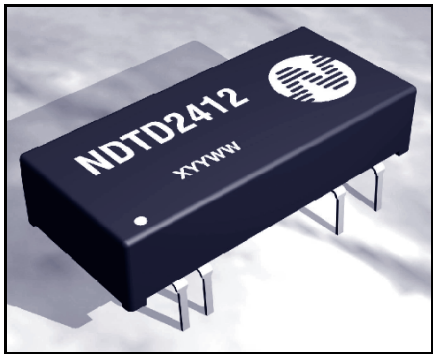
C&D TECHNOLOGIES
Power Solutions

NDT SERIES

Isolated 3W Wide Input Dual Output DC-DC Converters



FEATURES

- Industry Standard Footprint
- 1kVDC Isolation
- Dual Isolated Output
- Short Circuit Protection
- Low Profile 24 Pin Case
- Efficiency to 81%
- Power Density 0.90W/cm^3
- 2:1 Wide Input Range
- 24V & 48V Input
- 12V & 15V Output
- Footprint 4.73cm^2
- UL 94V-0 Package Materials
- Operating Temperature Range –40°C to 85°C
- Load and Line Regulation <1% on Both Outputs
- No Heatsink Required
- Internal SMD Construction
- Fully Encapsulated
- Custom Solutions Available

DESCRIPTION

The NDT series is a range of low profile DC-DC converters offering dual outputs over a 2:1 input voltage range. All parts deliver 3W output power up to 85°C without heatsinking. A flyback oscillator design with isolated feedback is used to give regulation over the full operating range of 25% to 100% of full load. It is strongly recommended that external capacitors be used on input and output to guarantee performance over full load and input voltage range (see application notes for guidance). The plastic case is rated to UL 94V-0 and encapsulant to UL 94V-1and the connection pins are formed from a tin plated alloy 42 leadframe.

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SELECTION GUIDE[1]

	Nominal Input Voltage	Rated Output Voltage	Output Current		Input Current	Efficiency[2]	Isolation Capacitance	MTTF[4]
			Min Load[3]	Full Load	Full Load			
Order Code	(V)	(V)	(mA)	(mA)	(mA)	(%)	(pF)	kHrs
NDTD2412	24	12	±31	±125	156	79	30	2075
NDTD2415	24	15	±25	±100	155	80	30	2080
NDTD4812	48	12	±31	±125	77	81	30	2090
NDTD4815	48	15	±25	±100	77	81	30	2045

INPUT CHARACTERISTICS[1]

Parameter	Conditions	MIN	TYP	MAX	Units
Voltage Range	24V input types	18	24	36	VDC
	48V input types	36	48	75	
Reflected Ripple Current	24V input types with 10µF at input		200	250	mA p-p
	48V input types with 10µF at input		125	150	

OUTPUT CHARACTERISTICS[1]

Parameter	Conditions	MIN	TYP	MAX	Units
Rated Power				3	W
Voltage Set Point Accuracy	With external input/output capacitors, refer to recommended test circuit		±1	±5	%
Line Regulation	Low line to high line, with external input/output capacitors, refer to recommended test circuit		0.15	0.5	%
Load Regulation	25% load to 100% load, with external input/output capacitors, refer to recommended test circuit		0.2	0.5	%
Ripple	BW = 20Hz to 300kHz With external input/output capacitors, refer to recommended test circuit		15	30	mV rms
Ripple & Noise	BW = DC to 20MHz With external input/output capacitors, refer to recommended test circuit		90	150	mV p-p
Cross Regulation	% voltage change on negative output when positive load varies from 12% to 50% with negative load fixed at 50%		2.1	3.0	%

ABSOLUTE MAXIMUM RATINGS

Short circuit protection over temperature range and input voltage range	continuous
Input Voltage, 24V types	40V
Input Voltage, 48V types	80V
Lead temperature 1.5mm from case for 10 seconds	300°C
Minimum Load	25% of rated output

ISOLATION CHARACTERISTICS[1]

Parameter	Conditions	MIN	TYP	MAX	Units
Isolation Test Voltage	Flash tested for 1 second	1000			VDC
Resistance	Viso=1KVDC	1			GΩ

GENERAL CHARACTERISTICS[1]

Parameter	Conditions	MIN	TYP	MAX	Units
Switching Frequency	100% load V_{IN} nominal	100	125	150	kHz
	25% load V_{IN} nominal	410	500	590	

ENVIRONMENTAL[1]

Parameter	Conditions	MIN	TYP	MAX	Units
Operation		–40		85	°C
Storage		–50		130	°C
Case Temperature Above Ambient	100% Load		28		°C

1 Specifications typical at T_A =25°C, nominal input voltage and rated output current unless otherwise specified.
2 Measured at full load with external input/output capacitors, refer to test circuit.
3 A lower load is entirely safe but higher levels of output ripple will be experienced.
4 Calculated using MIL-HDBK-217F with nominal input voltage at full load.

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TERMINOLOGY

LINE REGULATION

The percentage change in output voltage between low input voltage and high input voltage, measured with fixed output load

ie. A 5V output part with an output voltage of 5.05V @ high input voltage and 5.03V @ low input voltage would have a line regulation of 0.4%.

$$\text{line regulation} = \frac{V_{OUT}\text{ (Low Input V)} - V_{OUT}\text{ (High Input V)}}{V_{OUT}\text{ (Nominal Input V)}} \times 100\%$$

Where V_{OUT} (Nominal Input V) is 5V.

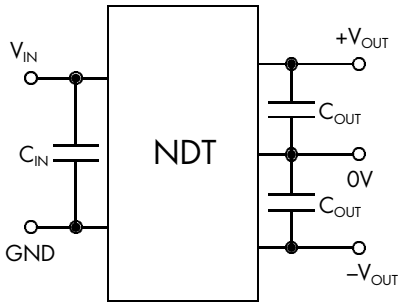
APPLICATION NOTES

EXTERNAL CAPACITANCE

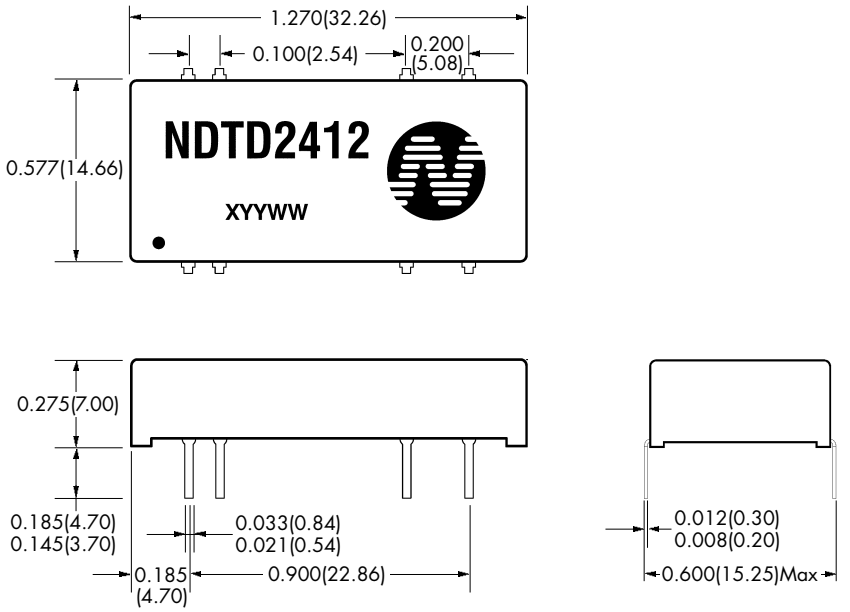
Although these converters will work without external capacitors, they are necessary in order to guarantee the full parametric performance over the full line and load range. All parts have been tested and characterised using the following values and test circuit

Value	
C_{IN}	C_{OUT}
10µF, 200V	47µF, 25V

TEST CIRCUIT



MECHANICAL DIMENSIONS

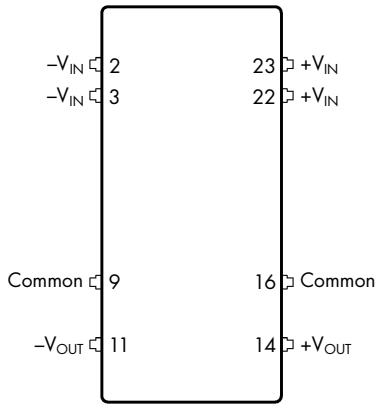


Weight: 6.5g

Unless otherwise stated all dimensions in inches ±0.010 (mm ±0.25mm).

PIN CONNECTIONS

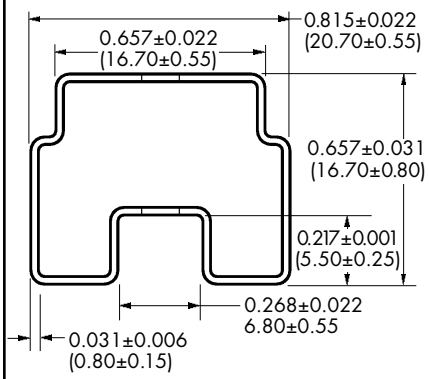
24 Pin DIL (top view)



PACKAGING DETAILS

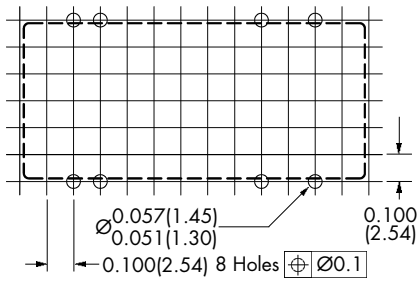
Order Code	Packaging Style	QTY
NDTDXXXX	Tube	15

TUBE OUTLINE DIMENSIONS



Tube Length: 20.472±0.079(520mm±2mm)
Tube Material: Antistatic coated clear pvc.

RECOMMENDED FOOTPRINT DETAILS



All pins on a 0.100(2.54) pitch and within 0.010(0.25) of true position.

C&D Technologies (NCL) Limited reserve the right to alter or improve the specification, internal design or manufacturing process at any time, without notice. Please check with your supplier or visit our web site to ensure that you have the current and complete specification for your product before use.

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