

## 5 watt dc-dc converters

Picture Available Soon

- 24 PIN DIP PACKAGE
- WIDE 4:1 INPUT RANGE
- HIGH EFFICIENCY UP TO 85%
- SHIELDED METAL PACKAGE
- INPUT/OUTPUT ISOLATION OF 1500VDC
- OPERATING TEMPERATURE: -40°C ... +71°C
- CONTINUOUS SHORT CIRCUIT PROTECTION
- PIN-COMPATIBLE WITH MULTIPLE MANUFACTURERS

DC-DC CONVERTERS

### GENERAL DESCRIPTION

Our AM5TW-N series is a family of cost effective 5W single and dual output DC/DC converters. These converters combine a shielded metal package in a 24-pin DIP compatible case and includes high performance features such as a 1500VDC input/output isolation voltage, continuous short circuit protection and a tight line / load regulation. Wide range devices operate over a 4:1 input voltage range continuously providing a stable output voltage.

18 models operate from input voltages of 24 and 48VDC with output voltages of 3.3, 5, 12, 15, 24,  $\pm 5$ ,  $\pm 12$ ,  $\pm 15$  &  $\pm 24$ VDC. High performance features include high efficiency operation up to 85% and output voltage accuracy of  $\pm 1\%$ . All models are packaged in a low profile 31.75 x 20.32 x 10.16mm case. Operation is specified over the full operating temperature range of -40°C to +71°C with no derating required. Cooling is by free-air convection.

### ELECTRICAL SPECIFICATIONS

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

#### Input Specifications:

Voltage range	24VDC, 9~36VDC 48VDC, 18~72VDC
Filter	p (Pi) Network

#### Isolation Specifications:

Rated voltage (60 sec)	1500VDC
Resistance	> 1000M $\Omega$
Capacitance	80pF, typ.

#### Environmental Specifications:

Operating temperature (ambient)	-40°C ... +71°C
Storage temperature	-55°C ... +125°C
Case Temperature	+100°C, max.
Derating	None required
Humidity (non-condensing)	Up to 95%
Cooling	Free-air Convection

#### General Specifications:

Efficiency	75% to 85%
Switching frequency (Single)	300KHz, typ., 100% load
Switching frequency (Dual)	250KHz, typ., 100% load

#### Output Specifications:

Voltage accuracy (Single)	$\pm 1\%$ , typ.
Voltage accuracy (Dual)	$\pm 1\%$ p. & $\pm 3\%$ n., typ.
Ripple	30mVp-p, typ.
Noise (at 20MHz BW)	100mVp-p, typ.
Short circuit protection	Continuous
Line voltage regulation	$\pm 0.2\%$ , max.
Load voltage regulation	$\pm 0.5\%$ , max.
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$ , typ.

#### Physical Specifications:

Dimensions	31.75x20.32x10.16mm 1.25x0.80x0.40inches
Weight	26g
Case material	Metal

MTBF: > 1,000,000 hrs (MIL-HDBK-217F, Ground Benign,  $t=+25^{\circ}\text{C}$ )

*Specifications are subject to change without notification.*

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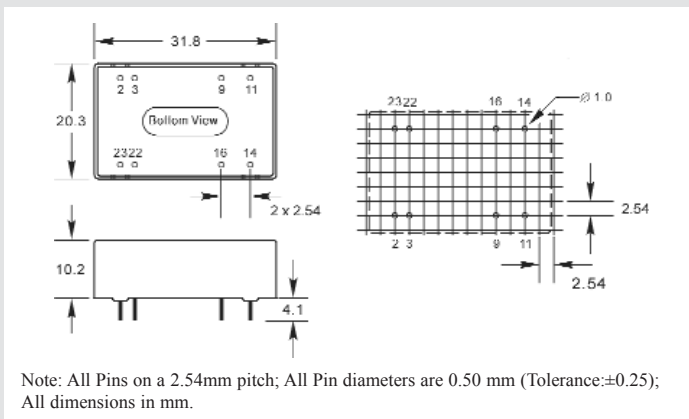
## MODELS Single Output

Models	Input Voltage	Output Voltage	Max. Output Current
AM5TW-2403S-N	9 - 36VDC	3.3VDC	1200mA
AM5TW-2405S-N		5VDC	1000mA
AM5TW-2412S-N		12VDC	420mA
AM5TW-2415S-N		15VDC	330mA
AM5TW-2424S-N		24VDC	200mA
AM5TW-4803S-N	18 - 72VDC	3.3VDC	1200mA
AM5TW-4805S-N		5VDC	1000mA
AM5TW-4812S-N		12VDC	420mA
AM5TW-4815S-N		15VDC	330mA
AM5TW-4824S-N		24VDC	200mA

## MODELS Dual Output

Models	Input Voltage	Output Voltage	Max. Output Current
AM5TW-2405D-N	9 - 36VDC	±5VDC	±500mA
AM5TW-2412D-N		±12VDC	±210mA
AM5TW-2415D-N		±15VDC	±165mA
AM5TW-2424D-N		±24VDC	±100mA
AM5TW-4805D-N	18 - 72VDC	±5VDC	±500mA
AM5TW-4812D-N		±12VDC	±210mA
AM5TW-4815D-N		±15VDC	±165mA
AM5TW-4824D-N		±24VDC	±100mA

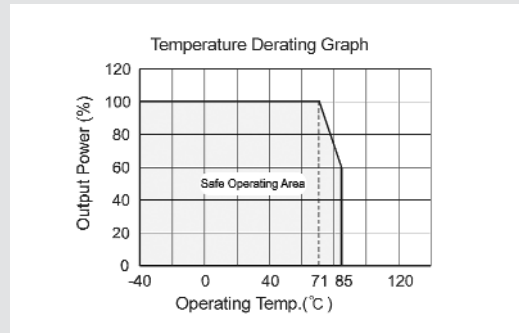
## OUTLINE DIMENSIONS & PIN CONNECTIONS



Pin	Single	Dual
1	Omitted	Omitted
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
10	Omitted	Omitted
11	N.C.	-V Output
12/13	Omitted	Omitted
14	+V Output	+V Output
15	Omitted	Omitted
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input
24	Omitted	Omitted

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## TYPICAL CHARACTERISTICS



## APPLICATION NOTE

### Recommended Circuit

All of our AM5TW-N Series have been tested according to the following recommended testing circuit before leaving our factory. This series should be tested under load & never be tested under no load (See Figure 1).

If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with a low ESR. However, the capacitance should not be too high. (See table 1).

### Input Current

When it is used in an unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module. (See figure 2)

### External Capacitor

Although this series of DC/DC converters can work without an external capacitor, it is highly recommended to use one in order to keep an optimum performance. (See Table 1)

### Requirement on Output Load

To ensure this module operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum out put load is not less than 10% Of the full load, and that this product should never be operated under no load!!! If the actual load is less below the specified minimum load, the output ripple of this type of DC/DC converter will increase drastically and at the same time efficiency & reliability of the circuit will decrease deeply .If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's other products with a lower rated output power.

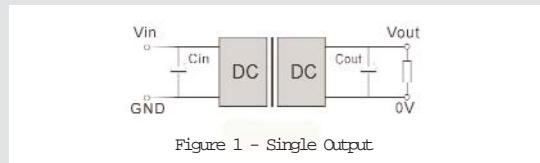


Figure 1 - Single Output

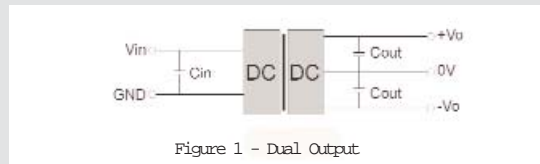


Figure 1 - Dual Output

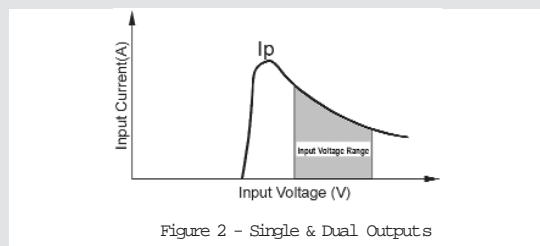


Figure 2 - Single & Dual Outputs

### External Capacitor Table Single & Dual Outputs

Vin	Cin	Vout	Cout
24V	100uF	5V	100uF each 1A Current
48V	100uF	12V	
-	-	15V	
-	-	24V	