

**FEATURES**

- 7 Pin SIP Package
- 1000VDC I/O Isolation
- Single and Dual Outputs
- UL 94V-0 Package Material
- Up to 2 Watts Output Power
- Low Reflected Ripple Current
- Input: 3.3, 5, 12, 15, 24, and 48VDC
- Industrial Grade Temperature Option: -40°C to +85°C "I"
- 2 Watt models available (Add suffix "2" to the part number)

**DESCRIPTION**

When board space is at a premium and voltage conversions require low power, the LAN E series miniature converters offer superior solutions at an economical price. A multitude of options and operating ranges allow you to custom-tailor these converters to application requirements. Populating 0.179 or 0.516 square inches of board space, the LAN E series provides up to 2 Watts of power while maintaining specifications over the entire commercial operating temperature range.

**SPECIFICATIONS: LAN E Series**

*All specifications apply @ 25°C ambient unless otherwise noted*

**INPUT SPECIFICATIONS**

|                               |                              |
|-------------------------------|------------------------------|
| Input Voltage Range .....     | ±10%                         |
| Nominal Input Voltage.....    | 3.3, 5, 12, 15, 24, & 48 VDC |
| Input Voltage Tolerance ..... | ±5%                          |
| Input Filtering .....         | Low ESR Capacitors           |

**OUTPUT SPECIFICATIONS**

|                                        |                            |
|----------------------------------------|----------------------------|
| Output Voltage .....                   | see table                  |
| Voltage Tolerance.....                 | ±5% (nom. Line, 100% load) |
| Output Current .....                   | see table                  |
| Output Power .....                     | 1 watt max.                |
| Line Regulation (10% to 100% FL) ..... | ±1.2% / 1% of Vin          |
| Load Regulation (10% to 100% FL)       |                            |
| 5V output .....                        | 15% max                    |
| 9, 12, and 15V outputs.....            | 10% max                    |
| Ripple/Noise (20 MHz BW)               |                            |
| 3.3 and 48V input models .....         | 150mVp-p max.              |
| 5, 12, 15, and 24V input models .....  | 100mVp-p max.              |

**PROTECTION SPECIFICATIONS**

|                                |            |
|--------------------------------|------------|
| Short Circuit Protection. .... | Short term |
|--------------------------------|------------|

**GENERAL SPECIFICATIONS**

|                                           |                      |
|-------------------------------------------|----------------------|
| Efficiency .....                          | 70% typ.             |
| Switching Frequency .....                 | 100KHz typ.          |
| Isolation Voltage (Input to Output) ..... | 1000VDC min.         |
| Isolation Resistance.....                 | 1000MΩ min. @ 500VDC |

**ENVIRONMENTAL SPECIFICATIONS**

|                                             |                         |
|---------------------------------------------|-------------------------|
| Operating Temperature ( <i>See Note 1</i> ) |                         |
| Standard.....                               | 0°C ~ +70°C             |
| "I" suffix .....                            | -40°C ~ +85°C           |
| Storage Temperature.....                    | -40°C ~ +100°C          |
| Cooling .....                               | Free air convection     |
| MTBF .....                                  | See MTBF chart (page 3) |

**PHYSICAL SPECIFICATIONS**

|                                              |                                            |
|----------------------------------------------|--------------------------------------------|
| Dimensions (L x W x H) ( <i>See Note 5</i> ) |                                            |
| 3.3~24V input models ....                    | 0.77 x 0.24 x 0.39 in (19.5 x 6 x 10 mm)   |
| 48V input model .....                        | 0.77 x 0.30 x 0.39 in (19.5 x 7.5 x 10 mm) |
| Case Material.....                           | Non-Conductive black plastic               |
| Potting material.....                        | Epoxy (UL94-V0)                            |

*Due to advances in technology, specifications subject to change without notice*

**NOTES**

1. For industrial grade operating temperature of -40°C to +85°C add the suffix "I" to the part number.
2. All case and pin-to-case measurements for reference only unless otherwise noted.
3. For 2 watt models, add suffix "2" to the part number and increase the width from 0.24" to 0.30" (6mm to 7.5mm).
4. 2 Watt models are not available with 48V input.
5. Dimensions of 3.3, 5, 12, 15, and 24V input models are 0.77 x 0.24 x 0.39 inches (19.5 x 6 x 10 mm). The dimensions of the 48V input models and the 2 watt models are 0.77 x 0.30 x 0.39 inches (19.5 x 7.5 x 10 mm).



Wall Industries, Inc.

Rev B

LAN E Series  
Up to 2 Watts  
DC/DC Converter  
Single and Dual Output

## MODEL SELECTION TABLES

### SINGLE OUTPUT MODELS

| Model Number | Input Voltage                | Output Voltage | Output Current |               | Efficiency (Typ.) |
|--------------|------------------------------|----------------|----------------|---------------|-------------------|
|              |                              |                | 1 Watt Models  | 2 Watt Models |                   |
| LANE3.305N   | 3.3 VDC<br>(2.97 ~ 3.63 VDC) | 5 VDC          | 200 mA         | 400 mA        | 70%               |
| LANE3.309N   |                              | 9 VDC          | 112 mA         | 224 mA        | 75%               |
| LANE3.312N   |                              | 12 VDC         | 84 mA          | 167 mA        | 75%               |
| LANE3.315N   |                              | 15 VDC         | 67 mA          | 132 mA        | 75%               |
| LANE505N     | 5 VDC<br>(4.95 ~ 5.5 VDC)    | 5 VDC          | 200 mA         | 400 mA        | 70%               |
| LANE509N     |                              | 9 VDC          | 112 mA         | 224 mA        | 75%               |
| LANE512N     |                              | 12 VDC         | 84 mA          | 167 mA        | 75%               |
| LANE515N     |                              | 15 VDC         | 67 mA          | 132 mA        | 75%               |
| LANE1205N    | 12 VDC<br>(10.8 ~ 13.2 VDC)  | 5 VDC          | 200 mA         | 400 mA        | 70%               |
| LANE1209N    |                              | 9 VDC          | 112 mA         | 224 mA        | 75%               |
| LANE1212N    |                              | 12 VDC         | 84 mA          | 167 mA        | 75%               |
| LANE1215N    |                              | 15 VDC         | 67 mA          | 132 mA        | 75%               |
| LANE1505N    | 15 VDC<br>(13.5 ~ 16.5 VDC)  | 5 VDC          | 200 mA         | 400 mA        | 70%               |
| LANE1509N    |                              | 9 VDC          | 112 mA         | 224 mA        | 75%               |
| LANE1512N    |                              | 12 VDC         | 84 mA          | 167 mA        | 75%               |
| LANE1515N    |                              | 15 VDC         | 67 mA          | 132 mA        | 75%               |
| LANE2405N    | 24 VDC<br>(21.6 ~ 26.4 VDC)  | 5 VDC          | 200 mA         | 400 mA        | 70%               |
| LANE2409N    |                              | 9 VDC          | 112 mA         | 224 mA        | 75%               |
| LANE2412N    |                              | 12 VDC         | 84 mA          | 167 mA        | 75%               |
| LANE2415N    |                              | 15 VDC         | 67 mA          | 132 mA        | 75%               |
| LANE4805N    | 48 VDC<br>(43.2 ~ 52.8 VDC)  | 5 VDC          | 200 mA         | -             | 70%               |
| LANE4809N    |                              | 9 VDC          | 112 mA         | -             | 75%               |
| LANE4812N    |                              | 12 VDC         | 84 mA          | -             | 75%               |
| LANE4815N    |                              | 15 VDC         | 67 mA          | -             | 75%               |

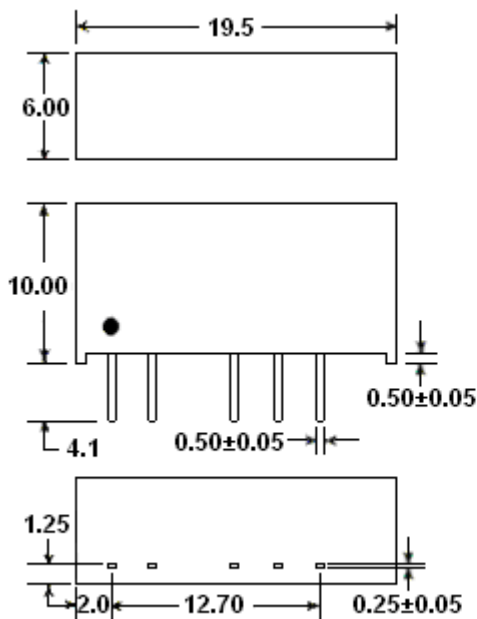
### DUAL OUTPUT MODELS

| Model Number | Input Voltage                | Output Voltage | Output Current |               | Efficiency (Typ.) |
|--------------|------------------------------|----------------|----------------|---------------|-------------------|
|              |                              |                | 1 Watt Models  | 2 Watt Models |                   |
| LANE3.305ND  | 3.3 VDC<br>(2.97 ~ 3.63 VDC) | ±5 VDC         | ±100 mA        | ±200 mA       | 70%               |
| LANE3.309ND  |                              | ±9 VDC         | ±56 mA         | ±111 mA       | 75%               |
| LANE3.312ND  |                              | ±12 VDC        | ±42 mA         | ±83 mA        | 75%               |
| LANE3.315ND  |                              | ±15 VDC        | ±34 mA         | ±67 mA        | 75%               |
| LANE505ND    | 5 VDC<br>(4.95 ~ 5.5 VDC)    | ±5 VDC         | ±100 mA        | ±200 mA       | 70%               |
| LANE509ND    |                              | ±9 VDC         | ±56 mA         | ±111 mA       | 75%               |
| LANE512ND    |                              | ±12 VDC        | ±42 mA         | ±83 mA        | 75%               |
| LANE515ND    |                              | ±15 VDC        | ±34 mA         | ±67 mA        | 75%               |
| LANE515ND1.2 |                              | ±15 VDC        | ±40 mA         | -             | 75%               |
| LANE1205ND   | 12 VDC<br>(10.8 ~ 13.2 VDC)  | ±5 VDC         | ±100 mA        | ±200 mA       | 70%               |
| LANE1209ND   |                              | ±9 VDC         | ±56 mA         | ±111 mA       | 75%               |
| LANE1212ND   |                              | ±12 VDC        | ±42 mA         | ±83 mA        | 75%               |
| LANE1215ND   |                              | ±15 VDC        | ±34 mA         | ±67 mA        | 75%               |
| LANE1505ND   | 15 VDC<br>(13.5 ~ 16.5 VDC)  | ±5 VDC         | ±100 mA        | ±200 mA       | 70%               |
| LANE1509ND   |                              | ±9 VDC         | ±56 mA         | ±111 mA       | 75%               |
| LANE1512ND   |                              | ±12 VDC        | ±42 mA         | ±83 mA        | 75%               |
| LANE1515ND   |                              | ±15 VDC        | ±34 mA         | ±67 mA        | 75%               |
| LANE2405ND   | 24 VDC<br>(21.6 ~ 26.4 VDC)  | ±5 VDC         | ±100 mA        | ±200 mA       | 70%               |
| LANE2409ND   |                              | ±9 VDC         | ±56 mA         | ±111 mA       | 75%               |
| LANE2412ND   |                              | ±12 VDC        | ±42 mA         | ±83 mA        | 75%               |
| LANE2415ND   |                              | ±15 VDC        | ±34 mA         | ±67 mA        | 75%               |
| LANE4805ND   | 48 VDC<br>(43.2 ~ 52.8 VDC)  | ±5 VDC         | ±100 mA        | -             | 70%               |
| LANE4809ND   |                              | ±9 VDC         | ±56 mA         | -             | 75%               |
| LANE4812ND   |                              | ±12 VDC        | ±42 mA         | -             | 75%               |
| LANE4815ND   |                              | ±15 VDC        | ±34 mA         | -             | 75%               |

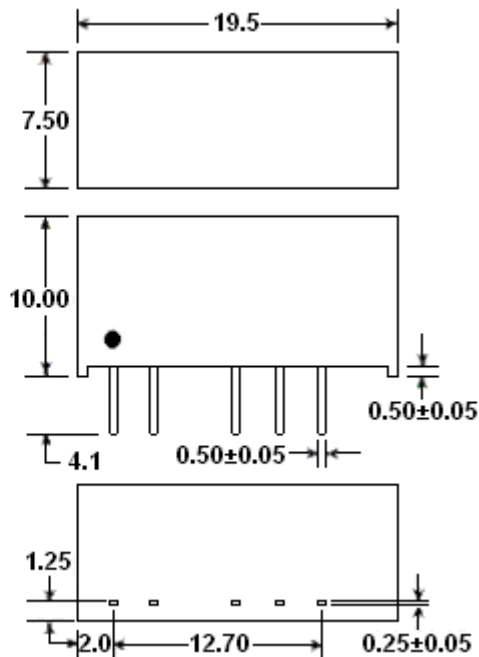
## MECHANICAL DRAWING

Unit: mm

3.3, 5, 12, 15, & 24V Input Models



48V Input Models & 2 Watt models



| PIN CONNECTIONS |                                   |                                  |              |
|-----------------|-----------------------------------|----------------------------------|--------------|
| PIN             | 3.3, 5, 12, 15 & 24V Input Models | 48V Input Models & 2 Watt Models | Dual Outputs |
| 1               | +INPUT                            | +INPUT                           | +INPUT       |
| 2               | -INPUT                            | -INPUT                           | -INPUT       |
| 4               | -OUTPUT                           | -OUTPUT                          | -OUTPUT      |
| 5               | NC                                | NC                               | COMMON       |
| 6               | +OUTPUT                           | +OUTPUT                          | +OUTPUT      |

| MTBF for LAN "E" SERIES, MIL217F                             |                             |               |         |         |         |
|--------------------------------------------------------------|-----------------------------|---------------|---------|---------|---------|
| Failure rate and MTBF due to ambient temp. and load derating |                             |               |         |         |         |
| Ambient Temp.                                                | Failure Rate (FIT) MTBF (H) | Load Derating |         |         |         |
|                                                              |                             | 100%          | 75%     | 50%     | 25%     |
| 20°C                                                         | FIT                         | 1464          | 964     | 519     | 299     |
|                                                              | H                           | 683060        | 1037344 | 1926782 | 2344482 |
| 30°C                                                         | FIT                         | 2196          | 1446    | 779     | 449     |
|                                                              | H                           | 455373        | 691563  | 1283697 | 2227171 |
| 40°C                                                         | FIT                         | 3660          | 2410    | 1298    | 748     |
|                                                              | H                           | 273224        | 414937  | 770416  | 1336898 |
| 50°C                                                         | FIT                         | 5856          | 3856    | 2076    | 1196    |
|                                                              | H                           | 170765        | 259336  | 481695  | 836120  |
| 60°C                                                         | FIT                         | 8784          | 1784    | 3114    | 1194    |
|                                                              | H                           | 113843        | 172890  | 321130  | 657414  |
| 70°C                                                         | FIT                         | 12444         | 8194    | 4412    | 2542    |
|                                                              | H                           | 80360         | 122040  | 226655  | 393391  |

DERATING CURVE

