DC/DC Converter

CNW1-XXSXXA3NT Series

Typical Feature

- ◆ Fixed Input Voltage, isolated & regulated Output, power 1W
- ◆ High efficiency up to 73%
- ◆ Small SMD package, international standard pin out
- ◆ Isolation Voltage 3000VDC
- ◆Operating Temperature: -40℃ to +85℃
- ◆ Plastic case, meet to UL94 V-0 standard

Test conditions: Unless otherwise specified, all parameter tests are measured at nominal input voltage, purely resistive rated load and 25°C room temperature.

Application Filed

Widely used in instrumentation, communication, pure digital circuits, general low-frequency analog circuits, relay drive circuits, data exchange circuits, etc.

Typical Product List

Part No	Input voltage range (VDC)		Output Voltage/Current(Vo/Io)		Input Current(mA)		Max capa	Ripple& Noise	Efficiency (%)@full load,	
	Nominal	Range	Voltage (VDC)	Current mA MAX./ Min.	Fullload	Noload	uF	mVp-p	Min.	Typ.
CNW1-3V3S3V3A3NT	3.3	3.135 - 3.465	3.3	250/20	290	8	2400	80	67	70
CNW1-05S3V3A3NT	5	4.75 - 5.25	3.3	250/25	290	6	2400	80	67	70
CNW1-05S05A3NT			5	200/20	265	6	2400	80	70	73
CNW1-05S12A3NT			12	84/9	260	8	560	80	70	73
CNW1-12S3V3A3NT	12	11.4 - 12.6	3.3	250/25	110	8	2400	80	67	70
CNW1-12S05A3NT			5	200/20	108	8	2400	80	70	73
CNW1-12S12A3NT			12	84/9	107	8	560	80	70	73
CNW1-24S3V3A3NT	24	22.8 - 25.2	3.3	250/25	56	8	2400	80	67	70
CNW1-24S05A3NT			5	200/20	54	8	2400	80	70	73
CNW1-24S12A3NT			12	84/9	52	8	560	80	70	73

In order to ensure that the module can work efficiently and reliably, when in use, the minimum output load cannot be less than 10% of the rated load. If the power you need is really small, please connect a resistor in parallel at the output end, the recommended resistance is equivalent to 10% of the rated power.

Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Overshoot Voltage (1sec.max.)	5Vdc Input	-0.7		9	VDC
	12Vdc Input	-0.7		18	
	24Vdc Input	-0.7		30	
Input Filter Type		Capacitor Filter			

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Output Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit
Output Power		0.1	-	1	W
Output Voltage Accuracy	Nominal input, full load	-	±2	±3	%
Load Regulation	10%-100% load	-	--	±3	
Line Regulation	Input voltage change ±1%	-	-	±0.25	
Ripple & Noise ①	Nominal input, full load, 20MHZ bandwidth	-	35	80	mVp-p
Temperature Drift Coefficient	100% load	-	-	±0.03	%/℃
Short Circuit Protection	Continuous, Self-recovery				

Note: ① ripple & noise is tested by Twisted pair method.

General Specifications

Switching Frequency	Typical	260KHz (Typ.)
Operating Temperature	see Temperature Derating Curve	-40℃ ~ +85℃
Storage Temperature		-55℃ ~ +125℃
Reflow Temperature	Peak temperature Tc≤250℃, maxi time is 60S for temperature above 217℃	
Case Temperature Rise	Within temperature derating curve	25℃(Typ.)
Relative Humidity	non-condensing	5%~95%
Case Material		Black flame-retardant, heat-resistant plastic (UL94 V-0)
Pin soldering temperature	10 seconds at a distance of 1.5mm from case	300℃ MAX
Isolation Voltage	Test 1min, leakage current≤0.5mA	3000Vdc
Isolation Capacitor	Input-output, 100KHz/0.1V	20 pF (Typ.)
MTBF	MIL-HDBK-217F@25℃	35X10^{5}Hrs
Product Weight		1.4g (Typ.)

EMC Characteristic

EMI	CE	CISPR32/EN55032 CLASS B(see EMC recommended circuit)
	RE	CISPR32/EN55032 CLASS B(see EMC recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air±8kV, Contact±6kV perf.Criteria B

Packing Information

DC/DC Converter

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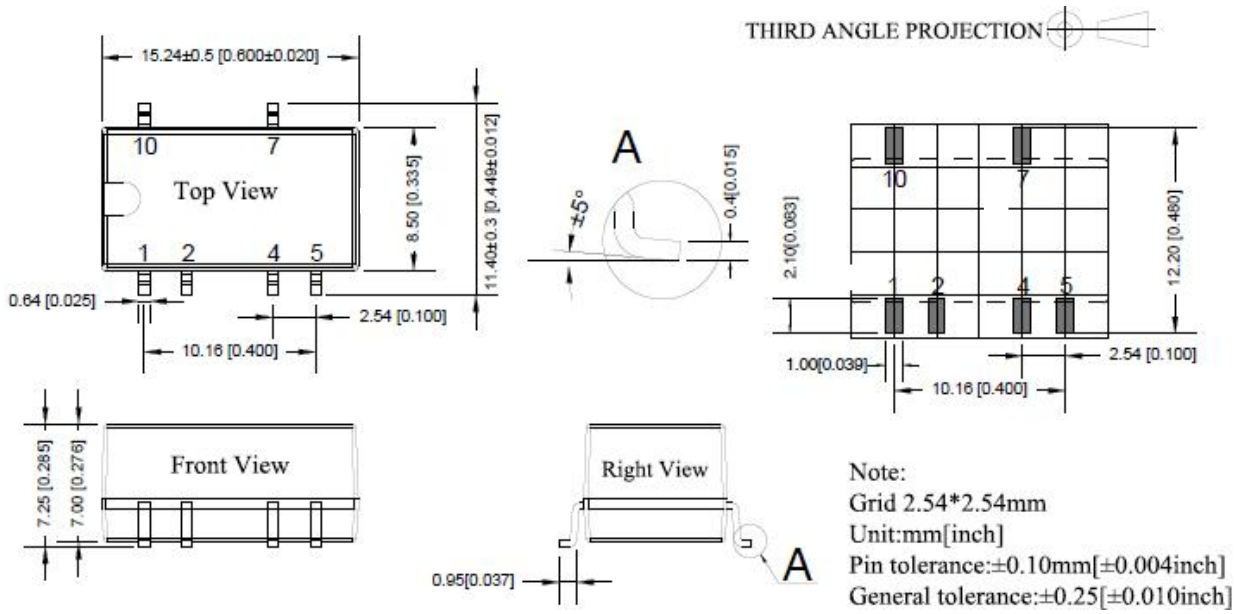


Packing Code	L x W x H	
A3NT	15.24X11.40X7.25 mm	0.600X0.449X0.285inch

Pin Definition

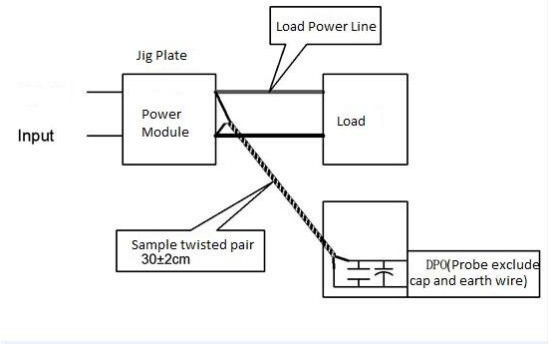
Pin-Out	1	2	4	5	7	10
Function	GND	Vin	0V	0V	+Vo	*NC

Ripple& Noise Test: (Twisted Pair Method 20MHZ bandwidth)

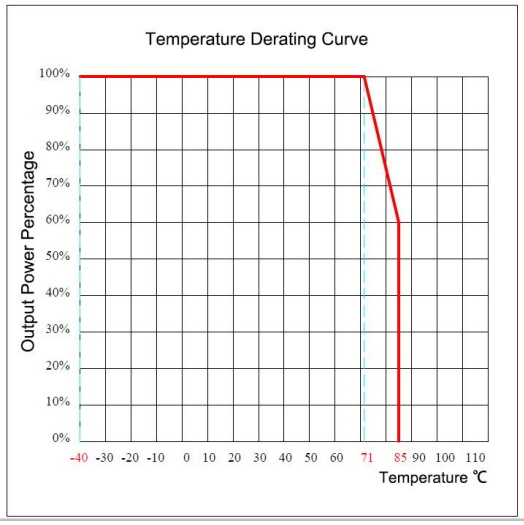
Test Method:

a.12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

b. Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



Products Characteristic Curve



Application Circuit

1. Output load requirements

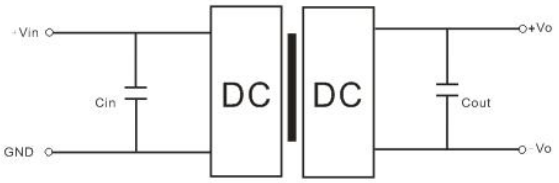
a. In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10% rated load when it is used. If the needed power is indeed small, please parallel a resistor at the output side, the resistance equal to 10% nominal load.

b. The maximum capacitive load is tested under nominal input full load, and cannot exceed the maximum capacitive load of output terminal under operation, otherwise it will cause it difficult to start up and damage the product.

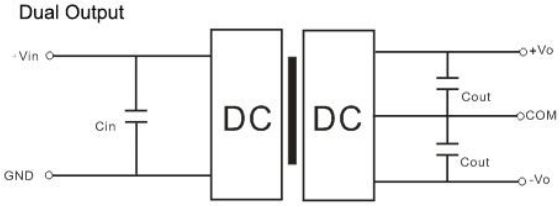
2. Recommended circuit

In order to ensure the input/output ripple and noise decreased, capacitor filter net could be connected to input and output terminal, application circuit as below photo 1; choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running safely and reliably, the recommended capacitive load values as shown in Table 1.

Single Output



Dual Output

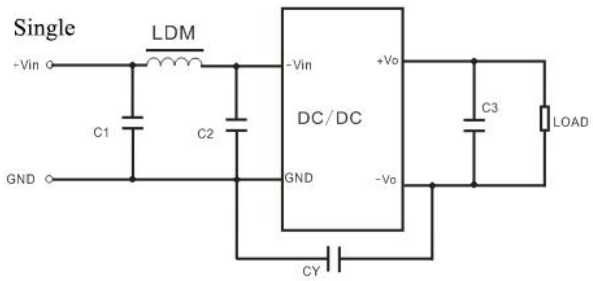


Recommended capacitive load value(Table 1)

Vin (Vdc)	Cin	Single Vout Vdc	Cout (μF)	Dual Vout (Vdc)	Cout (μF)
5	10μF/16V	3.3	10μF/16V	±3.3	4.7μF/16V
12	2.2μF/25V	5	10μF/16V	±5	4.7μF/16V
15	2.2μF/25V	9	2.2μF/25V	±9	2.2μF/25V
24	1μF/50V	12	2.2μF/25V	±12	1μF/25V
--	--	15	1μF/25V	±15	1μF/16V
--	--	24	1μF/50V	±24	0.47μF/50V

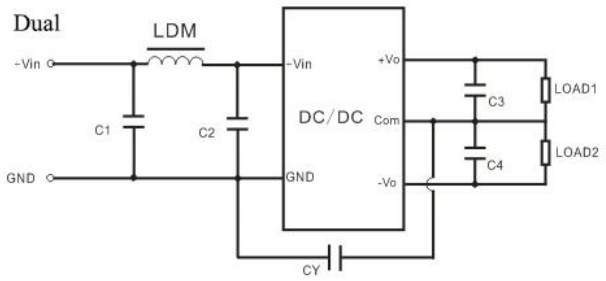
3. EMC recommended circuit

Single



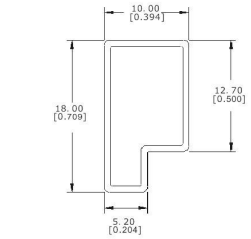
Input Voltage		5VDC	12/15/24VDC
EMI	C1/C2	4.7μF/16V	4.7μF/50V
	CY	270pF/3kV	270pF/3kV
	C3	Refer to Cout specs at Table 1	
	LDM	6.8μH	6.8μH

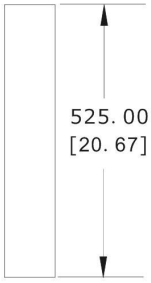
Dual



Input Voltage		5VDC	12/15/24VDC
EMI	C1/C2	4.7μF/16V	4.7μF/50V
	CY	270pF/3kVdc	270pF/3kVdc
	C3/C4	Refer to Cout specs at Table 1	
	LDM	6.8μH	6.8μH

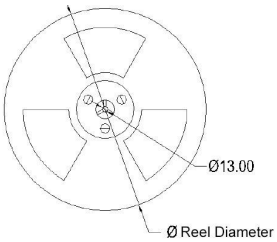
Packing Information

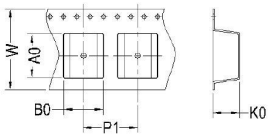




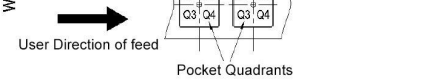
Note:
Unit:mm(inch)
General tolerance:±1.50[±0.059]
Single tube packing qty:33pcs
Carton packing qty:2640pcs
Size of single tube:525x18x10mm
Size of carton:542x110x155mm

Packing method: Tube





Quadrant assignments for Pin 1 orientation in tape



Packing method: Tape and reel(500pc per reel)

Note:

1. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
2. The maximum capacitive load is tested under nominal input voltage range and full load condition;
3. Unless otherwise specified, data in this datasheet are tested under conditions of **Ta=25℃**, **humidity<75%** when inputting nominal voltage and outputting rated load(pure resistance load);
4. All index testing methods in this datasheet are based on our Company's corporate standards.
5. We can provide customized product service;