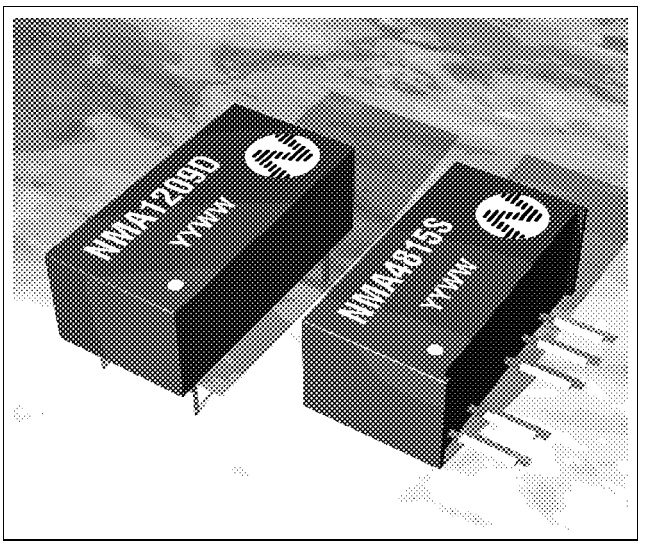
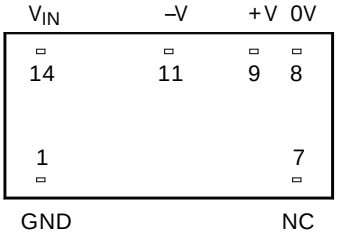
features

- 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^3
- 3.3V, 24V & 48V Input
- 5V, 9V, 12V and 15V Output
- Footprint from 1.17cm^2
- 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

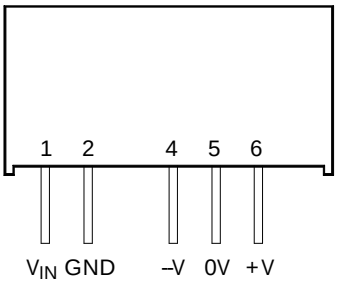


pin connections

14 Pin DIP (top view)



7 Pin SIP



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.

absolute maximum ratings over operating free air* temperature range

Input voltage V_{IN} NMA03 types 5V

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 $T_A = 25°C$, at nominal input voltage)

Input voltage range NMA03 types . . . . . 3.3V±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.
NMA24 type . . . . . 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. [1] See derating curve.

electrical specifications

(measured at T_A = 25°C, at nominal input voltage)

Temperature drift (V_{OUT}) . . . . . 0.03% per °C max.
Temperature rise above ambient at full load . . . . . 10°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 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	

selection guide

48V input types

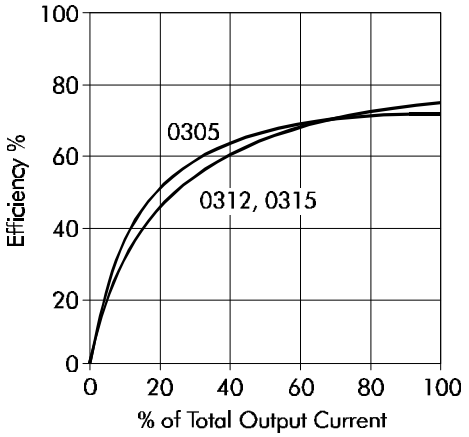
Part Number	Output Voltage (V)	Output Current Each Output (mA)	Package Style
NMA4805D	±5	100	2
NMA4809D	±9	56	
NMA4812D	±12	42	
NMA4815D	±15	34	
NMA4805S	±5	100	4
NMA4809S	±9	56	
NMA4812S	±12	42	
NMA4815S	±15	34	

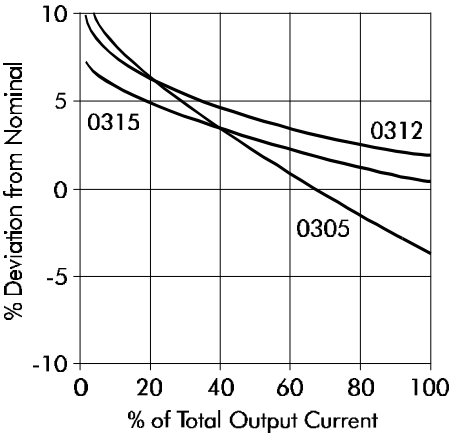
typical isolation capacitance (pF)

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

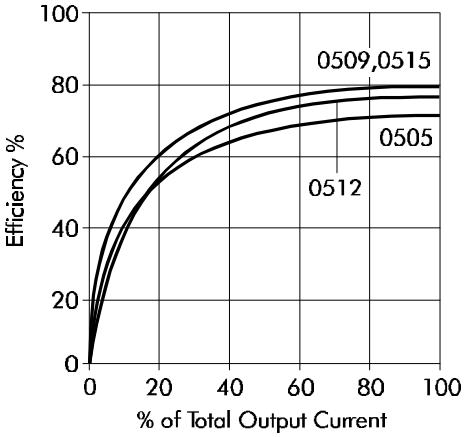
typical characteristics

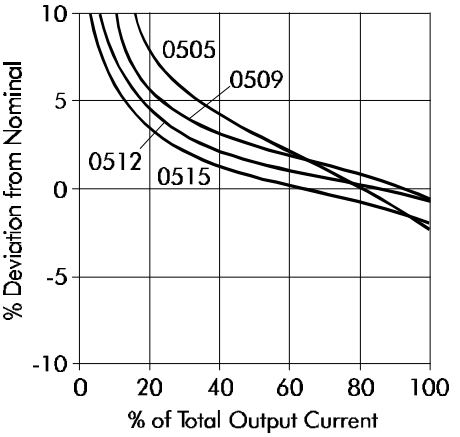
NMA03 series



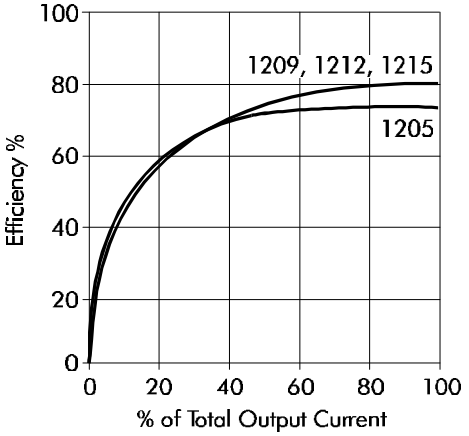


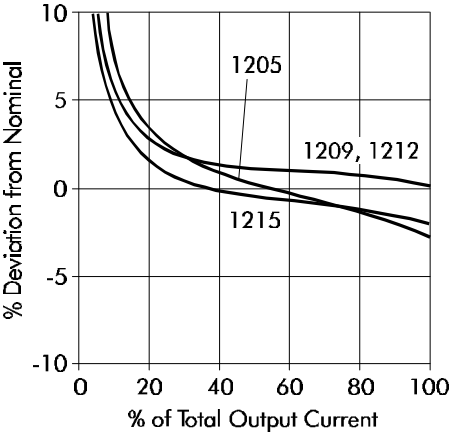
NMA05 series





NMA12 series

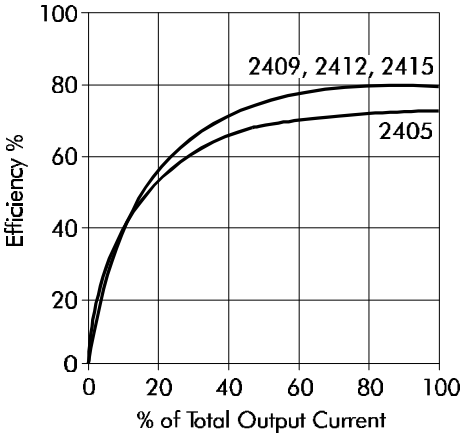


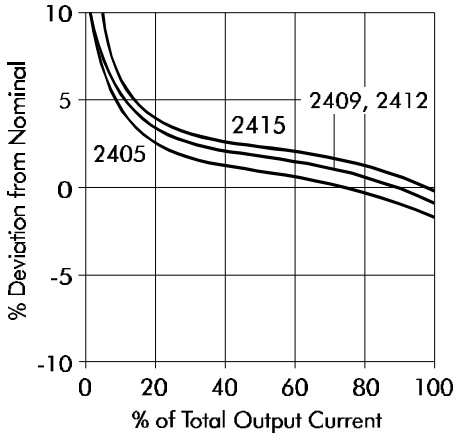


Note : All data taken at $T_A = 25°C$.

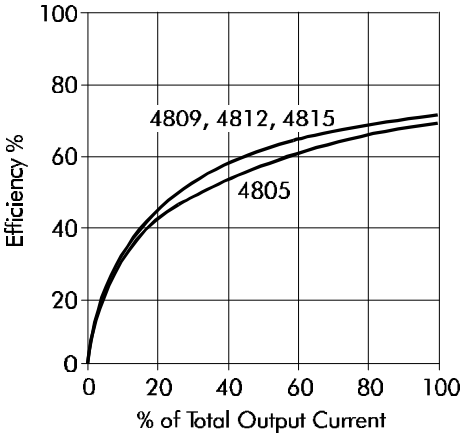
typical characteristics

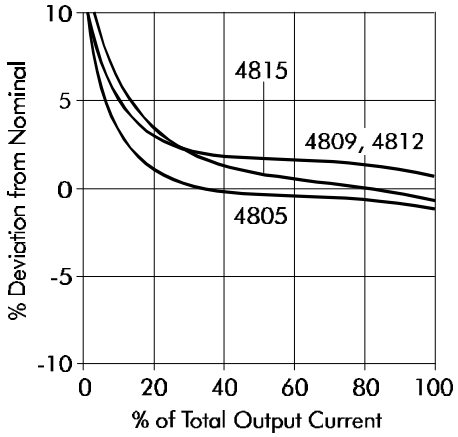
NMA24 series



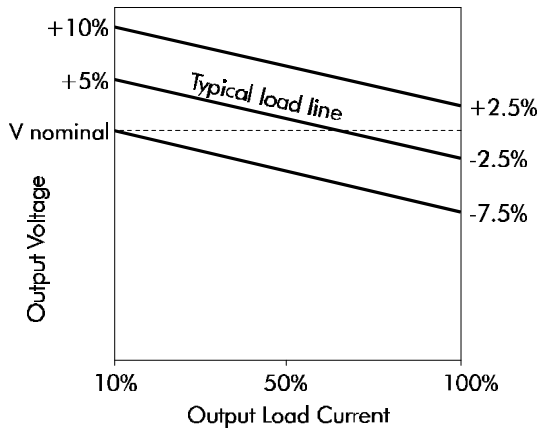


NMA48 series

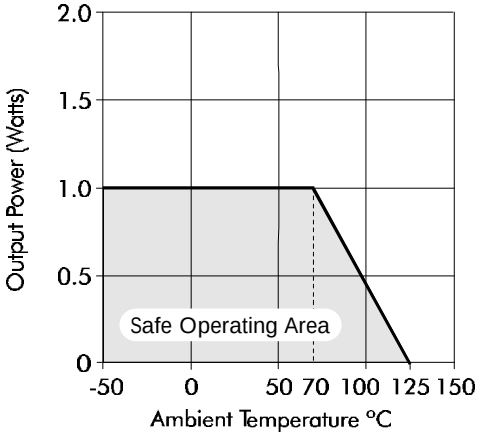




tolerance envelope



temperature derating graph

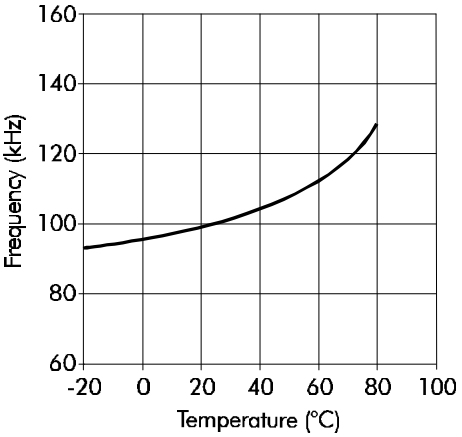


See application notes on page 2-132

Note : All data taken at $T_A = 25°C$.

typical characteristics

temperature test (under full load)



Note : All data taken at $T_A = 25°C$.

mean time to failure (MTTF) in thousands of hours

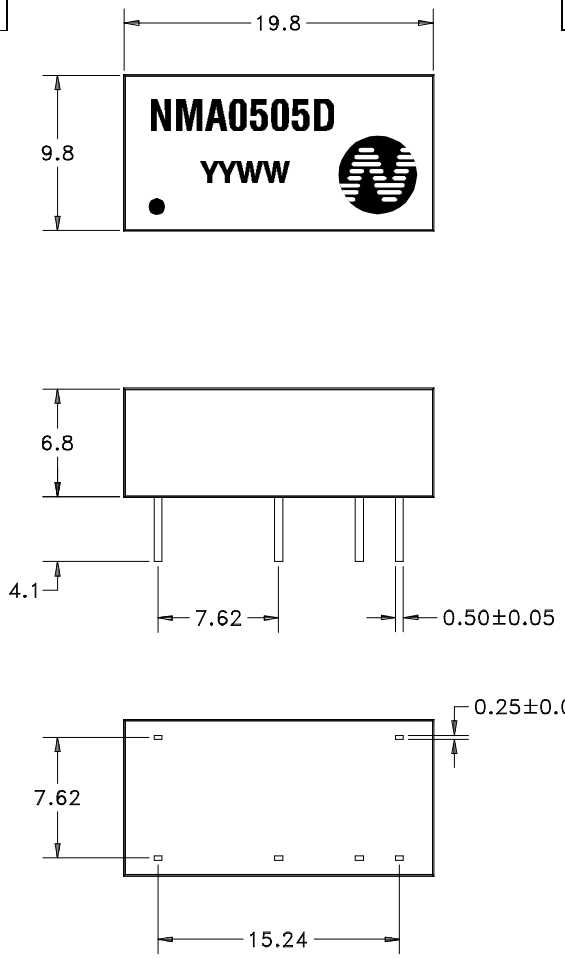
Part Number	–25°C	25°C	70°C
NMA0305	2182	1814	1501
NMA0309	819	701	603
NMA0312	403	347	303
NMA0315	219	189	166
NMA0505	1899	1614	1349
NMA0509	774	668	577
NMA0512	391	338	295
NMA0515	215	186	163
NMA1205	566	488	423
NMA1209	395	342	298
NMA1212	263	228	199
NMA1215	169	147	129
NMA2405	224	194	170
NMA2409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

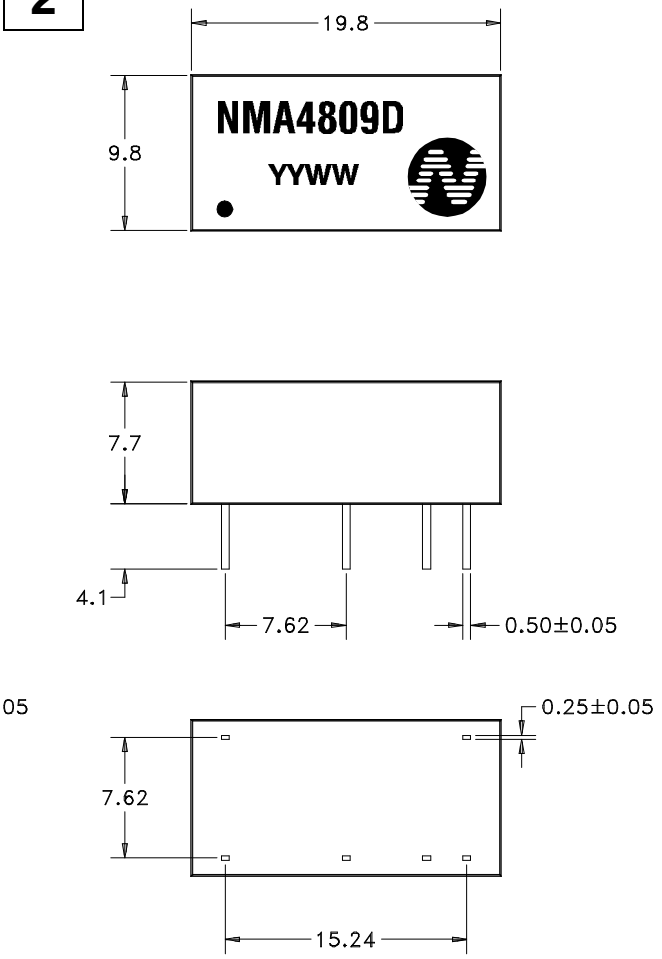
outline dimensions

14 Pin DIP package styles

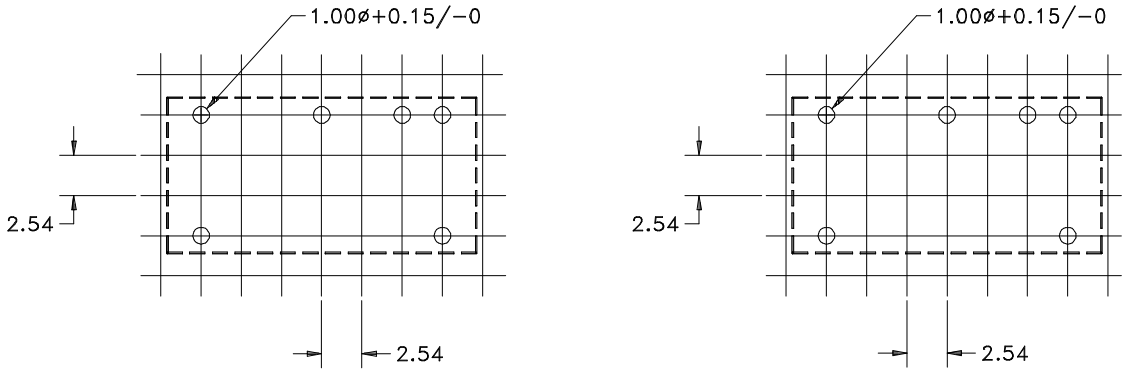
1



2



recommended footprint details



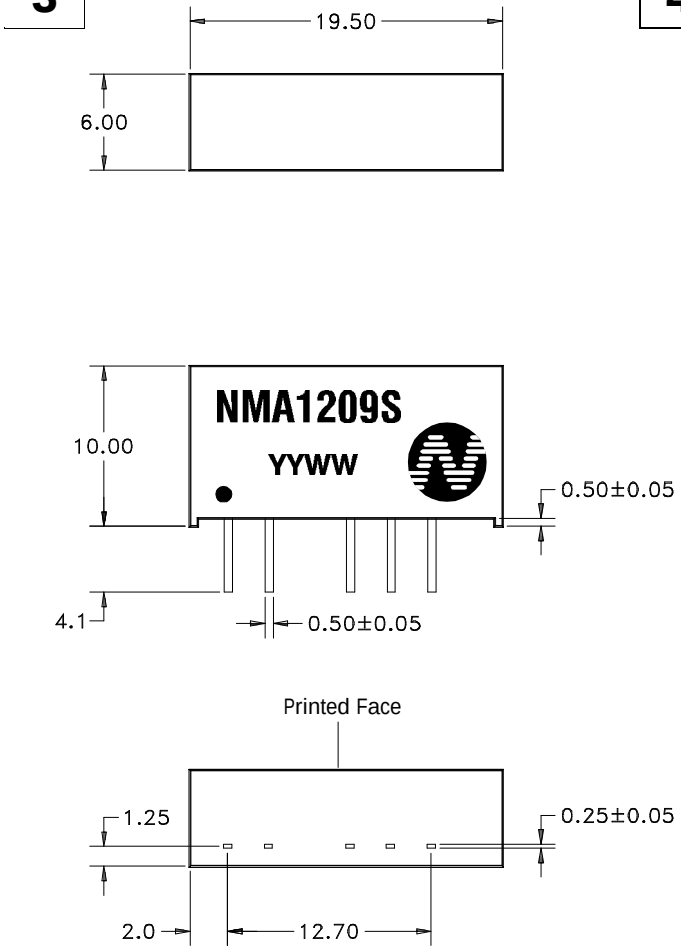
All pins on a 2.54mm pitch.

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

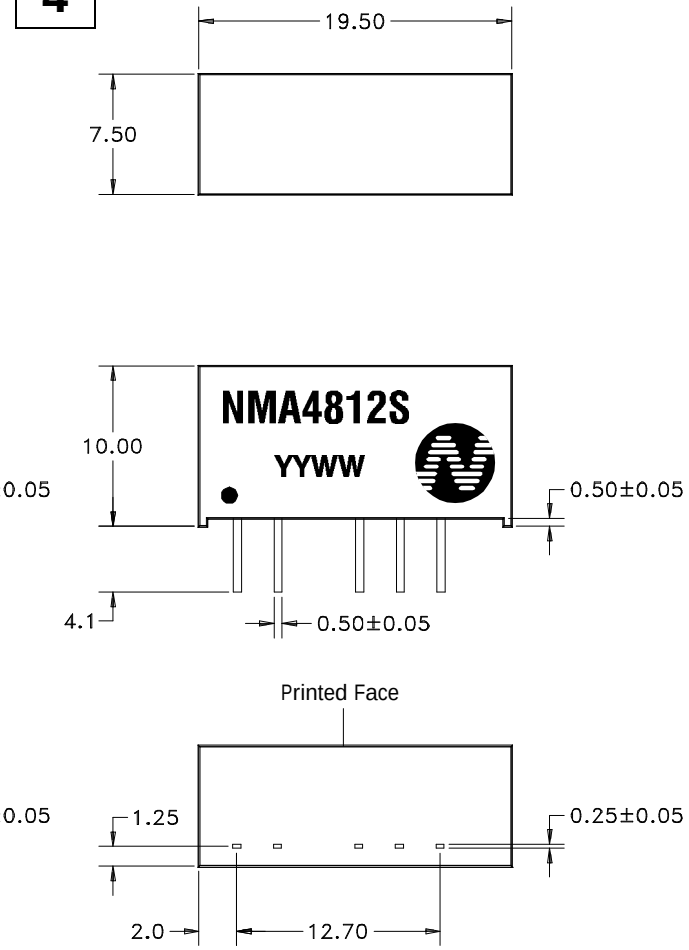
outline dimensions

7 Pin SIP package styles

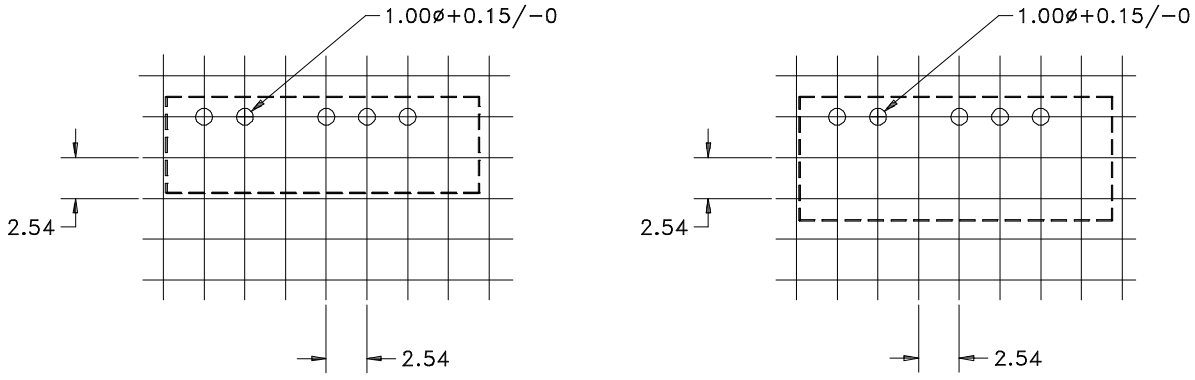
3



4



recommended footprint details



All pins on a 2.54mm pitch.

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