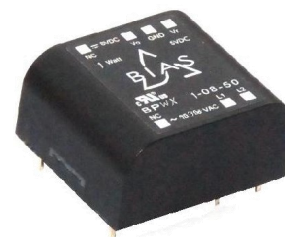




# BIAS 1 Watt Power Supply BPWX 1 Series Data Sheet

Single (Vo) or Dual (Vo & Vr) output  
BPWX 1-08-00, -08-33, -08-50  
BPWX 1-14-00, -14-33, -14-50



Actual Size



## Features:

- Extended Temperature with **NO DE-RATING!** (-40 to +85°C)
- Universal Input (90-308 VAC, 50/60Hz)
- Small Size—0.55in<sup>3</sup> [9.0cm<sup>3</sup>]
- Low no-load input power <30mW
- Constant power mode (not current limit)
- 3000 VAC Isolation
- EN 55022, Class B; FCC Part 15, Class B
- Meets UL/CSA and EN Product Safety (ITE)

The BPWX is a revolutionary, micro-sized, drop-in switching power supply module. It contains patented technology with unique features that provide solutions for a wide range of applications, including low power wireless and many other intelligent control devices. The patented SMPS topology is totally different from any other:

**It's Quiet:** Switching is synchronized and occurs only 10% of the time, so there is very little EMI / EMC interference with other circuits. This means no extra filtering or shielding is needed, helping to achieve longer transmission range with more reliable data communication in low power wireless applications.

**It's Powerful:** No power de-rating across the full wide temperature range. No current limit design margin needed when selecting a module. Charge large super caps faster than any regular SMPS with twice the power rating.

**It's Green:** High efficiency with ultra low standby power and very little self generated heat make it ideal for intelligent devices such as smart-sensors, smart-meters, smart-lighting, smart-grid, M2M or IoT, and any other control applications.

## Operating Specifications

(@120VAC / 60 Hz / 25°C unless otherwise specified)

| Electrical                         |                                                                                              |
|------------------------------------|----------------------------------------------------------------------------------------------|
| Input Voltage Range                | 90 - 308 VAC (50/60Hz)                                                                       |
| Input Surge Withstand              | 345V, < 30 sec                                                                               |
| Output Power (Pmax)                | 1.0 W (60Hz)<br>0.83 W (50Hz)                                                                |
| Efficiency                         | 70% nom.                                                                                     |
| Output Vo (Peak)                   | 8 or 14 VDC nom. +/- 5%                                                                      |
| Line / Load Regulation Vo (Peak)   | +/- 1% Po < Pmax                                                                             |
| Temperature Regulation Vo (Peak)   | +/- 2% Po < Pmax                                                                             |
| Ripple Vo (@120 Hz)<br>(@ 100 kHz) | 1.00 V p:p<br>0.25 V p:p                                                                     |
| Output Vr, 3.3 volt (+/- 5%)       | For Vo = 8V, Ir out 53mA max, Io+Ir ≤ 125mA*<br>For Vo = 14V, Ir out 23mA max, Io+Ir ≤ 71mA* |
| Output Vr, 5.0 volt (+/- 5%)       | For Vo = 8V, Ir out 83mA max, Io+Ir ≤ 125mA*<br>For Vo = 14V, Ir out 28mA max, Io+Ir ≤ 71mA* |
| No-load Consumption                | 30 mW typical @ Vin=120 VAC                                                                  |
| Isolation                          | 3000 VAC (meets UL / CSA & EN Product Safety)                                                |
| Earth Leakage @ 120 VAC            | < 10 uA                                                                                      |
| Short Circuit Protection           | Continuous, Pin ≤ 0.6 w @ Vin = 120 VAC                                                      |
| Reliability @ 25° C, MIL HDBK-217F | > 500 Khr MTBF                                                                               |
| Thermal                            |                                                                                              |
| Operating Temperature              | -40 to +85° C                                                                                |
| Operating Relative Humidity        | 0 – 95%, non-condensing                                                                      |
| Storage Temperature                | -40 to 105° C                                                                                |
| Mechanical                         |                                                                                              |
| Package Size<br>(L x W x H)        | 1.10 x 0.92 x 0.55 inches<br>[27.94 x 23.24 x 13.97 mm]                                      |
| Safety                             |                                                                                              |
| Safety Compliance                  | UL / EN 60950-1 2 <sup>nd</sup> Ed. (CB Report Available)                                    |
| EMI Emissions                      | EN 55022, Class B, FCC Part 15, Class B                                                      |

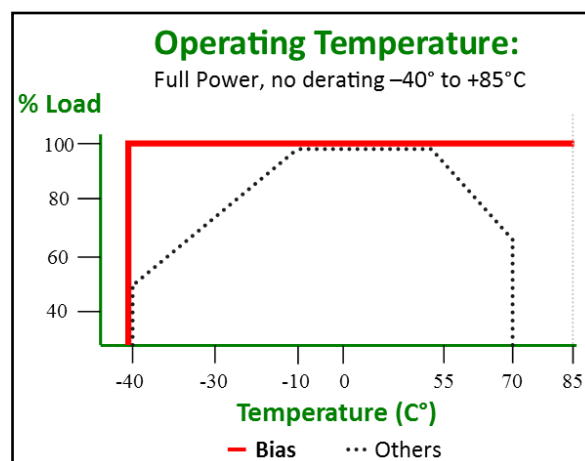
**Bias Power AC/DC power supplies are available with two different types of outputs to fit your applications...**

The characteristics of the main (Vo) and auxiliary (Vr) outputs are different and each has application-specific benefits which can provide high value to the system designer:

Vo is a voltage-regulated output which has a constant power mode instead of a conventional current limit. This output is best suited as a source for isolated DC utility power, which may be used directly or post-regulated with either a linear regulator or a DC/DC converter. **Vo is self protecting, cannot be over-loaded and can be shorted indefinitely.** So unlike design-your-own, or partially complete modules where significant design margin is required to stay far away from current limit, **there is no need to oversize a Bias Power supply.** The graceful transition from voltage regulation to constant power along with the wide range of product ratings allows the designer to select a supply tightly matched to the design load.

Vr is also a voltage-regulated output and is thermally protected from overload. It has very low output ripple capable of driving elements which require a low-noise, tightly-regulated supply. In addition, Vr is supplied internally by Vo. This means that any capacitance added to Vo can increase the hold-up time of Vr as well.

\*Note: maximum currents specified for constant voltage range only. See V-I curve on page 2 for Vo in constant power range.





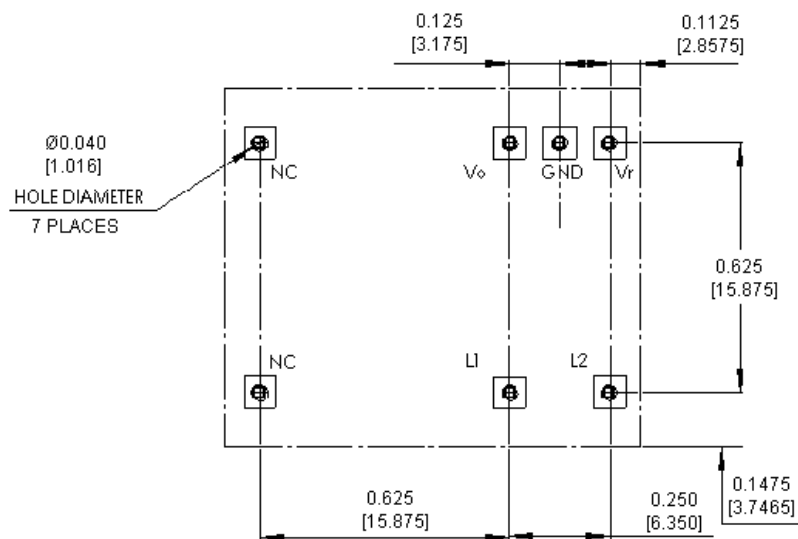
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BPWX 1-14-00, -14-33, -14-50

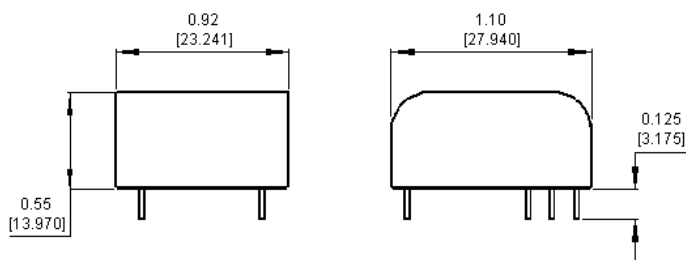
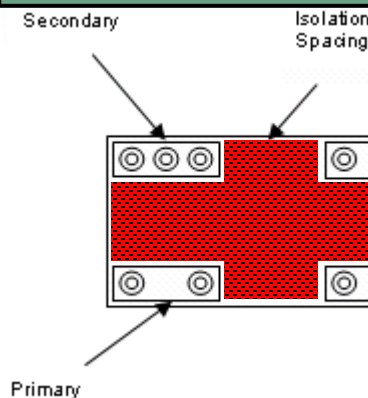
## Part Number Designation

| Part Number  | Output Configuration | Vo     | Vr      |
|--------------|----------------------|--------|---------|
| BPWX 1-08-00 | Single output        | 8 VDC  | N/A     |
| BPWX 1-14-00 | Single output        | 14 VDC | N/A     |
| BPWX 1-08-33 | Dual Output          | 8 VDC  | 3.3 VDC |
| BPWX 1-08-50 | Dual Output          | 8 VDC  | 5 VDC   |
| BPWX 1-14-33 | Dual Output          | 14 VDC | 3.3 VDC |
| BPWX 1-14-50 | Dual Output          | 14 VDC | 5 VDC   |

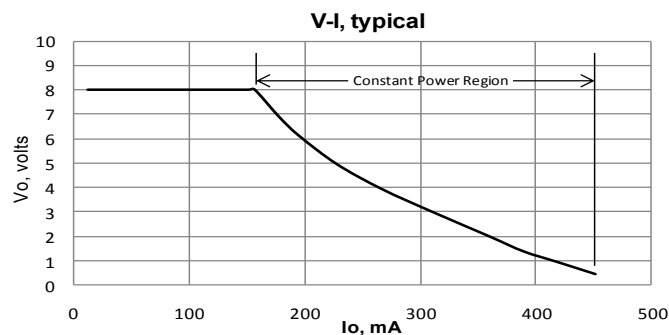
## Recommended Land Pattern, top view



## Recommended Isolation, Bottom View



## V-I Curve (For Vo in Constant Power Range)



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[BPWX 1-12-50](#) [BPWX 1-14-00](#) [BPWX 1-14-33](#) [BPWX 1-14-50](#) [BPWX 1-24-00](#) [BPWX 1-24-33](#) [BPWX 1-24-50](#)