



FEATURES

- 3.3, 5, 9, 12, 15, 24, and 48VDC Nominal Input Voltages
- 1 Watt Output Power
- RoHS Compliant
- Unregulated Output Types
- Two Package Sizes Available
- DAP Case Material
- No External Components Required
- 5-Pin SIP Package
- High Efficiency up to 82%
- Internal SMD Construction
- Industry Standard Pinout

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. At the compact size of 0.77" x 0.24" x 0.39" or 0.77" x 0.28" x 0.39", the LAN E series provides 1 Watt of power while maintaining specifications over the entire industrial operating temperature range.

MODEL SELECTION TABLE

Single Output Models

| Model Number ⁽¹⁾ | Input Voltage Range | Output Voltage | | Output Current | | Efficiency | | Ripple & Noise | Output Power |
|-----------------------------|--------------------------|----------------|-----------|----------------|-----------|------------|-----------|----------------|--------------|
| | | Package 1 | Package 2 | Package 1 | Package 2 | Package 1 | Package 2 | | |
| LANE3.333N | 3.3VDC (2.97~3.63VDC) | 3.3VDC | - | 303mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE3.305N | | 5VDC | 5VDC | 200mA | 200mA | 70% | 70% | | |
| LANE3.309N | | 9VDC | 9VDC | 112mA | 112mA | 75% | 75% | | |
| LANE3.312N | | 12VDC | 12VDC | 84mA | 84mA | 78% | 78% | | |
| LANE3.315N | | 15VDC | 15VDC | 67mA | 67mA | 80% | 80% | | |
| LANE3.324N | | 24VDC | 24VDC | 42mA | 42mA | 82% | 82% | | |
| LANE533N | 5VDC (4.5~5.5VDC) | 3.3VDC | - | 303mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE505N | | 5VDC | 5VDC | 200mA | 200mA | 70% | 70% | | |
| LANE509N | | 9VDC | 9VDC | 112mA | 112mA | 75% | 75% | | |
| LANE512N | | 12VDC | 12VDC | 84mA | 84mA | 78% | 78% | | |
| LANE515N | | 15VDC | 15VDC | 67mA | 67mA | 80% | 80% | | |
| LANE524N | | 24VDC | 24VDC | 42mA | 42mA | 82% | 82% | | |
| LANE933N | 9VDC (8.1~9.9VDC) | 3.3VDC | - | 303mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE905N | | 5VDC | 5VDC | 200mA | 200mA | 70% | 70% | | |
| LANE909N | | 9VDC | 9VDC | 112mA | 112mA | 75% | 75% | | |
| LANE912N | | 12VDC | 12VDC | 84mA | 84mA | 78% | 78% | | |
| LANE915N | | 15VDC | 15VDC | 67mA | 67mA | 80% | 80% | | |
| LANE924N | | 24VDC | 24VDC | 42mA | 42mA | 82% | 82% | | |
| LANE1233N | 12VDC (10.8~13.2VDC) | 3.3VDC | - | 303mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE1205N | | 5VDC | 5VDC | 200mA | 200mA | 70% | 70% | | |
| LANE1209N | | 9VDC | 9VDC | 112mA | 112mA | 75% | 75% | | |
| LANE1212N | | 12VDC | 12VDC | 84mA | 84mA | 78% | 78% | | |
| LANE1215N | | 15VDC | 15VDC | 67mA | 67mA | 80% | 80% | | |
| LANE1224N | | 24VDC | 24VDC | 42mA | 42mA | 82% | 82% | | |
| LANE1533N | 15VDC (13.5~16.5VDC) | 3.3VDC | - | 303mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE1505N | | 5VDC | 5VDC | 200mA | 200mA | 70% | 70% | | |
| LANE1509N | | 9VDC | 9VDC | 112mA | 112mA | 75% | 75% | | |
| LANE1512N | | 12VDC | 12VDC | 84mA | 84mA | 78% | 78% | | |
| LANE1515N | | 15VDC | 15VDC | 67mA | 67mA | 80% | 80% | | |
| LANE1524N | | 24VDC | 24VDC | 42mA | 42mA | 82% | 82% | | |
| LANE2433N | 24VDC (21.6~26.4VDC) | 3.3VDC | - | 303mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE2405N | | 5VDC | 5VDC | 200mA | 200mA | 70% | 70% | | |
| LANE2409N | | 9VDC | 9VDC | 112mA | 112mA | 75% | 75% | | |
| LANE2412N | | 12VDC | 12VDC | 84mA | 84mA | 78% | 78% | | |
| LANE2415N | | 15VDC | 15VDC | 67mA | 67mA | 80% | 80% | | |
| LANE2424N | | 24VDC | 24VDC | 42mA | 42mA | 82% | 82% | | |
| LANE485NP | 48VDC (43.2~52.8VDC) | - | 5VDC | - | 200mA | - | 70% | 100mVp-p | 1 Watt |
| LANE489NP | | - | 9VDC | - | 112mA | - | 75% | | |
| LANE4812NP | | - | 12VDC | - | 84mA | - | 78% | | |
| LANE4815NP | | - | 15VDC | - | 67mA | - | 80% | | |
| LANE4824NP | | - | 24VDC | - | 42mA | - | 82% | | |

MODEL SELECTION TABLE
Dual Output Models

| Model Number ⁽¹⁾ | Input Voltage Range | Output Voltage | | Output Current | | Efficiency | | Ripple & Noise | Output Power |
|-----------------------------|--------------------------|----------------|-----------|----------------|-----------|------------|-----------|----------------|--------------|
| | | Package 1 | Package 2 | Package 1 | Package 2 | Package 1 | Package 2 | | |
| LANE3.333ND | 3.3VDC (2.97~3.63VDC) | ±3.3VDC | - | ±150mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE3.305ND | | ±5VDC | ±5VDC | ±100mA | ±100mA | 70% | 70% | | |
| LANE3.309ND | | ±9VDC | ±9VDC | ±56mA | ±56mA | 75% | 75% | | |
| LANE3.312ND | | ±12VDC | ±12VDC | ±42mA | ±42mA | 78% | 78% | | |
| LANE3.315ND | | ±15VDC | ±15VDC | ±34mA | ±34mA | 80% | 80% | | |
| LANE3.324ND | | ±24VDC | ±24VDC | ±21mA | ±21mA | 82% | 82% | | |
| LANE533ND | 5VDC (4.5~5.5VDC) | ±3.3VDC | - | ±150mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE505ND | | ±5VDC | ±5VDC | ±100mA | ±100mA | 70% | 70% | | |
| LANE509ND | | ±9VDC | ±9VDC | ±56mA | ±56mA | 75% | 75% | | |
| LANE512ND | | ±12VDC | ±12VDC | ±42mA | ±42mA | 78% | 78% | | |
| LANE515ND | | ±15VDC | ±15VDC | ±34mA | ±34mA | 80% | 80% | | |
| LANE524ND | | ±24VDC | ±24VDC | ±21mA | ±21mA | 82% | 82% | | |
| LANE933ND | 9VDC (8.1~9.9VDC) | ±3.3VDC | - | ±150mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE905ND | | ±5VDC | ±5VDC | ±100mA | ±100mA | 70% | 70% | | |
| LANE909ND | | ±9VDC | ±9VDC | ±56mA | ±56mA | 75% | 75% | | |
| LANE912ND | | ±12VDC | ±12VDC | ±42mA | ±42mA | 78% | 78% | | |
| LANE915ND | | ±15VDC | ±15VDC | ±34mA | ±34mA | 80% | 80% | | |
| LANE924ND | | ±24VDC | ±24VDC | ±21mA | ±21mA | 82% | 82% | | |
| LANE1233ND | 12VDC (10.8~13.2VDC) | ±3.3VDC | - | ±150mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE1205ND | | ±5VDC | ±5VDC | ±100mA | ±100mA | 70% | 70% | | |
| LANE1209ND | | ±9VDC | ±9VDC | ±56mA | ±56mA | 75% | 75% | | |
| LANE1212ND | | ±12VDC | ±12VDC | ±42mA | ±42mA | 78% | 78% | | |
| LANE1215ND | | ±15VDC | ±15VDC | ±34mA | ±34mA | 80% | 80% | | |
| LANE1224ND | | ±24VDC | ±24VDC | ±21mA | ±21mA | 82% | 82% | | |
| LANE1533ND | 15VDC (13.5~16.5VDC) | ±3.3VDC | - | ±150mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE1505ND | | ±5VDC | ±5VDC | ±100mA | ±100mA | 70% | 70% | | |
| LANE1509ND | | ±9VDC | ±9VDC | ±56mA | ±56mA | 75% | 75% | | |
| LANE1512ND | | ±12VDC | ±12VDC | ±42mA | ±42mA | 78% | 78% | | |
| LANE1515ND | | ±15VDC | ±15VDC | ±34mA | ±34mA | 80% | 80% | | |
| LANE1524ND | | ±24VDC | ±24VDC | ±21mA | ±21mA | 82% | 82% | | |
| LANE2433ND | 24VDC (21.6~26.4VDC) | ±3.3VDC | - | ±150mA | - | 70% | - | 100mVp-p | 1 Watt |
| LANE2405ND | | ±5VDC | ±5VDC | ±100mA | ±100mA | 70% | 70% | | |
| LANE2409ND | | ±9VDC | ±9VDC | ±56mA | ±56mA | 75% | 75% | | |
| LANE2412ND | | ±12VDC | ±12VDC | ±42mA | ±42mA | 78% | 78% | | |
| LANE2415ND | | ±15VDC | ±15VDC | ±34mA | ±34mA | 80% | 80% | | |
| LANE2424ND | | ±24VDC | ±24VDC | ±21mA | ±21mA | 82% | 82% | | |
| LANE485NDP | 48VDC (43.2~52.8VDC) | - | ±5VDC | - | ±100mA | - | 70% | 100mVp-p | 1 Watt |
| LANE489NDP | | - | ±9VDC | - | ±56mA | - | 75% | | |
| LANE4812NDP | | - | ±12VDC | - | ±42mA | - | 78% | | |
| LANE4815NDP | | - | ±15VDC | - | ±34mA | - | 80% | | |
| LANE4824NDP | | - | ±24VDC | - | ±21mA | - | 82% | | |

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

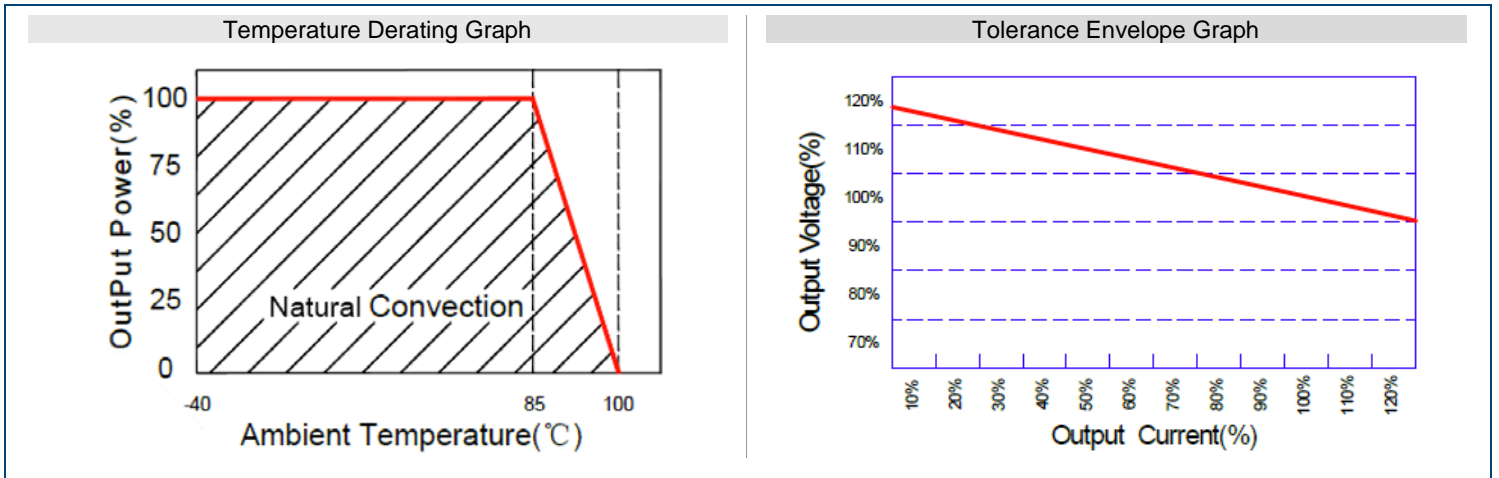
| SPECIFICATION | TEST CONDITIONS | Min | Typ | Max | Unit |
|-------------------------------------|-------------------------------------|--|--|----------|-------|
| INPUT SPECIFICATIONS | | | | | |
| Input Voltage Range | Vo, Io Nom | | | ±10 | % |
| Input Filter | | | Capacitor | | |
| OUTPUT SPECIFICATIONS | | | | | |
| Output Voltage | | | See Table | | |
| Voltage Tolerance | 100% Full Load | | | ±5 | % |
| Line Regulation | For 1% of Vin | | 1.2 | | % |
| Load Regulation | 10% to 100% Full Load | 3.3V & 5V output models 9V, 12V, 15V, 24V | | 15 10 | % |
| Output Power | | | See Table | | |
| Output Current | | | See Table | | |
| Ripple & Noise | BW=DC to 20MHz | | | 100 | mVp-p |
| Transient Response Setting Time | 50% load step change | | 350 | | µS |
| PROTECTION | | | | | |
| Short Circuit Protection | Short term | | | 1 | Sec |
| ENVIRONMENTAL SPECIFICATIONS | | | | | |
| Operating Ambient Temperature | | -40 | | +85 | °C |
| Humidity | Non-Condensing | | | 95 | % |
| Cooling | | | Free Air Convection | | |
| MTBF | MIL-HDBK-217F @25°C | 3,500,000 | | | Hours |
| GENERAL SPECIFICATIONS | | | | | |
| Efficiency ⁽²⁾ | | | See Table | | |
| Switching Frequency | Full Load, Nominal Input | | 100 | | KHz |
| Isolation Resistance | 500VDC | 1000 | | | MΩ |
| PHYSICAL SPECIFICATIONS | | | | | |
| Weight | Package 1 Package 2 ("P" suffix) | | 0.074oz (2.1g) 0.095oz (2.7g) | | |
| Dimensions (L x W x H) | Package 1 Package 2 ("P" suffix) | | 0.77in x 0.24in x 0.39in (19.5mm x 6mm x 10mm) 0.77in x 0.28in x 0.39in (19.5mm x 7.1mm x 10mm) | | |
| Case Material | | | DAP | | |
| SAFETY | | | | | |
| Safety Approvals | Single Outputs | | UL 60950 | | |

NOTES

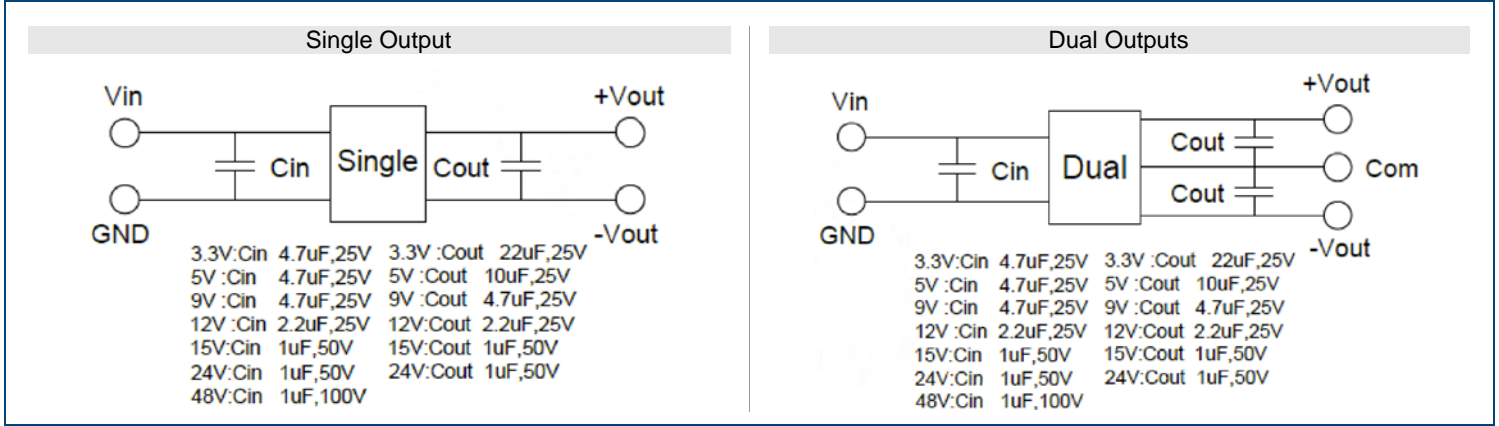
- (1) Add "P" to end of model number to indicate Package 2 type.
3.3VDC output voltage is only available for Package 1 type.
48VDC nominal input voltage models are only available for Package 2 type.
- (2) As the input voltage increases there will be an increase in efficiency.

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

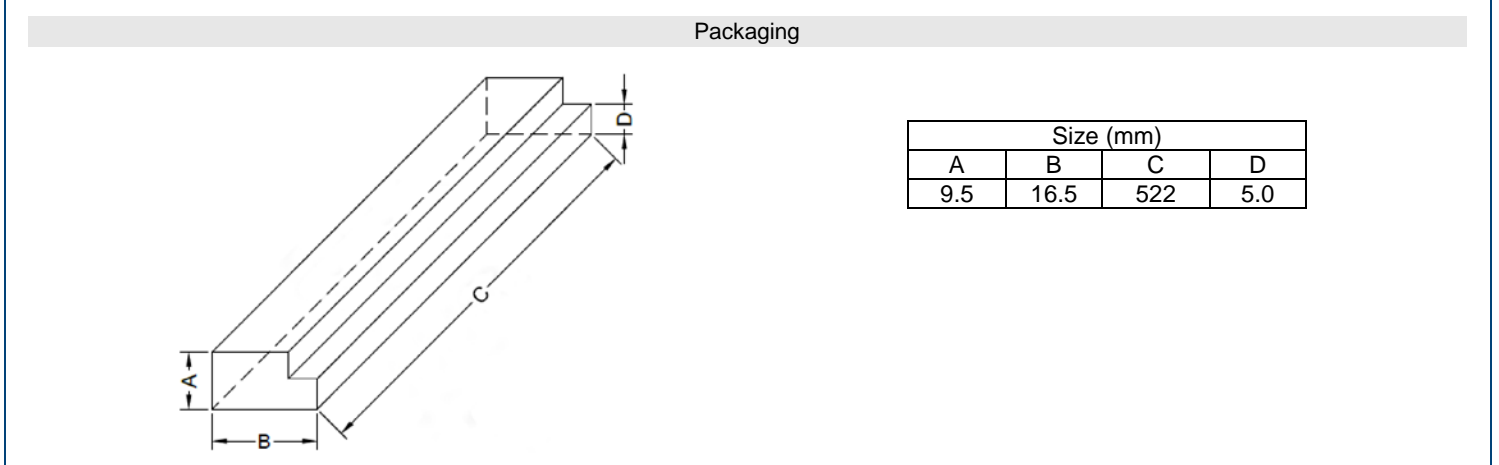
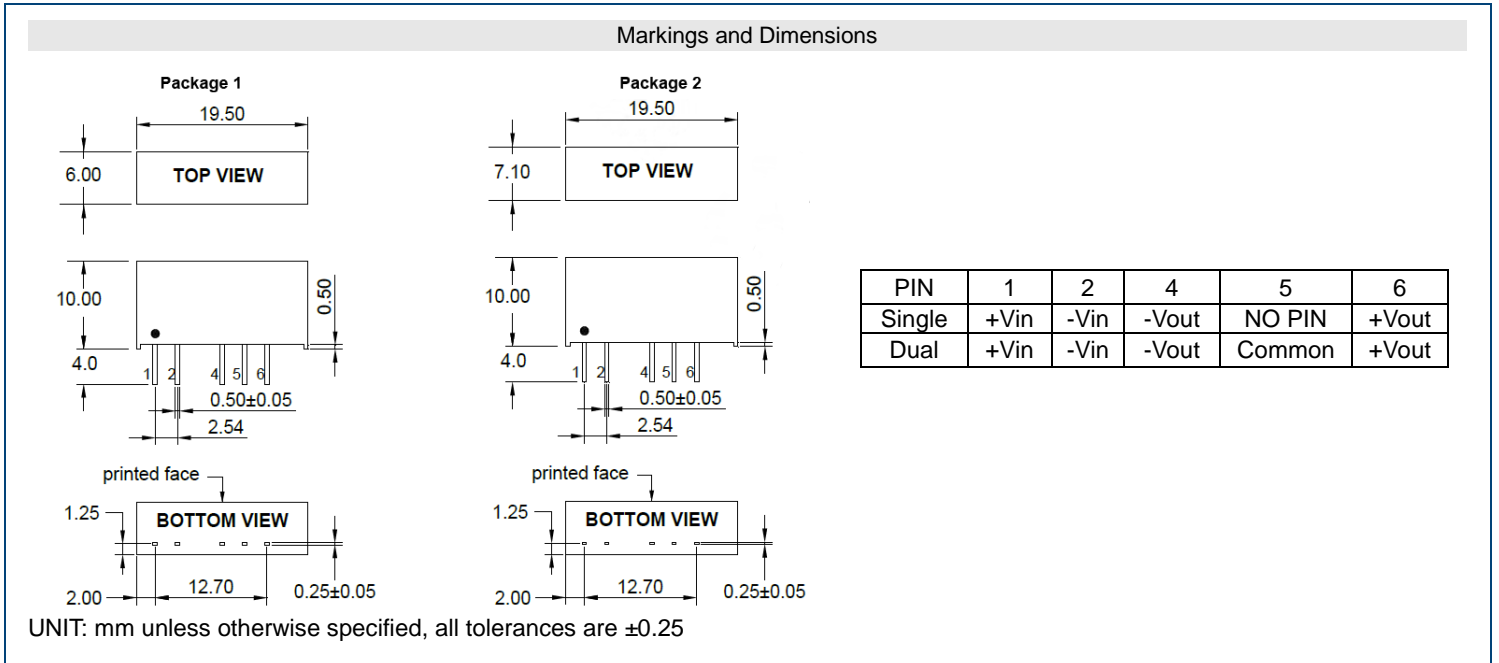
DERATING CURVES



RECOMMENDED TEST CIRCUITS

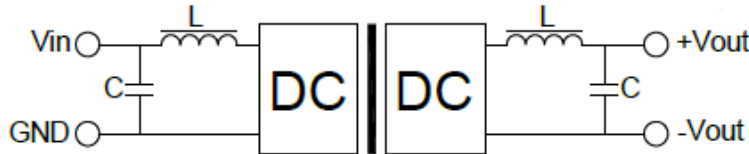


MECHANICAL DRAWINGS



FILTERING

In some circuits, which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter must be appropriate. If the capacitance is too big, a startup problem may arise. To ensure safe and reliable operation, please refer to the capacitance table below for the maximum filter capacitor size for each output voltage. To get an extremely low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference (see figure 1 below).



<Figure 1>

External Capacitor Table

| Vin | External Capacitor | Vout | External Capacitor |
|--------|--------------------|--------|--------------------|
| 3.3VDC | 4.7uF/25V | 3.3VDC | 22uF/16V |
| 5VDC | 4.7uF/25V | 5VDC | 10uF/25V |
| 9VDC | 4.7uF/25V | 9VDC | 4.7uF/25V |
| 12VDC | 2.2uF/25V | 12VDC | 2.2uF/25V |
| 15VDC | 1uF/50V | 15VDC | 1uF/50V |
| 24VDC | 1uF/50V | 24VDC | 1uF/50V |
| 48VDC | 1uF/100V | -- | -- |

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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