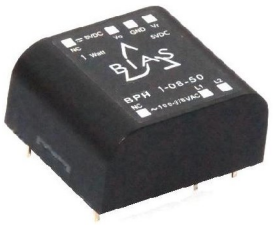
BIAS 1 Watt Power Supply
BPH 1 Series Data Sheet
Single (Vo) or Dual (Vo & Vr) output
BPH 1-08-00, -08-33, -08-50
BPH 1-14-00, -14-33, -14-50



Actual Size

The BPH 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.

Features

- **Complies with CSA CAN3-C235-83**
- **NO DE-RATING across entire temperature range (-30 to +70°C)**
- **Universal Input (100-375 VAC, 50/60Hz)**
- **Small Size—0.55in^3 [9.0cm^3]**
- **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)**

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.

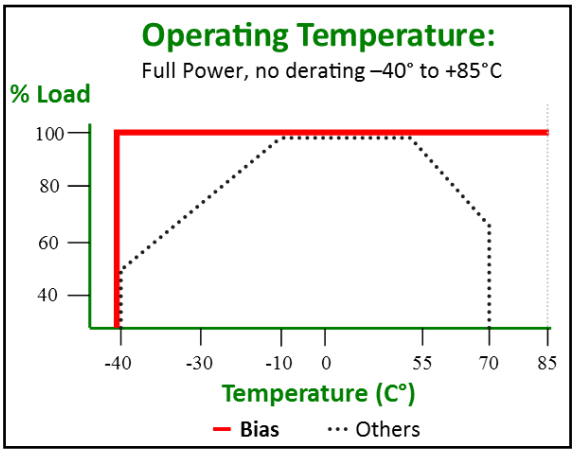
Vr is also a voltage-regulated output and is thermally protected from overload. It has very low output ripple capable of driving elements which require a low-noise, tightly-regulated supply. In addition, Vr is supplied internally by Vo. This means that any capacitance added to Vo can increase the hold-up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

Operating Specifications

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

Electrical	
Input Voltage Range	100 - 375 VAC (50/60Hz)
Input Surge Withstand	420V, < 30 sec
Output Power (Pmax)	1.0 W (60Hz) 0.83 W (50Hz)
Efficiency	70% nom.
Output Vo (Peak @ 100% load)	+/- 10% across operational voltage range
Line / Load Regulation Vo (Peak)	+/- 1% Po < Pmax
Temperature Regulation Vo (Peak)	+/- 2% Po < Pmax
Ripple Vo	1.00 V p:p @120 Hz; 0.25 V p:p @ 100 kHz
Output Vr, 3.3 volt (+/- 5%)	For Vo = 8V, Ir out 53mA max, Io+Ir ≤ 125mA* 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* 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	-30 to +70° C
Operating Relative Humidity	0 – 95%, non-condensing
Storage Temperature	-40 to +105° C
Mechanical	
Package Size (L x W x H)	1.10 x 0.92 x 0.55 inches [27.94 x 23.24 x 13.97 mm]
Safety	
Safety Compliance	UL/EN 60950-1 2nd Edition (CB Report Available)
EMI Emissions	EN 55022, Class B, FCC Part 15, Class B



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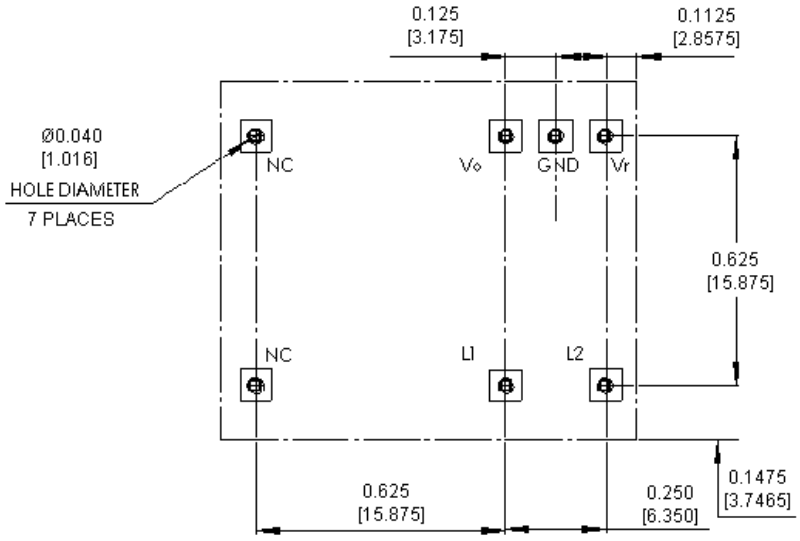
Part Number Designation

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

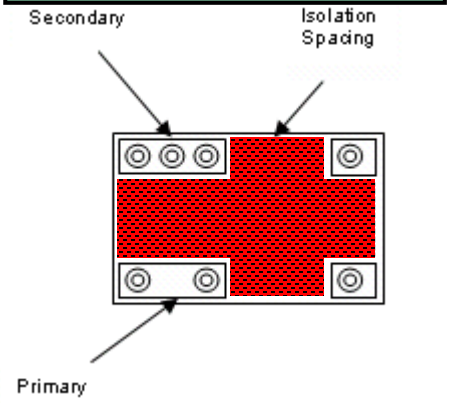
PIN	DESCRIPTION
L1	Input High
L2	Input Low
N/C	No Connection
Vo	Output
GND	Ground
Vr	Vr Output
N/C	No Connection

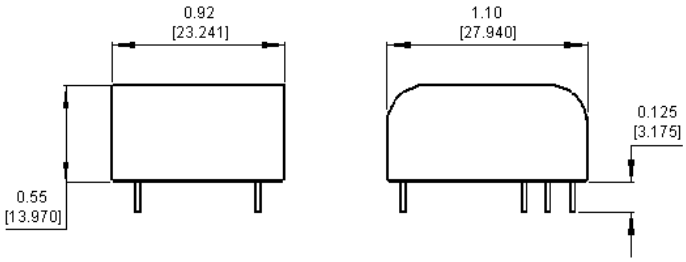
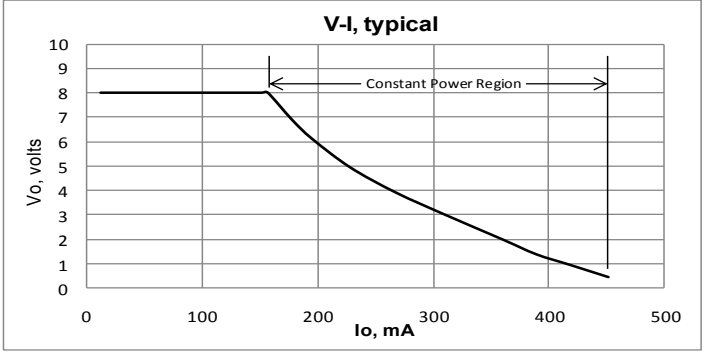
NOTES
1. Pins 0.031" [0.787 mm] round
2. Pins extend 0.125" [3.175 mm] below stand-offs

Recommended Land Pattern, top view



Recommended Isolation, Bottom View





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