

1D14B Series

1W Single/Dual Output - Fixed Input - Isolated & Unregulated
DIP PACKAGE

DC-DC Converter

1 Watt

- ⊕ High Efficiency up to 81%
- ⊕ DIP Package
- ⊕ Industry Standard Pinout
- ⊕ UL94-V0 Package
- ⊕ 1.5KVDC Isolation
- ⊕ Short circuit protection (SCP)
- ⊕ Temperature Range: -40°C~+105°C
- ⊕ No External Component Required
- ⊕ RoHS Compliance

The 1D14B series is specially designed for applications where an isolated voltage is required in a distributed power supply system.

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 = 1500VDC)
- 3) Where do not has high requirement of line regulation and load regulation

Such as: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.



UL-60950-1 Certified



Common specifications	
Short circuit protection:	1 second
Temperature rise at full load:	25°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C – +105°C
Storage temperature range:	-55°C – +125°C
Lead temperature	300°C (1.5mm from case for 10 sec.)
Storage humidity range:	< 95%
Case material:	Plastic [UL94-V0]
MTBF:	>3,500,000 hours
Weight:	2.4g

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Output power		0.1		1	W	
Line regulation	For Vin change of 1%			±1.2	%	
Load regulation	10% to 100% full load					
	• 5V Output		12		%	
	• 9V Output		9		%	
	• 12V Output		8		%	
	• 15V Output		7		%	
	• 24V Output		6		%	
Output voltage accuracy	See tolerance envelope graph					
Temperature drift	100% full load			±0.03	%/°C	
Ripple & Noise*	20MHz Bandwidth		60		mVp-p	
Switching frequency	Full load, nominal input		100	300	KHz	

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Input current (No load/full load)	• 5V input		25/256		mA
	• 12V input		15/106		mA
	• 15V input		10/84		mA
	• 24V input		7/54		mA
Surge voltage (1S max)	• 5V input	-0.7		9	VDC
	• 12V input	-0.7		18	VDC
	• 15V input	-0.7		21	VDC
	• 24V input	-0.7		30	VDC
Reflected ripple current			15		mA
Filter	Capacitor				

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

** Supply voltage must be discontinued at the end of short circuit duration for 1D14B series of 24V input.

Model selection:

WCTP**_xxyyN##O

W=Watt; C= Case; T=Type; P=Pinning; **= Voltage Variation (omitted $\pm 10\%$); xx= Vin; yy= Vout; N= Numbers of Output; ##= Isolation (kVDC); O= output regulation

Example:

1D14B_0505D1U

1= 1Watt; D14= DIP14; A= Pinning; 5Vin; 5Vout; D= Dual Output; 1= 1kVDC; U= Unregulated Output; P= Short Circuit Protection (SCP)

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

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
2. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, all the test methods of indications are based on corporate standards.
4. Only typical models listed, other models may be different, please contact our technical person for more details.

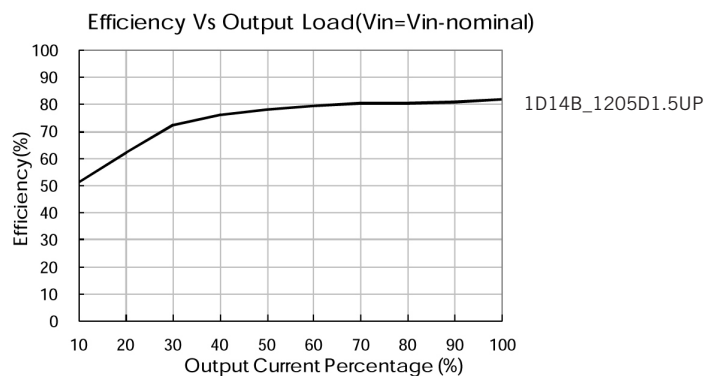
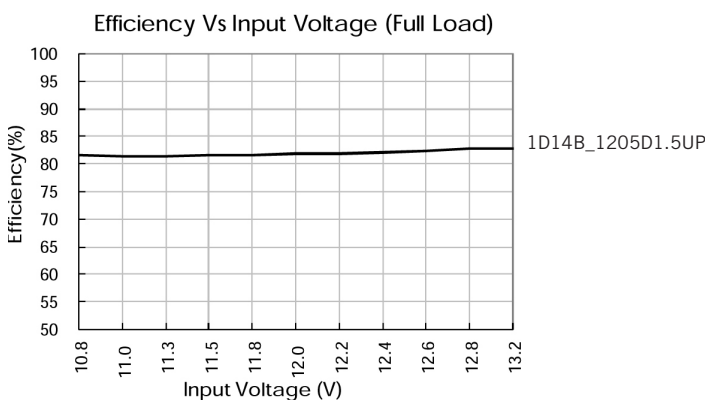
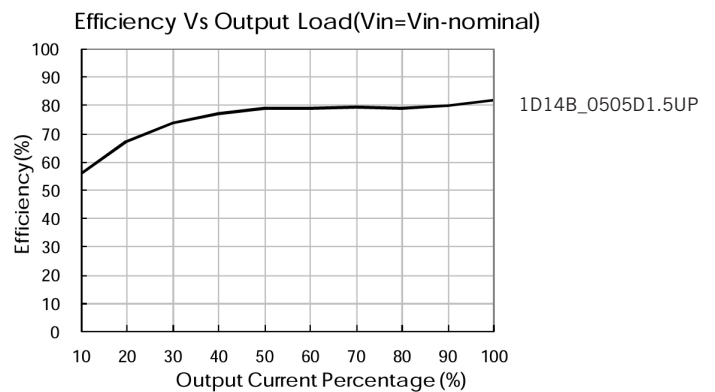
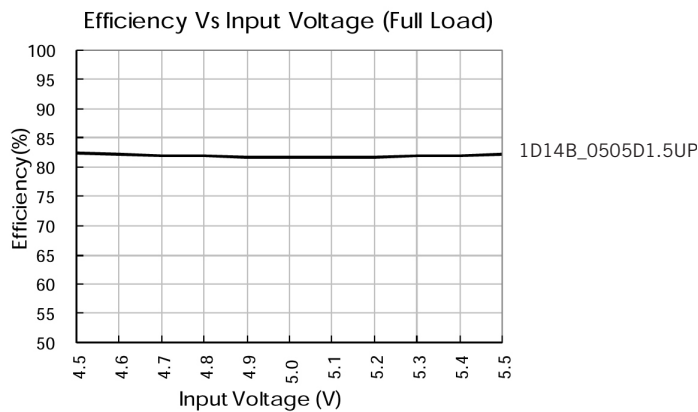
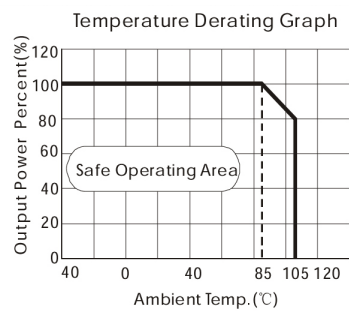
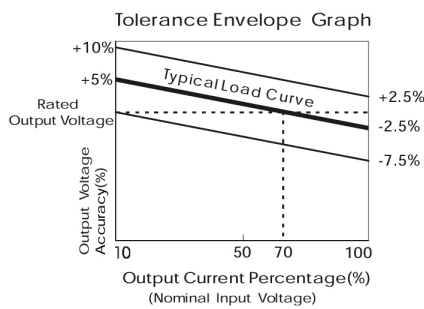
EMC specifications					
EMI	CE	CISPR22/EN55022	CLASS B	(External Circuit Refer to EMC recommended circuit)	
EMI	RE	CISPR22/EN55022	CLASS B	(External Circuit Refer to EMC recommended circuit)	
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV	perf. Criteria B	

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Part Number	Input Voltage [V]	Output Voltage [VDC]	Current [mA]	Efficiency [%, typ]	Capacitive load [μ F, max]
1D14B_0505D1.5UP	5	\pm 5	\pm 100	80	100
1D14B_0509D1.5UP	5	\pm 9	\pm 56	80	100
1D14B_0512D1.5UP	5	\pm 12	\pm 42	81	100
1D14B_0515D1.5UP	5	\pm 15	\pm 34	81	100
1D14B_0524D1.5UP	5	\pm 24	\pm 21	81	100
1D14B_1205D1.5UP	12	\pm 5	\pm 100	80	100
1D14B_1209D1.5UP	12	\pm 9	\pm 56	80	100
1D14B_1212D1.5UP	12	\pm 12	\pm 42	81	100
1D14B_1215D1.5UP	12	\pm 15	\pm 34	81	100
1D14B_1224D1.5UP	12	\pm 24	\pm 21	81	100
1D14B_2405D1.5UP	24	\pm 5	\pm 100	80	100
1D14B_2409D1.5UP	24	\pm 9	\pm 56	80	100
1D14B_2412D1.5UP	24	\pm 12	\pm 42	81	100
1D14B_2415D1.5UP	24	\pm 15	\pm 34	81	100
1D14B_2424D1.5UP	24	\pm 24	\pm 21	81	100

Typical characteristics



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Application note

1) Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.1. Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running well, the recommended capacitive load values as shown in Table 1.

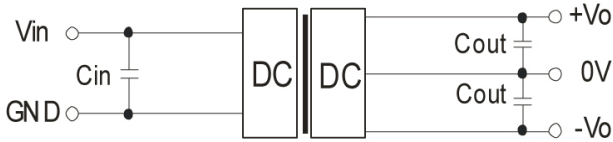


Figure 1

Vin (VDC)	Cin (uF)	Dual Vout (VDC)	Cout (uF)
5	4.7	±5	4.7
12	2.2	±9/ ±12	1
15	2.2	±15/±24	0.47
24	1	--	--

Table 1

2) EMC typical recommended circuit (CLASS B)

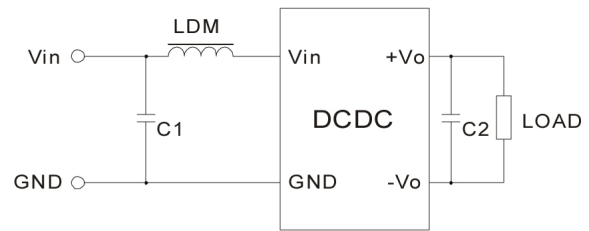


Figure 2

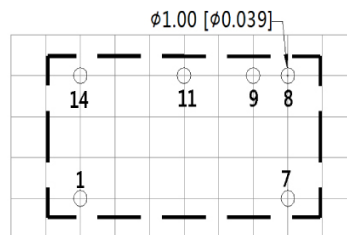
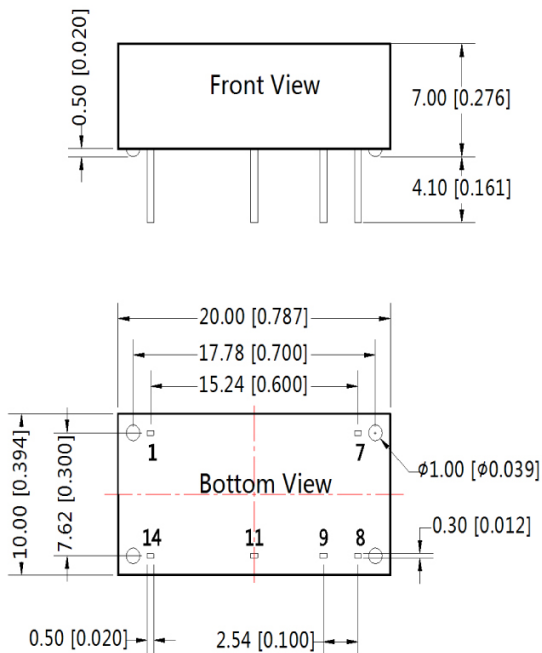
Input voltage (V)	5 / 12 / 15 / 24	
EMI	C1	4.7µF/50V
EMI	C2	Refer to the Cout in Fig. 1
EMI	LDM	6.8µH

3) Output load requirements

To ensure the module work efficiently and reliably, during the operation, the min. output load should be no less than 10% of the full load. If the actual output power is low, please connect a resistor to the output terminal in parallel, with a recommended resistance which is 10% of the rated power, and derating is required during operation.

Mechanical dimensions and footprint

THIRD ANGLE PROJECTION



Note : Grid 2.54*2.54mm

Pin-Out	
Pin	Dual
1	GND
7	NC
8	0V
9	+Vo
11	-Vo
14	Vin

NC:No connection

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