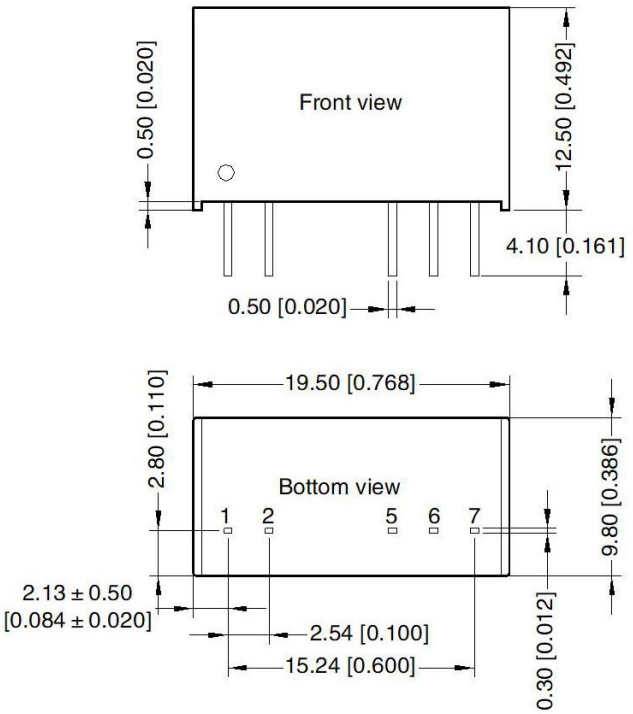


Figure 7: Overall dimensions

Note:
Dimensions in mm [inch]
Terminal diameter tolerance: ±0.10 [±0.004]
Undeclared tolerance: ±0.50 [±0.020]

Table 3: Pin Function Table

Pin	Function
1	Vin
2	GND
5	-Vo
6	0V
7	+Vo

Notes & Instructions

1) The input voltage shall not exceed the specified range value, otherwise permanent and unrecoverable damage may be caused;
2) Unless otherwise specified, the parameters in this manual are measured at 25 ℃, 40%~75% humidity, input nominal voltage and output pure resistance mode under full load;
3) All index test methods are based on the company's enterprise standards.
4) The copyright and the final interpretation right of the product belong to AMCHARD.