



## 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
- ⊕ UL60950 approved

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.



**UL**  
UL-60950-1 (E347551)

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

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage tolerance	100% full load			±5	%
Line regulation	For Vin change of ±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 isolation; 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.

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 60 seconds and 0,5mA max.	6000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		4	10	pF

# 1S7B\_6U series

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

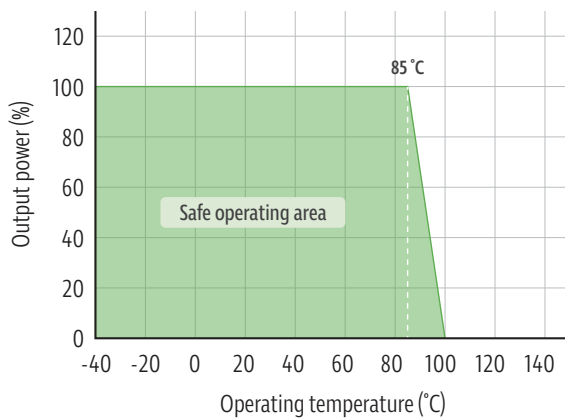
## Typical characteristics

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

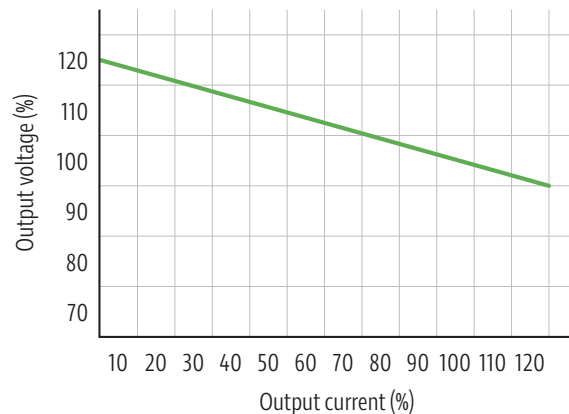
- xx = Input Voltage (possible for other input and output voltage combinations on request)  
03 = 3.3Vdc, 05=5Vdc, 09 = 9Vdc, 12 = 12Vdc, 15 = 15Vdc, 24 = 24Vdc
- The input voltage increases, there will be an increase in efficiency.

## Typical characteristics

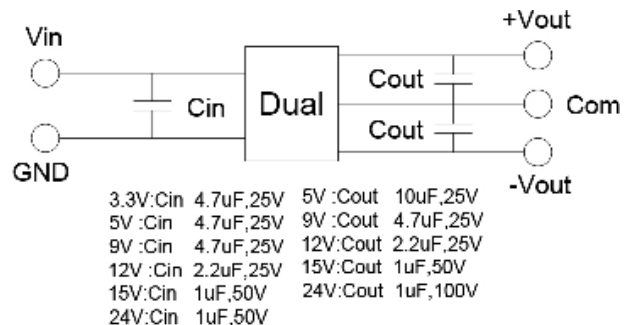
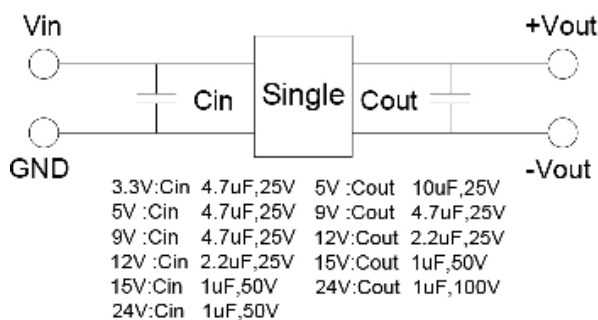
Temperature derating graph



Tolerance envelope graph



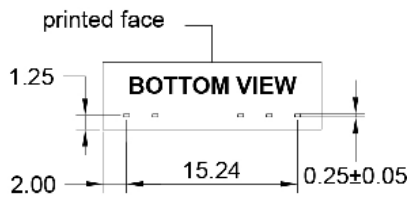
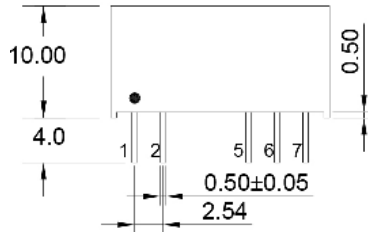
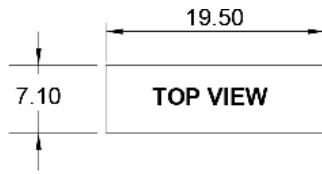
## Recommended test circuit



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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