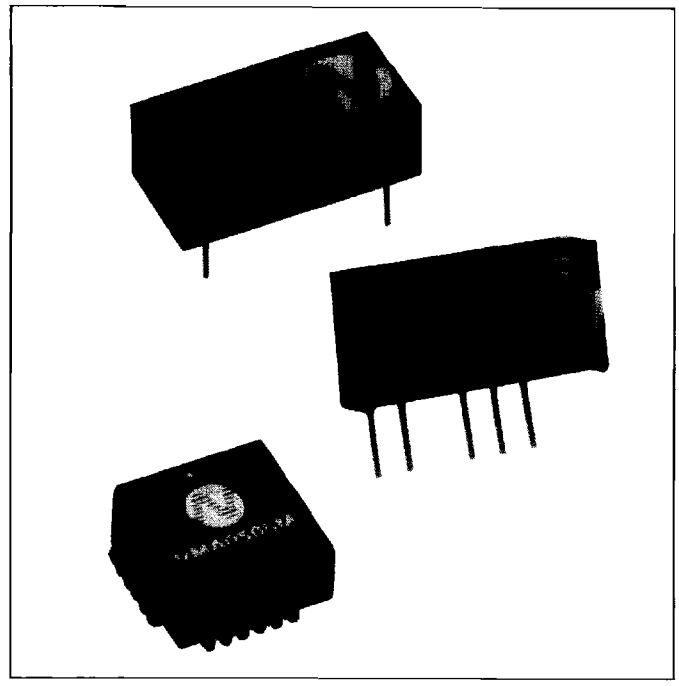
CALEX

1 WATT DUAL OUTPUT DC/DC CONVERTERS
NMA05/12/24/48 SERIES
Full power may be taken from a single output

- ❒ **Input/Output isolation 1000VDC**
- ❒ **100% burned in**
- ❒ **Triple tested**
- ❒ **Low profile**
- ❒ **High efficiency up to 80%**
- ❒ **DIP, SIP and Surface Mount styles**
- ❒ **5V, 12V, 24V and 48V input**



GENERAL DESCRIPTION

The NM Series is a range of miniature high efficiency isolated DC-DC converters available in both DIP and SIP packages. The DIP requires only 0.32 square inches of board space and the SIP only 0.18 square inches. Choice of 5V, 12V, 24V or 48V inputs and the range provides isolated output voltages of ± 5V, ± 12V and ± 15V. The delivered power is 1W total with an input to output isolation of 500VDC. Both types of package have full UL94-V0 rating. No heatsinks are needed for the rated performance and the operating temperature range is −25°C to +80°C (+125°C) and down to −50°C to special order.

absolute maximum ratings over operating free-air* temperature range

Input voltage V_{cc} NMA05 types	7V
Input voltage V_{cc} NMA12 types	15V
Input voltage V_{cc} NMA24 types	28V
Input voltage V_{cc} NMA48 types	54V
Output power total	1W
Short-circuit duration	<1s
Isolation voltage	1000VDC
Operating free-air temperature range	−25°C to +125°C
Storage temperature range	−55°C to +125°C
Lead temperature 1.5mm from case for 10 seconds	300°C

electrical specifications over operating free-air* temperature range

Input voltage range NMA05 types	5V±10%
Input voltage range NMA12 types	12V±10%
Input voltage range NMA24 types	24V±10%
Input voltage range NMA48 types	48V±10%
Load voltage regulation (10% to 100% full load)	+10% −7.5%
Line voltage regulation (10% to 100% full load)	1.2%/1% of V_{in}
Output voltage accuracy	See tolerance envelope graph
Input reflected noise (20 MHz Band limited)	80mV p-p max.
Output ripple and noise (20 MHz Band limited)	75mV p-p max.
Input output isolation	1000VDC max.
Insulation resistance at 500VDC	1000MΩ min.
Efficiency at full load, 5V output type	70% typical 65% min.
Efficiency at full load, 9V, 12V and 15V types	80% typical 70% min.
Temperature drift	0.03% per °C max.
Temperature rise above ambient at full load	8°C max.
Weight 05/12/24 DIP and SIP types	2.3 grams max.
Weight 48 DIP and SIP types	2.9 grams max.
Weight 05/12/24 Surface mount types	1.3 grams max.
Weight 48 Surface mount types	1.7 grams max.
Switching frequency at full load (typical)	100kHz
No load power consumption (typical)	100mW

* Free-air - requires a minimum of 10mm air space around the component.

selection guide

(05V) 12V and 24V input types

Part Number	Output Voltage (V)	Output Current Each Output (mA)	Package Style
NMAXX05D(V)	±5	100	1
NMAXX09D(V)	±9	56	
NMAXX12D(V)	±12	42	
NMAXX15D(V)	±15	34	
NMAXX05S(V)	±5	100	2
NMAXX09S(V)	±9	56	
NMAXX12S(V)	±12	42	
NMAXX15S(V)	±15	34	
NMAXX05M	±5	100	10
NMAXX09M	±9	56	
NMAXX12M	±12	42	
NMAXX15M	±15	34	

48V input types

Part Number	Output Voltage (V)	Output Current Each Output (mA)	Package Style
NMA4805D(V)	±5	100	3
NMA4809D(V)	±9	56	
NMA4812D(V)	±12	42	
NMA4815D(V)	±15	34	
NMA4805S(V)	±5	100	4
NMA4809S(V)	±9	56	
NMA4812S(V)	±12	42	
NMA4815S(V)	±15	34	
NMA4805M	±5	100	15
NMA4809M	±9	56	
NMA4812M	±12	42	
NMA4815M	±15	34	

(V) = parts with high voltage breakdown 1kV AC rms "V" is added to the part number

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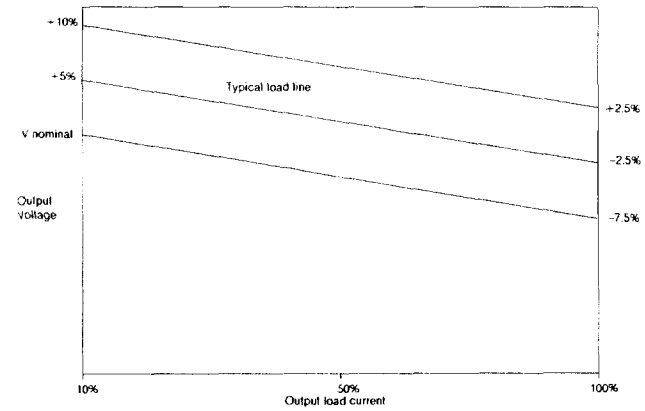
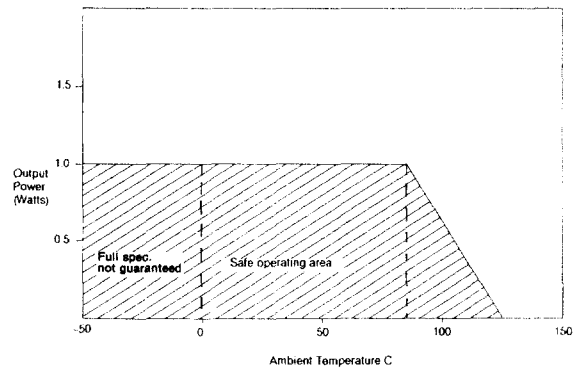
tolerance envelope

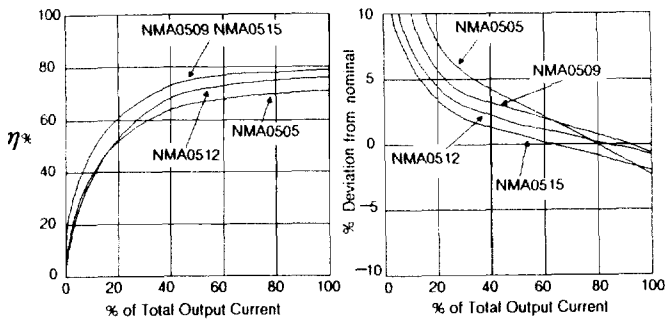


temperature derating graph

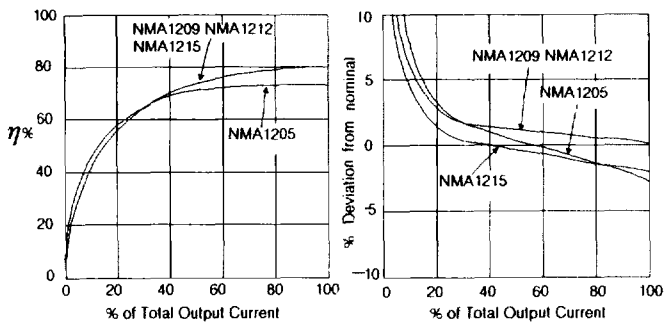


typical characteristics

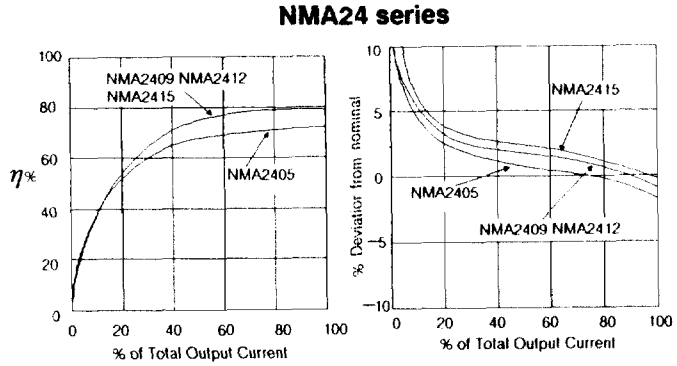
NMA05 series



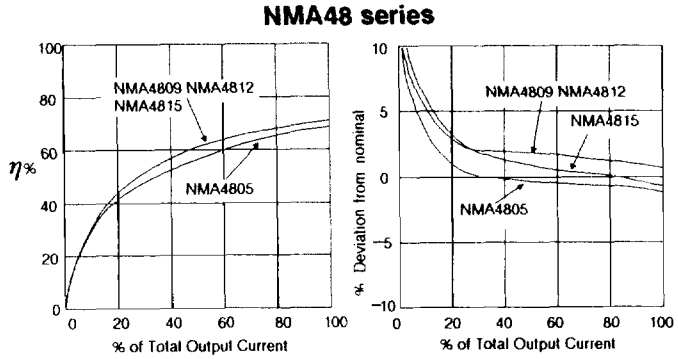
NMA12 series



NMA24 series



NMA48 series



Note: typical data taken at 20C.

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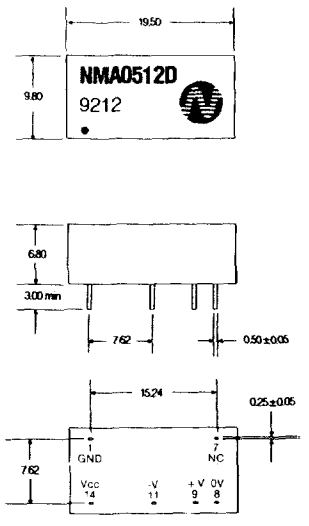
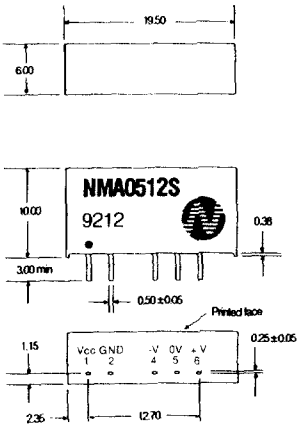
OUTLINE DIMENSIONS

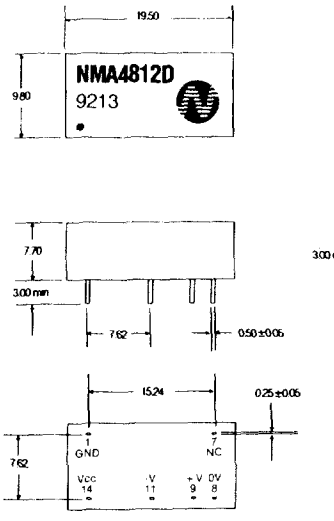
dual-in-line package



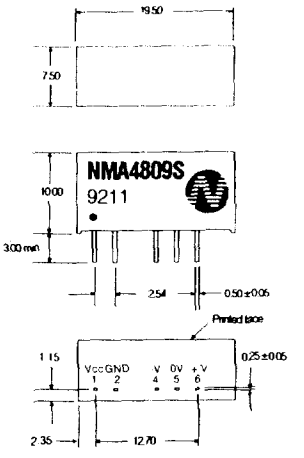
single in-line package



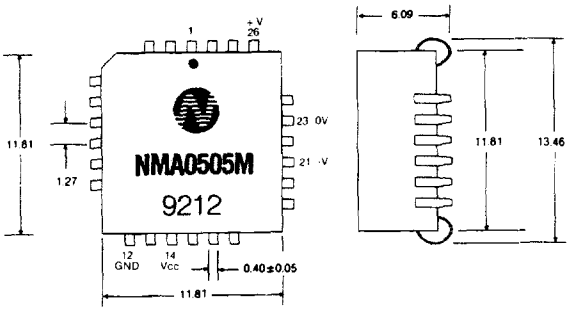
dual-in-line package



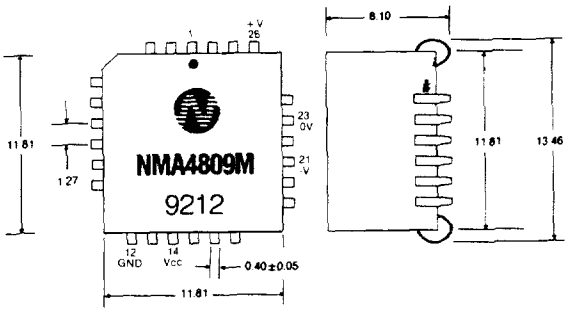
single in-line package



surface mount package



surface mount package



MILLIMETRES XX.XX±0.25

ALL PINS ON A 2.54mm PITCH

Note

These package style diagrams show outline dimensions, the printing information and pin outs shown are illustrative only and will differ between types of component. For exact pin out of a part refer to the specific chapter. Dot denotes pin 1.

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