

Description

Designed to convert fixed voltages into an isolated regulated voltage, the VIBLSD1-SIP series is well suited for providing board-mount local supplies in a wide range of applications, including mixed analog/digital circuits, test & measurement equip., process/machine controls, data-com/telecom fields, etc...

Features

- Isolated 1 W output
- Regulated
- High efficiency to 79%
- Single voltage output
- Small footprint
- SIP package style
- Industry standard pinout
- UL94-V0 package
- No heatsink required
- 1K Vdc isolation
- Temperature range: -40°C~+85°C
- No external component required
- Low cost



| Model Number | Input Voltage | | Output Voltage | Output Current | | Efficiency | Package Style |
|---------------------|---------------|---------------|----------------|----------------|-------|------------|---------------|
| | Nominal | Range | | Max. | Min. | | |
| VIBLSD1-S5-S5-SIP | 5 Vdc | 4.75~5.25 Vdc | 5 Vdc | 150 mA | 15 mA | 69% | SIP |
| VIBLSD1-S5-S9-SIP | 5 Vdc | 4.75~5.25 Vdc | 9 Vdc | 111 mA | 12 mA | 70% | SIP |
| VIBLSD1-S5-S12-SIP | 5 Vdc | 4.75~5.25 Vdc | 12 Vdc | 83 mA | 9 mA | 71% | SIP |
| VIBLSD1-S5-S15-SIP | 5 Vdc | 4.75~5.25 Vdc | 15 Vdc | 67 mA | 7 mA | 72% | SIP |
| VIBLSD1-S12-S5-SIP | 12 Vdc | 11.4~12.6 Vdc | 5 Vdc | 150 mA | 15 mA | 69% | SIP |
| VIBLSD1-S12-S9-SIP | 12 Vdc | 11.4~12.6 Vdc | 9 Vdc | 111 mA | 12 mA | 71% | SIP |
| VIBLSD1-S12-S12-SIP | 12 Vdc | 11.4~12.6 Vdc | 12 Vdc | 83 mA | 9 mA | 72% | SIP |
| VIBLSD1-S12-S15-SIP | 12 Vdc | 11.4~12.6 Vdc | 15 Vdc | 67 mA | 7 mA | 72% | SIP |
| VIBLSD1-S24-S5-SIP | 24 Vdc | 22.8~25.2 Vdc | 5 Vdc | 150 mA | 15 mA | 70% | SIP |
| VIBLSD1-S24-S9-SIP | 24 Vdc | 22.8~25.2 Vdc | 9 Vdc | 111 mA | 12 mA | 72% | SIP |
| VIBLSD1-S24-S12-SIP | 24 Vdc | 22.8~25.2 Vdc | 12 Vdc | 83 mA | 9 mA | 73% | SIP |
| VIBLSD1-S24-S15-SIP | 24 Vdc | 22.8~25.2 Vdc | 15 Vdc | 67 mA | 7 mA | 73% | SIP |

Note:

1. All specifications measured at TA=25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.

Output Specifications

| Item | Test conditions | Min. | Typ. | Max. | Units |
|-------------------------|----------------------------|------|------|------|-------|
| Output power | | 0.1 | | 1 | W |
| Line Regulation | For Vin change of 1% | | | 0.25 | % |
| Load Regulation | 10% to 100% full load | | | 1 | % |
| Output voltage accuracy | 100% full load | | | ±3 | % |
| Temperature drift | @ 100% load | | | 0.03 | %/°C |
| Output ripple | 20 Hz to 300 KHz Bandwidth | | 10 | 20 | mVp-p |
| Switching frequency | Full load, nominal input | | 100 | | KHz |

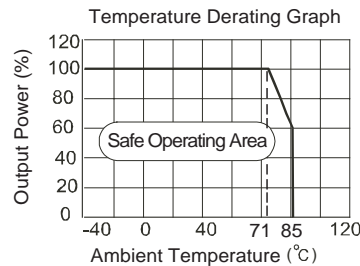
General Specifications

| | |
|-------------------------------|--|
| Short circuit protection | <1 second |
| Temperature rise at full load | 25°C Max, 15°C Typ. |
| Cooling | Free air convection |
| No-load power consumption | 10% nominal power (typical) |
| Operating temperature range | -40°C to +85°C |
| Storage temperature range | -55°C to +125°C |
| Soldering temperature | <= 300°C (1.5mm from case for 10 sec.) |
| Storage humidity range | <95% |
| Case material | Plastic (UL94-V0) |
| MTBF | >3,500,000 hrs. |
| Burn-in | At +85°C, for 4 hours at no-load and 4 hours at full load. |

Isolation Specifications

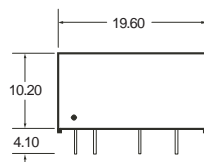
| Item | Test Conditions | Min. | Typ. | Max. | Units |
|-----------------------|-------------------|------|------|------|-------|
| Isolation Voltage | Tested for 1 min. | 1000 | | | Vdc |
| Insulation Resistance | Test at 500 Vdc | 1000 | | | M Ω |

Typical Characteristics

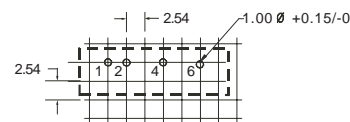


Outline Dimensions & Recommended Layout Pattern

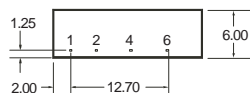
Side View



Layout



Bottom View



| Pin | Function |
|-----|----------|
| 1 | +Vin |
| 2 | -Vin |
| 4 | -Vout |
| 6 | +Vout |

- Notes:
1. All units in mm.
 2. All pins on a 2.54 mm pitch.
 3. All Pin widths are 0.50 mm.

Application Notes:
- Input filtering

To reduce the reflected ripple current and minimize EMI, especially when the converter input is more than 2" away from the DC source, it is recommended to connect a low ESR electrolytic capacitor between Vin and Gnd. The values suggested are as shown in Table 1. If additional filtering is required, the capacitance may be increased, or expanded to an LC network as shown in Figure 1.

Table 1

| Input Voltage | External Input Capacitance |
|---------------|----------------------------|
| 5 V | 4.7 μ F |
| 12 V | 2.2 μ F |
| 24 V | 1.0 μ F |

- Output filtering

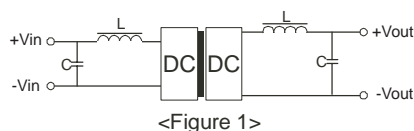
An output capacitor as shown in Table 2 may be used to reduce output ripples and noise.

requirements as shown in Table 2.

Output capacitance may be increased for additional filtering, but should not exceed 10 μ F. It can also be expanded to an LC network as in Figure 1.

Table 2

| Vout | External Output Capacitance |
|------|-----------------------------|
| 5 V | 10 μ F |
| 9 V | 4.7 μ F |
| 12 V | 2.2 μ F |
| 15 V | 1 μ F |


- Minimum loading

The converter needs a minimum of 10% loading to maintain output regulation. Operation under no-load conditions will not cause immediate damages but may reduce reliability, and cause performance not to meet specifications.

- Protection

The converter has minimal protection against input over-voltage or output over-load, and may be permanently damaged if exposed to these conditions. An input clamping device can be used for input voltage limiting. An input fuse or an output fuse can also be used to protect against over-loading.

- Unregulated input

As fixed input converters, this series can accept voltages within a limited range of the nominal input. Otherwise the converter may not function properly or may be damaged. An optional regulator can be used at the input to bring voltage within regulation, as shown in Figure 2.

