

0.42W, Non-isolated DC-DC converter  
Fixed input voltage and regulated single high voltage output



### FEATURES

- No-load input current as low as 10mA
- Six-sided metal shielding package, output ripple as low as 10mV
- Output voltage with high stability, low time coefficient and temperature coefficient
- Operating ambient temperature range: -25°C to +75°C
- Input reverse polarity protection
- Output short-circuit protection, over-current protection
- EMI meet CISPR32/EN55032 CLASS B
- Meet EN62368 standard

Patent Protection

RoHS



HO1-P421H-1C offers 0.42W of output, with operating ambient temperature range -25°C to +75°C, input reverse polarity protection, output short circuit protection, over-current protection, ultra compact size, low ripple, low time coefficient and temperature coefficient, which are specifically designed for applications in board power systems where high voltages are required and output ripple requirements are high and output voltage stability is critical. products are widely used in: avalanche photodiode, ion beam, mass spectrum, light spectrum, electron beam, ion beam, ultrasonic flaw detector and other high voltage applications.

### Selection Guide

Certification	Part No.	Input Voltage (VDC)	Input Current <sup>①</sup> (mA) Full load/No-load		Output Voltage (VDC)			Output Current (mA) Max./Min.
		Nominal (Range)	Typ.	Max.	Nominal	Range	Guaranteed range	
--	HO1-P421H-1C	12 (10.8-13.2)	60/10	65/12	420	420	/	1/0

Note:

① At the nominal input voltage and nominal output voltage.

### Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Reflected Ripple Current <sup>①</sup>		--	30	--	mA
Surge Voltage (1sec. max.)		--	--	18	VDC
Input Filter Type		Pi filter			
Hot Plug		Unavailable			
Input Reverse Polarity protection	The voltage between Vin and GND	-36	--	0	VDC

Note:

① Refer to DC-DC Converter Application Notes for detailed description of reflected ripple current test method.

### Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Nominal output voltage	--	±1	±2	%
Linear Regulation	Input voltage range, nominal output voltage, full load	--	±0.01	--	%
Load Regulation	Nominal input voltage, nominal output voltage, 10%-100% load	--	±0.01	--	%
Time Coefficient	Nominal input voltage, nominal output voltage, full load, after warming up for 30 minutes	--	±0.001	±0.003	%/Hr
Temperature Coefficient	Nominal input voltage, nominal output voltage, full load	--	±100	±200	PPM/°C
Ripple & Noise <sup>①</sup>	20MHz bandwidth, nominal input voltage, 0%-100% load	--	10	20	mV p-p
Over-current Protection/ Short-circuit Protection	Input voltage range	110	140	180	%Io
	Input voltage range	Constant current mode, continuous, self-recovery			

Note:

① Please refer to Fig.2 for the test method of ripple and noise, the product is working by the linear power source.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Operating Temperature	See Fig. 1	-25	--	+75	°C
Storage Temperature		-40	--	+85	
Storage Humidity	Non-condensing	5	--	85	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	Nominal input voltage, full load	--	200	--	kHz
Altitude		Altitude: ≤2000m			
MTBF	MIL-HDBK-217F@25°C	1000	--	--	k hours

Mechanical Specifications

Case Material	Aluminum alloy
Dimensions	45.50 x 23.00 x 12.50 mm
Weight	20g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B (with external 22uF/25V MLCC capacitor at the input)		
	RE	CISPR32/EN55032 CLASS B (without extra components)		
Immunity	ESD	IEC/EN61000-4-2	Contact ±4kV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria B
	EFT	IEC/EN61000-4-4	100kHz ±2kV (see Fig.4 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2kV (see Fig.4 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria B

Product Characteristic Curve

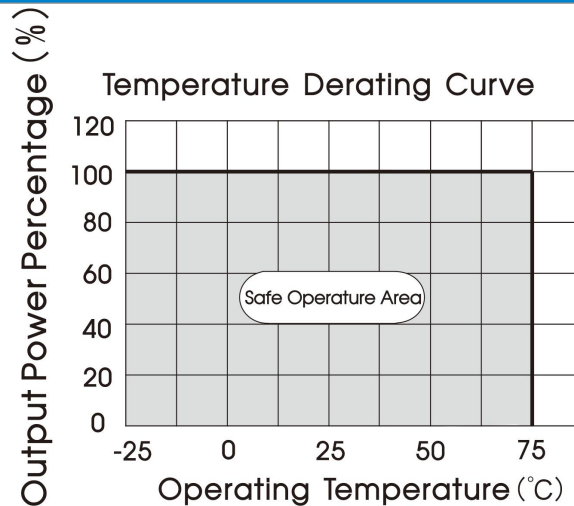


Fig. 1

Design Reference

1. Ripple & Noise testing compliance circuit

Output ripple can be further reduced by connect the RC filter on the output end of the product.

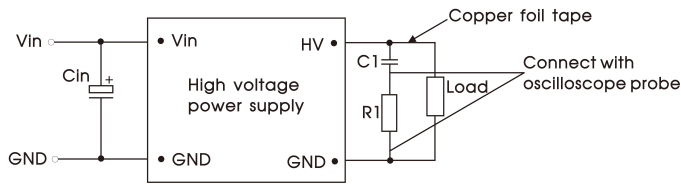


Fig. 2

Parameter description:

Cin	100μF/25V Aluminum electrolytic capacitor
R1	1kΩ/2W Resistance
C1	4.7nF/2000V

2. Typical application

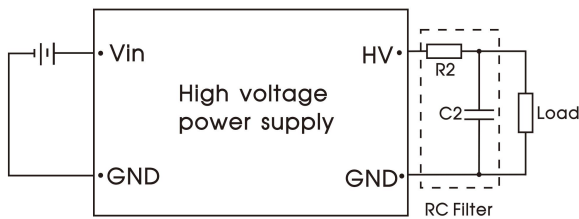


Fig.3

Parameter description:

R2	2kΩ
C2	4.7nF/2000V

3. EMC compliance circuit

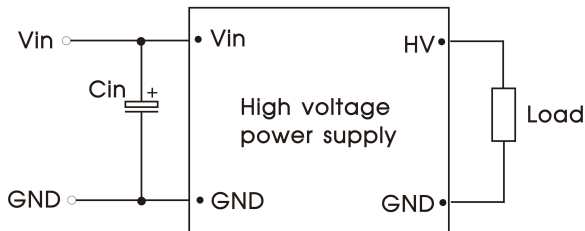


Fig. 4

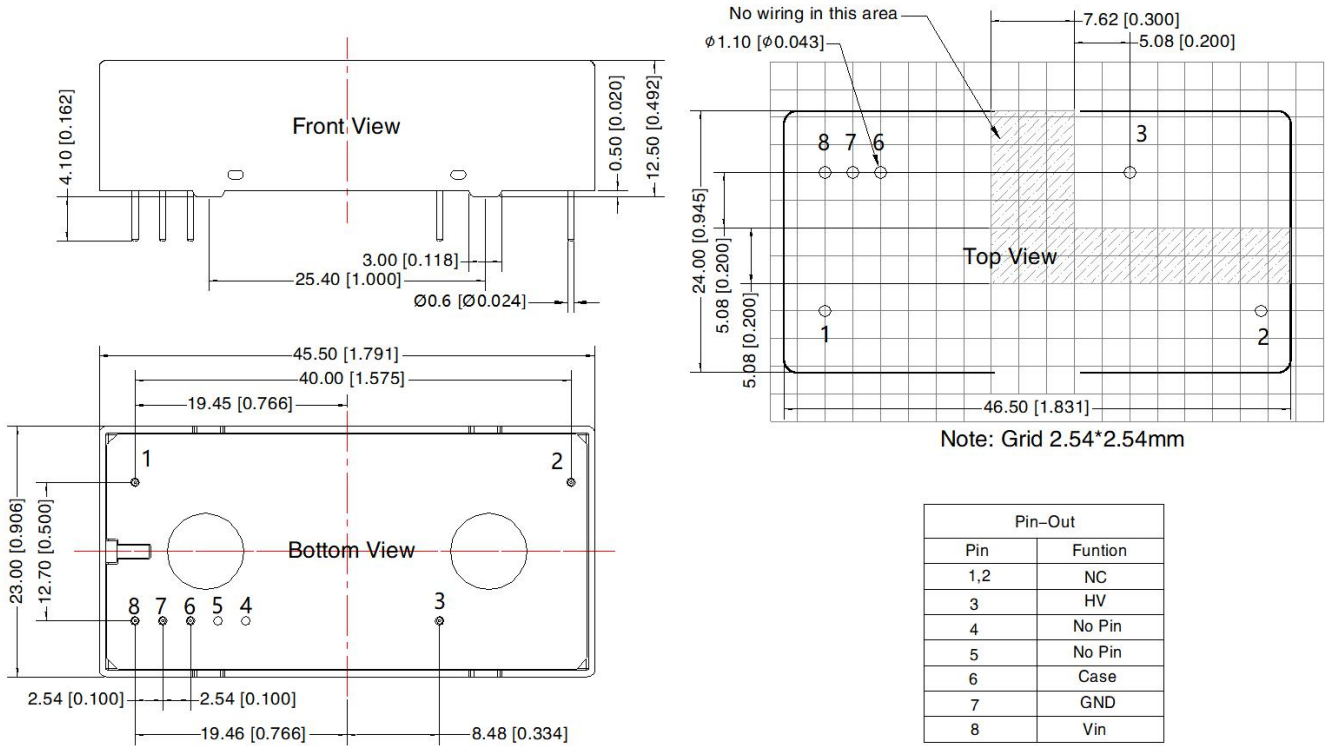
Parameter description:

Cin	680μF/25V Aluminum electrolytic capacitor
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4. For additional information please refer to DC-DC converter application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note:  
Unit: mm[inch]  
Pin diameter tolerances:  $\pm 0.10 [\pm 0.004]$   
General tolerances:  $\pm 0.50 [\pm 0.020]$

NC: Pin to be isolated from circuit  
Case: Case is connected to the internal GND  
GND: Vin's and HV's GND are connected internally

Notes:

- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58210097;
- 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;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^\circ\text{C}$ , humidity<75%RH with nominal input voltage, nominal output voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- 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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