

## 5 WATTS REGULATED DC/DC CONVERTER

### PWR70XX



#### FEATURES

- HIGH RELIABILITY
- SHORT-CIRCUIT PROTECTED
- FOLDBACK CURRENT LIMIT
- HIGH EFFICIENCY
- LINEAR OUTPUT REGULATION
- TRACKING OUTPUTS
- SIX-SIDED SHIELDING
- INTERNAL INPUT AND OUTPUT FILTERING
- NON-CONDUCTIVE CASE
- INDUSTRY STANDARD PINOUT
- 500Vdc ISOLATION

#### DESCRIPTION

The PWR70XX Series uses advanced circuit design and packaging technology to realize superior reliability and performance. A 170kHz driven push-pull oscillator is used to ensure stable frequency and non-saturating operation of the input stage. This means there are no high peak voltages or currents like other design topologies, which can severely reduce unit reliability. Reliability is further enhanced by the use of MOSPOWER transistors. These rugged devices permit higher frequency operation with less complicated drive circuitry than is possible with bipolar power transistors. Reduced parts count adds to the reliability of the PWR70XX Series.

Continuous short-circuit protection and foldback current

limiting make the PWR70XX Series rugged devices for use in demanding system applications. These features add to the overall reliability of the PWR70XX Series by reducing the possibility of inadvertently damaging the unit due to an output overload.

The high efficiency of the PWR70XX Series means low internal power dissipation. With less heat dissipated, the PWR70XX Series can operate at higher ambient temperature with no degradation of reliability.

The PWR70XX Series offers the user low cost without sacrificing reliability. The use of surface mounted devices and manufacturing technologies makes it possible to offer premium performance and low cost.

Internet: <http://www.cdpowerelectronics.com>

Power Electronics Division, United States  
3400 E Britannia Drive, Tucson, Arizona 85706  
Phone: 800.547.2537 Fax: 520.770.9369

Power Electronics Division, Europe  
C&D Technologies (Power Electronics) Ltd.  
132 Shannon Industrial Estate, Shannon, Co. Clare, Ireland  
Tel: +353.61.474.133 Fax: +353.61.474.141

# ELECTRICAL SPECIFICATIONS

Specifications typical at  $T_A = +25^{\circ}\text{C}$ , nominal input voltage, 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>(%) |
|---------|---------------------------------------------------|--------------------------------------------------|------------------------------------|--------------------|-----------------------|-------------------------------------------|-------------------|
|         |                                                   |                                                  |                                    | NO<br>LOAD<br>(mA) | RATED<br>LOAD<br>(mA) |                                           |                   |
| PWR7000 | 5                                                 | 5                                                | 1000                               | 50                 | 1580                  | 30                                        | 63                |
| PWR7004 | 5                                                 | ±12                                              | ±210                               | 50                 | 1490                  | 30                                        | 67                |
| PWR7005 | 5                                                 | ±15                                              | ±167                               | 50                 | 1450                  | 30                                        | 69                |
| PWR7006 | 12                                                | 5                                                | 1000                               | 30                 | 620                   | 30                                        | 67                |
| PWR7010 | 12                                                | ±12                                              | ±210                               | 30                 | 580                   | 30                                        | 72                |
| PWR7011 | 12                                                | ±15                                              | ±167                               | 30                 | 570                   | 30                                        | 73                |
| PWR7012 | 15                                                | 5                                                | 1000                               | 30                 | 500                   | 30                                        | 67                |
| PWR7016 | 15                                                | ±12                                              | ±210                               | 30                 | 480                   | 30                                        | 70                |
| PWR7017 | 15                                                | ±15                                              | ±167                               | 30                 | 460                   | 30                                        | 73                |
| PWR7018 | 24                                                | 5                                                | 1000                               | 30                 | 320                   | 30                                        | 65                |
| PWR7022 | 24                                                | ±12                                              | ±210                               | 30                 | 310                   | 30                                        | 67                |
| PWR7023 | 24                                                | ±15                                              | ±190                               | 30                 | 355                   | 30                                        | 68                |
| PWR7030 | 48                                                | 5                                                | 1000                               | 20                 | 165                   | 30                                        | 63                |
| PWR7033 | 48                                                | ± 5                                              | ±500                               | 20                 | 168                   | 30                                        | 62                |

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, rated output current unless otherwise specified.

| PARAMETER                                                                                                                                                                         | CONDITIONS                                                                                                                                              | MIN                                  | TYP                                                                | MAX                                  | UNITS                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------|
| <b>INPUT</b><br>Voltage Range                                                                                                                                                     |                                                                                                                                                         | 4.75<br>10.8<br>13.5<br>21.6<br>43.2 | 5<br>12<br>15<br>24<br>48                                          | 5.25<br>13.2<br>16.5<br>26.5<br>52.8 | V <sub>DC</sub><br>V <sub>DC</sub><br>V <sub>DC</sub><br>V <sub>DC</sub><br>V <sub>DC</sub> |
| <b>ISOLATION</b><br>Rated Voltage<br>Test Voltage<br>Resistance<br>Capacitance<br>Leakage Current                                                                                 | 60Hz, 10 Seconds<br><br><br>V <sub>ISO</sub> = 240V <sub>AC</sub> , 60Hz                                                                                | 500<br>500                           | <br>10<br>80<br>10                                                 | <br><br>18                           | V <sub>DC</sub><br>V <sub>pk</sub><br>GΩ<br>pF<br>μArms                                     |
| <b>OUTPUT</b><br>Rated Power<br>Voltage Setpoint Accuracy<br>Temperature Coefficient<br>Ripple and Noise<br><br>Tracking                                                          | Rated Load, Nominal V <sub>IN</sub><br><br>BW = DC to 10MHz<br>BW = DC to 2MHz<br>–V <sub>OUT</sub> Tracks +V <sub>OUT</sub>                            |                                      | 5<br><br>±0.02<br>30<br>5<br>±1                                    | ±1                                   | W<br>%<br>%/°C<br>mVp-p<br>mVrms<br>%                                                       |
| <b>TRANSIENT RESPONSE</b><br>5V Output Models (Within ±1%)<br><br>All Other Models (Within ±0.1%)                                                                                 | Rated Load to No Load<br>No Load to Rated Load<br>Rated Load to No Load<br>No Load to Rated Load                                                        |                                      | 50<br>100<br>30<br>100                                             |                                      | μs<br>μs<br>μs<br>μs                                                                        |
| <b>REGULATION</b><br>Line Regulation<br>Load Regulation<br>5V Output Models<br>All Other Models                                                                                   | High Line to Low Line<br>Rated Load to No Load                                                                                                          |                                      | ±0.02<br><br>±0.04<br>±0.02                                        |                                      | %<br><br>%<br>%                                                                             |
| <b>GENERAL</b><br>Switching Frequency<br>Package Weight<br>MTTF per MIL-HDBK-217, Rev. E*<br>Ground Benign<br><br>Fixed Ground<br>Naval Sheltered<br>Airborne Uninhabited Fighter | Circuit Stress Method<br>T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C<br>T <sub>A</sub> = +35°C<br>T <sub>A</sub> = +35°C<br>T <sub>A</sub> = +35°C |                                      | 170<br>50<br><br>762,000<br>46,000<br>230,000<br>127,000<br>29,000 |                                      | kHz<br>g<br><br>Hr<br>Hr<br>Hr<br>Hr<br>Hr                                                  |
| <b>TEMPERATURE</b><br>Specification<br>Operation<br>Storage                                                                                                                       |                                                                                                                                                         | 0<br>-25<br>-40                      | +25                                                                | +70<br>+85<br>+110                   | °C<br>°C<br>°C                                                                              |

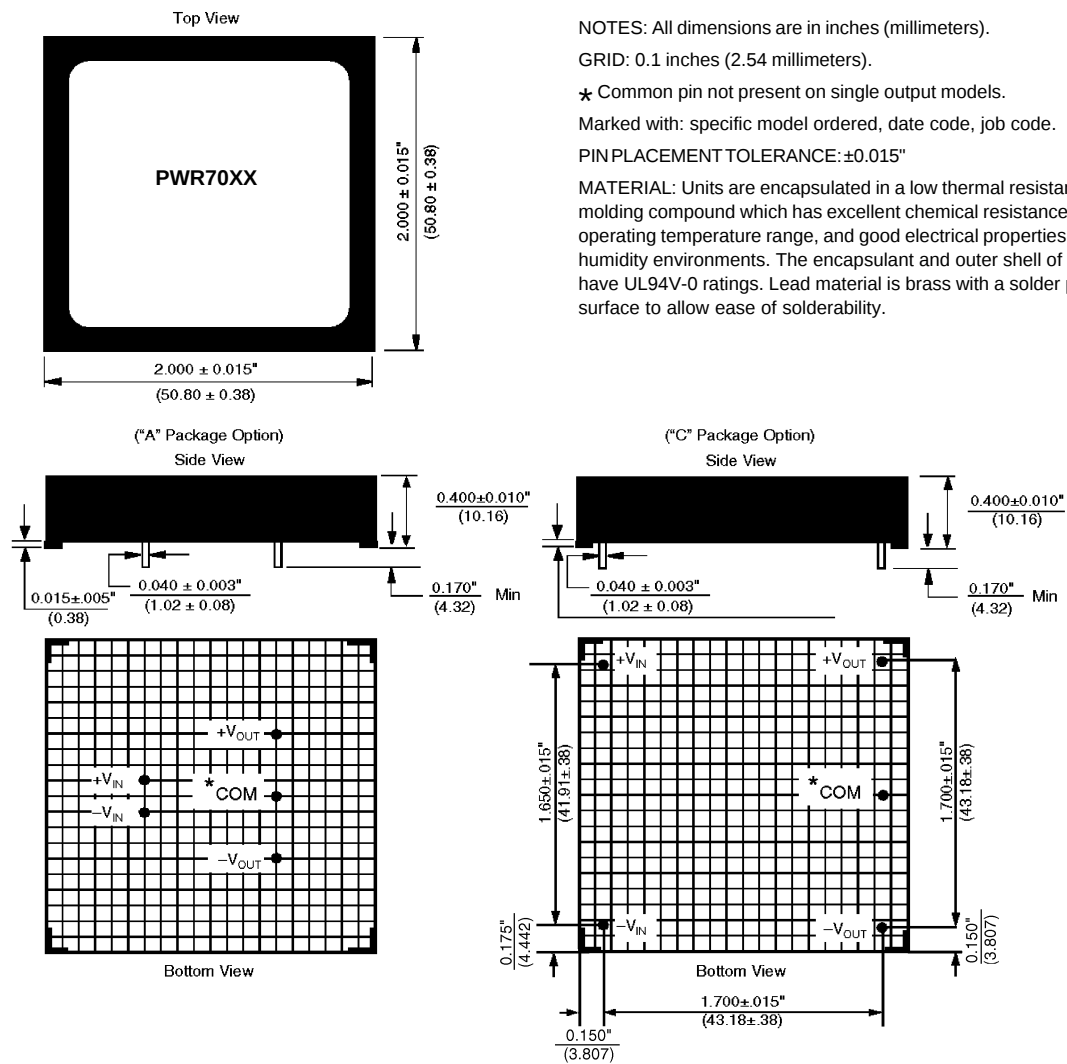
## ABSOLUTE MAXIMUM RATINGS

|                                                    |            |
|----------------------------------------------------|------------|
| Output Short-Circuit Duration .....                | Continuous |
| Internal Power Dissipation .....                   | 3.5W       |
| Lead Temperature (soldering, 10 seconds max) ..... | +300°C     |

## ORDERING INFORMATION

|                                                   |     |      |   |     |
|---------------------------------------------------|-----|------|---|-----|
| Device Family                                     | PWR | 70XX | A | I/H |
| PWR Indicates DC/DC Converter                     |     |      |   |     |
| Model Number                                      |     |      |   |     |
| Selected from Table of Electrical Characteristics |     |      |   |     |
| Package Option                                    |     |      |   |     |
| A or C (see Mechanical section)                   |     |      |   |     |
| Screening Option                                  |     |      |   |     |

## MECHANICAL



The information provided herein is believed to be reliable; however, C&D TECHNOLOGIES assumes no responsibility for inaccuracies or omissions. C&D TECHNOLOGIES assumes no responsibility for the use of this information, and all use of such information shall be entirely at the user's own risk. Prices and specifications are subject to change without notice. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. C&D TECHNOLOGIES does not authorize or warrant any C&D TECHNOLOGIES product for use in life support devices/systems or in aircraft control applications.