

**FEATURES**

- Dual Output from a Single Input Rail
- Industry Standard Pinout
- Power Sharing on Output
- 1kVDC Isolation
- Efficiency to 80%
- Power Density 0.85W/cm<sup>3</sup>
- 24V & 48V Input
- 5V, 9V, 12V and 15V Output
- Footprint from 1.17cm<sup>2</sup>
- UL 94V-0 Package Material
- No Heatsink Required
- Internal SMD Construction
- Toroidal Magnetics
- Fully Encapsulated
- No External Components Required
- Custom Solutions Available

**DESCRIPTION**

The NMA series of DC-DC converters are the standard building blocks for on-board distributed power systems. They are ideally suited to providing dual rail supplies on primarily digital boards with the added benefit of galvanic isolation to reduce switching noise. All of the rated power may be drawn from a single pin provided the total load does not exceed 1 Watt.

**SELECTION GUIDE**

	Nominal Input Voltage	Output Voltage	Output Current	Efficiency	Isolation Capacitance	MTTF <sup>1</sup>	Package Style
Order Code	(V)	(V)	(mA)	(%)	(pF)	kHrs	
<b>NMA2405D</b>	24	5	±100	70	39	194	DIP
<b>NMA2409D</b>	24	9	±55	80	50	166	
<b>NMA2412D</b>	24	12	±42	80	65	134	
<b>NMA2415D</b>	24	15	±33	80	95	101	
<b>NMA2405S</b>	24	5	±100	70	39	194	SIP
<b>NMA2409S</b>	24	9	±55	80	50	166	
<b>NMA2412S</b>	24	12	±42	80	65	134	
<b>NMA2415S</b>	24	15	±33	80	95	101	
<b>NMA4805D</b>	48	5	±100	70	26	206	DIP
<b>NMA4809D</b>	48	9	±55	80	38	174	
<b>NMA4812D</b>	48	12	±42	80	52	139	
<b>NMA4815D</b>	48	15	±33	80	56	104	
<b>NMA4805S</b>	48	5	±100	70	26	206	SIP
<b>NMA4809S</b>	48	9	±55	80	38	174	
<b>NMA4812S</b>	48	12	±42	80	52	139	
<b>NMA4815S</b>	48	15	±33	80	56	104	

When operated **with** additional external load capacitance the rise time of the input voltage will determine the maximum external capacitance value for guaranteed start up. The slower the rise time of the input voltage the greater the maximum value of the additional external capacitance for reliable start up.

**INPUT CHARACTERISTICS**

Parameter	Conditions	MIN	TYP	MAX	Units
Voltage Range	Continuous operation, 24V input types	21.6	24	26.4	V
	Continuous operation, 48V input types	43.2	48	52.8	

**OUTPUT CHARACTERISTICS**

Parameter	Conditions	MIN	TYP	MAX	Units
Rated Power <sup>2</sup>	T <sub>A</sub> = 0°C to 70°C			1	W
Voltage Set Point Accuracy	See tolerance envelope				
Line Regulation	High V <sub>IN</sub> to low V <sub>IN</sub>			1.2	%/%
Load Regulation	10% load to rated load, 5V output types			15	%
	10% load to rated load, all other output types			10	
Ripple & Noise	BW=DC to 20MHz, all input types			150	mV p-p

**ABSOLUTE MAXIMUM RATINGS**

Short-circuit duration <sup>3</sup>	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Input voltage V <sub>IN</sub> , NMA24 types	28V
Input voltage V <sub>IN</sub> , NMA48 types	54V

1 Calculated using MIL-HDBK-217F with nominal input voltage at full load.

2 See derating curve

3 Supply voltage must be discontinued at the end of the short circuit duration.

All specifications typical at T<sub>A</sub>=25°C, nominal input voltage and rated output current unless otherwise specified.

# NMA 24V & 48V SERIES

Isolated 1W Dual Output DC-DC Converters

## ISOLATION CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Isolation Test Voltage	Flash tested for 1 second	1000			VDC
Resistance	Viso=500VDC	1			G

## GENERAL CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Switching Frequency	All input types		100		kHz

## TEMPERATURE CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Specification	All output types	0		70	°C
Storage		-55		150	°C
Cooling	Free air convection				

## PIN CONNECTIONS

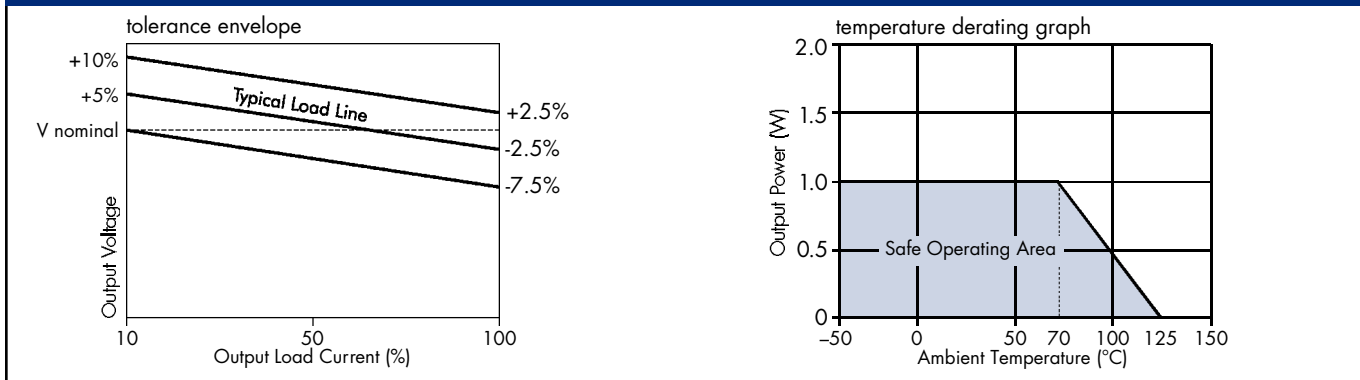
14 Pin DIP

PIN	
1	GND
7	NC
8	0V
9	+V
11	-V
14	V <sub>IN</sub>

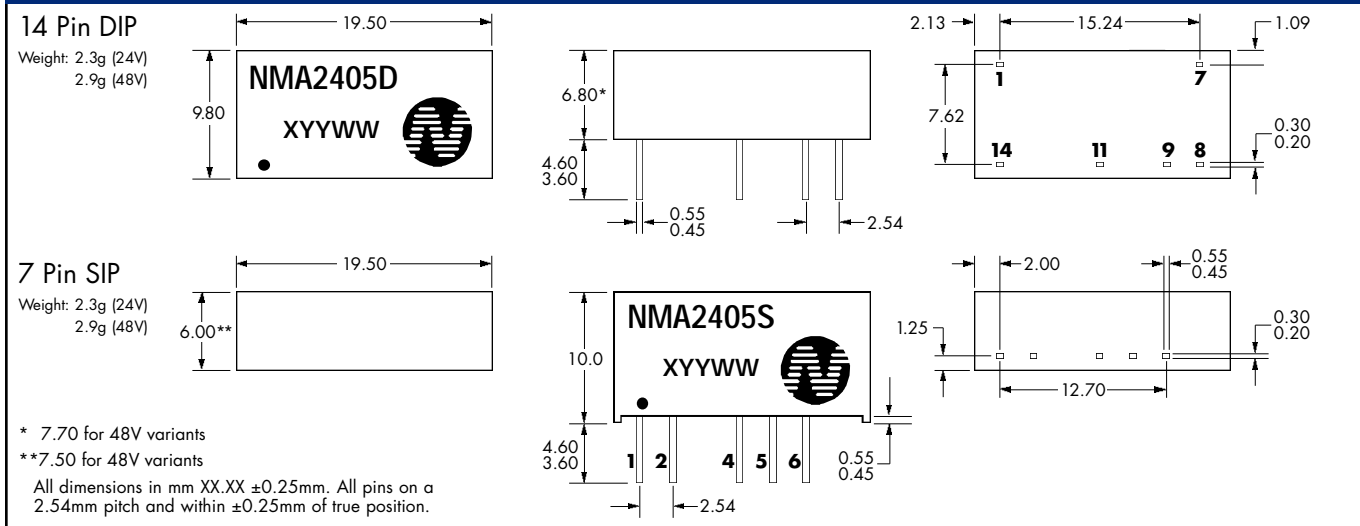
7 Pin SIP

PIN	
1	V <sub>IN</sub>
2	GND
4	-V
5	0V
6	+V

## PERFORMANCE CHARACTERISTICS



## MECHANICAL DIMENSIONS



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**C&D TECHNOLOGIES**  
Power Solutions