



157B_6U Series

1W - Single/Dual Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter

1 Watt

- ⊕ High efficiency up to 85%
- ⊕ 6000VDC isolation voltage
- ⊕ Protective separation insulation
- ⊕ 7 PIN SIP package
- ⊕ Industry standard pinout
- ⊕ No external component required
- ⊕ RoHS compliance
- ⊕ Internal SMD construction
- ⊕ Unregulated output types



The 157B_6U series meet basic insulation grid supplied circuits from earthed exposed parts and is thus vital for safety. It is specially designed for applications which require compact size, high isolation, low isolation capacitor and low leakage current power.

These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 10\%$)
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 6000\text{VDC}$)
- 3) Where do not have high requirement of line regulation and the ripple & noise of the output voltage;

Such as: Medical collection and isolation, High voltage collection circuit, IGBT-driven circuits, etc.

Common specifications

| | |
|--------------------------------|---------------------------------------|
| Short circuit protection*: | Short term, 1 sec. MAX |
| Temperature rise at full load: | 25°C TYP (Ta=25°C) |
| Cooling: | Free air convection |
| Operation temperature range: | -40°C – +85°C |
| Storage temperature range: | -55°C – +125°C |
| Lead temperature: | 300°C MAX, 1.5mm from case for 10 sec |
| Storage humidity range: | < 95%, non condensing |
| Patient leakage current: | 250VAC, 50/60Hz: 2μA MAX |
| MTBF: | >3,500,000 hours |
| Case material: | Plastic case UL94-V0 |
| Weight: | 2.7g |

Input specifications

| Item | Test condition | Min | Typ | Max | Units |
|-------------------|----------------|-----|-----|-----|-------|
| Voltage tolerance | Vo, Io Nom | | | ±5 | % |
| Input filter | Capacitor | | | | |
| Hot plug | Unavailable | | | | |

Isolation specifications

| Item | Test condition | Min | Typ | Max | Units |
|-----------------------|---------------------------------|------|-----|-----|-------|
| Isolation voltage | Tested for 1 minute and 1mA max | 6000 | | | VDC |
| Isolation resistance | Test at 500VDC | 1000 | | | MΩ |
| Isolation capacitance | Input/Output, 100KHz/0.1V | | 4 | 10 | pF |

Output specifications

| Item | Test condition | Min | Typ | Max | Units |
|---------------------------------|---|-----|-------|----------|--------|
| Voltage tolerance | 100% full load | | | ±5 | % |
| Line regulation | For Vin change of $\pm 1\%$ | | 1.2 | | % |
| Load regulation | 10% To 100% F.L. • 5V • 9V,12V,15V, 24V | | | 15 10 | % % |
| Temperature coefficient | 100% full load | | ±0.02 | | %/°C |
| Ripple & Noise* | 20MHz Bandwidth | | | 100 | mVp-p |
| Transient response setting time | 50% load step change | | 350 | | us |
| Switching frequency | Full load, nominal input | | 100 | | KHz |

* Ripple and noise tested with "parallel cable" method, please see DC-DC Converter Application Notes for specific operation methods.

Example:

157B_0505D6U
1= 1Watt; S7= SIP7; B= Pinning; 5Vin; 5Vout; D= Dual Output;
6= 6kVDC; U= Unregulated Output

Note:

1. Operation under minimum load will not damage the converter; however, they may not meet all specifications.
2. Max. Capacitive Load is tested at nominal input voltage and full load.
3. Unless otherwise noted, All specifications are measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load.
4. In this datasheet, all test methods are based on our corporate standards.
5. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.
6. Please contact our technical support for any specific requirement.
7. Specifications of this product are subject to changes without prior notice.

1S7B_6U Series Series

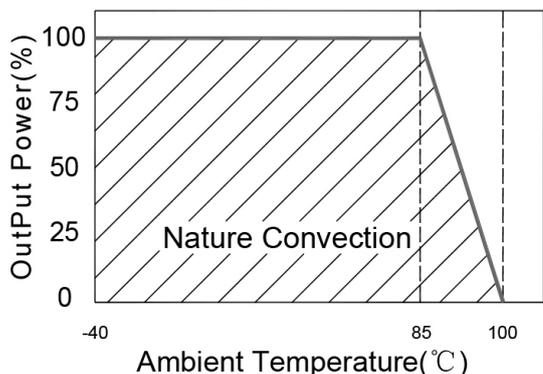
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| Part Number | Input Voltage [V] | Output Voltage [VDC] | Output Current [mA] | Efficiency [%, max] |
|--------------|-----------------------|----------------------|---------------------|---------------------|
| 1S7B_xx05S6U | 3.3, 5, 9, 12, 15, 24 | 5 | 200 | 70 |
| 1S7B_xx09S6U | 3.3, 5, 9, 12, 15, 24 | 9 | 112 | 75 |
| 1S7B_xx12S6U | 3.3, 5, 9, 12, 15, 24 | 12 | 84 | 78 |
| 1S7B_xx15S6U | 3.3, 5, 9, 12, 15, 24 | 15 | 67 | 80 |
| 1S7B_xx24S6U | 3.3, 5, 9, 12, 15, 24 | 24 | 42 | 82 |
| 1S7B_xx05D6U | 3.3, 5, 9, 12, 15, 24 | ±5 | ±100 | 70 |
| 1S7B_xx09D6U | 3.3, 5, 9, 12, 15, 24 | ±9 | ±56 | 75 |
| 1S7B_xx12D6U | 3.3, 5, 9, 12, 15, 24 | ±12 | ±42 | 78 |
| 1S7B_xx15D6U | 3.3, 5, 9, 12, 15, 24 | ±15 | ±34 | 80 |
| 1S7B_xx24D6U | 3.3, 5, 9, 12, 15, 24 | ±24 | ±21 | 82 |

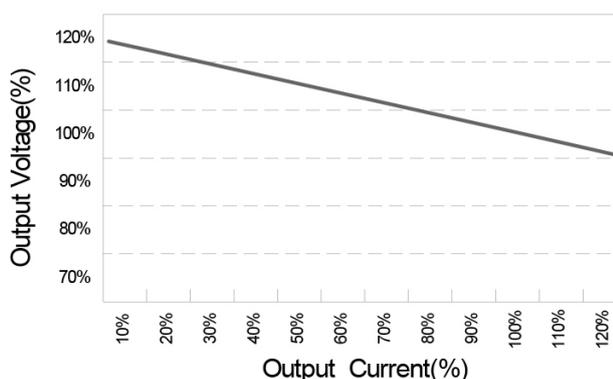
- xx=Input Voltage (possible for other input and output voltage combinations on request)
03=3.3Vdc, 05=5Vdc, 09=9Vdc, 12=12Vdc, 15=15Vdc, 24=24Vdc
- The input voltage increases, there will be an increase in efficiency.

Typical characteristics

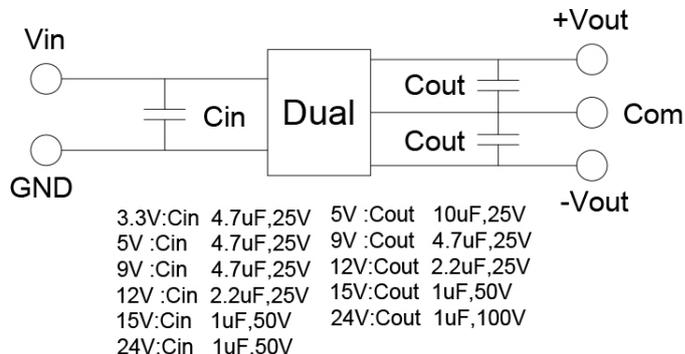
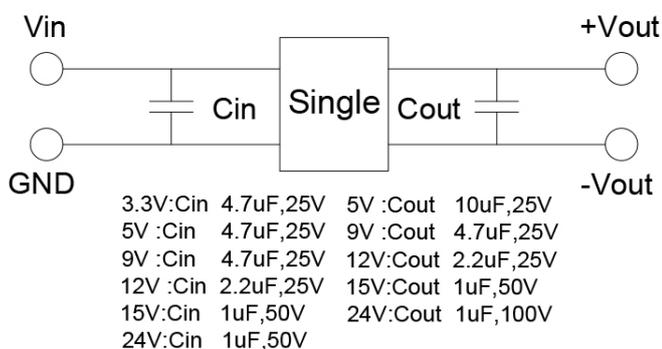
Temperature derating graph



Tolerance envelope graph



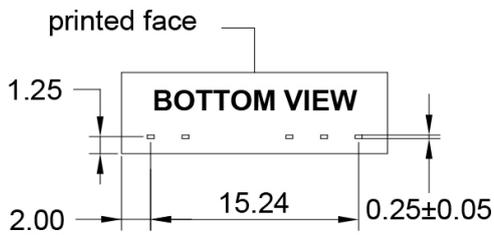
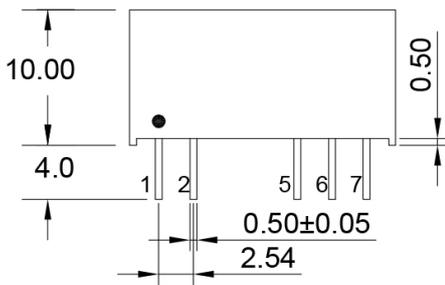
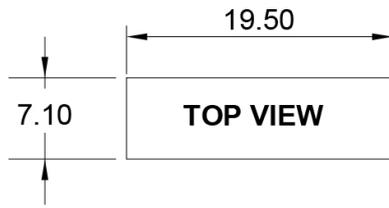
Recommended test circuit



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Mechanical dimensions



Pin connection:

| PIN | 1 | 2 | 5 | 6 | 7 |
|--------|------|------|-------|--------|-------|
| Single | +Vin | -Vin | -Vout | No Pin | +Vout |
| Dual | +Vin | -Vin | -Vout | Common | +Vout |