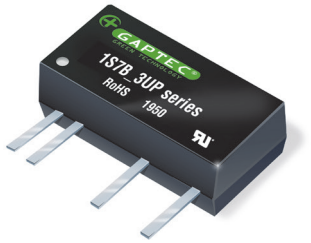
1S7B_3UP series

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



DC-DC Converter 1 Watt

- High efficiency up to 85%
- 3000VDC isolation
- SIP package
- Short circuit protection (SCP)
- RoHS compliance
- Operating temperature: -40°C to +105°C
- Industry standard pinout
- IEC62368, UL62368, EN62368 approved

The 1S7B_3UP series are specially designed for applications where an isolated (two isolated) voltage is required in a distributed power supply system.

They are suitable for: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

UL-62368-1 (E347551)

Common specifications

Short circuit protection:	Continuous, self-recovery
Temperature rise at full load: (Ta=25°C)	• 3.3VDC: 25°C TYP • Others: 15°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C – +105°C
Storage temperature range:	-55°C – +125°C
Pin soldering resistance temperature:	300°C MAX, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
MTBF (MIL-HDBK-217F@25°C):	>3,500,000 hours
Case material:	Plastic [UL94-V0]
Dimensions:	19.65 x 6.00 x 10.16mm
Weight:	2.1g

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (no-load/full load)	• 3.3/5VDC input • 9/12VDC input • 15/24VDC input		270/5 241/12 241/18	286/10 254/20 254/30	mA mA mA
Input surge voltage (1sec. max.)	5VDC input	-0.7		9	VDC
Reflected ripple current*			15		mA
Input filter	Capacitor				
Hot plug	Unavailable				

* Reflected ripple current testing method please see DC-DC Converter Application Notes for specific operation.

EMC specifications

EMI	CE	CISPR32/EN55032 CLASS B (see EMC recommended circuit)
EMI	RE	CISPR32/EN55032 CLASS B (see EMC recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8KV, Contact ±8KV perf. Criteria B

Example:
1S7B_0505D3UP
1 = 1Watt; S7 = SIP7; B = Pinning; 5Vin; 5Vout; D = Dual Output;
3 = 3kVDC; U = Unregulated Output; P = Short circuit protection

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	See output regulation curve				
Line regulation	For Vin change of ±1% • 3.3V output • Others			1.5 1.2	% %
Load regulation	10% to 100% load • 3.3VDC output • 5VDC output • 9VDC output • 12VDC output • 15VDC output • 24VDC output		15 10 8 7 6 5	20 15 10 10 10 10	% % % % % %
Temperature coefficient	100% full load		±0.02		%/°C
Ripple & Noise*	20MHz Bandwidth • 3.3V output • Others		30 50	75 100	mVp-p mVp-p
Switching frequency	Full load, nominal input		270		KHz

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

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		20		pF

Note:
1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see „Features" and „EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

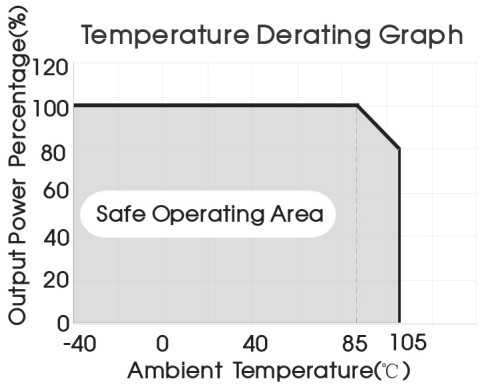
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Specifications subject to change without notice.

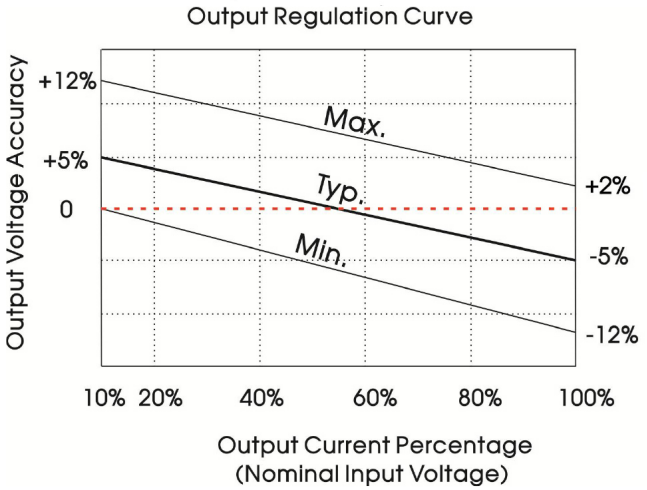
1S7B_3UP Series Series

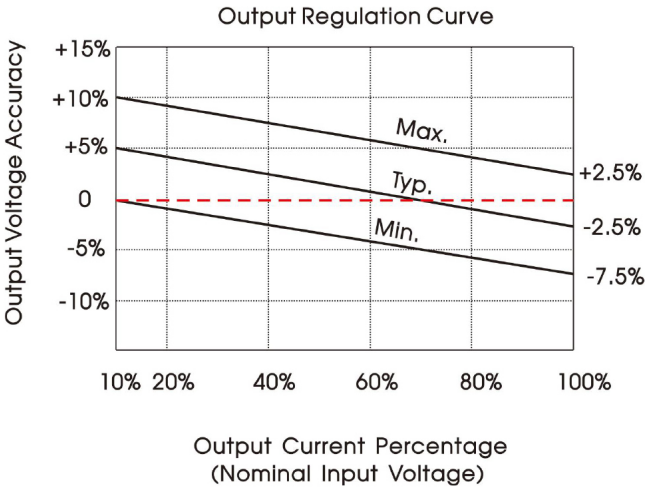
1W - Single/Dual Output DC-DC Converter - Fixed Input - Isolated & Unregulated

Part Number	Input Voltage [V]	Output Voltage [VDC]	Output current [mA, max.]	Capacitive load [µF, max]	Efficiency [%, typ]
1S7B_0503S3UP	5	3.3	303	1000	73
1S7B_0505S3UP	5	5	200	1000	78
1S7B_0509S3UP	5	9	111	470	76
1S7B_0512S3UP	5	12	84	470	76
1S7B_0515S3UP	5	15	67	470	76
1S7B_0524S3UP	5	24	42	470	76
1S7B_0503D3UP	5	±3.3	±152	470	78
1S7B_0505D3UP	5	±5	±100	470	78
1S7B_0509D3UP	5	±9	±56	470	80
1S7B_0512D3UP	5	±12	±42	220	74
1S7B_0515D3UP	5	±15	±34	220	76
1S7B_0515D3UP	5	±24	±20	220	76

Typical characteristics



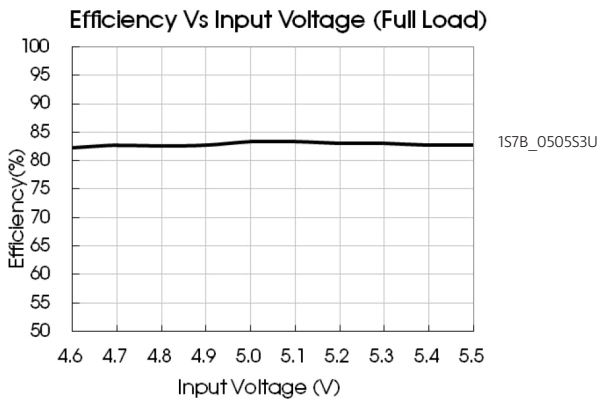


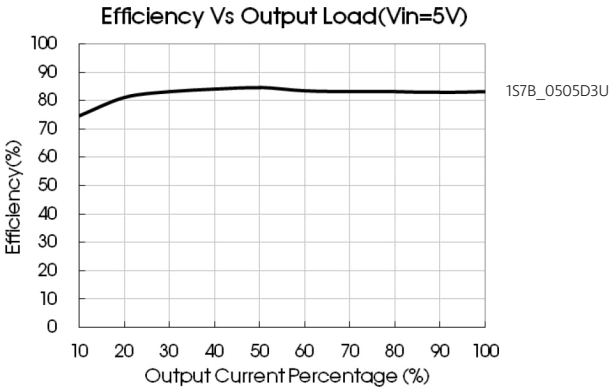


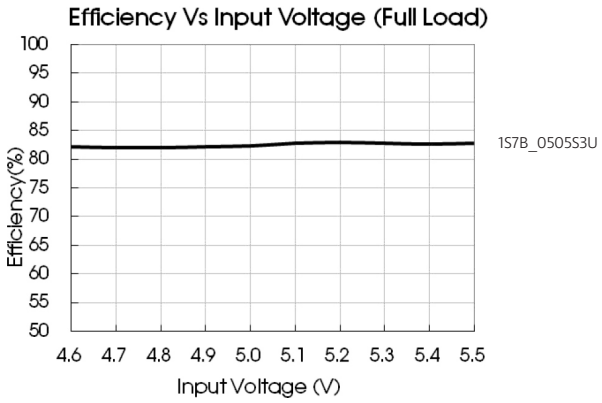
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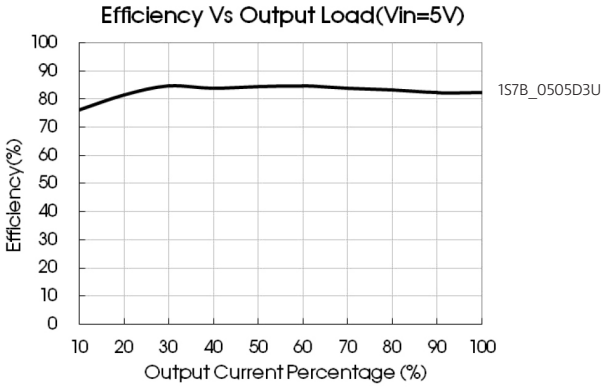
Specifications subject to change without notice.

Efficiency curves









Typical application circuit

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in the figure below.
Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

Dual Output



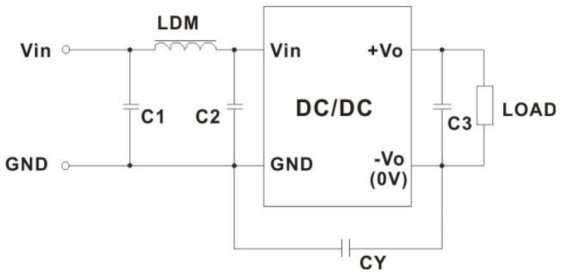
Single Output



Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (µF)	Single output (VDC)	Cout (µF)	Dual output (VDC)	Cout (µF)
5	4.7	3.3/5	10	±3.3/±5	4.7
--	--	9/12	2.2	±9/±12	1
--	--	15/24	1	±15/±24	0.47

EMC compliance circuit (CLASS B)

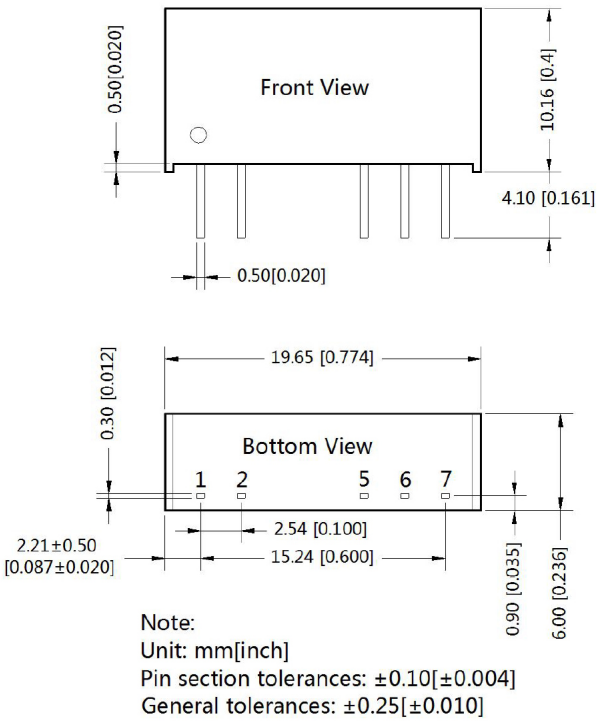


EMC recommended circuit value table (Table 2)

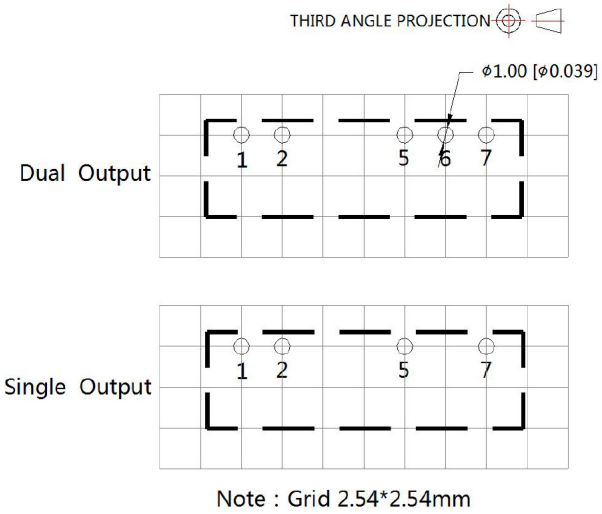
Input voltage 5VDC	Output voltage (VDC)		3.3/5/9	12/15/24
	EMI	C1/C2	4.7μF /25V	4.7μF /25V
		CY	--	1nF/4KVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA
		C3	Refer to the Cout in table 1	
		LDM	6.8μH	6.8μH

Note: In the case of actual use, the requirements for EMI are high, it is subject to CY (CY:1nF/4KV).

Mechanical dimensions



Note:
Unit: mm[inch]
Pin section tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]



Note : Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
1	Vin	Vin
2	GND	GND
5	0V	-Vo
6	No Pin	0V
7	+Vo	+Vo

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