

**Typical Features**

- ◆ Fixed input voltage, isolated & regulated output power 1W
- ◆ Efficiency up to 73% (Typ.)
- ◆ Mini SIP package, standard pin-out alignment
- ◆ Reinforced insulation
- ◆ Isolation voltage 5000VAC/7000VDC
- ◆ Continuous short circuit protection, self-recovery
- ◆ Operating temperature from -40°C to +105°C
- ◆ Plastic case, flame class UL94-V0



**Application Field**

**NW1-XXSXXD7R3** series of converters are specially designed for the application fields of Solar & Energy storage with the high voltage power supply system that need isolated output voltage and requires as following:

1. The power supply with stable input voltage (voltage change  $\pm 5\%V_{in}$ )
2. Isolation voltage  $\leq 5000VAC$  or  $7000VDC$  between input and output.

**Typical Product List**

Certificate	Part No.	Input Voltage Range (VDC)		Output Voltage/ Current (Vo/Io)		Input Current (mA) Typ. @nominal volt.		Max Capacitive Load uF	Efficiency (%) @full load, nominal volt.	
		Nominal	Range	Vo (VDC)	Io(mA) Max/Min	Full load	No Load		Min	Typ.
-	NW1-05S05D7R3	5	4.5 - 5.5	5	200/20	288	10	1000	70	73
-	NW1-12S05D7R3	12	10.8 - 13.2	5	200/20	120	10	1000	70	73

Note 1: The maximum capacitive load is the capacitance allowed to be used when the power supply starts up at full load. The converter may not start if the capacitor exceeds this value.

Note 2: The efficiency is tested at the nominal input voltage and the rated load.

Note 3: Please contact Aipu sales for other output voltages requirement in this series but not listed in this table.

**Input Specifications**

Item	Operating conditions	Min.	Typ.	Max.	Unit
Input Inrush Voltage (1Sec. Max)	5VDC input	-0.7	--	9	VDC
	12VDC input	-0.7	--	18	
Input Filter	Capacitor Filter				
Hot Plug	Unavailable				

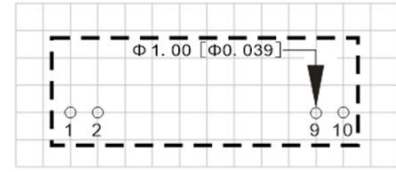
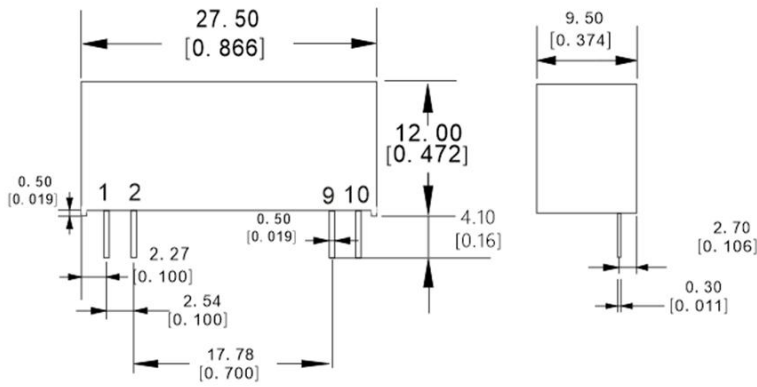
Output Specifications					
Item	Operating conditions	Min.	Typ.	Max.	Unit
Output power		0.1	--	1	W
Output voltage accuracy		--	±2	±3	%
Load regulation	10% ~ 100% load	--	--	±3	
Line regulation	Input voltage change ±1%	--	--	±2	%
Temperature drift coefficient		--	--	±0.03	%/°C
Ripple & Noise	0%-100% load, 20MHz bandwidth	--	50	150	mVp-p
Short circuit protection	Continuous, self-recovery				

Note: The Ripple & Noise is tested by the Twisted Pair Method, please refer to the following test instruction.

General Specifications					
Item	Operating conditions	Min.	Typ.	Max.	Unit
Switching frequency	Nominal input voltage, full load	--	260	--	KHz
Operating temperature	Please refer to the temperature derating graph	-40	--	+105	°C
Storage temperature		-55	--	+125	
Case temperature rise	Within the temperature derating range	--	30°	--	
Pin soldering temperature	1.5mm from the case, soldering time 10S	--	--	300	
Relative humidity	No condensation	5	--	95	%RH
Isolation voltage	I/P – O/P, test 1min, leakage current <1mA	5000	--	--	VAC
		7000	--	--	VDC
Insulation resistance	I/P – O/P, @ 500VDC	1000	--	--	M Ω
Isolation capacitance	I/P – O/P, 100KHz/0.1V	--	6	--	pF
Vibration		10-150Hz, 5G, 30 Min. along X, Y and Z			
MTBF	MIL-HDBK-217F@25°C	3500	--	--	K hours
Case material	Plastic in Black, flame class UL94-V0				
Unit weight	4.5g (Typ.)				
Cooling method	Natural air				
Packing	Tube size (525x20x13 mm)	17PCS/Tube			
	Carton size (542x110x155 mm)	952PCS (Total 56 Tubes)			
Unit dimensions	L x W x H	27.50×9.50×12.00 mm		0.866×0.374×0.472 inch	

EMC Performance			
EMI	CE	CISPR32/EN55032	CLASS B (With the recommended EMC circuit)
	RE	CISPR32/EN55032	CLASS B (With the recommended EMC circuit)
EMS	ESD	IEC/EN61000-4-2	Contact ±4KV, Air ±8kV perf. Criteria B

**Mechanical Dimensions**



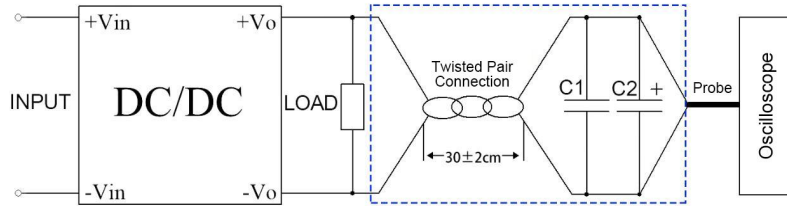
PCB layout vertical view  
Grid 2.54x2.54[0.10x0.10]

Unit: mm[inch]  
Pin section tolerance:  $\pm 0.10[\pm 0.004]$   
General tolerance:  $\pm 0.50[\pm 0.020]$

Pin No.	1	2	Others	9	10
Single (S)	+Vin	GND	No Pin	-Vo	+Vo

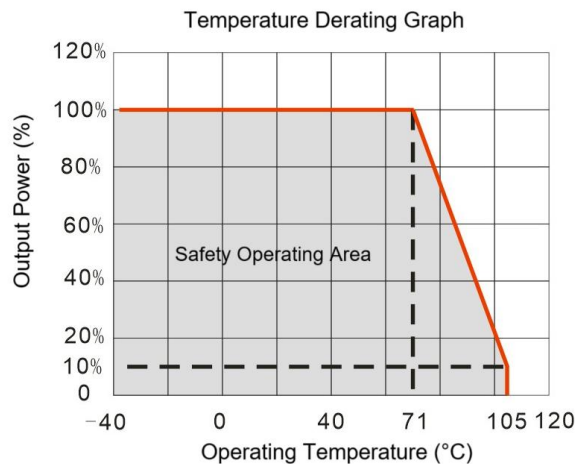
Note: Please take the pin function definition on the product label as the right one if it is different than the data sheet description.

**Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz Bandwidth)**



1. The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. C1(0.1uF) polypropylene capacitor and C2(10uF) high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes and one side of the twisted pair.
2. The power supply output connects to the load by the cables. The other side of the twisted pair (length 30cm $\pm$ 2 cm) should be connected in parallel with the load, the polarity of the output and the oscilloscope probe should not be reversed. The test can start after input power on.
3. It is recommended to connect a  $\geq 5\%$  load or a high-frequency low resistance electrolytic capacitor ( $\geq 100\mu\text{F}$ ) load to the output to avoid the output ripple increasing.

**Product Characteristics Graph**



**Recommended Circuits for Application**

**1. Requirement for Output load**

The maximum capacitive load of the product was tested at the Rated full load. The converter may not start or be damaged if the output capacitor exceeds this value.

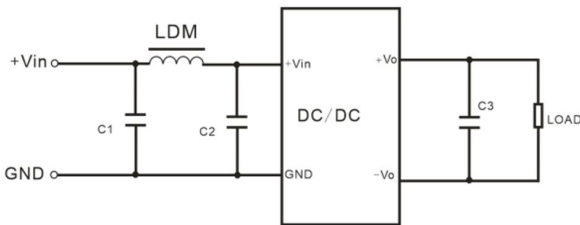
**2. Typical application circuits**

To effectively decrease the input and output ripple and noise, a capacitor filter can be connected at the input and output as the application circuit diagram below. The suitable filtering capacitors should be chosen as the recommended capacitive load values in Table 1. The converter could not start if the capacitance is too big.



Recommended capacitive load values (Table 1)			
Vin (Vdc)	Cin	Vout (Vdc)	Cout
5	4.7uF/16V	5	10uF/16V
12	2.2uF/25V	12	2.2uF/25V

**3. Recommended EMC Circuit Diagram**



EMI	Output volt. (Single)	5Vdc	12Vdc
	C1/C2	10uF/16V	10uF/50V
C3	Refer to Table 1 Cout		
LDM	6.8uH	6.8uH	

**Application Notice**

1. This series of products cannot be connected in parallel to increase the output power, and do not support hot-plug.
2. The product should be used according to the specifications, otherwise it could be permanently damaged.
3. The product performance cannot be guaranteed if it works at a lower load than the minimum load defined.
4. The product performance cannot be guaranteed if it works under the over-load condition.
5. Unless otherwise specified, all values or indicators on this datasheet are tested at Ta=25°C, humidity<75%RH, nominal input voltage and rated load (pure resistance load).
6. All values or indicators on this datasheet had been tested based on Aipupower test specifications.
7. The specifications are specially for the parts listed on this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
8. Aipupower can provide customization service.

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