



### Applications

- Telecom, datacom
- Networking
- Industrial
- Consumer
- Gaming

### Features

- RoHS compliant for all six substances
- Typical 80-85% efficiency
- Quasi-resonant ZVS topology with synchronous rectification
- Compact size of 2" x 4" x 1.30"
- 65 Watts with only 4-5 CFM forced-air cooling
- 60 Watts with convection cooling
- 90-264 VAC wide-range input
- FCC & CISPR 22, Class "B" – Conducted EMI
- Height meets 1U chassis constraints
- Two-year limited warranty
- Safety Agency pending to UL60960-1, CSA 22.2 No. 60950-1-03, and TUV EN60950/IEC 60950-1
- Compliance with EN 61000-4-2 level 4 (ESD), EN 61000-4-3 (RF), EN 61000-4-4 level 3 (Fast Transient/Burst), EN 61000-4-5 class 3 (Surge)

### Description

The SBLP65 is a compact and efficient series of AC-DC power supplies suited for telecom, datacom, and many other applications. The SBLP65 Series meets the international information technology safety standards with the CE-Mark for the European Low Voltage Directive (LVD). Its high efficiency allows a very minimal power loss in end equipment, resulting in higher reliability, ease of thermal management, and regulatory approvals for an environmentally friendly end product.

### Single-Output Model Selection

| Model               | Nominal Output Voltage (VDC) | Min-Max Output Current (Amps), Convection | Min-Max Output Current (Amps), Forced Air <sup>1</sup> | Peak Output Current (Amps) <sup>2</sup> | Total Regulation (%) <sup>3</sup> | Ripple & Noise mV pk-pk % <sup>4</sup> |
|---------------------|------------------------------|-------------------------------------------|--------------------------------------------------------|-----------------------------------------|-----------------------------------|----------------------------------------|
| <b>SBLP65-1003G</b> | 3.3                          | 0 - 11                                    | 0 - 11                                                 | 19                                      | ±2                                | 1.5                                    |
| <b>SBLP65-1005G</b> | 5                            | 0 - 11                                    | 0 - 11                                                 | 12                                      | ±2                                | 1.0                                    |
| <b>SBLP65-1012G</b> | 12                           | 0 - 5                                     | 0 - 5.4                                                | 6.25                                    | ±2                                | 1.0                                    |
| <b>SBLP65-1015G</b> | 15                           | 0 - 4                                     | 0 - 4.3                                                | 5                                       | ±2                                | 1.0                                    |
| <b>SBLP65-1024G</b> | 24                           | 0 - 2.5                                   | 0 - 2.7                                                | 3.1                                     | ±2                                | 1.0                                    |
| <b>SBLP65-1048G</b> | 48                           | 0 - 1.25                                  | 0 - 1.35                                               | 1.56                                    | ±2                                | 1.0                                    |

<sup>1</sup> 4 CFM or 105 LFM (average measurement of six equally-distributed points through a 3.5" x 1.6" (9 cm x 4 cm cross-sectional area) with power supply mounted on a 0.25" (6.35 mm) standoffs. Recommended airflow direction is from the AC input to the DC output.

<sup>2</sup> Peak current duration for less than 30 seconds with a maximum duty cycle of 10%. During peak loading, output may exceed total regulation limits.

<sup>3</sup> At 25 °C ambient including voltage set point tolerance, line and load regulation

<sup>4</sup> Maximum peak-to-peak noise at 20 MHz bandwidth measured at the end of a twisted pair cable across a bypass capacitor.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

### ELECTRICAL SPECIFICATIONS

#### Input Specifications

| Parameter              | Conditions/Description                                                                                                          | Min. | Nom.           | Max.     | Units        |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------|------|----------------|----------|--------------|
| AC Input Voltage Range | Continuous voltage range                                                                                                        | 90   | 100 - 250      | 264      | VAC          |
| DC Input Voltage Range | For DC input applications, please consult factory.                                                                              |      |                |          | VDC          |
| Frequency              | AC Input                                                                                                                        | 47   | 50 - 60        | 63       | Hz           |
| Power Factor           | Complies with EN61000-3-2 Standard for Line Current Harmonics with input power less than 75 Watts, at <60W output power         |      |                |          |              |
| Input current          | At 90 VAC input and max rating                                                                                                  |      | 1.5            |          | Amps rms     |
| Inrush current         | 115 VAC, Max power, 25 °C<br>230 VAC, Max power, 25 °C                                                                          |      |                | 30<br>60 | A pk<br>A pk |
| Input fuse             | Non-user serviceable internally located AC input line fuse is provided.                                                         |      |                |          | A            |
| Efficiency             | At maximum power, 110 VAC<br>Single output models above 24V output<br>Single output 12V model<br>Single output models below 12V |      | 85<br>84<br>80 |          | %<br>%<br>%  |

### Output Specifications

| Parameter                          | Conditions/Description                                                                                                                                | Min.         | Nom. | Max.         | Units         |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------|--------------|---------------|
| Output power                       | With convection cooling                                                                                                                               | <sup>1</sup> |      | 60           | Watts         |
|                                    | With 3 CFM forced-air cooling for single output models                                                                                                | <sup>1</sup> |      | 65           |               |
| Output DC voltages                 | Vo1 output is adjustable -5/+10 % of nominal                                                                                                          |              |      |              |               |
| Output DC current                  |                                                                                                                                                       |              |      | <sup>1</sup> | A             |
| Minimum load                       | Required to meet total regulation                                                                                                                     |              |      | <sup>1</sup> | A             |
| Leakage current                    | At 264 VAC/60 Hz                                                                                                                                      |              |      | 0.75         | mA            |
| Output ripple & noise              |                                                                                                                                                       |              |      | <sup>1</sup> | mV<br>pk-pk   |
| Overshoot                          | Vo1 overshoot at turn-on                                                                                                                              |              |      | 5            | %             |
| Load transient                     | Vo1 deviation due to a 50 to 100% load change at a rate of 1A/μs                                                                                      |              |      | ±5           | %             |
| Turn-On & Turn-Off characteristics | Outputs turn ON monotonically at minimum output current or at full load.<br>Outputs turn OFF monotonically at minimum output current or at full load. |              |      |              |               |
| Turn-on Delay                      | Time required for output within regulation after initial application of AC input @ 90 VAC.                                                            |              |      | 3            | Sec           |
| Turn-on Rise Time                  | Time required for output voltage to rise from 10% to 90%.                                                                                             |              |      | 20           | ms            |
| Hold-up Time                       | Time Vo1 is required to stay within 95% regulation after removal of AC measure from the last peak of the AC line at 120 VAC and max power.            | 16           |      |              | ms            |
| Remote Sense                       | Maximum compensation.                                                                                                                                 |              |      | 500          | mV            |
| Control loop stability             | Phase margin.                                                                                                                                         | 45           |      |              | Degrees<br>dB |
|                                    | Gain margin.                                                                                                                                          | 10           |      |              |               |

<sup>1</sup> See Model Selection table.

### Fault Protection

| Parameter                | Conditions/Description       | Min. | Nom.  | Max. | Units |
|--------------------------|------------------------------|------|-------|------|-------|
| Current Limit Protection | Protection is provided.      |      |       |      |       |
| Short-circuit Protection | Provided with auto-recovery. |      |       |      | ADC   |
| OVP Trip                 | Vo1, 3.3 V                   | 3.6  | 3.75  | 3.95 | VDC   |
|                          | Vo1, 5 V                     | 5.6  | 6.2   | 6.9  |       |
|                          | Vo1, 12 V                    | 14   | 15.35 | 16.7 |       |
|                          | Vo1, 24 V                    | 29   | 31.6  | 34.2 |       |
|                          | Vo1, 48 V                    | 55   | 57.5  | 60   |       |

### Isolation Requirements

| Parameter         | Conditions/Description | Min. | Nom. | Max. | Units |
|-------------------|------------------------|------|------|------|-------|
| Input-to-Chassis  |                        | 2121 |      |      | VDC   |
| Input-to-Output   |                        | 4242 |      |      | VDC   |
| Output-to-Chassis |                        | 500  |      |      | VDC   |

### EMC Immunity

| Parameter             | Conditions/Description |
|-----------------------|------------------------|
| ESD                   | EN 61000-4-2 Level 2.  |
| RF Susceptibility     | EN 61000-4-3 Level 3.  |
| Fast Transient/Burst  | EN 61000-4-4 Level 3.  |
| Surge                 | EN 61000-4-5 Class 3.  |
| RF Immunity           | EN 61000-4-6 Class 3.  |
| Magnetic Fields       | EN 61000-4-8.          |
| Voltage Interruptions | EN 61000-4-11.         |

### EMC Emmisions

| Parameter   | Conditions/Description               |
|-------------|--------------------------------------|
| FCC Part 15 | Conducted Class B, Radiated Class A. |
| CISPR 22    | Conducted Class B, Radiated Class A. |

### Environmental Specifications

| Parameter      | Conditions/Description                                                                                                              | Min. | Nom. | Max.       | Units            |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------|------|------|------------|------------------|
| Cooling        | Rated for convection and forced-air cooling.                                                                                        |      |      |            |                  |
| Audible Noise  |                                                                                                                                     |      |      | 0          | dBA              |
| Operating Temp | -10 °C to 50 °C with linear derating to 50% at 70 °C. Unit will start up at -10 °C, but will not meet all published specifications. | -10  | 50   | 70         | °C               |
| Altitude       | Operating.<br>Non-Operating.                                                                                                        |      |      | 10K<br>50K | ASL ft<br>ASL ft |
| Storage Temp   |                                                                                                                                     | -40  |      | 85         | °C               |
| Humidity       | 95% relative humidity @ 40 °C, non-condensing                                                                                       |      |      |            |                  |
| Vibration      | Operating: Random vibration; 5 to 500 Hz (10 minutes, each axis).                                                                   |      |      | 2.4        | Grms             |
|                | Non-Operating: Random vibration; 5 to 500 Hz (10 minutes, each axis).                                                               |      |      | 6          | Grms             |
| Shock          | Operating: half-sine, 11 ±3 ms, 3-axis.                                                                                             |      |      | 15         | G                |
|                | Non-Operating: half-sine, 11 ±3 ms, 3-axis.                                                                                         |      |      | 40         | G                |

### Regulatory & Safety Approvals

| Parameter                 | Conditions/Description                        | Min. | Nom. | Max. | Units |
|---------------------------|-----------------------------------------------|------|------|------|-------|
| UL60950-1                 | 3.3V and 5V single-output models are pending. |      |      |      |       |
| CSA-C22.2, No. 60950-1-03 | 3.3V and 5V single-output models are pending. |      |      |      |       |
| EN 60950-1 /IEC 60950-1   | 3.3V and 5V single-output models are pending. |      |      |      |       |
| CE Mark for LVD           | 3.3V and 5V single-output models are pending. |      |      |      |       |
| CB Approval               | 3.3V and 5V single-output models are pending. |      |      |      |       |
| Ground Continuity         | At 12 VAC.                                    |      |      | 40   | A     |

### Mechanical Specifications

| Parameter                      | Conditions/Description                                                                                                                                | Min. | Nom.  | Max.  | Units   |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|---------|
| Dimensions                     | Length                                                                                                                                                |      |       | 101.6 | mm      |
|                                | Width                                                                                                                                                 |      |       | 50.8  | mm      |
|                                | Height, including component or component lead protrusion on the bottom of the PCB.                                                                    |      |       | 33.02 | mm      |
| Power Density                  | With forced-air cooling.                                                                                                                              |      |       | 4.81  | W/cu in |
| Mounting                       | (Location/Hardware); see Outline Drawing.                                                                                                             |      |       |       |         |
| Input                          | (Location/Connector);<br>J1 - Molex 41791 series or equivalent                                                                                        |      |       |       |         |
| Output                         | (Location/Connector);<br>J2 - Molex 41791 series or equivalent                                                                                        |      |       |       |         |
| Remote Sense                   | Combined into J2, pins 5 & 6 for single-output models.                                                                                                |      |       |       |         |
| Outline Drawing Pins/Functions | See Mechanical Drawing.                                                                                                                               |      |       |       |         |
| Weight                         |                                                                                                                                                       |      | 0.115 |       | kg      |
| Connector kit                  | Consult factory                                                                                                                                       |      |       |       |         |
| Mounting distance              | Distance from the bottom of the components or component leads (solder side) or top of the components (component side) to the customer's metal chassis | 2.87 |       |       | mm      |

### Reliability

| Parameter         | Conditions/Description | Min.    | Nom. | Max. | Units |
|-------------------|------------------------|---------|------|------|-------|
| Calculated MTBF   |                        | 250,000 |      |      | Hours |
| Demonstrated MTBF |                        | 550,000 |      |      | Hours |

## Mechanical Drawing

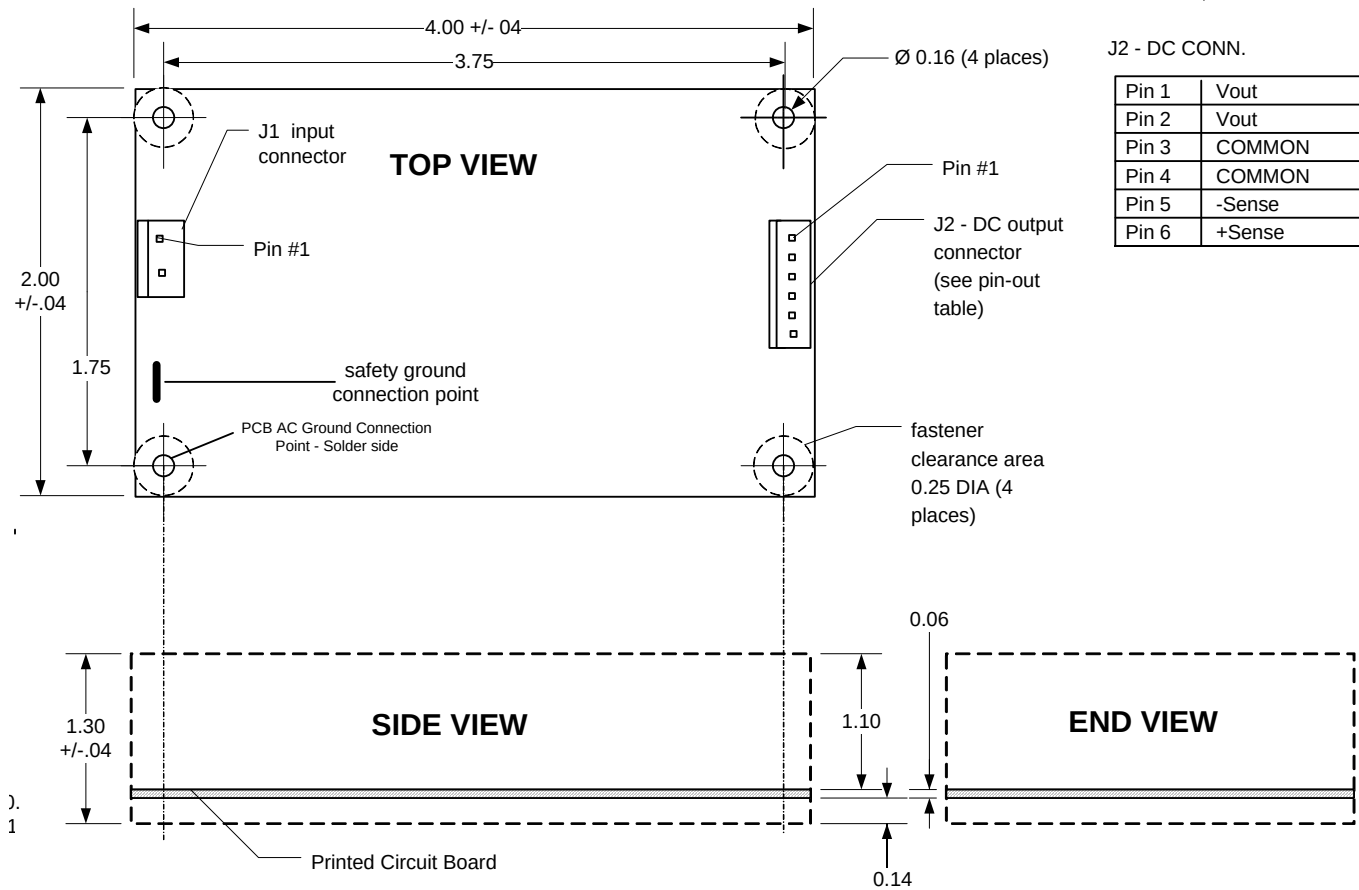
### SBLP65 Single-Output Drawing:

J1 - AC CONN.

|       |            |
|-------|------------|
| Pin 1 | AC Line    |
| Pin 3 | AC Neutral |

J2 - DC CONN.

|       |        |
|-------|--------|
| Pin 1 | Vout   |
| Pin 2 | Vout   |
| Pin 3 | COMMON |
| Pin 4 | COMMON |
| Pin 5 | -Sense |
| Pin 6 | +Sense |



**NUCLEAR AND MEDICAL APPLICATIONS** - Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

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