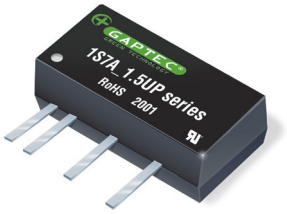
1S7A_1.5UP series

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



DC-DC Converter 1 Watt

- SIP package
- Efficiency up to 83%
- Short circuit protection (SCP)
- 1500VDC isolation voltage
- No-load input current as low as 5mA
- Operating temperature: -40°C to +105°C
- Industry standard pinout
- RoHS compliance
- UL62368, EN62368 approved

The 1S7A_1.5UP series products 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, automatic recovery
Temperature rise at full load:	15°C TYP, Ta= 25°C
Cooling:	Free air convection
Operation temperature range:	-40°C~+105°C
Storage temperature range:	-55°C ~+125°C
Pin welding resistance temperature:	300°C max, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
Package material:	Plastic [UL94-V0]
Switching frequency:	Full load, nominal input 270KHz typ.
MTBF (MIL-HDFK-217F@25°C):	>3500 Khours
Dimensions:	19.65*6.00*10.16mm
Weight:	2.1g

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	See tolerance envelope curve				
Line regulation	For Vin change of ±1%			1.2	%
Load regulation	10% to 100% load • 5VDC output • 9VDC output • 12VDC output • 15VDC output		 10 8 7 6	 15 10 10 10	 % % % %
Temperature coefficient	100% full load		±0.02		%/°C
Ripple & Noise*	20MHz Bandwidth		30	75	mVp-p

* Test ripple and noise by "parallel cable" method.

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Input current (Full load/no load)	• 5VDC output • 9/12VDC output • 15VDC output		244/5 241/12 241/18	257/10 254/20 254/30	mA mA mA
Surge voltage (1sec. max.)	5VDC input	-0.7		9	VDC
Reflected ripple current			15		mA
Filter	Filter capacitor				
Hot plug	Unavailable				

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	Input/output, 100KHz/0.1V		20		pF

Example:
1S7A_0505D1.5UP
1 = 1Watt; S7 = SIP7; A = series; 5Vin; 5Vout; D = Dual Output;
1.5 = 1.5kVDC; U = Unregulated Output; P = Short Circuit Protection

Note:

1. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
2. 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;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. 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;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see „Features" and „EMC";
8. 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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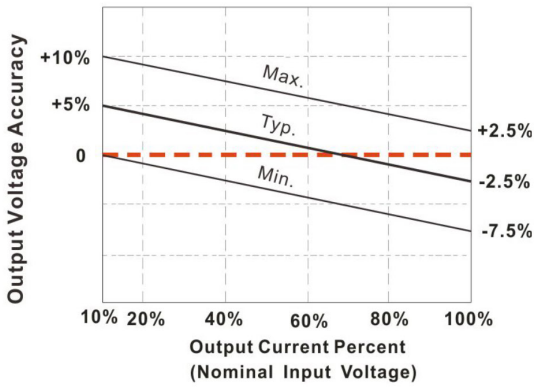
EMC specifications				
EMI	CE	CISPR22/EN55022	CLASS B (see EMC recommended circuit)	
EMI	RE	CISPR22/EN55022	CLASS B (see EMC recommended circuit)	
EMS	ESD	IEC/EN61000-4-2	Contact ±4KV, Air ±8KV	perfect Criteria B

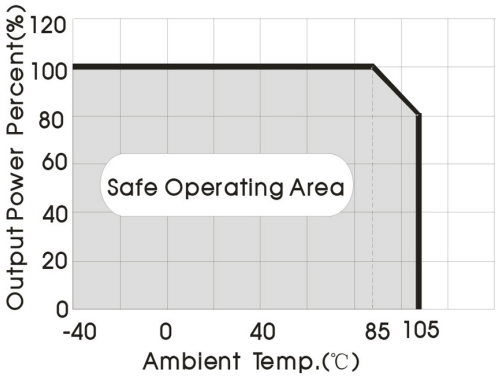
Part Number	Input Voltage [V]	Output Voltage [VDC]	Current [mA, max]	Efficiency [%, typ]	Capacitive load [µF, max]	Certification
1S7A_0505S1.5UP	5	5	200	82	2400	UL/CE
1S7A_0509S1.5UP	5	9	111	83	1000	UL/CE
1S7A_0512S1.5UP	5	12	84	83	560	UL/CE
1S7A_0515S1.5UP	5	15	67	83	560	UL/CE
1S7A_0505D1.5UP	5	±5	±100	82	1200	UL/CE
1S7A_0509D1.5UP	5	±9	±56	83	470	UL/CE
1S7A_0512D1.5UP	5	±12	±42	83	220	UL/CE
1S7A_0515D1.5UP	5	±15	±34	83	220	UL/CE

Typical characteristics

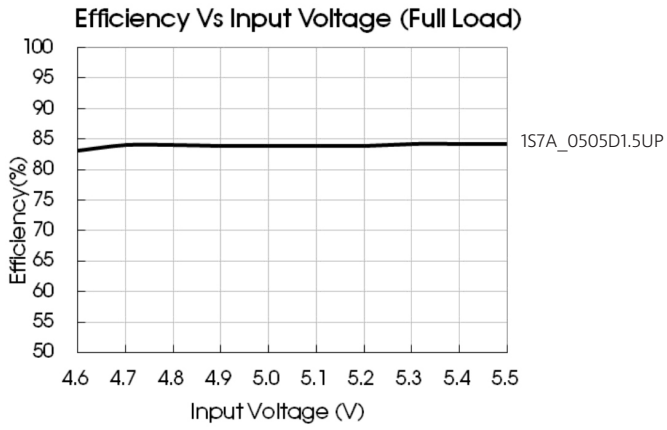
Tolerance envelope curve

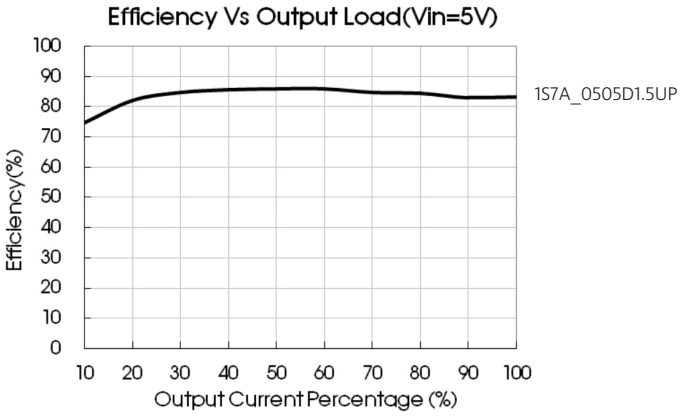


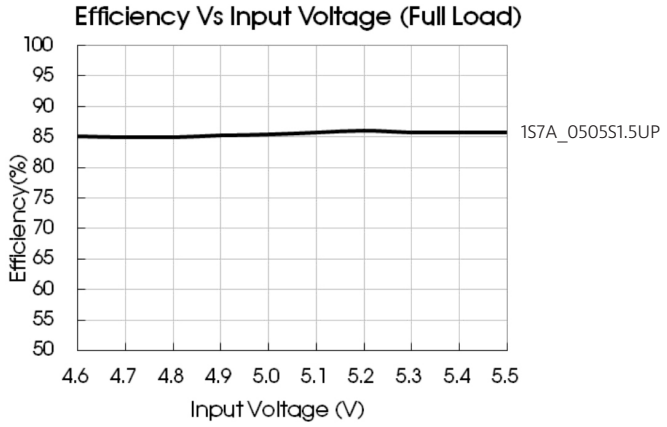
Temperature derating curve

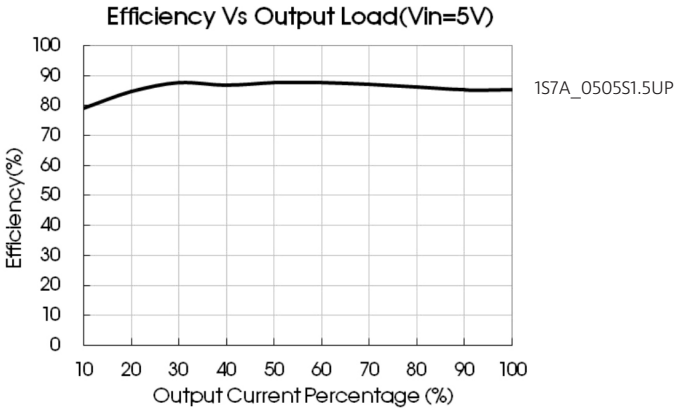


Efficiency









Typical application

If it is required to further reduce input and output ripple, a filter capacitor may be connected to the input and output terminals, see Fig. 1.
Moreover, choosing a suitable filter capacitor is very important, start-up problems may be caused if the capacitance is too large. Under the condition of safe and reliable operation, the recommended capacitive load values are shown in Table 1.

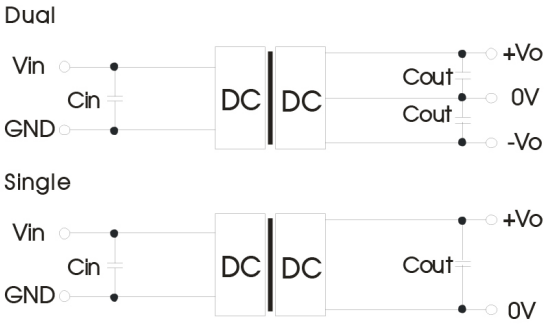
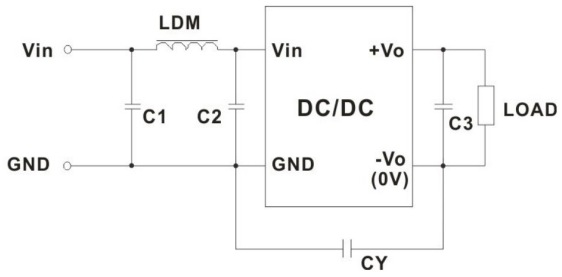


Figure 1

Recommended capacitive load value table (Table 1)

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

EMC solution-recommended circuit

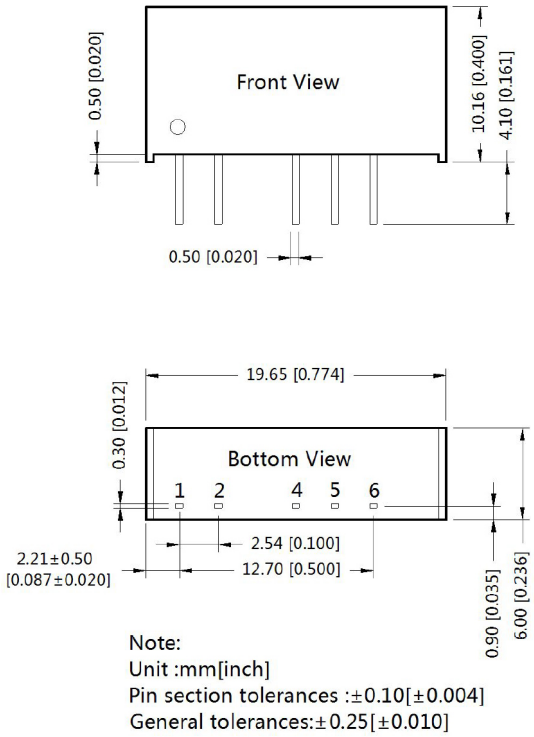


EMC recommended circuit value table

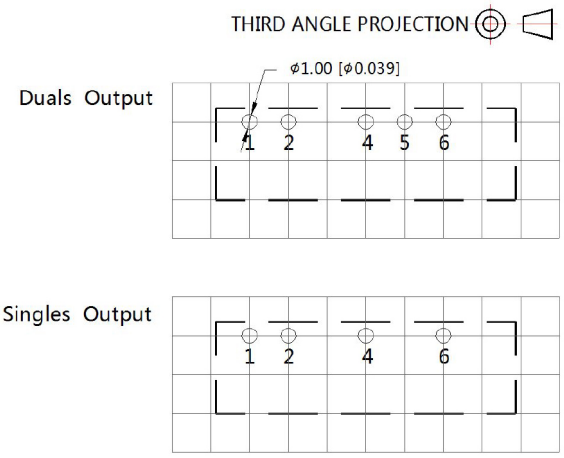
EMI // Output voltage	Vout: 5/9V	Vout: 12/15V
C1/C2	4.7μF/25V	4.7μF/25V
CY	-	1nF/4KVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-G
C3	Refer to the Cout in typical application	
LDM	6.8μH	

Note:
In the case of actual use, the requirements for EMI are high, it is subject to CY .

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	Singles	Duals
1	Vin	Vin
2	GND	GND
4	0V	-Vo
5	No Pin	0V
6	+Vo	+Vo