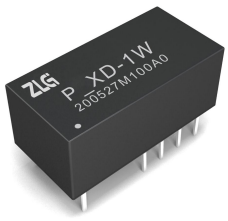
Product Manual

Data Sheet

P0505XD-1W

Constant voltage input,isolated no-regulated single output



RoHS

Product Series

Product Series	Temperature Range	Isolated Voltage	Package
P0505XD-1W	-40℃～+85℃	1000VDC	DIP

Features

- Efficiency up to 80%
- Isolated voltage 1000VDC
- The shell meet the UL94 V-0 standard
- No additional radiator
- Package is pin-to-pin compatible with international and domestic similar product
- Unsuitable for the occasion where the fluctuation range of input voltage is greater than ±10%

Applications

- Op-Amp Power Supplies
- Relay Drive Circuits
- High-Power IGBT Gate Drive
- General Low-Frequency Analog Circuits
- Medical, Handheld and Portable Instruments
- Digital Circuits, Analog Front-End Isolation Circuits
- ……

Product Model

Part Number	Input Nominal Voltage (Voltage Range) (VDC)	Output			Full Load Efficiency (%,Min/Typ)	Maximum Capacitive Load (μF)
		Nominal Voltage (VDC)	Min Current (mA)	Max Current (mA)		
P0505XD-1W	5 (4.5-5.5)	5	5	50	80	47

Note:(1) The P0505XD-1W is a four-output module. The output power of each channel is P1, P2, P3 and P4, respectively. The full-load efficiency is defined as the total output power divided by the input power of the module.The efficiency formula is: $\eta = \frac{P1+P2+P3+P4}{P_{in}} \times 100\%$

(2) The typical full-load efficiency (% , Typ) listed in the table has a tolerance of ±2%.

Limit Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Input Surge Voltage (1s，max)		-0.7	--	8	VDC
Lead Soldering Temperature	1.5mm from case,10s	--	--	300	℃
Hot Plug		Unavailable			

Input Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
No Load/Full Load Input Current		--	25/245	--	mA
Input Filter		Capacitor filter			

Output Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Line Regulation	Input voltage changes within ±1%,50% load	--	±1.4	±1.7	--
Load Regulation	Load is from 10% to 100%	--	±10	±15	%
Temperature Drift Coefficient	100% load	--	--	±0.03	%/℃
Output Ripple	20MHz bandwidth	--	20	40	mVp-p
Output Noise	20MHz bandwidth	--	60	100	mVp-p
Output Voltage Accuracy		See output voltage and load curve			
Output Short-Circuit Protection		Sustainable short circuit, self-recovery			

General Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Isolation Voltage	Input-output, time 1 minute, leakage current less than 1mA	1000	--	--	VDC
Isolation Resistance	Input-output,isolation voltage 500VDC	1	--	--	GΩ
Switching Frequency	Nominal input voltage, 100% load	--	300	--	kHz
Package Size	--	20.00×10.60×8.10			mm
Package Material	--	Black flame retardant plastic shell, comply with UL94V-0 standard			

Environmental Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Operating Temperature	See the ambient temperature derating curve for details	-40	--	+85	℃
Storage Temperature	--	-55	--	+125	
Casing Temperature Rise	Ta=25℃	--	20	30	
Storage Humidity	No condensation	--	--	95	%
Cooling Method		Natural air cooling			
Vibration		5-200Hz, 5G, 0.75mm. along X, Y and Z			

EMC Characteristics

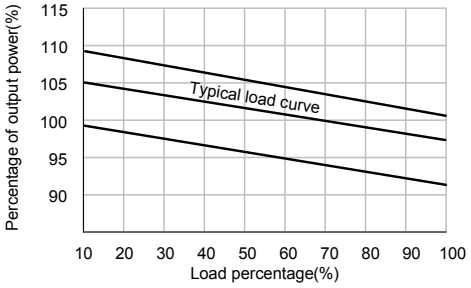
EMI	CE	EN55032 CLASS B (See Figure 2)	
EMS	ESD	IEC/EN61000-4-2 Contact±4kV	Perf.Criteria B

Notes:(1) The input voltage cannot exceed the specified range, otherwise it may cause permanent and irreversible damage.

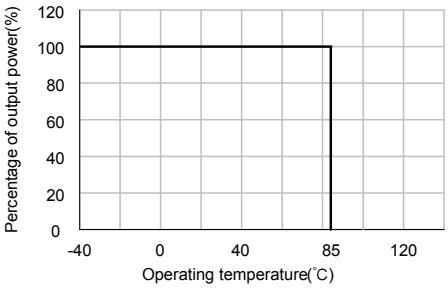
(2)Unless specified specially, parameters in this manual are measured under the conditions of 25℃, 40%~75% humidity, input nominal voltage and rated output load.

(3)Output ripple & noise tested by direct-probe method.

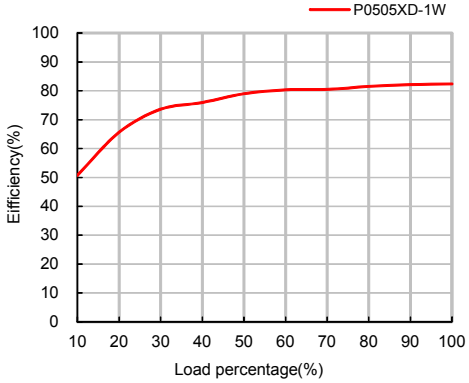
Product Characteristic Graph



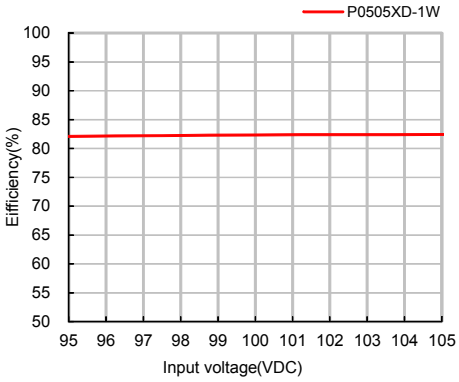
Out voltage VS load graph
(nominal input voltage)



Curve of relationship between output
power and working temperature

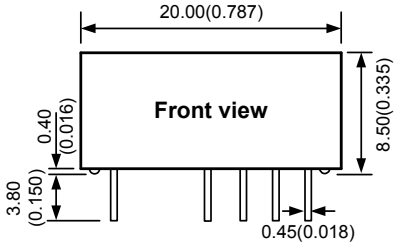


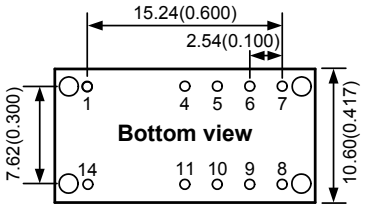
Efficiency VS load(Nominal input voltage)



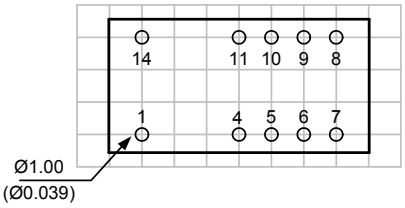
Eifficiency VS input voltage(Full load)

Outline and Footprint Dimensions



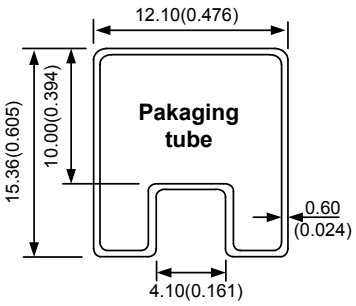


PCB Silkscreen Diagram
(Top View)



Notes：
Unit：mm(inch)
Unlabeled tolerance：±0.25(±0.010)
Grid distance：2.54×2.54mm

Pin	Function
1	GND
4	-Vo3
5	+Vo3
6	-Vo4
7	+Vo4
8	+Vo2
9	-Vo2
10	+Vo1
11	-Vo1
14	Vin



Notes：
Size：mm(inch)
Unlabeled tolerance:±0.50(±0.020)
L=282(11.102)，13pieces/pallet
Carton Size：304×120×40mm
234pieces/carton

Circuit Design and Application

1. Recommended circuit

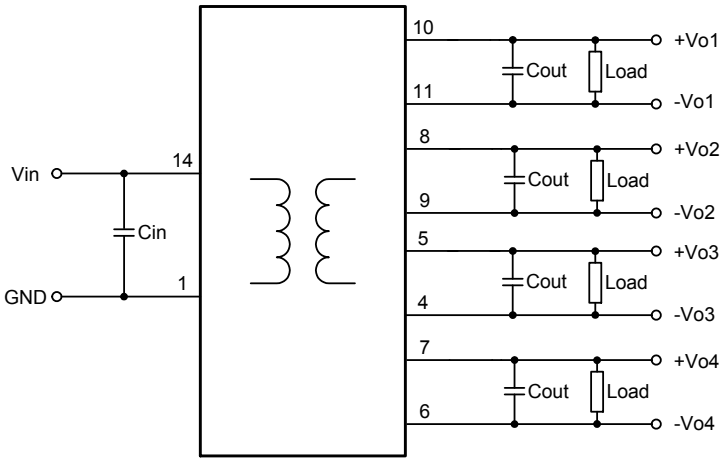


Figure 1 Recommended circuit

2. Filter capacitor

For the selection of filter capacitor, please refer to values in Table 1. If the ESR is less than 1 Ω (when the frequency is 100KHz), the ceramic or electrolytic capacitor is recommended to use, and the tantalum capacitor is not recommended to use. The value of input and output filter capacitor can not be too large, otherwise it may cause startup problem.

Table 1 The reference value of the external capacitor

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout(μF)
5	4.7	5	4.7

3. EMC typical recommended circuit(CLASS B)

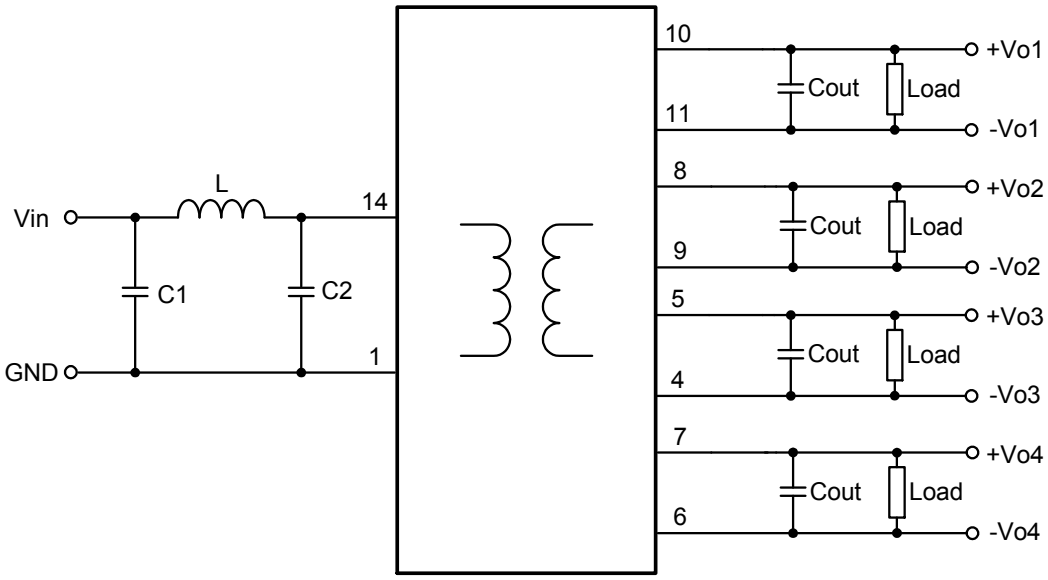


Figure 2 EMC recommended circuit diagram

Table 2 EMC recommended circuit external parameter values

EMC	Vin(VDC)	C1/C2(μF)	LDM(μH)	Cout(μF)
EMI	5	4.7	6.8	10

Note：
1.The withstand voltage values of capacitors C1 and C2 are selected according to "input impulse voltage".
2.The maximum current of inductance LDM is selected according to the actual input current, and it is recommended to select 1.5 times the actual current.
3.It is recommended that the circuit wiring should not be long and be as close as possible to the module.

4. Load requirements

In order to ensure efficient and reliable operation of the module, it is recommended that the output load should be between 10% and 100% of the rated power. It is not recommended to run for a long time in the case of the load is less than 10%, otherwise part of the product performance can't conform to the performance index of this manual. If the output load is too light, place a dummy load resistance on output terminal in parallel. The sum of the fake load resistance power plus the actual load power is greater than 10% of the load.

5. Protection function

Under normal conditions, this series of power modules have no over-current protection function.An overcurrent protector can be added at the input terminal. The simplest way to protect the output from over voltage and over current is to connect a linear regulator with over current protection at the output.

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