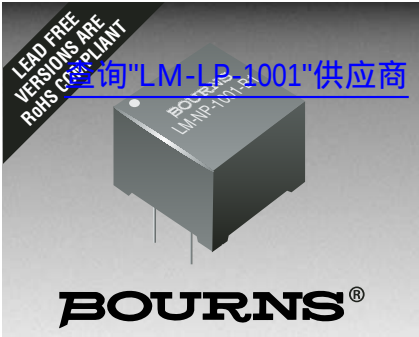




## Features

- Fully encapsulated
- Low profile
- High dielectric strength
- Ten models available
- Ex stock
- Competitively priced

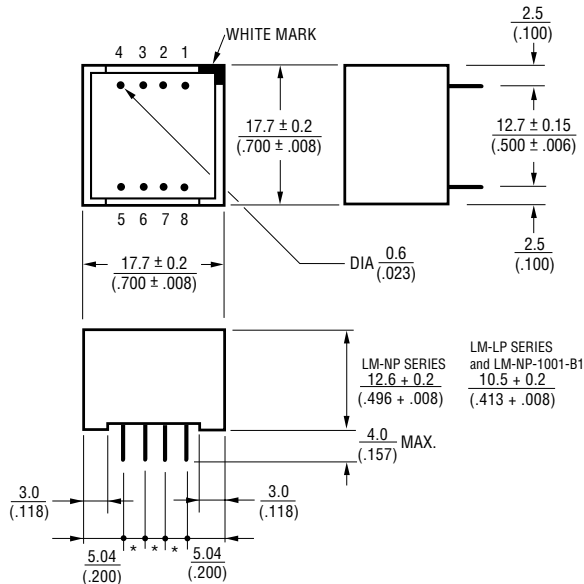
- Lead free version available (see How to Order)
- Lead free versions are RoHS compliant\*

## Applications

- Line matching
- Fax modem

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

## Product Dimensions



\*:pitch = 1/10 " = 2.54 (0.100) (for number of pins see pin assignment)

## 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.

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

## How to Order

**LM-xP-100x-xx**

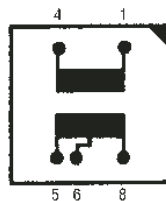
Model \_\_\_\_\_  
Termination \_\_\_\_\_  
Blank = Tin-lead  
L = Tin only (lead free)

## Pin Assignment and Winding Configurations (Bottom View)

LM-NP-1001-B1  
LM-LP-1001

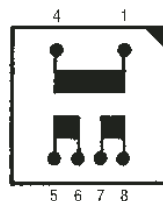


LM-NP-1002  
LM-LP-1002



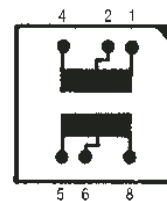
one-winding  
center-tapped\*

LM-NP-1003  
LM-LP-1003



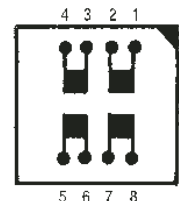
one winding  
split\*

LM-NP-1004  
LM-LP-1004



both windings  
center-tapped

LM-NP-1005  
LM-LP-1005



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.

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

# BOURNS®

## Part Numbers And Specifications

| Parameters                                                       |           | Unit                                                                                                                                                                   | LM-NP<br>1001-B1 | LM-NP<br>1002                      | LM-NP<br>1003           | LM-NP<br>1004                        | LM-NP<br>1005             | LM-LP<br>1001   | LM-LP<br>1002                      | LM-LP<br>1003           | LM-LP<br>1004                        | LM-LP<br>1005             |
|------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------|-------------------------|--------------------------------------|---------------------------|-----------------|------------------------------------|-------------------------|--------------------------------------|---------------------------|
| 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<br>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<br><br>Transformer<br>(0.2 - 4.0 kHz)<br>In Networks |           | dB                                                                                                                                                                     | ≥ 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 Range                                                | Operation | °C                                                                                                                                                                     | -10 to +60       |                                    |                         |                                      |                           | -10 to +60      |                                    |                         |                                      |                           |
|                                                                  | Storage   | °C                                                                                                                                                                     | -20 to +70       |                                    |                         |                                      |                           | -20 to +70      |                                    |                         |                                      |                           |
| Specifications Met                                               |           | BS 6204: Construction and flammability (UL 94 VO)<br>BS 6301: Isolation<br>BS 6305: Return loss (1982/paragraph 4.3.2.2/b)<br><br>CCITT: Rec. T/CD 1-1<br>(Sept. 1982) |                  |                                    |                         |                                      |                           |                 |                                    |                         |                                      |                           |