

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



Patent Protection RoHS



FEATURES

- Ultra-low power consumption: input current as low as 60uA (the counting rate less < 10pcs/s.)
- Ultra small size: 22.00 x 14.00 x 5.50mm
- Input voltage range: 2.3-3.5VDC
- Dual channel operation: two counter tubes with 430V working voltage can be connected at the same time to work independently
- Output pulse: negative square wave pulse based on Vin, its typical pulse width is 50us
- Operating ambient temperature range: -45°C to 55°C
- Output short-circuit protection

HO1-P431-XA product is a counter front module with two channels, ultra small size and dual channels designed for G-M counter, related equipment widely used in nuclear radiation detection and measurement. It integrates a 430V DC-DC high-voltage power supply module and two-way counter pulse amplification filter shaping circuit, which can be connected with two counter tubes at the same time. It is very suitable for the wide range application scenarios that need high dose rate and low dose rate counter tube, and can also be applied to single counter tube. The operating temperature is from 45°C to 55°C, and it has the function of short circuit protection for output.

Selection Guide

Certification	Part No.	Input Voltage (VDC) Nominal (Range)	Input Current ^① (mA) Full load/No-load				Output Voltage (VDC) Nominal	Output Current ^② (uA) Max./Min.	Pulse width (us) Typ.
			The counting rate of counter is less than 10pcs/s		The counting rate of counter is more than 10pcs/s				
			Typ.	Max.	Typ.	Max.			
--	HO1-P431-XA	3.3 (2.3-3.5)	0.06	0.15	6	10	430	10/0	50

Note:

①Average input current at nominal input voltage.

②The counting rate of counter is more than 10pcs/s, and the output current range of each channel is sustainable.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Surge Voltage (1sec. max.)		--	--	4	VDC
Input Filter Type		Capacitive filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Short-circuit Protection	Input voltage range	Constant current mode, continuous			

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Operating Temperature	See Fig. 1	-45	--	+55	°C
Storage Temperature		-55	--	+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			
MTBF	MIL-HDBK-217F@25°C	1000	--	--	k hours

Mechanical Specifications

Case Material	Stainless steel
Dimensions	22.00 x 14.00 x 5.50 mm
Weight	3.5g (Typ.)
Cooling Method	Free air convection

Product Characteristic Curve

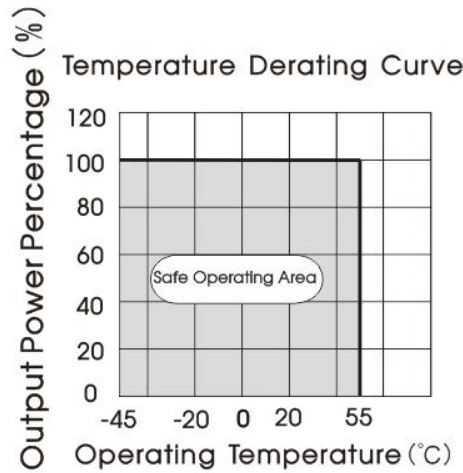


Fig. 1

Design Reference

1. Typical application

The product can be connected to two counter tubes at the same time. For example, if J1 is a low dose counter tube and J2 is a high dose counter tube, it can be used to cover both high and low ranges. After receiving the radiation particles, the counter flows through the pulse current, which is output to SO1 and SO2 after shaping by the internal circuit of the product. The specific connection method is shown in Figure 2.

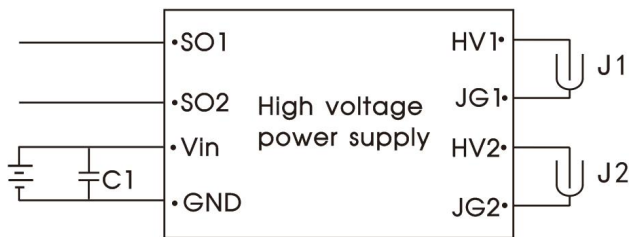


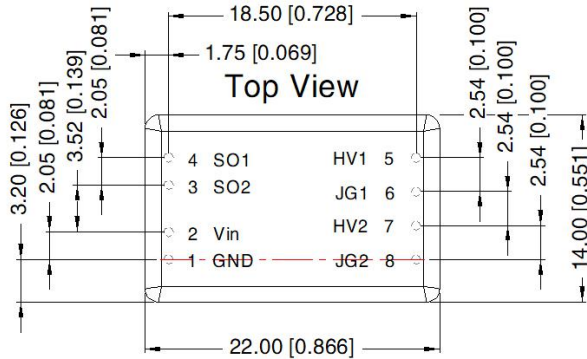
Fig.2 Application circuit

Parameter description:

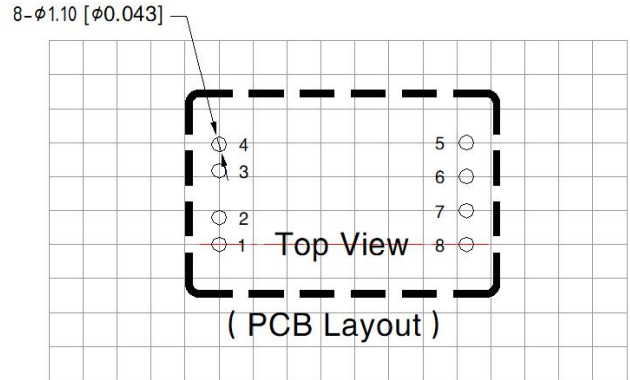
C1	10 μF
J1	Low dose counter (HV1 is connected to the anode of counter tube, JG1 is connected to the cathode of counter tube)
J2	High dose counter (HV2 is connected to the anode of counter tube, JG2 is connected to the cathode of counter tube)
SO1	Connected to MCU I/O port counting
SO2	Connected to MCU I/O port counting

2. For additional information please refer to DC-DC converter application notes on www.mornsun.cn

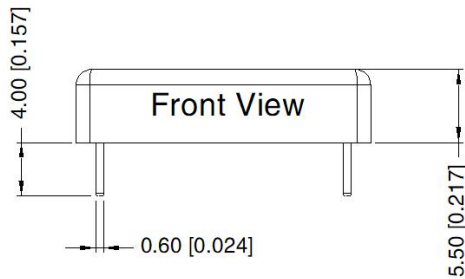
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm



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

Pin-Out	
Pin	Mark
1	GND
2	Vin
3	SO2
4	SO1
5	HV1
6	JG1
7	HV2
8	JG2

Notes:

1. For additional information please refer to Product Packaging Information. Packaging bag number: 58210111;
2. Unless otherwise specified, parameters in this data-sheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75% with nominal input voltage and output are connected to the load of counter;
3. All index testing methods in this data-sheet are based on our company corporate standards;
4. We can provide product customization service;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. 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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