1D8A2_1.5UP series

1W - Single Output DC-DC Converter - Isolated & Unregulated

DC-DC Converter 1 Watt

- DIP8 package type
- Operating temperature range: -40°C to +105°C
- 1500VDC isolation voltage
- Up to 89% efficiency
- International standard pinning
- MTBF: 3,500,000 hours

Introducing our new 1D8A2_1.5UP series, a compact and high-reliability isolated DC-DC converter platform designed for efficient power conversion in industrial and embedded applications. Housed in a standard DIP8 package with international pinning, the series enables easy integration and drop-in replacement across a wide range of designs. With 1500 VDC isolation and efficiencies of up to 89%, the 1D8A2_1.5UP series delivers dependable and efficient performance. It operates reliably across an extended temperature range from –40°C to +105°C, ensuring stable functionality even in demanding environments. An MTBF of 3,500,000 hours underlines the long-term reliability of the series, making it an ideal choice for applications requiring compact, robust, and maintenance-free isolated power solutions.

Common specifications

Short circuit protection	Continuous, self recovery
Switching frequency	220 kHz (full Load, nominal input voltage)
Operation temperature	-40°C ~+105°C (with derating)
Storage temperature	-55°C ~+125°C
Soldering Profile	Wave-soldering, 260°C (±5°C); time: 5 - 10s Manual-welding, 360°C (±10°C); time: 3 - 5s
Heating of the casing during operation	25°C (input nominal, output full load)
Storage humidity	95% RH (Non-condensing)
MTBF: (MIL-HDBK-217F@25°C)	>3,500,000 hours
Input filter	Capacitance filter
Hot plug	Unavailable
Case material	Black plastic; flame-retardant and heat-resistant (UL 94V-0 rated)
Package dimensions	12.70 x 10.10 x 7.00 mm
Weight	1.65g (typ.)
Cooling method	Free air convection

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (full load/ no load)	5VDC Input • 15/24VDC Output • Other Output 12VDC Input 15VDC Input 24VDC Input		 225/18 230/10 99/7 76/6 51/3	 255/15 260/15 105/15 82/15 58/15	mA
Reflected ripple current			15		mA
Impulse voltage	5VDC Input 12VDC Input 15VDC Input 24VDC Input	-0.7 -0.7 -0.7 -0.7		9 18 21 30	VDC

Example:
1D8A2_2405S1.5UP
1 = 1Watt; D8 = DIP; A2 = Series; 24 = 24Vin; 05 = 5Vout; S = Single Output; 1.5 = 1500VDC isolation; U = Unregulated Output; P = Short circuit protection.

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	See figure 1				
Linear regulation (input voltage variation)	3.3VDC output Other output		±1.5 ±1.2		%
Load regulation (10% - 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	%
Ripple & noise	20mHZ bandwidth	--	45	100	mV
Temperature coeffcient	Full load	--	±0.03	--	%/°C

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500			VDC
Isolation resistance	Input-output, isolated voltage 500VDC	1000			MΩ
Isolation capacitance	Input-output, 100kHz/0.1V		20		pF

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, all indicators in this manual are measured at Ta = 25°C, humidity <75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this datasheet are based on our corporate standards;
6. For specific requirements please contact our technical team directly;
7. Product specifications are subject to change without prior notice.

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EMC specifications				
EMI	CE	CISPR32/EN55032 CLASS B (EMC application circuit 4)		
EMI	RE	CISPR32/EN55032 CLASS B (EMC application circuit 4)		
EMS	ESD	IEC/EN61000-4-2	Contact ±6kV	perf. criteria B

Product Selection Guide

Approval	Part number	Input Voltage Nominal Range (VDC)	Output Voltage (VDC)	Output Current (mA) max./min.	Full Load Efficiency% (typ.)	Capacitive Load max. (µF)
	1D8A2_0503S1.5UP	5	3.3	303/30	79	2400
	1D8A2_0505S1.5UP	5	5	200/20	86	2400
	1D8A2_0509S1.5UP	5	9	111/11	86	1000
	1D8A2_0512S1.5UP	5	12	84/8	88	560
	1D8A2_0515S1.5UP	5	15	67/7	86	560
	1D8A2_0524S1.5UP	5	24	42/4	86	220
	1D8A2_1203S1.5UP	12	3.3	303/30	79	2400
	1D8A2_1205S1.5UP	12	5	200/20	86	2400
	1D8A2_1209S1.5UP	12	9	111/11	86	1000
	1D8A2_1212S1.5UP	12	12	84/8	88	560
	1D8A2_1215S1.5UP	12	15	67/7	86	560
	1D8A2_1224S1.5UP	12	24	42/4	86	220
	1D8A2_1503S1.5UP	15	3.3	303/30	80	2400
	1D8A2_1505S1.5UP	15	5	200/20	86	2400
	1D8A2_1509S1.5UP	15	9	111/11	86	1000
	1D8A2_1512S1.5UP	15	12	84/8	88	560
	1D8A2_1515S1.5UP	15	15	67/7	86	560
	1D8A2_1524S1.5UP	15	24	42/4	86	220
	1D8A2_2403S1.5UP	24	3.3	303/30	80	2400
	1D8A2_2405S1.5UP	24	5	200/20	86	2400
	1D8A2_2409S1.5UP	24	9	111/11	86	1000
	1D8A2_2412S1.5UP	24	12	84/8	87	560
	1D8A2_2415S1.5UP	24	15	67/7	88	560
	1D8A2_2424S1.5UP	24	24	42/4	89	220

Typical characteristics

Temperature derating graph

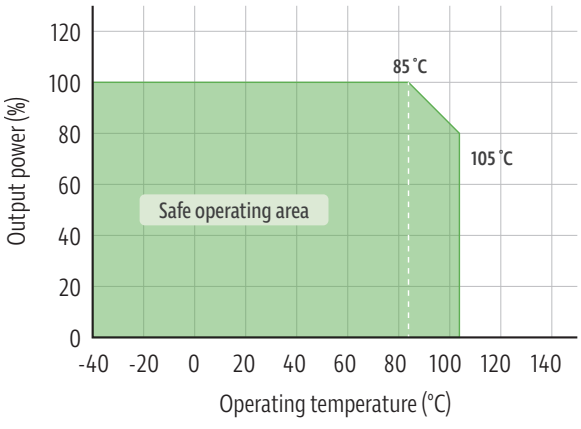
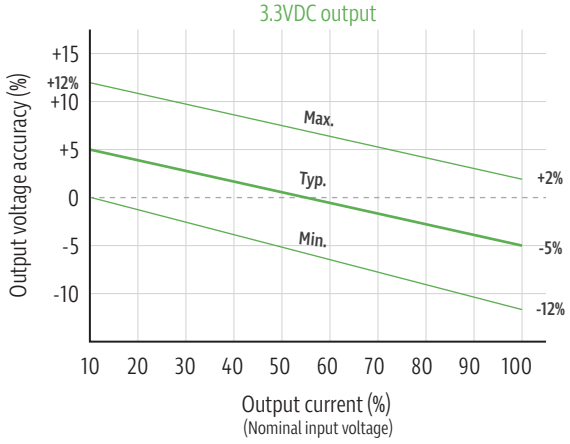


Figure2

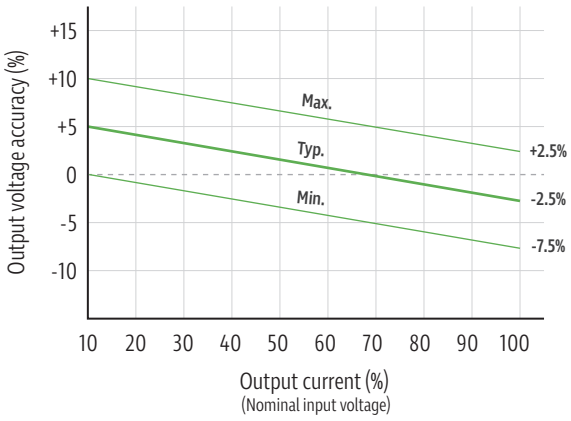
Typical characteristics

Output regulation curve
3.3VDC output



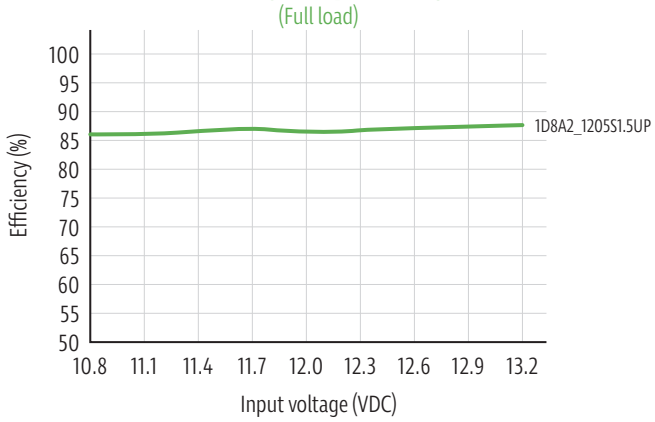
(Figure1-1)

Output regulation curve

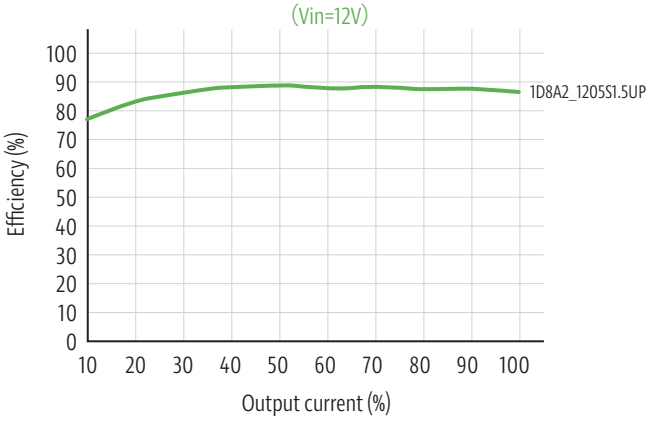


(Figure1-2)

Efficiency vs input voltage
(Full load)



Efficiency vs output load
(Vin=12V)



Typical circuit design and application

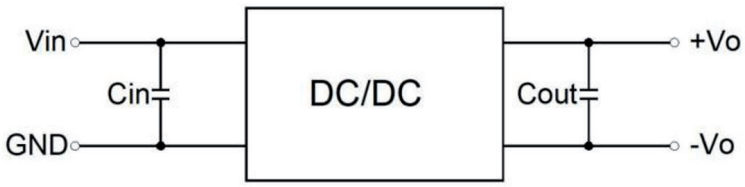


Figure 3

Recommended component parameters

Vin	Cin	Vo	Cout
5VDC	4.7uF/16V	3.3/5VDC	10μF/16V
12VDC	2.2uF/25V	9VDC	4.7μF/16V
15VDC	2.2uF/25V	12VDC	2.2μF/25V
24VDC	1.0uF/50V	15VDC	1.0μF/25V
--	--	24VDC	0.47μF/50V

EMI recommended component parameters

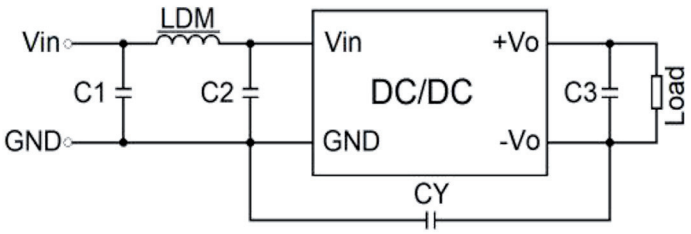


Figure 4

EMC recommended parameter table

EMI	C1	4.7μF / 50V
	C2	4.7μF / 50V
	C3	Refer to the Cout parameter in figure 3
	CY	1000pF / 2kV
	LDM	6.8μH

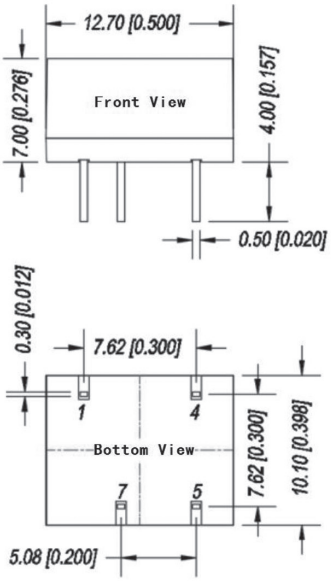
1. Typical applications
If further reduction of input and output ripple is required, a capacitor filtering network can be connected at the input and output terminals, and the application circuit is shown in figure 3.

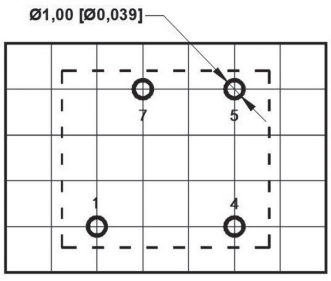
However, attention should be paid to selecting appropriate filtering capacitors. If the capacitance is too large, it is likely to cause startup problems. For each output, while ensuring safe and reliable operation, the recommended capacitive load values are detailed in the table.

2. EMC recommended circuit: see figure 4

3. Output load requirements
To ensure the efficient and reliable operation of the module, its minimum output load should not be less than 10% of the rated load when in use. If your required power is indeed small, please connect a resistor in parallel at the output end (the sum of the power consumed by the resistor and the actual power used is greater than or equal to 10% of the rated power).

Mechanical dimensions





The grid distance is 2.54mm x2.54mm

Pin definition table	
Pin	Function
1	GND
4	Vin
5	+Vo
7	-Vo

Note:
Unit: mm [inch]
Pin section tolerances: ±0.10 [±0.004]
General tolerances: ±0.50 [±0.020]