

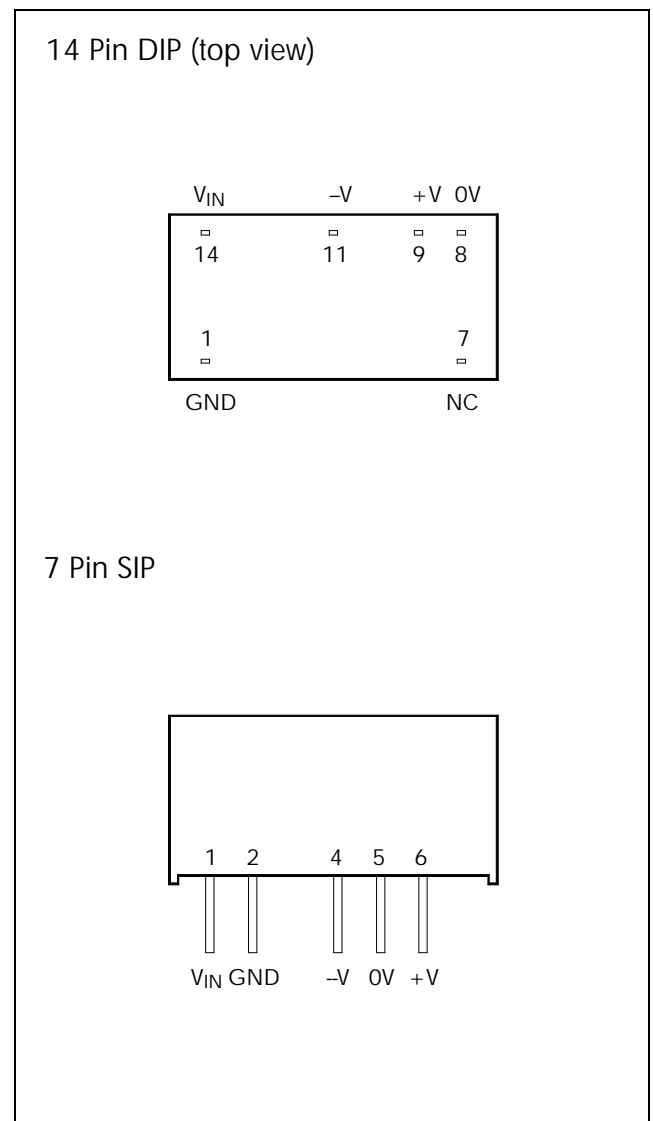
features

- 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/cm³
- 3.3V, 5V, 12V, 24V & 48V Input
- 5V, 9V, 12V and 15V Output
- Footprint from 1.17cm²
- 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



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 ¹
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 \pm 10%
Input voltage range NMA05 types	5V \pm 10%
Input voltage range NMA12 types	12V \pm 10%
Input voltage range NMA24 types	24V \pm 10%
Input voltage range NMA48 types	48V \pm 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	1000M Ω 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.

¹ 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	± 5	100	1
NMAXX09D	± 9	56	
NMAXX12D	± 12	42	
NMAXX15D	± 15	34	
NMAXX05S	± 5	100	3
NMAXX09S	± 9	56	
NMAXX12S	± 12	42	
NMAXX15S	± 15	34	

NMA SERIES

Isolated 1W Dual Output

selection guide

48V input types

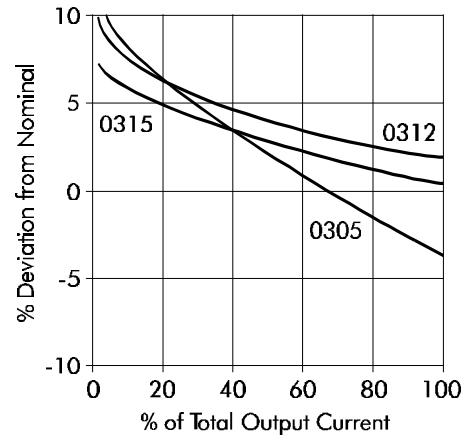
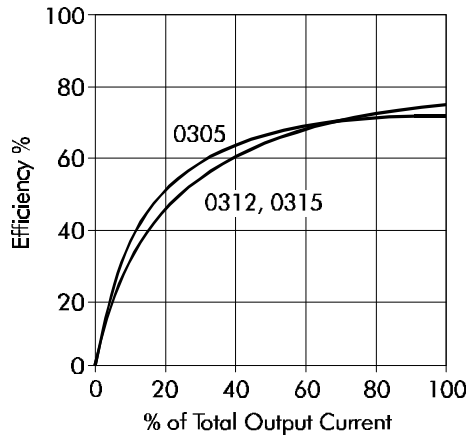
Part Number	Output Voltage (V)	Output Current Each Output (mA)	Package Style
NMA4805D	±5	100	2
NMA4809D	±9	56	
NMA4812D	±12	42	
NMA4815D	±15	34	
NMA4805S	±5	100	4
NMA4809S	±9	56	
NMA4812S	±12	42	
NMA4815S	±15	34	

typical isolation capacitance (pF)

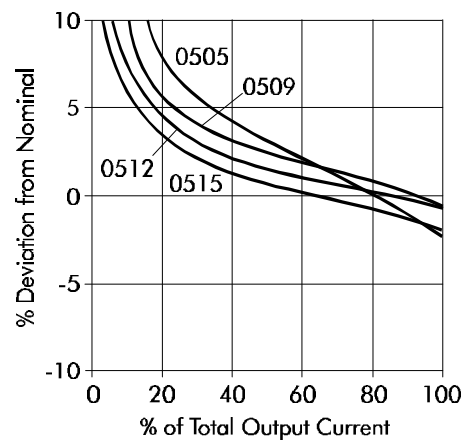
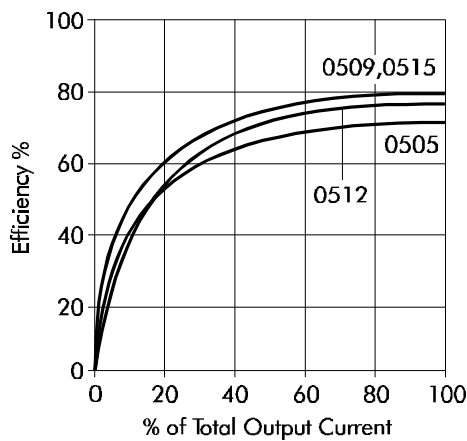
Part Number	Output Voltage (V)			
	05	09	12	15
NMA03XXX	23	25	21	23
NMA05XXX	18	25	26	32
NMA12XXX	33	40	57	60
NMA24XXX	39	50	65	95
NMA48XXX	26	38	52	56

typical characteristics

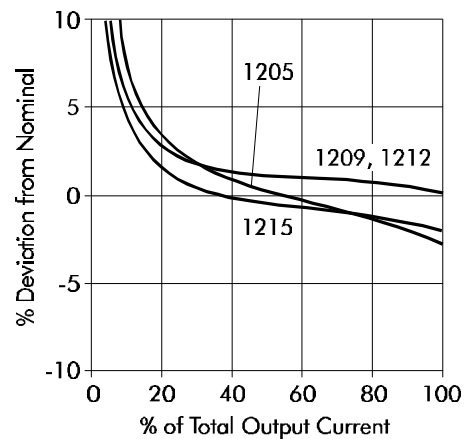
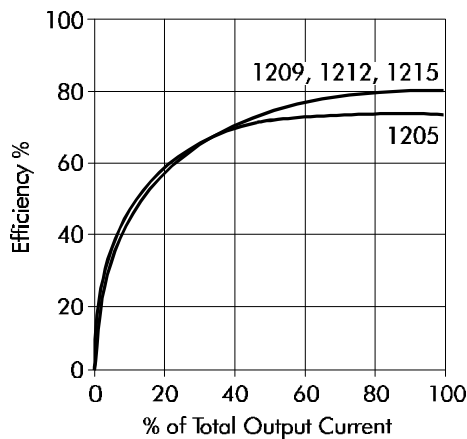
NMA03 series



NMA05 series



NMA12 series



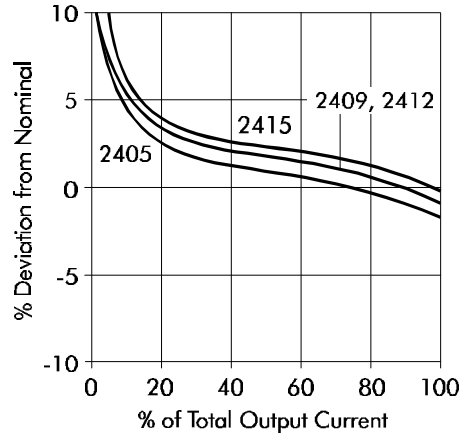
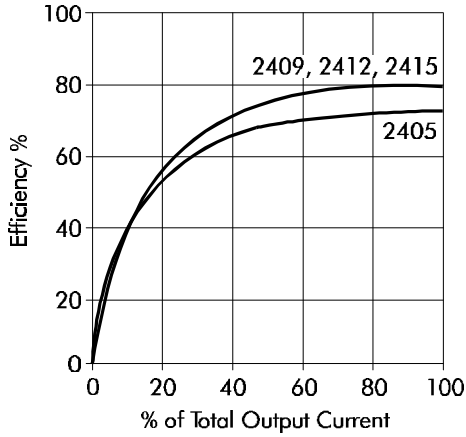
Note : All data taken at $T_A=25^{\circ}\text{C}$.

NMA SERIES

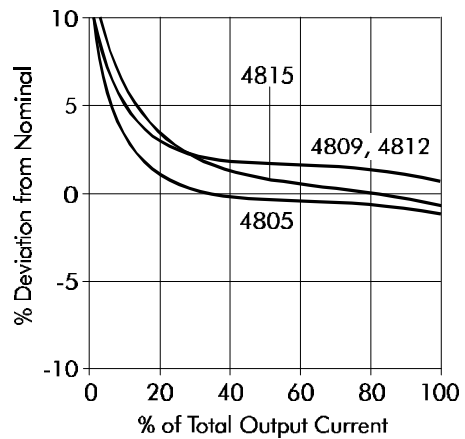
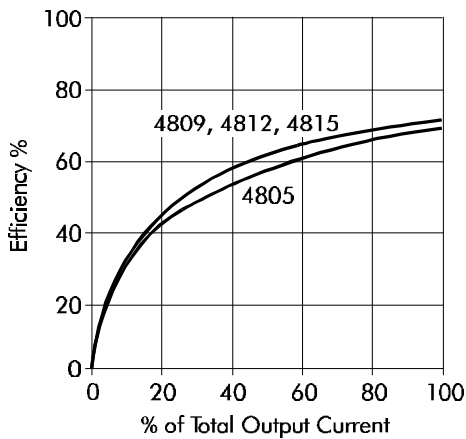
Isolated 1W Dual Output

typical characteristics

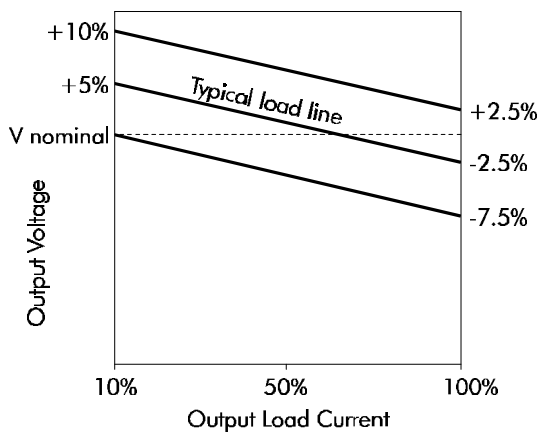
NMA24 series



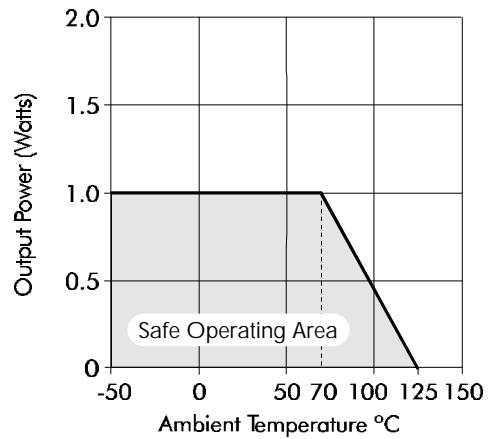
NMA48 series



tolerance envelope



temperature derating graph

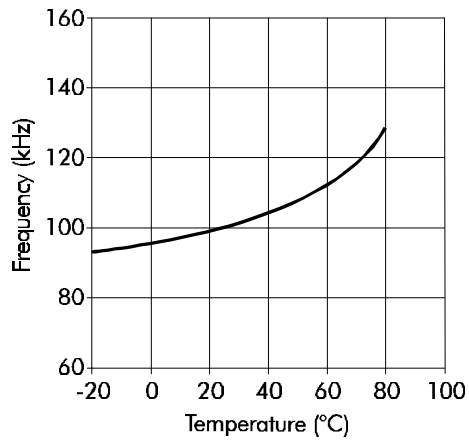


Note : All data taken at $T_A = 25^\circ\text{C}$.

See application notes on page 2-132

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

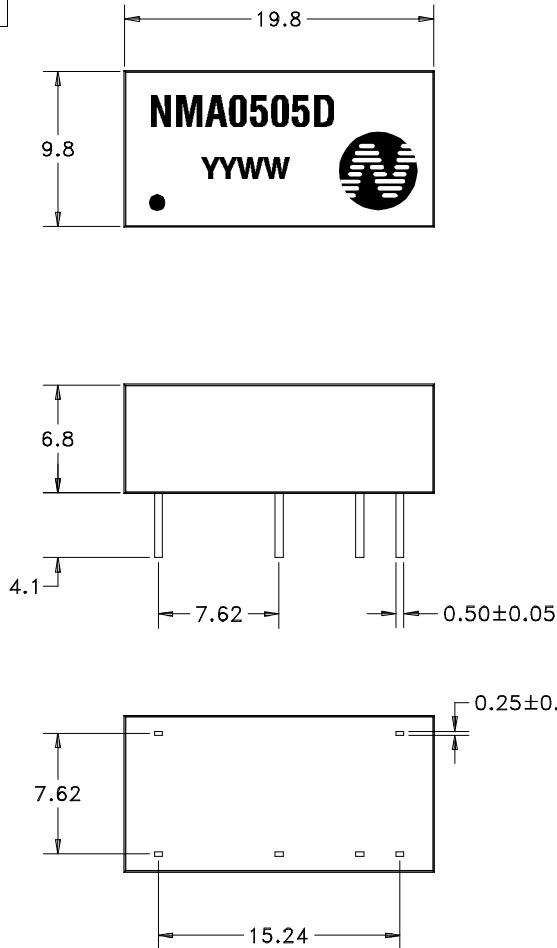
Part Number	-25°C	25°C	70°C
NMA0305	2182	1814	1501
NMA0309	819	701	603
NMA0312	403	347	303
NMA0315	219	189	166
NMA0505	1899	1614	1349
NMA0509	774	668	577
NMA0512	391	338	295
NMA0515	215	186	163
NMA1205	566	488	423
NMA1209	395	342	298
NMA1212	263	228	199
NMA1215	169	147	129
NMA2405	224	194	170
NMA2409	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.

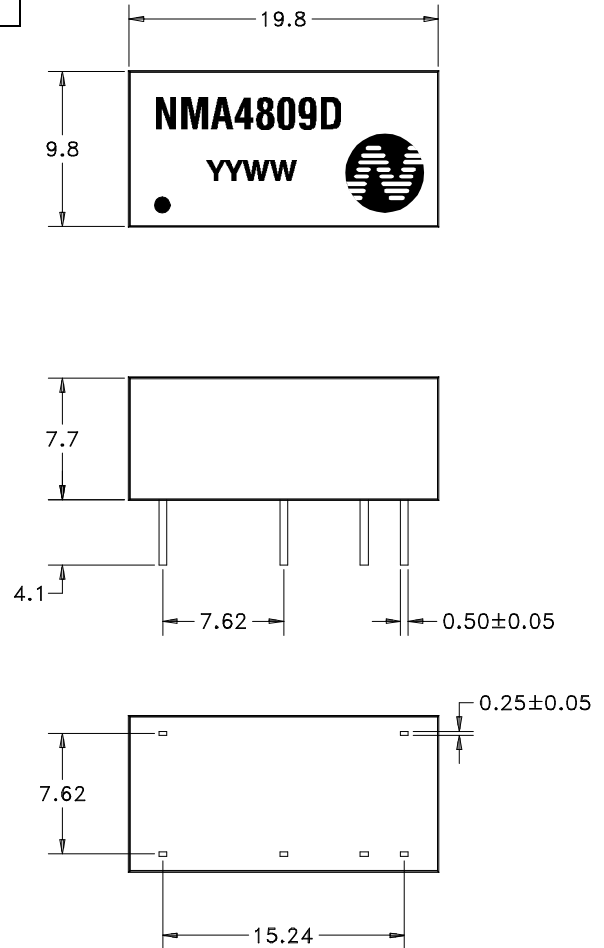
outline dimensions

14 Pin DIP package styles

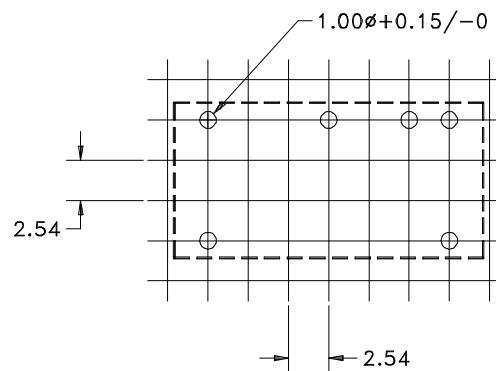
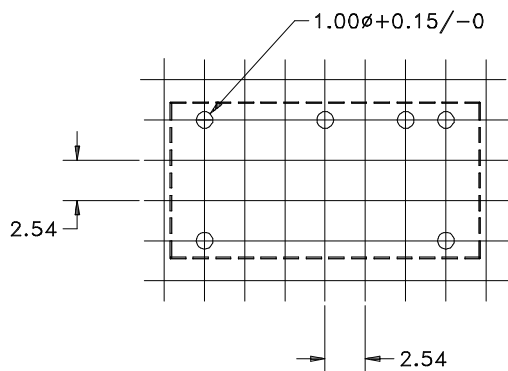
1



2



recommended footprint details



All pins on a 2.54mm pitch.

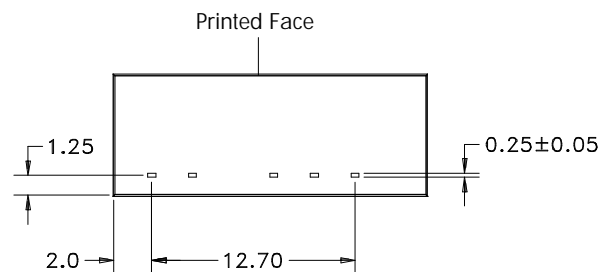
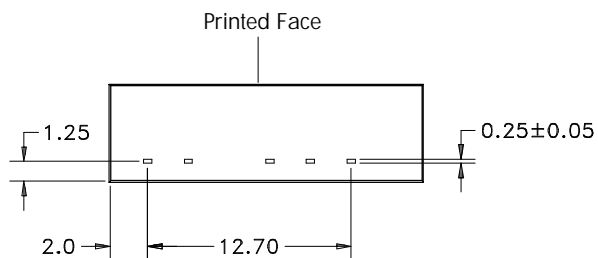
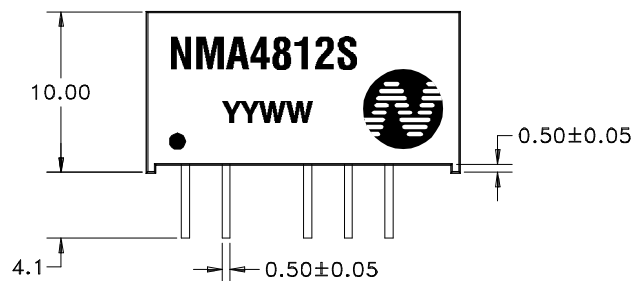
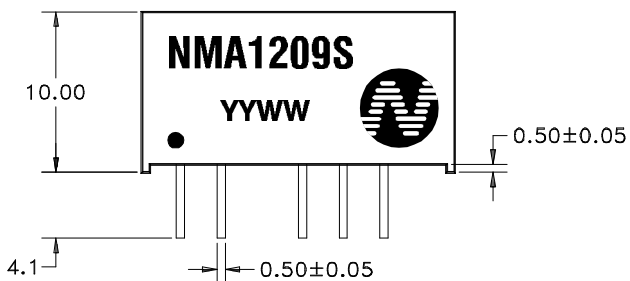
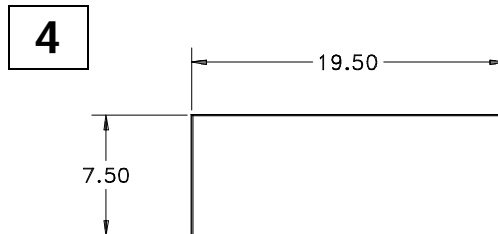
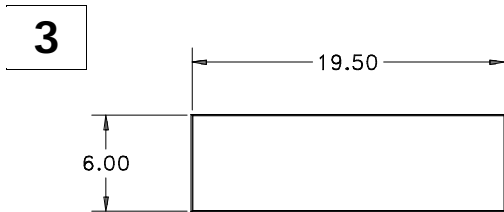
All dimensions in mm XX.X ±0.50, XX.XX ±0.25

NMA SERIES

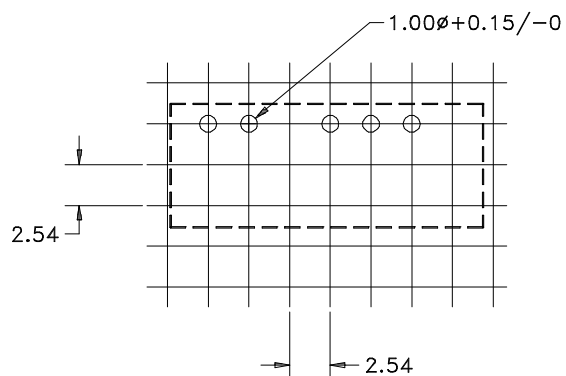
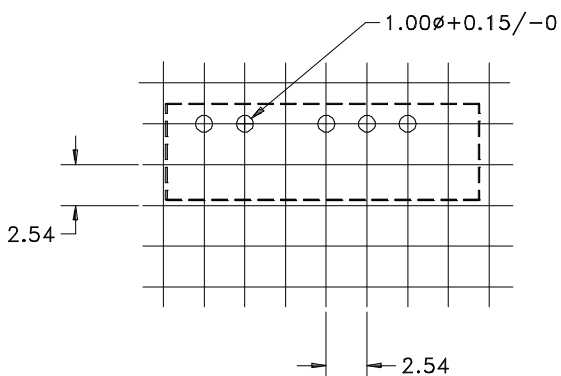
Isolated 1W Dual Output

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

