

### features

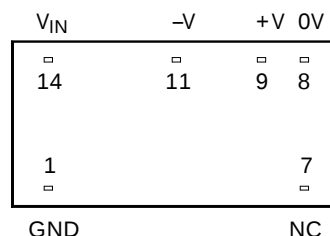
- ☐ Dual Output from a Single Input Rail
- ☐ Pin Compatible with NMH
- ☐ Industry Standard Pinout
- ☐ Power Sharing on Output
- ☐ 1kVDC Isolation
- ☐ SIP & DIP Package Styles
- ☐ Efficiency to 80%
- ☐ Power Density 0.85W/cm<sup>3</sup>
- ☐ 3.3V, 5V, 12V, 24V & 48V Input
- ☐ 5V, 9V, 12V and 15V Output
- ☐ 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
- ☐ MTTF up to 2.1 Million hours
- ☐ PCB Mounting
- ☐ Custom Solutions Available

### description

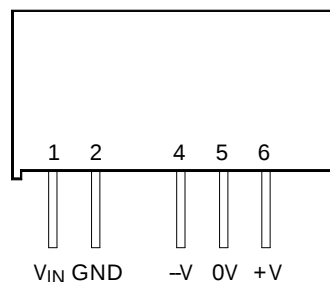
The NMA series of DC-DC converters are the standard building blocks for on-board distributed power systems. They are ideally suited to providing dual rail supplies on primarily digital boards with the added benefit of galvanic isolation to reduce switching noise. All of the rated power may be drawn from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

### pin connections

14 Pin DIP (top view)



7 Pin SIP



# NMA SERIES

Isolated 1W Dual output

## absolute maximum ratings over operating free air\* temperature range

|                                                 |             |                          |
|-------------------------------------------------|-------------|--------------------------|
| Input voltage $V_{IN}$                          | NMA03 types | 5V                       |
| Input voltage $V_{IN}$                          | NMA05 types | 7V                       |
| Input voltage $V_{IN}$                          | NMA12 types | 15V                      |
| Input voltage $V_{IN}$                          | NMA24 types | 28V                      |
| Input voltage $V_{IN}$                          | NMA48 types | 54V                      |
| Output power total                              |             | 1W                       |
| Short-circuit duration                          |             | 1s                       |
| Isolation voltage (flash tested for 1 second)   |             | 1000VDC                  |
| Operating free air temperature range            |             | 0°C to 70°C <sup>1</sup> |
| Storage temperature range                       |             | -55°C to 150°C           |
| Lead temperature 1.5mm from case for 10 seconds |             | 300°C                    |

## electrical specifications

(measured at  $T_A=25^{\circ}\text{C}$ , at nominal input voltage)

|                                                       |             |                              |
|-------------------------------------------------------|-------------|------------------------------|
| Input voltage range                                   | NMA03 types | 3.3V±10%                     |
| 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)       |             |                              |
| 5V output types                                       |             | 15% max.                     |
| 9V, 12V and 15V output types                          |             | 10% max.                     |
| Line voltage regulation (10% to 100% full load)       |             | 1.2%/1% of $V_{IN}$          |
| Output voltage accuracy                               |             | See tolerance envelope graph |
| Input reflected ripple (20 MHz Band limited)          |             |                              |
| NMA03 and 48 types                                    |             | 100mV p-p max.               |
| NMA05, 12 and 24 types                                |             | 80mV p-p max.                |
| Output ripple (20 MHz Band limited)                   |             |                              |
| NMA03 and 48 types                                    |             | 150mV p-p max.               |
| NMA05, 12 and 24 types                                |             | 75mV p-p max.                |
| Insulation resistance at 500VDC                       |             | 1000MΩ min.                  |
| Efficiency at full load, 5V output types              |             | 70% typical 65% min.         |
| Efficiency at full load, 9V, 12V and 15V output types |             | 80% typical 70% min.         |

\* Free air – requires a minimum of 10mm air space around the component. <sup>1</sup> See derating curve.

### electrical specifications

(measured at  $T_A = 25^\circ\text{C}$ , at nominal input voltage)

|                                                   |                                 |
|---------------------------------------------------|---------------------------------|
| Temperature drift ( $V_{OUT}$ )                   | 0.03% per $^\circ\text{C}$ max. |
| Temperature rise above ambient at full load       | $10^\circ\text{C}$ max.         |
| Weight NMA03/05/12/24 DIP and SIP types (typical) | 2.3 grams                       |
| Weight NMA48 DIP and SIP types (typical)          | 2.9 grams                       |
| Switching frequency at full load (typical)        | 100kHz                          |
| No load power consumption (typical)               | 100mW                           |

### selection guide

3.3V, 5V, 12V and 24V input types

| Part Number | Output Voltage (V) | Output Current Each Output (mA) | Package Style |
|-------------|--------------------|---------------------------------|---------------|
| NMAXX05D    | $\pm 5$            | 100                             | 1             |
| NMAXX09D    | $\pm 9$            | 56                              |               |
| NMAXX12D    | $\pm 12$           | 42                              |               |
| NMAXX15D    | $\pm 15$           | 34                              |               |
| NMAXX05S    | $\pm 5$            | 100                             | 3             |
| NMAXX09S    | $\pm 9$            | 56                              |               |
| NMAXX12S    | $\pm 12$           | 42                              |               |
| NMAXX15S    | $\pm 15$           | 34                              |               |

# NMA SERIES

Isolated 1W Dual Output

## selection guide

48V input types

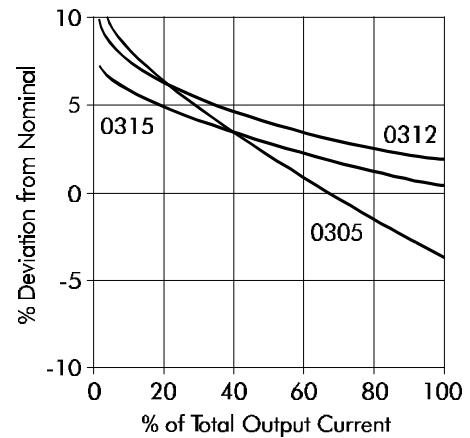
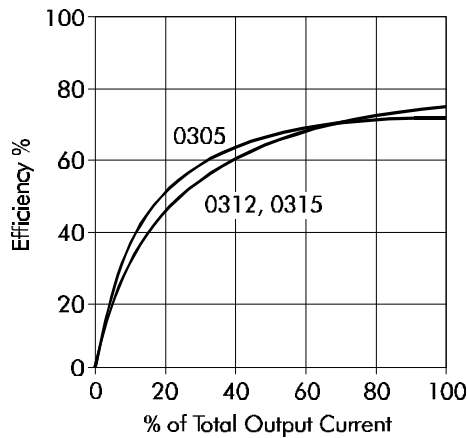
| Part Number | Output Voltage (V) | Output Current Each Output (mA) | Package Style |
|-------------|--------------------|---------------------------------|---------------|
| NMA4805D    | ±5                 | 100                             | 2             |
| NMA4809D    | ±9                 | 56                              |               |
| NMA4812D    | ±12                | 42                              |               |
| NMA4815D    | ±15                | 34                              |               |
| NMA4805S    | ±5                 | 100                             | 4             |
| NMA4809S    | ±9                 | 56                              |               |
| NMA4812S    | ±12                | 42                              |               |
| NMA4815S    | ±15                | 34                              |               |

## typical isolation capacitance (pF)

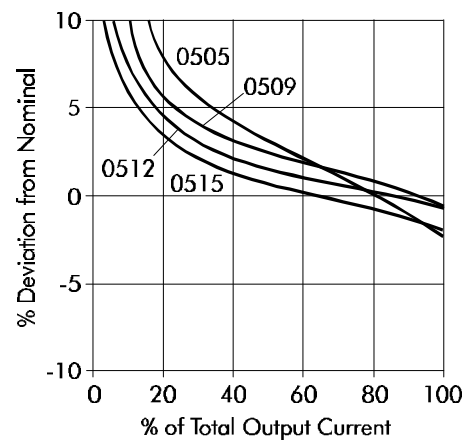
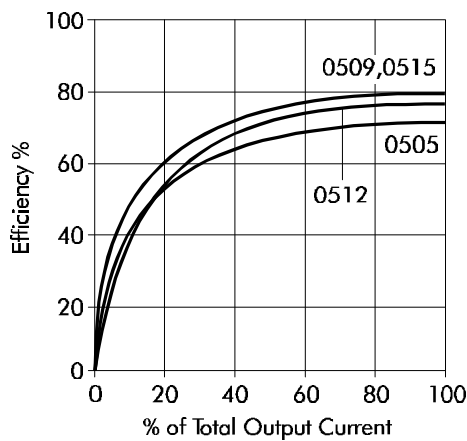
| Part Number | Output Voltage (V) |    |    |    |
|-------------|--------------------|----|----|----|
|             | 05                 | 09 | 12 | 15 |
| NMA03XXX    | 23                 | 25 | 21 | 23 |
| NMA05XXX    | 18                 | 25 | 26 | 32 |
| NMA12XXX    | 33                 | 40 | 57 | 60 |
| NMA24XXX    | 39                 | 50 | 65 | 95 |
| NMA48XXX    | 26                 | 38 | 52 | 56 |

### typical characteristics

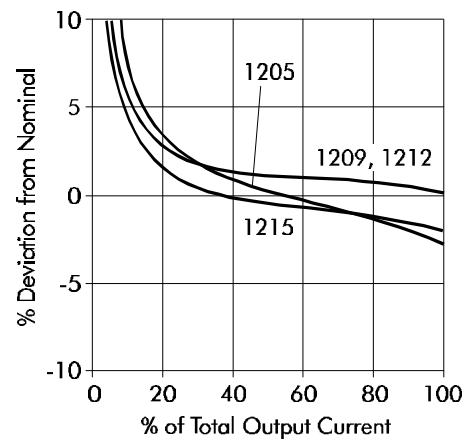
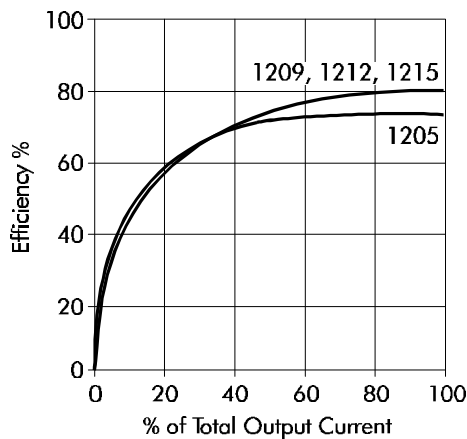
#### NMA03 series



#### NMA05 series



#### NMA12 series



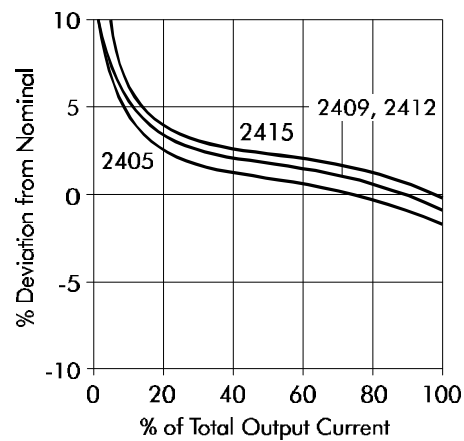
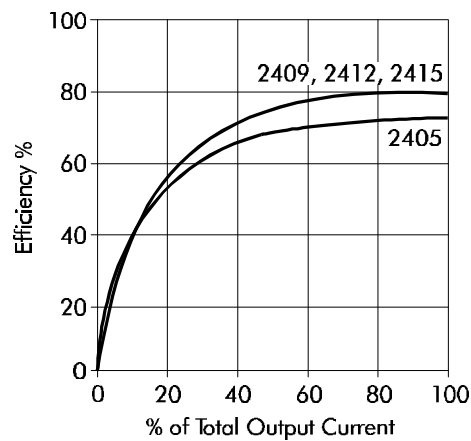
Note : All data taken at  $T_A = 25^\circ\text{C}$ .

# NMA SERIES

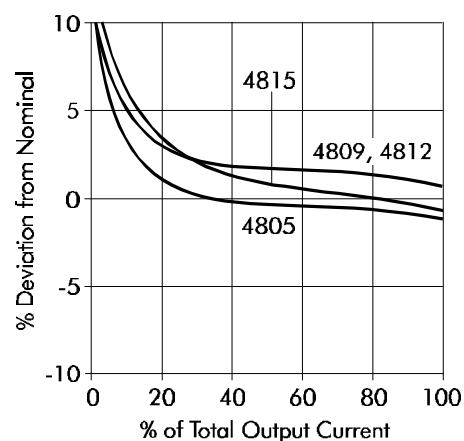
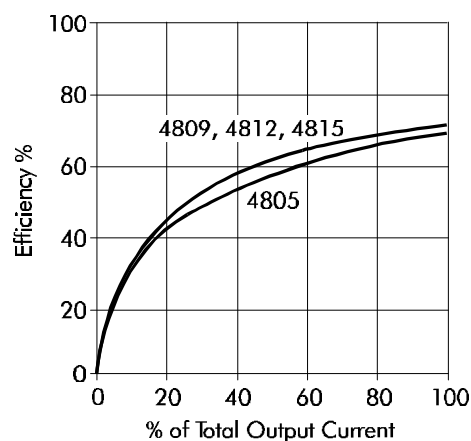
Isolated 1W Dual Output

## typical characteristics

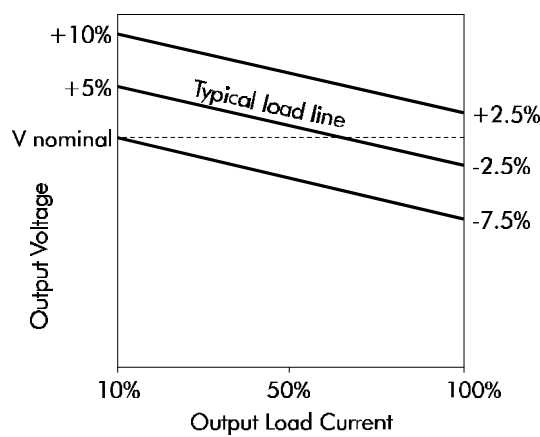
NMA24 series



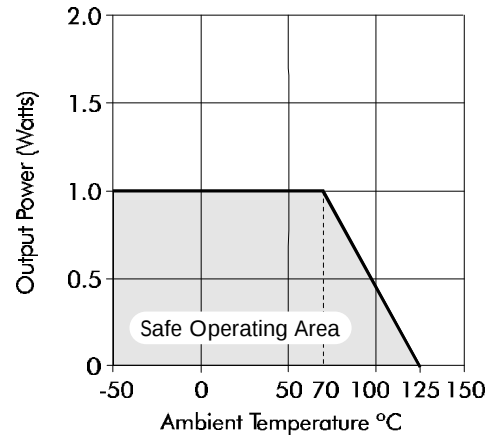
NMA48 series



## tolerance envelope



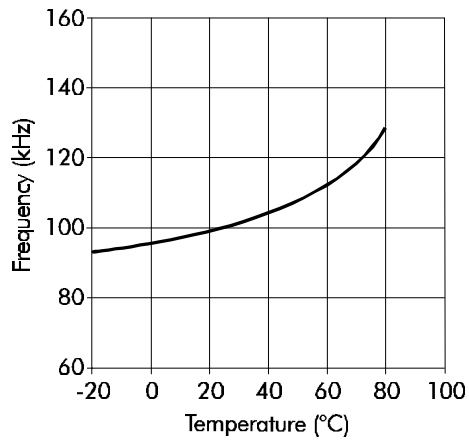
## temperature derating graph



Note : All data taken at  $T_A = 25^{\circ}\text{C}$ .

### typical characteristics

temperature test (under full load)



Note : All data taken at  $T_A = 25^\circ\text{C}$ .

# NMA SERIES

Isolated 1W Dual Output

mean time to failure (MTTF) in thousands of hours

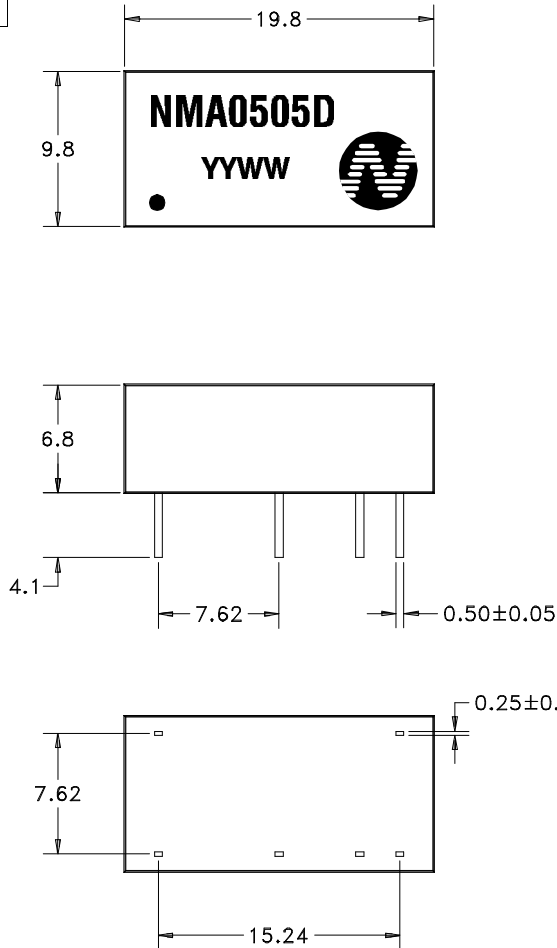
| Part Number | -25°C | 25°C | 70°C |
|-------------|-------|------|------|
| NMA0305     | 2182  | 1814 | 1501 |
| NMA0309     | 819   | 701  | 603  |
| NMA0312     | 403   | 347  | 303  |
| NMA0315     | 219   | 189  | 166  |
| NMA0505     | 1899  | 1614 | 1349 |
| NMA0509     | 774   | 668  | 577  |
| NMA0512     | 391   | 338  | 295  |
| NMA0515     | 215   | 186  | 163  |
| NMA1205     | 566   | 488  | 423  |
| NMA1209     | 395   | 342  | 298  |
| NMA1212     | 263   | 228  | 199  |
| NMA1215     | 169   | 147  | 129  |
| NMA2405     | 224   | 194  | 170  |
| NMA2409     | 191   | 166  | 145  |
| NMA2412     | 154   | 134  | 117  |
| NMA2415     | 117   | 101  | 89   |
| NMA4805     | 237   | 206  | 180  |
| NMA4809     | 201   | 174  | 153  |
| NMA4812     | 166   | 139  | 122  |
| NMA4815     | 120   | 104  | 92   |

Note : MTTF figures derived from hybrid model of MIL-HDBK-217F.

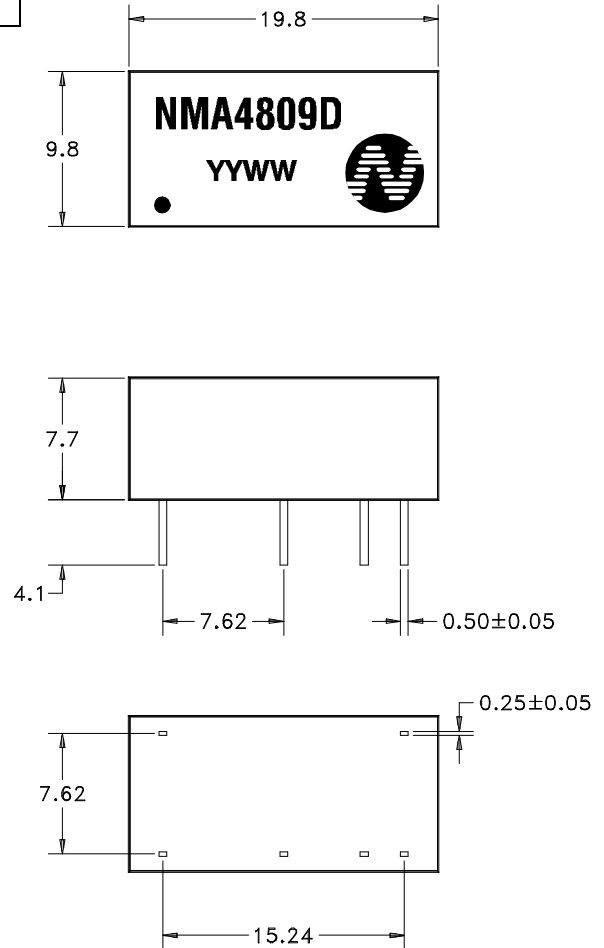
### outline dimensions

#### 14 Pin DIP package styles

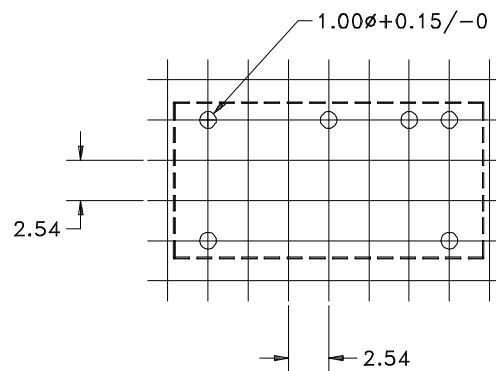
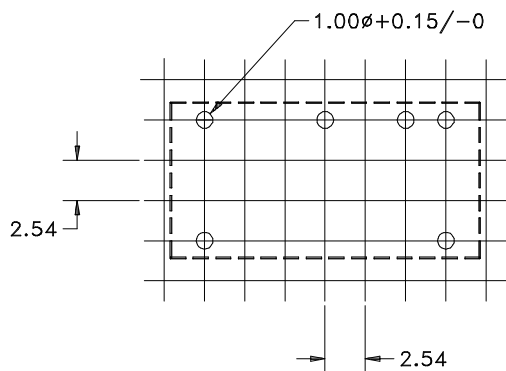
1



2



### recommended footprint details



All pins on a 2.54mm pitch.

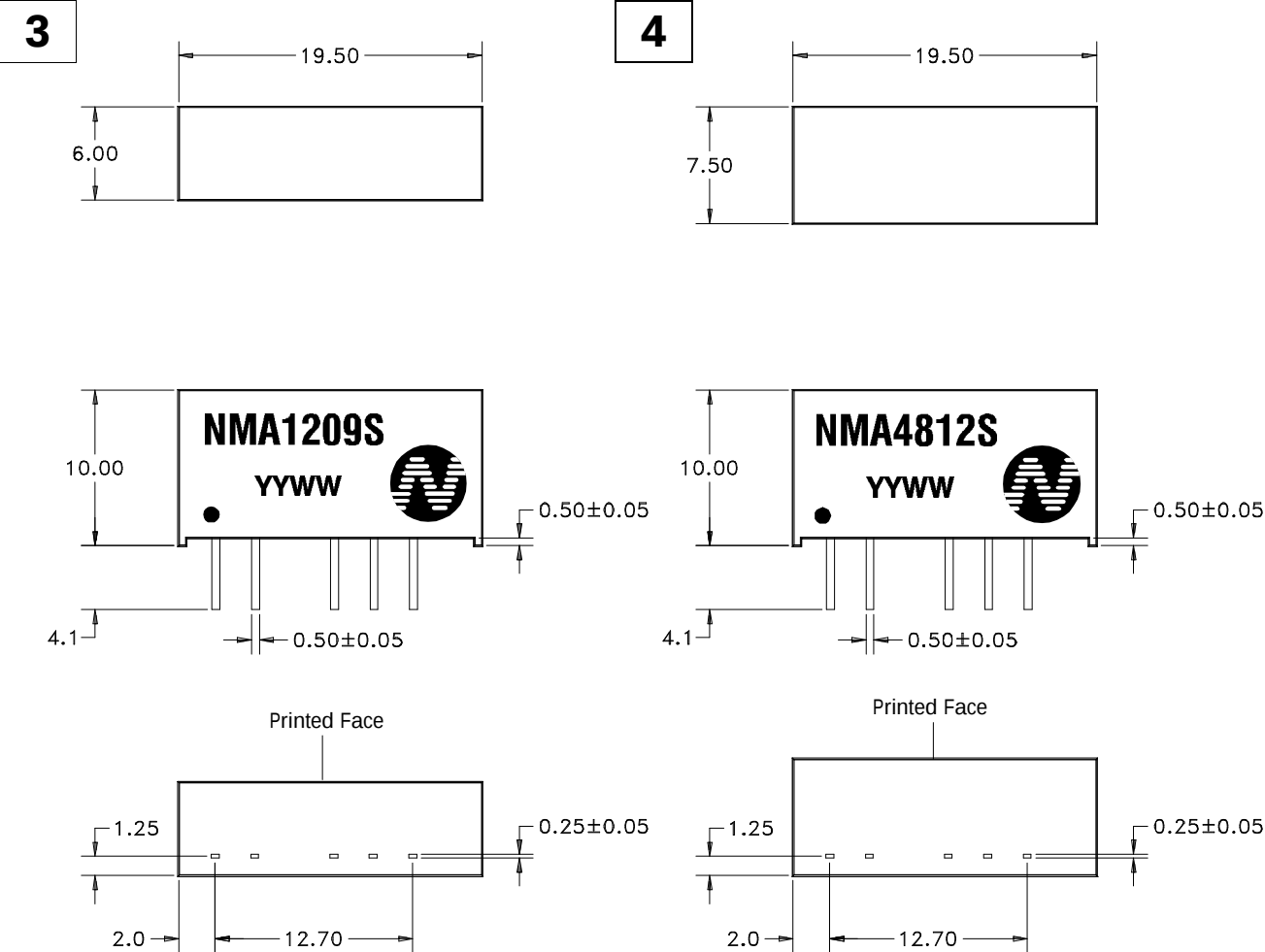
All dimensions in mm  $XX.X \pm 0.50$ ,  $XX.XX \pm 0.25$

# NMA SERIES

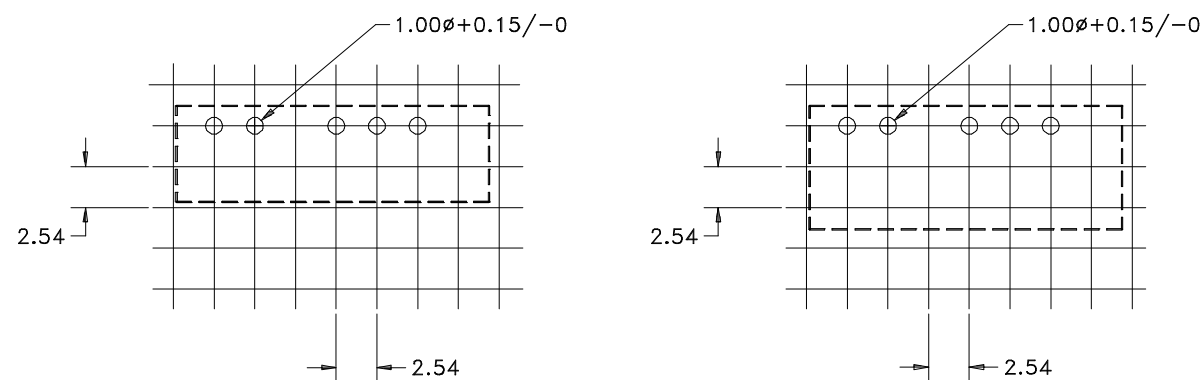
Isolated 1W Dual Output

## outline dimensions

7 Pin SIP package styles



## recommended footprint details



All pins on a 2.54mm pitch.  
All dimensions in mm XX.X ±0.50, XX.XX ±0.25

