

### Features

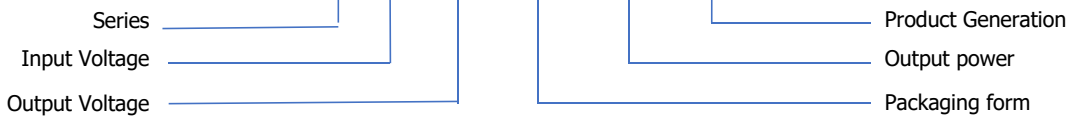
1. Constant voltage input, isolated unregulated output, power 1W
2. Isolation Voltage: 3000VDC/1min
3. Low No-Load Power Consumption: 0.025W(Typ.)
4. Operating Temperature Range: -40 +85
5. Efficiency up to 83%
6. Short Circuit Protection: Continuous short circuit protection, automatic
7. International Standard Pin Layout
8. Small DIP Package
9. Low Ripple/Noise (20MHz Bandwidth): 50mVp-p(typ.)
10. MTBF  $\geq$  3,500,000 hours



3 years  
Warranty

### Model Numbering

## AMFxxxxN-1WR3



### Selection Guide

Product Model	Input Voltage Range (Vdc)	Output Voltage/Current		Ripple and Noise	Efficiency @ Full Load	Maximum Capacitive Load
	Nominal Value (Range Value)	Output Voltage (Vdc)	Output Current (mA) (Max.Min.)	Full Load (mVp-p) Typ./Max.	% Min./Typ.	uF
AMF0303N-1WR3	3.3 (2.97-3.63)	3.3	303/30	50/100	75/79	2400
AMF0305N-1WR3		5	200/20	50/100	78/82	2400
AMF0312N-1WR3		12	84/9	50/150	80/83	560
AMF0503N-1WR3	5 (4.5-5.5)	3.3	303/30	50/100	70/74	2400
AMF0505N-W5R3		5	100/20	50/100	73/76	2400
AMF0505N-1WR3		5	200/20	50/100	78/82	2400
AMF0509N-1WR3		9	111/12	50/100	79/83	1000
AMF0512N-1WR3		12	84/9	50/100	79/83	560

AMF0515N-1WR3		15	67/7	100/150	79/83	560
AMF0524N-1WR3		24	42/4	100/200	81/85	220
AMF1203N-1WR3	12 (10.8-13.2)	3.3	303/30	50/100	71/75	2400
AMF1205N-1WR3		5	200/20	50/100	76/80	2400
AMF1209N-1WR3		9	111/12	50/100	74/78	1000
AMF1212N-1WR3		12	84/9	50/100	76/80	560
AMF1215N-1WR3		15	67/7	50/100	77/81	560
AMF1224N-1WR3		24	42/4	50/100	77/81	220
AMF1503N-1WR3		15 (13.5-16.5)	3.3	303/30	50/100	81/84
AMF1505N-1WR3	5		200/20	50/100	76/80	2400
AMF1509N-1WR3	9		111/12	50/100	76/80	1200
AMF1512N-1WR3	12		84/9	50/100	77/81	560
AMF1515N-1WR3	15		67/7	50/100	77/81	560
AMF1524N-1WR3	24		42/4	50/100	77/81	220
AMF2403N-1WR3	24 (21.6-26.4)		3.3	303/30	50/100	69/75
AMF2405N-1WR3		5	200/20	50/100	73/79	2400
AMF2409N-1WR3		9	111/12	50/100	74/80	1000
AMF2412N-1WR3		12	84/9	50/100	75/81	560
AMF2415N-1WR3		15	67/7	50/100	75/81	560
AMF2424N-1WR3		24	42/4	50/100	75/81	220

## Input Characteristics

Items	Working Conditions	Min.	Typ.	Max.	Unit
Input Current (Full Load/No Load)	3.3V Input	--	370/12	389/--	mA
	5V Input	--	241/8	254/--	
	12V Input	--	105/8	110/--	
	15V Input	--	83/8	88/--	
	24V Input	--	52/8	57/--	
Reflected Ripple Current		--	15	--	
Surge Voltage	3.3V Input	-0.7	--	5	V
	5V Input	-0.7	--	9	
	12V Input	-0.7	--	18	
	15V Input	-0.7	--	21	
	24V Input	-0.7	--	30	
Input Filter Type		Capacitor Filtering			
Hot Plug		Not Supported			

## Output Characteristics

Items	Working Conditions		Min.	Typ.	Max.	unit
Output Load	Load Percentage		10	--	100	%
Output Voltage Accuracy	See Load curve		--	--	±15.0	%
Linear regulation	Input voltage change ±1%	3.3V output	--	--	±1.5	%
		OTHER				%
Load regulation		3.3V output	--	11	15	%
		5V output	--	10	15	%
		9V output		8	10	%
		12V output	--	7	10	%
		15V output	--	6	10	%
		24V output	--	5	10	%
Ripple & Noise	Pure resistive load, 20MHz bandwidth, peak-to-peak		--	50	-	mVp-p
Temperature coefficient	Fully loaded--			0.03		%/°C
Short circuit protection output	sustainable and recover					

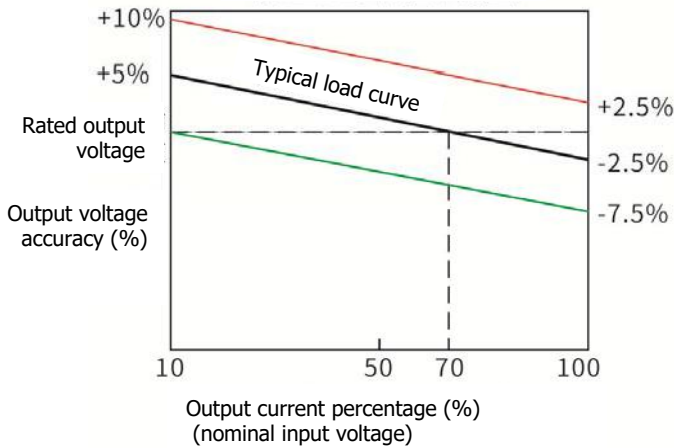
Note: The test method for ripple and noise is the twisted pair method.

## General Characteristics

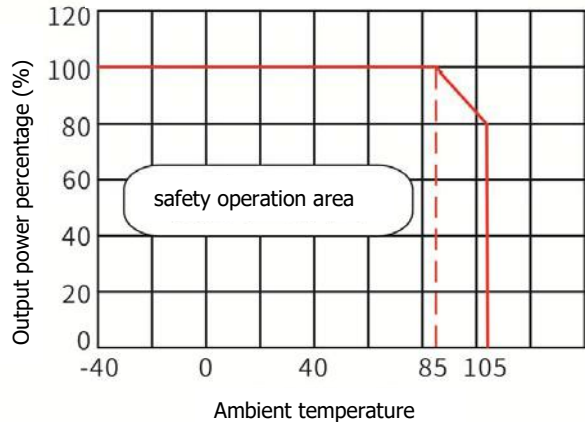
Items	Working Conditions	Min.	Typ.	Max.	unit
Insulation voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000	--	--	V
Insulation resistance	Input-output, insulation voltage 500VNC	1000	--	--	MΩ
Isolation Capacitor	INPUT-OUTPUT, 100KHz/0.1V	--	20	--	pF
Working temperature	Use the reference temperature derating graph	-40	--	+85	°C
Storage temperature		-40	--	+125	
Temperature rise of the casing during operation		--	25	--	
Store humidity	No condensation	5	--	95	%RH
Temperatures of Pin withstand	Welding spot 1.5mm from case, 10 seconds	--	--	+300	
Switching frequency	Fully loaded, nominal voltage input	--	100	--	KHz
Vibrate level		10-55Hz, 10G, 30 Min. along X, Y and Z Black			
Case material		Black Heat-Resistant Plastic (UL94 V-0)			
Minimum time between failures	MIL-HNFK-217F@25	3500k	--	--	Hrs

### Product Characteristic Curve

**Load curve**



**Temperature derating curve**



### Typical application reference circuit (recommended parameters)

1. Normal usage: recommended capacity load value details (Table 1)



Fig 1

Vin (VDC)	Cin(uF)	Vo (VDC)	Cout(uF)
3.3/5	4.7	3.3/5	10
12	2.2	9	4.7
15	2.2	12	2.2
24	1	15	1
-	-	24	1

If it is required to further reduce the input and output ripple, a capacitive filter network can be connected at the input and output terminals, and the application circuit is shown in Figure 1. However, attention should be paid to the selection of appropriate filtering capacitors. If the capacitor is too big, it is likely to cause startup problems. For each output, the recommended capacitive load value is shown in Table 1 under the condition of safe and reliable operation.

2.EMI typical application circuit

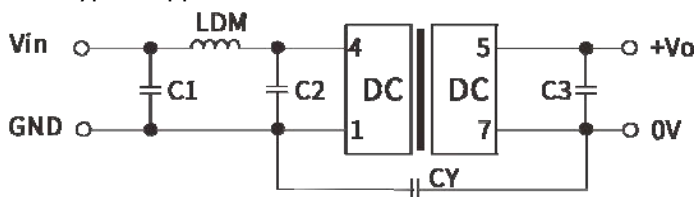


Fig 2

Vin (VDC)	3.3/5/12/15/24
C1/C2	4.7u F/50V
C3	Refer to Cout in Table 1
LDM	4.7uH
CY	270pF/2KVNC

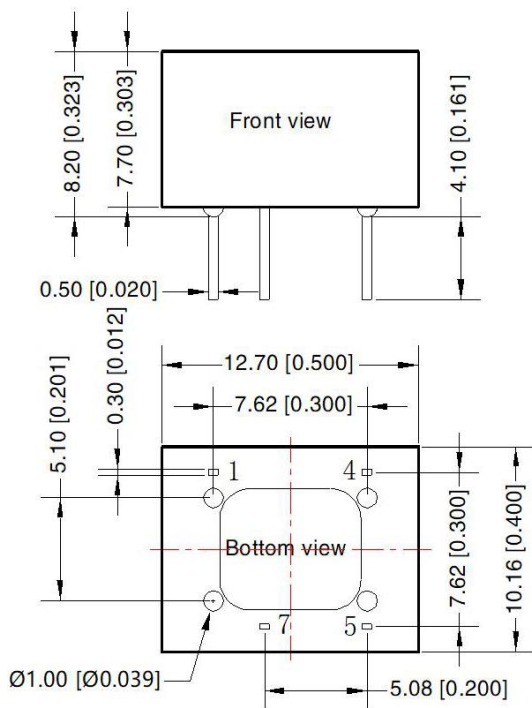
3. Output load requirements

In order to ensure that the module can work efficiently and reliably, the minimum output load cannot be less than 10% of the rated load when used.

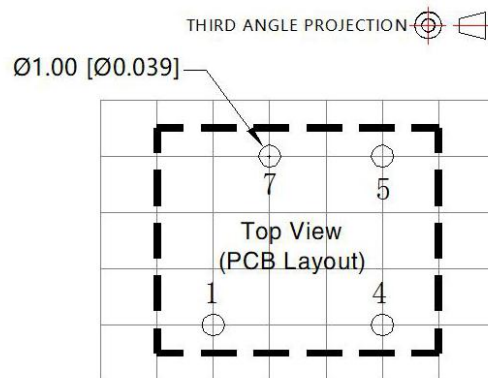
### Physical Characteristics

Parameter	Content
Housing material	Black flame retardant and heat-resistant plastic (UL94V-0)
Dimensions	12.7 x 8.2 x 10.16mm(0.500 x 0.323 x 0.400inch)
Cooling mode	Natural air cooling

### Overall Dimensions and Pin Functions



Note:  
 Unit: mm[inch]  
 Pin section tolerances:  $\pm 0.10$  [ $\pm 0.004$ ]  
 General tolerances:  $\pm 0.25$  [ $\pm 0.010$ ]



Note: Grid 2.54\*2.54mm

Table 3: Pin Function Table

Pin	Function
1	GND
4	V <sub>in</sub>
5	+V <sub>o</sub>
7	0V

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

## Notes & Instructions

1. Input requirements: Ensure that the output voltage fluctuation range of the power supply does not exceed the input requirements of the NC/NC module itself, and the output power of the input power must be greater than the output power of the NC/NC module;
2. Recommended circuit 1 For the occasion of general ripple noise requirements, a filter capacitor can be connected in parallel with the input and output terminals. The external circuit is shown in Figure (1) below, and the recommended value of the filter capacitor is shown in Table (1). Output load requirements: Avoid no-load use when the actual power consumption of the load is smaller than the output rating of the module 10% of the power or no-load phenomenon, it is recommended to connect the dummy load outside the output terminal, the dummy load (resistance) can be calculated according to the rated power of the module 5-10%, the resistance value  $=U_{out}/(1WR3*10\%)$ ;
3. Overload protection: under normal working conditions, the output circuit of the product has no protection function for overload, and the overload will be over-temperature protection for a long time, and the output will be turned off.
4. Output sustainable short-circuit protection, automatic recovery.
5. The capacitance value of the external capacitance of the output end should not be too large, otherwise it will easily cause overcurrent or poor start when the module is started.
6. If the product works below the minimum required load, it cannot be guaranteed that the performance of the product meets all the performance indicators in this manual.
7. The maximum capacitive load is tested under the input voltage range and full load condition.
8. Unless otherwise specified, all indicators in this manual are measured at  $T_a=25^{\circ}\text{C}$ , humidity  $<75\%\text{RH}$ , nominal input voltage and rated output load;
9. All index test methods in this manual are based on the company's standards;
10. Our company can provide product customization, specific circumstances can directly contact our technical personnel;
11. Product specifications are subject to change without notice.

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