

### Features

- Fully encapsulated
- Low profile
- High dielectric strength
- Ten models available
- Ex stock
- Competitively priced
- RoHS compliant\*

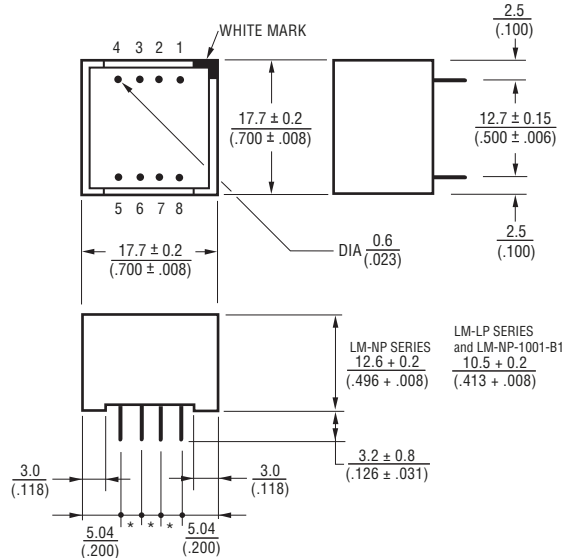
### Applications

- Line matching
- Fax modem

**BOURNS®**

## LM-NP/-LP 1000 Series - Line Matching Transformers

### Product Dimensions



\*pitch = 1/10" = 2.54 (.100) (for number of pins see pin assignment)

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

### Note

The LM-NP/-LP-1000 Series Line Matching Transformers meet the return loss specifications of BS 6305.

It is important, however, to use the circuit recommended by BS 6305 for return loss measurements.

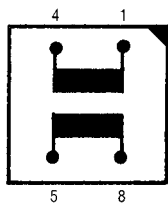
The LM-NP-1000 Series are EN 41003 approved.

### How To Order

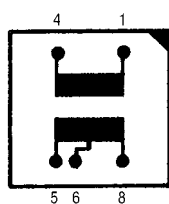
Model LM-xP-100x0xx L  
 Termination \_\_\_\_\_  
 L = Tin only (RoHS Compliant)

### Pin Assignment and Winding Configurations (Bottom View)

LM-NP-1001-B1L  
LM-LP-1001L

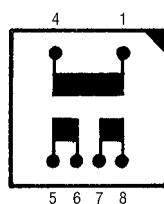


LM-NP-1002L  
LM-LP-1002L



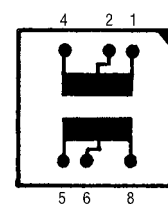
one-winding  
center-tapped\*

LM-NP-1003L  
LM-LP-1003L



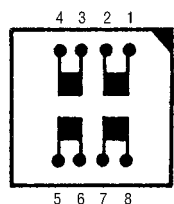
one winding  
split\*

LM-NP-1004L  
LM-LP-1004L



both windings  
center-tapped

LM-NP-1005L  
LM-LP-1005L



both windings  
split

\* Due to the unique design and the most advanced manufacturing techniques the 2 coils are fully identical, meaning there is no real primary nor secondary winding. Depending on the application, the transformers can be used either way.



**WARNING Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including Annex.  
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# LM-NP/-LP 1000 Series - Line Matching Transformers

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## Part Numbers And Specifications

| Parameters                                 | Unit  | LM-NP<br>1001-B1L | LM-NP<br>1002L                     | LM-NP<br>1003L          | LM-NP<br>1004L                       | LM-NP<br>1005L                    | LM-LP<br>1001L   | LM-LP<br>1002L                     | LM-LP<br>1003L          | LM-LP<br>1004L                       | LM-LP<br>1005L            |                  |
|--|---|-------------------|------------------------------------|-------------------------|--------------------------------------|-----------------------------------|------------------|------------------------------------|-------------------------|--------------------------------------|---------------------------|------------------|
| Ref. Temperature Data                      | °C  | 25                | 25                                 | 25                      | 25                                   | 25                                | 25               | 25                                 | 25                      | 25                                   | 25                        |                  |
| Impedance<br>(min./at 1.0 kHz)             | Primary   | Ω                 | 600                                | 600                     | 600                                  | 600<br>(150, 150)                 | 600<br>(150+150) | 600                                | 600                     | 600                                  | 600<br>(150, 150)         | 600<br>(150+150) |
|  | Secondary   | Ω                 | 600                                | 600<br>(150,150)        | 600<br>(150+150)                     | 600<br>(150,150)                  | 600<br>(150+150) | 600                                | 600<br>(150,150)        | 600<br>(150+150)                     | 600<br>(150,150)          | 600<br>(150+150) |
| Inductance<br>(min./at 0.2 kHz)            | Primary   | H                 | 2.8                                | 2.8                     | 2.8                                  | 2.8<br>(0.7, 0.7)                 | 2.8<br>(0.7+0.7) | 2.8                                | 2.8                     | 2.8                                  | 2.8<br>(0.7, 0.7)         | 2.8<br>(0.7+0.7) |
|  | Secondary   | H                 | 2.8                                | 2.8<br>(0.7, 0.7)       | 2.8<br>(0.7+0.7)                     | 2.8<br>(0.7, 0.7)                 | 2.8<br>(0.7+0.7) | 2.8                                | 2.8<br>(0.7, 0.7)       | 2.8<br>(0.7+0.7)                     | 2.8<br>(0.7, 0.7)         | 2.8<br>(0.7+0.7) |
| DC-Resistance<br>(typical/±10 %)           | Primary   | Ω                 | 66                                 | 66                      | 66                                   | 66<br>(33,33)                     | 66<br>(33+33)    | 90                                 | 90                      | 90                                   | 90<br>(45,45)             | 90<br>(45+45)    |
|  | Secondary   | Ω                 | 66                                 | 66<br>(33,33)           | 66<br>(33+33)                        | 66<br>(33,33)                     | 66<br>(33+33)    | 90                                 | 90<br>(45,45)           | 90<br>(45+45)                        | 90<br>(45,45)             | 90<br>(45+45)    |
| Turns Ratio (± 2 %)                        | —   | 1:1               | 1:1                                | 1:1                     | 1:1                                  | 1:1                               | 1:1              | 1:1                                | 1:1                     | 1:1                                  | 1:1                       |                  |
| Winding Configurations                     | —   | —                 | one<br>winding<br>center<br>tapped | one<br>winding<br>split | both<br>windings<br>center<br>tapped | both<br>windings<br>split         | —                | one<br>winding<br>center<br>tapped | one<br>winding<br>split | both<br>windings<br>center<br>tapped | both<br>windings<br>split |                  |
| Insertion Loss (at 2.0 kHz)                | dB  | ≤ 1.5             |                                    |                         |                                      |                                   | ≤ 2.0            |                                    |                         |                                      |                           |                  |
| Return Loss                                | Transformer<br>(0.2 - 4.0 kHz)<br>In Networks   | ≥ 10.0            |                                    |                         |                                      |                                   | ≥ 8.0            |                                    |                         |                                      |                           |                  |
|  |   | ≥ 21.0            |                                    |                         |                                      |                                   | ≥ 20.0           |                                    |                         |                                      |                           |                  |
| Shunt Loss (typical)                       | kΩ  | 9.0               |                                    |                         |                                      |                                   | 9.0              |                                    |                         |                                      |                           |                  |
| Frequency Response<br>(typ./0.2 - 3.5 kHz) | dB  | - 0.3             |                                    |                         |                                      |                                   | - 0.5            |                                    |                         |                                      |                           |                  |
| Wide Band Response<br>(0.2 - 10.0 kHz)     | dB  | -2.5              |                                    |                         |                                      |                                   | -4.5             |                                    |                         |                                      |                           |                  |
| Power Level                                | dBm   | - 45.0 to + 3.0   |                                    |                         |                                      |                                   | - 43.0 to + 3.0  |                                    |                         |                                      |                           |                  |
| Longitudinal Balance<br>(0.3 - 4.0 kHz)    | dB  | -80.0             |                                    |                         |                                      |                                   | - 70.0           |                                    |                         |                                      |                           |                  |
| Distortion (0 dB/at 1.0 kHz)               | %   | ≤ 0.1             |                                    |                         |                                      |                                   | ≤ 0.25           |                                    |                         |                                      |                           |                  |
| Leakage Induction (typical)                | mH  | 14.0              |                                    |                         |                                      |                                   | 14.0             |                                    |                         |                                      |                           |                  |
| Dielectric Strength (P/S)                  | kVDC  | 6.5               |                                    |                         |                                      |                                   | 6.5              |                                    |                         |                                      |                           |                  |
| Temperature<br>Range                       | Operation   | °C                |                                    |                         |                                      |                                   | -10 to +60       |                                    |                         |                                      |                           |                  |
|  | Storage   | °C                |                                    |                         |                                      |                                   | -20 to +70       |                                    |                         |                                      |                           |                  |
| Specifications Met                         | BS 6204: Construction and flammability (UL 94V0)<br>BS 6301: Isolation<br>BS 6305: Return loss (1982/paragraph 4.3.2.2/b) |                   |                                    |                         |                                      | CCITT: Rec. T/CD 1-1 (Sept. 1982) |                  |                                    |                         |                                      |                           |                  |

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REV. 05/11

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Users should verify actual device performance in their specific applications.

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