

## .5 - 1.0 WATT DUAL-IN-LINE REGULATED DC/DC CONVERTER PWR59XX



### DESCRIPTION

The PWR59XX Series offers an extensive selection of input and output voltage combinations to choose from, including a 9V output for Cheapernet local area networking. Both single and dual output voltages are available. These miniature, regulated DC/DC converters come in a 24-pin dual-in-line package for applications where space is a concern. The small size is possible through the use of surface mounted devices and manufacturing technologies. SMT processes and components also make it possible to offer the Series with no power derating over an extended temperature range of  $-25^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

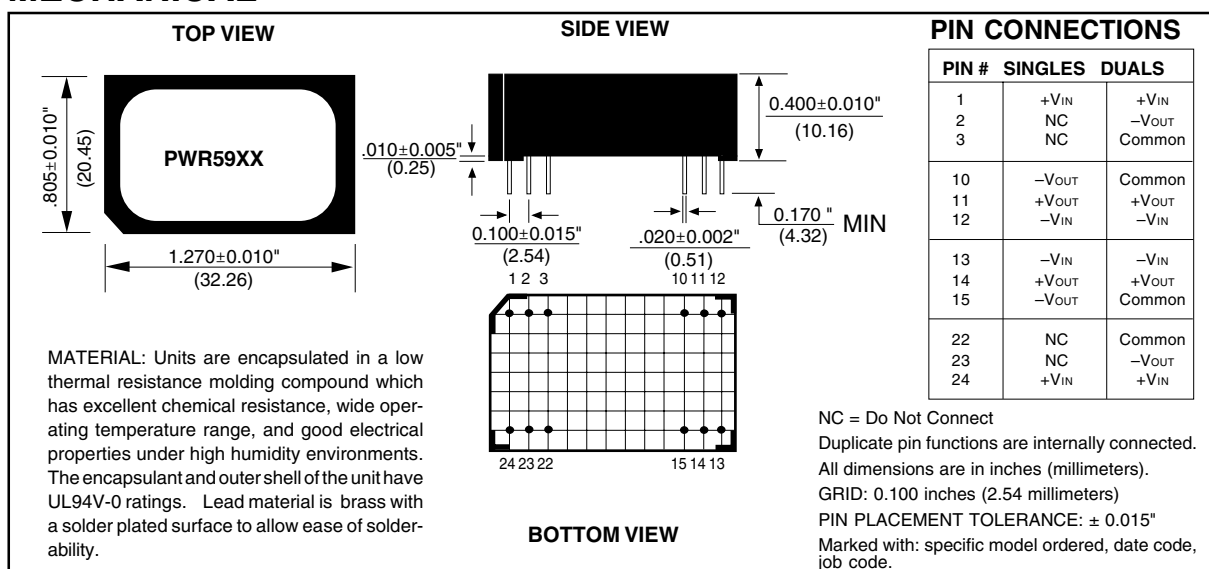
A push-pull input stage ensures fixed frequency, non-saturating operation of the oscillator section of the PWR59XX Series. MOSPOWER transistors are used as high speed switching elements. These rugged devices provide higher frequency to 500kHz operation, and uncomplicated drive circuitry. Reduced component count means higher reliability. High frequency operation means smaller magnetics. Higher isolation voltages are possible, due to the section wound transformer. Higher frequency operation also means less noise generation within the system's bandwidth.

Linear regulators, used in the output stage, output voltage variations due to line and load changes, also provide short-circuit current limiting and thermal overload protection.

### FEATURES

- High Reliability
- 24-Pin DIP Package
- Internal Input and Output Filtering
- Short-Circuit Current Limiting
- Thermal Overload Protection
- Built-In Standoffs
- Industry Standard Pinout

### MECHANICAL



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# ELECTRICAL SPECIFICATIONS

Specifications typical at  $T_A = +25^{\circ}\text{C}$ , nominal input voltage, and rated output current unless otherwise specified.

| MODEL   | NOMINAL<br>INPUT<br>VOLTAGE<br>(V <sub>DC</sub> ) | RATED<br>OUTPUT<br>VOLTAGE<br>(V <sub>DC</sub> ) | RATED<br>OUTPUT<br>CURRENT<br>(mA) | INPUT CURRENT      |                       | REFLECTED<br>RIPPLE<br>CURRENT<br>(mAp-p) | EFFICIENCY<br>(%) | RATED<br>OUTPUT<br>POWER<br>(mW) |
|---------|---------------------------------------------------|--------------------------------------------------|------------------------------------|--------------------|-----------------------|-------------------------------------------|-------------------|----------------------------------|
|         |                                                   |                                                  |                                    | NO<br>LOAD<br>(mA) | RATED<br>LOAD<br>(mA) |                                           |                   |                                  |
| PWR5900 | 5                                                 | 5                                                | 100                                | 40                 | 175                   | 10                                        | 57                | 500                              |
| PWR5901 | 5                                                 | 9                                                | 111                                | 40                 | 345                   | 10                                        | 57                | 1000                             |
| PWR5902 | 5                                                 | 12                                               | 83                                 | 40                 | 345                   | 10                                        | 57                | 1000                             |
| PWR5903 | 5                                                 | 15                                               | 67                                 | 40                 | 345                   | 10                                        | 57                | 1000                             |
| PWR5904 | 5                                                 | ±5                                               | ±50                                | 40                 | 175                   | 10                                        | 57                | 500                              |
| PWR5905 | 5                                                 | ±12                                              | ±42                                | 40                 | 345                   | 10                                        | 57                | 1000                             |
| PWR5906 | 5                                                 | ±15                                              | ±33                                | 40                 | 345                   | 10                                        | 57                | 1000                             |
| PWR5907 | 12                                                | 5                                                | 100                                | 35                 | 100                   | 30                                        | 42                | 500                              |
| PWR5908 | 12                                                | 9                                                | 111                                | 35                 | 170                   | 30                                        | 49                | 1000                             |
| PWR5909 | 12                                                | 12                                               | 83                                 | 35                 | 150                   | 30                                        | 55                | 1000                             |
| PWR5910 | 12                                                | 15                                               | 67                                 | 35                 | 150                   | 30                                        | 55                | 1000                             |
| PWR5911 | 12                                                | ±5                                               | ±50                                | 35                 | 76                    | 30                                        | 55                | 500                              |
| PWR5912 | 12                                                | ±12                                              | ±42                                | 35                 | 150                   | 30                                        | 55                | 1000                             |
| PWR5913 | 12                                                | ±15                                              | ±33                                | 35                 | 150                   | 30                                        | 55                | 1000                             |
| PWR5914 | 15                                                | 5                                                | 100                                | 30                 | 76                    | 20                                        | 44                | 500                              |
| PWR5915 | 15                                                | 9                                                | 111                                | 30                 | 135                   | 20                                        | 50                | 1000                             |
| PWR5916 | 15                                                | 12                                               | 83                                 | 30                 | 120                   | 20                                        | 55                | 1000                             |
| PWR5917 | 15                                                | 15                                               | 67                                 | 30                 | 120                   | 20                                        | 55                | 1000                             |
| PWR5918 | 15                                                | ±5                                               | ±50                                | 30                 | 60                    | 20                                        | 55                | 500                              |
| PWR5919 | 15                                                | ±12                                              | ±42                                | 30                 | 120                   | 20                                        | 55                | 1000                             |
| PWR5920 | 15                                                | ±15                                              | ±33                                | 30                 | 120                   | 20                                        | 55                | 1000                             |
| PWR5921 | 24                                                | 5                                                | 100                                | 15                 | 43                    | 10                                        | 48                | 500                              |
| PWR5922 | 24                                                | 9                                                | 111                                | 15                 | 83                    | 10                                        | 50                | 1000                             |
| PWR5923 | 24                                                | 12                                               | 83                                 | 15                 | 73                    | 10                                        | 55                | 1000                             |
| PWR5924 | 24                                                | 15                                               | 67                                 | 15                 | 73                    | 10                                        | 55                | 1000                             |
| PWR5925 | 24                                                | ±5                                               | ±50                                | 15                 | 40                    | 10                                        | 55                | 500                              |
| PWR5926 | 24                                                | ±12                                              | ±42                                | 15                 | 73                    | 10                                        | 60                | 1000                             |
| PWR5927 | 24                                                | ±15                                              | ±33                                | 15                 | 73                    | 10                                        | 60                | 1000                             |

Note: Other input to output voltages may be available. Please consult factory.

## COMMON SPECIFICATIONS

Specifications typical at  $T_A = +25^{\circ}\text{C}$ , nominal input voltage, and rated output current unless otherwise specified.

| PARAMETER                            | CONDITIONS                                                      | MIN   | TYP        | MAX   | UNITS           |
|--------------------------------------|-----------------------------------------------------------------|-------|------------|-------|-----------------|
| INPUT                                |                                                                 |       |            |       |                 |
| Input Voltage Range                  |                                                                 | 4.75  | 5          | 5.25  | V <sub>DC</sub> |
|                                      |                                                                 | 11.4  | 12         | 12.6  | V <sub>DC</sub> |
|                                      |                                                                 | 14.25 | 15         | 15.75 | V <sub>DC</sub> |
|                                      |                                                                 | 22.8  | 24         | 25.2  | V <sub>DC</sub> |
| ISOLATION                            |                                                                 |       |            |       |                 |
| Rated Voltage                        | 60 Hz, 10 Seconds                                               | 750   |            |       | V <sub>DC</sub> |
| Test Voltage                         |                                                                 | 750   |            |       | V <sub>pk</sub> |
| Resistance                           |                                                                 |       | 10         |       | GW              |
| Capacitance                          |                                                                 |       | 50         |       | pF              |
| Leakage Current                      | V <sub>ISO</sub> = 240V <sub>AC</sub> , 60Hz                    |       | 4          |       | μArms           |
| OUTPUT                               |                                                                 |       |            |       |                 |
| Voltage Setpoint Accuracy            | Rated Load, Nominal V <sub>IN</sub>                             |       |            | ±5    | %               |
| Temperature Coefficient              |                                                                 |       | ±0.02      |       | %/°C            |
| Ripple & Noise<br>(BW = DC to 20MHz) | No External Components                                          |       | 50         |       | mVp-p           |
|                                      | 10μF Across Each Output                                         |       | 5          |       | mVrms           |
|                                      | 10μF Across Each Output                                         |       | 10         | 20    | mVp-p           |
| Line Regulation                      |                                                                 |       | ±0.3       |       | %               |
| Load Regulation                      | No Load to Rated Load                                           |       | ±0.4       |       | %               |
| GENERAL                              |                                                                 |       |            |       |                 |
| Switching Frequency                  | All Models Except 24V <sub>IN</sub><br>24V <sub>IN</sub> Models |       | 500<br>200 |       | kHz<br>kHz      |
| MTTF per MIL-HDBK-217, Rev. E*       |                                                                 |       | 900        |       | kHr             |
| Package Weight                       |                                                                 |       | 11         |       | g               |
| TEMPERATURE                          |                                                                 |       |            |       |                 |
| Specification                        |                                                                 | -25   | +25        | +85   | °C              |
| Operation                            |                                                                 | -40   |            | +100  | °C              |
| Storage                              |                                                                 | -40   |            | +110  | °C              |

## ABSOLUTE MAXIMUM RATINGS

|                                                   |            |
|---------------------------------------------------|------------|
| Output Short-Circuit Duration .....               | Continuous |
| Internal Power Dissipation .....                  | 1.5W       |
| Lead Soldering Temperature (10seconds, max) ..... | +300°C     |

## ORDERING INFORMATION

|                                                   |          |    |
|---------------------------------------------------|----------|----|
| Device Family                                     | PWR 59XX | /H |
| PWR Indicates DC/DC Converter                     |          |    |
| Model Number                                      |          |    |
| Selected from Table of Electrical Characteristics |          |    |
| Screening Option                                  |          |    |

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