

Figure 1. Physical Photo of AHV12VPN5KV2MAW

FEATURES

- High precision
Full modulation range on output voltage
Positive and negative voltage output
Linear regulation
Shutdown

APPLICATIONS

This power module, AHV12VPN5KV2MAW, is designed for achieving DC-DC conversion from low voltage to high voltage. High voltage power supply is widely used in industry, agriculture, national defense, scientific research and other fields including: X-ray machine high voltage power supply, laser high voltage power supply, spectral analysis high voltage power supply, etc. They are widely applied in ion beam deposition, ion beam assisted deposition, electron beam evaporation, electron beam welding, ion source, DC reactive magnetron sputtering, glass / fabric coating, glow discharge, microwave treatment high voltage capacitance test, CRT monitor test, high voltage cable fault test (PD testing), TWT test, and H-POT test. Particle accelerator, free electron laser, neutron source, cyclotron accelerator, capacitor and inductance pulse generator, Marx high voltage pulse generator, and capacitor charger. Microwave heating, radio frequency amplification, nanotechnology application,

electrostatic technology application, electrospinning preparation of nanofiber, high voltage power supply for nuclear power and other products.

DESCRIPTION

Draw a clear distinction between input lead and output lead: input 12V (red lead), ground electrodes (black lead), regulation wire (white lead), reference voltage 5V (yellow lead), shutdown (blue lead), voltage polarity selection (thin brown lead), and output high-tension cable (thick brown lead).

While regulating the potentiometer, connect the intermediate tap of the potentiometer with white lead, and connect the other two ends to ground (black lead) and reference voltage (yellow lead) respectively. Switch on the power, and regulate the potentiometer to have the required output voltage.

A 2V or higher input voltage is applied to voltage polarity selection, the output voltage is positive; when a 1V or lower input voltage is applied to voltage polarity selection, the output voltage is negative.



SHUTDOWN MODE OPERATION

A logic low <0.8V or a 0V on the SDN pin will turn the device off. When SDN is in logic high >1.2V or left

unconnected, the product is working well.

Make sure the circuit is insulated perfectly, especially between the high voltage output and the surroundings so as to avoid electronic shock.

SPECIFICATIONS

Table 1. Characteristics. $T_A = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit/Note
Input Voltage	VPS		11	12	13	V
Quiescent Input Current	I_{INQQ}	$I_{OUT} = 0\text{mA}$	150	200	250	mA
Full Load Input Current	I_{INFLD}	$I_{OUT} = 2.0\text{mA}$	1.1	1.2	1.3	A
Input Voltage Regulation Ratio	$\Delta V_{OUT}/\Delta V_{VPS}$	$V_{VPS} = 11\text{V} \sim 13\text{V}$		0.1		%
Output Voltage	V_{OUT}	$I_{OUT} = 0 \sim 2.0\text{mA}$	-5000	0	5000	V
Maximum Output Current	I_{OUTMAX}	$V_{VPS} = 11\text{V} \sim 13\text{V}$			2.0	mA
Stability of Reference Voltage	V_{REF}	$-20 \sim 50^\circ\text{C}$	4.95	5	5.05	V
Load				2.5		$\text{m}\Omega$
Regulation Mode			0 ~ 5V or 10k potentiometer			
Control Input vs. Output Linearity	$\Delta V_{REF}/\Delta V_{OUT}$			<0.2		%
Load Regulation Rate		$I_{OUT} = 0 \sim 2.0\text{mA}$		≤ 0.05		%
Instantaneous Short Circuit Current	I_{SC}			<500		mA
Shutdown Supply Current	I_{SHDN}				15	mA
Shutdown Logic Input Current	I_{LOGIC}				3	μA
Shutdown Logic Low	V_{INL}				0.8	V
Shutdown Logic High	V_{INH}		1.2			V
Full Load Efficiency	η			≥ 70		%
Temperature Coefficient	TCV_O	$-20 \sim 50^\circ\text{C}$		<0.01		$\%/^\circ\text{C}$
Time Drift	Short Time Drift			<0.5		$\%/ \text{min}$
	Long Time Drift			<1		$\%/ \text{h}$
Output Voltage Temperature Stability		$-20 \sim 50^\circ\text{C}$		$< \pm 1$		%
Operating Temperature Range	T_{opr}		-20		50	$^\circ\text{C}$
Storage Temperature Range	T_{stg}		-55		100	$^\circ\text{C}$
External Dimensions			140×100×55			mm
Weight				800		g
				1.77		lbs
				28.22		Oz



TESTING DATA

High voltage power supply testing data (Test condition: the load is 2.5mΩ)

I. A 2V or higher input voltage is applied to voltage polarity selection, the output voltage is positive.

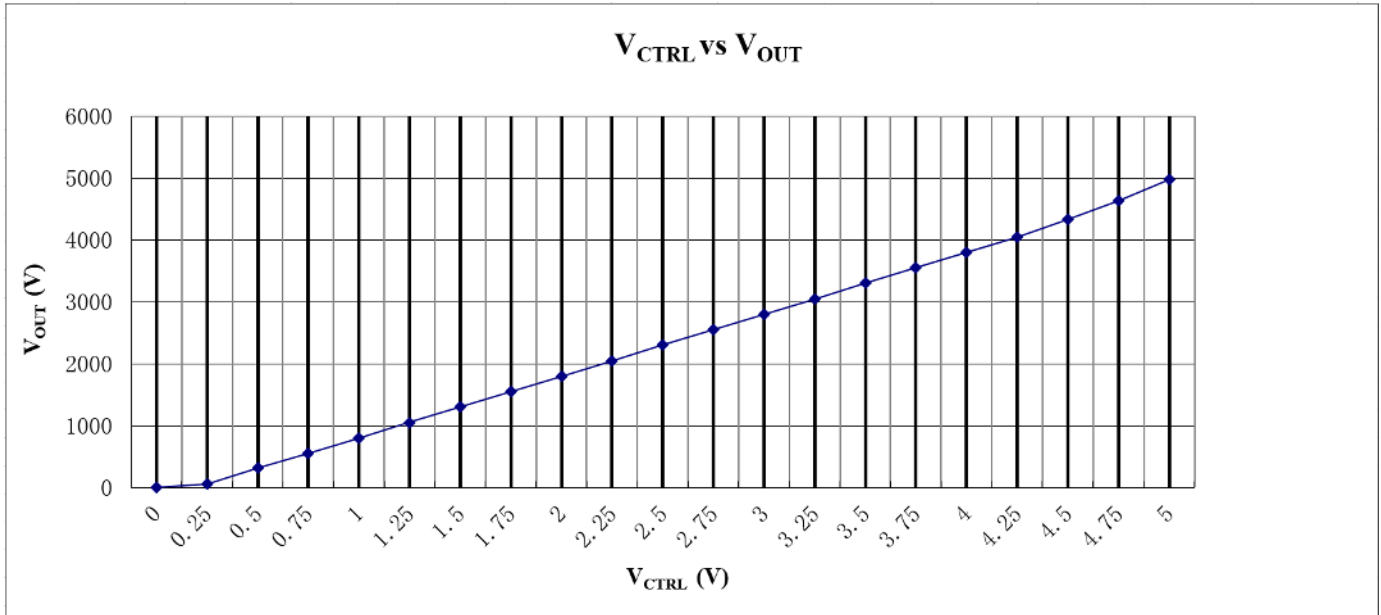


Figure 2. V_{CTRL} vs. V_{OUT}

II. When a 1V or lower input voltage is applied to voltage polarity selection, the output voltage is negative.

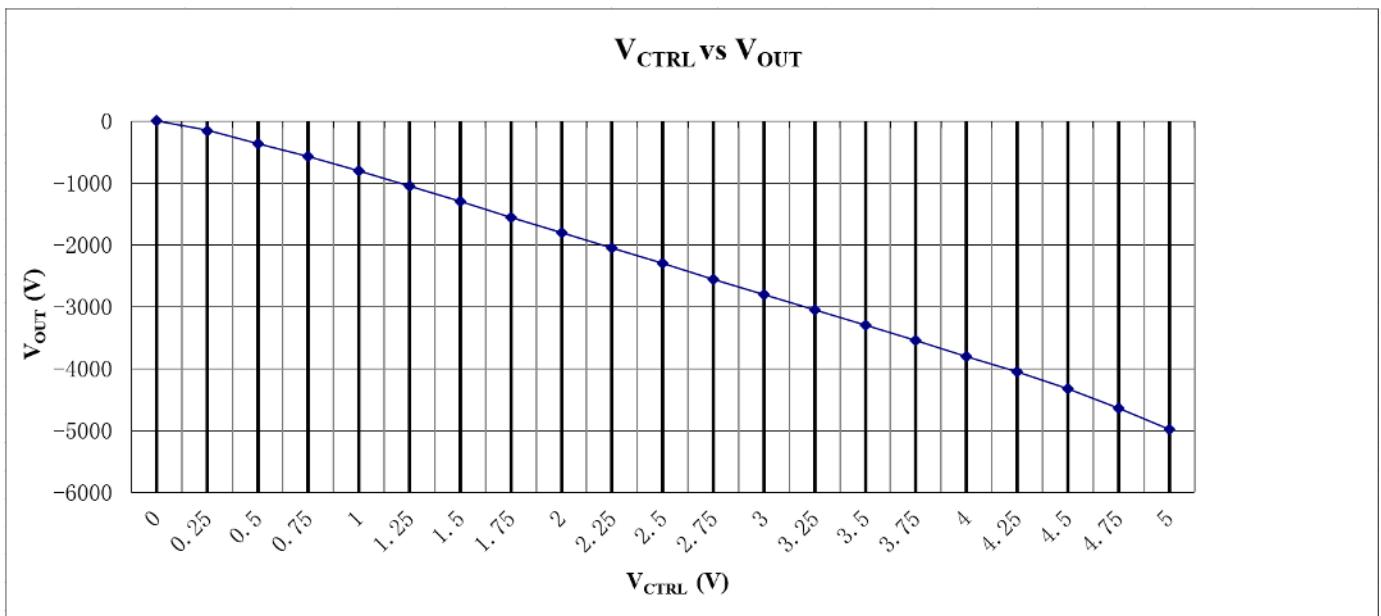


Figure 3. V_{CTRL} vs. V_{OUT}



THE CONNECTION DIAGRAM OF MODULE'S PERIPHERAL CIRCUIT

The leads colors in the figures below are identical with those in the physical AHV12VPN5KV2MAW.

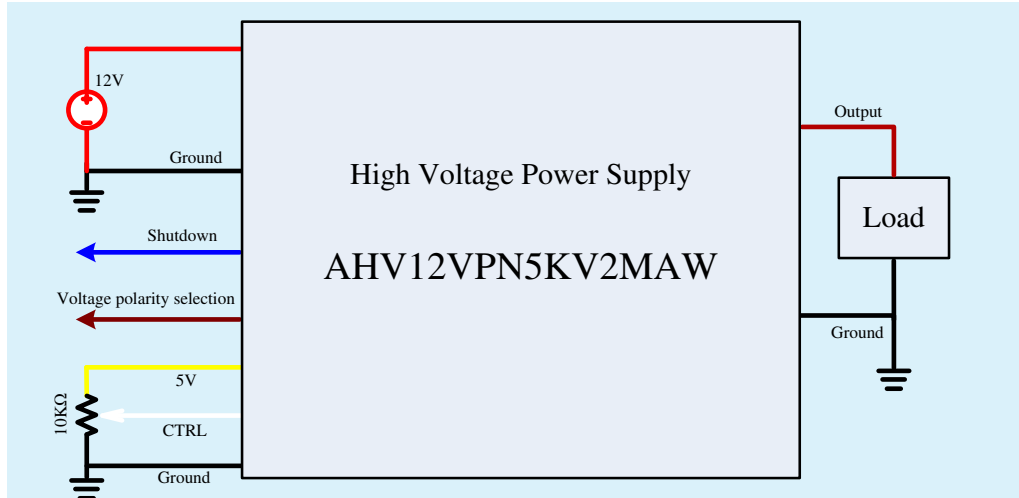


Figure 4. Control by External Signal Source

A 2V or higher input voltage is applied to voltage polarity selection, the output voltage is positive; when a 1V or lower input voltage is applied to voltage polarity selection, the output voltage is negative.

BLOCK DIAGRAM

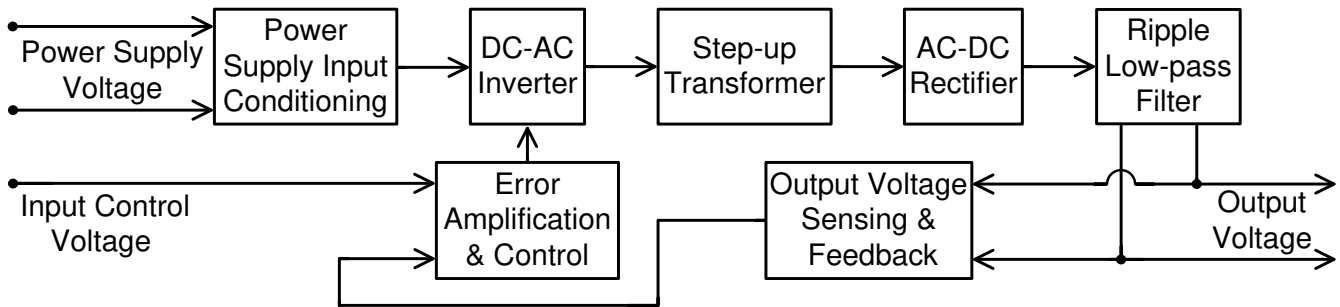


Figure 5. Block Diagram

NAMING INSTRUCTIONS

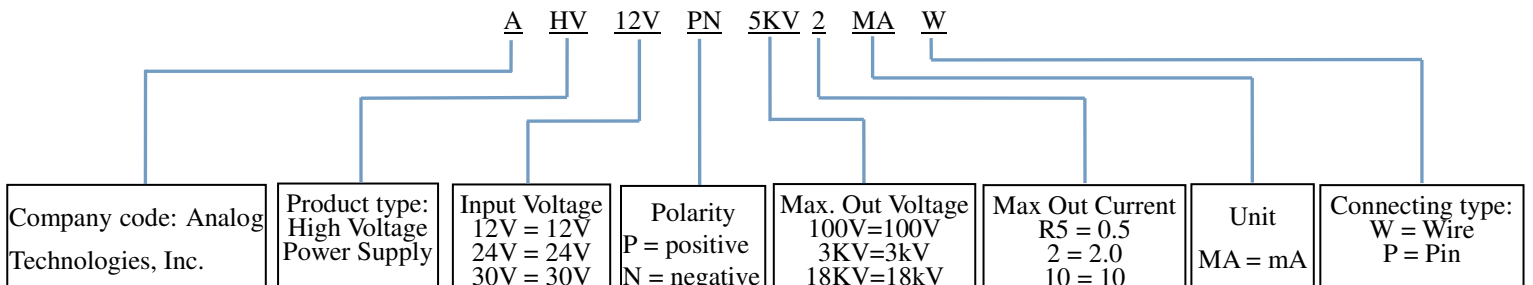


Figure 6. Naming Rules of AHV12VPN5KV2MAW



DIMENSIONS

I. Dimension of the leads.

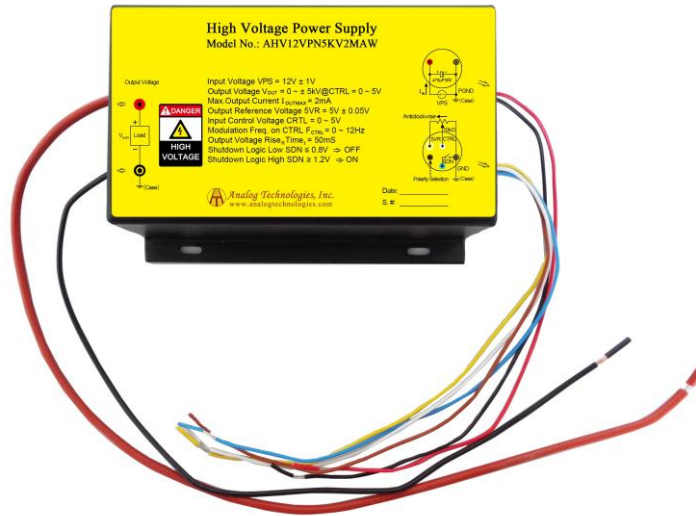


Figure 7. Leads of AHV12VPN5KV2MAW

Leads	Diameter (mm)	Length (mm)
Thick brown lead	4.5	120
Yellow, red, blue, black and white leads	1.5	23

II. Dimension of AHV12VPN5KV2MAW.

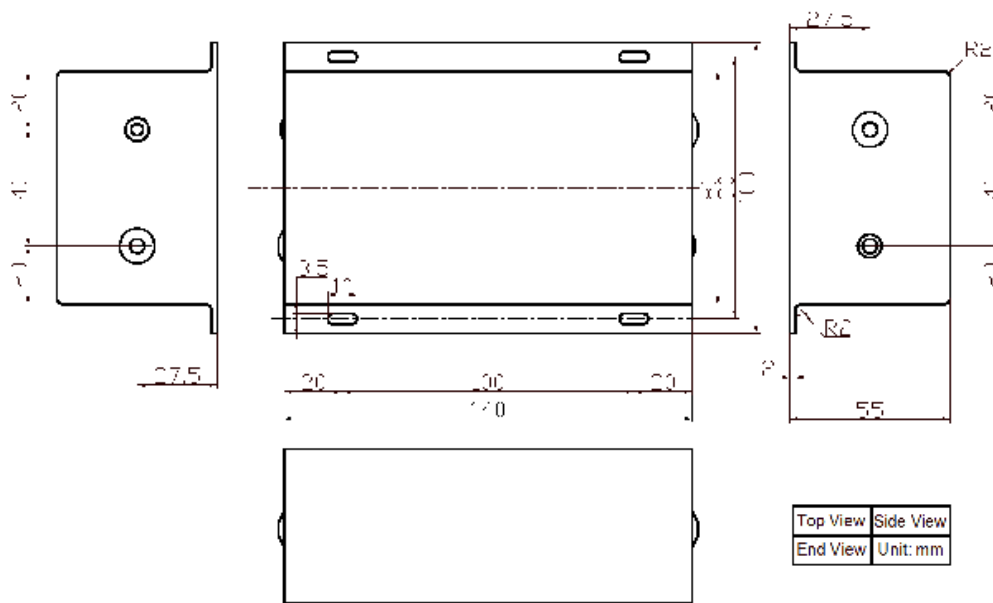


Figure 8. Dimensions for AHV12VPN5KV2MAW



PRICES

Quantity (pcs)	1~9	10~49	50~99	≥100
AHV12VPN5KV2MAW	\$339	\$329	\$319	\$309

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