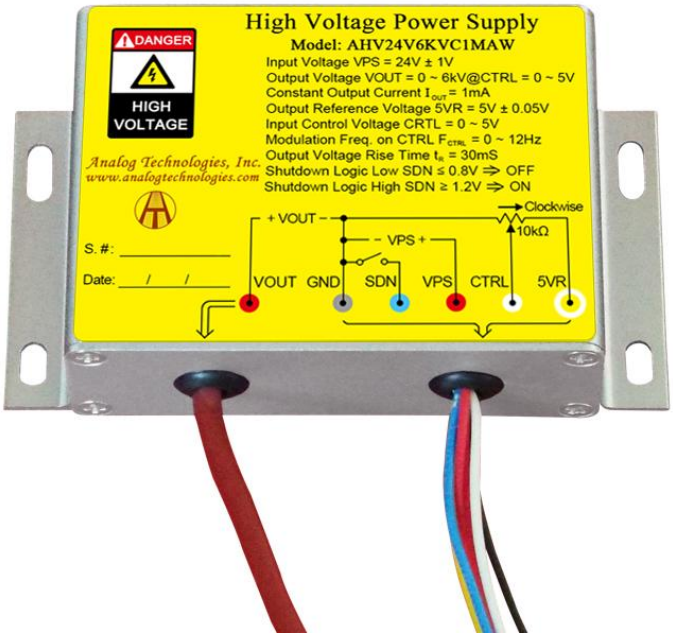


Figure 1. Physical Photo of AHV24V6KVC1MAW

FEATURES

High precision

Full modulation range on output voltage

Linear regulation

Shutdown

Constant current output

For charging capacitors

APPLICATIONS

This power module, AHV24V6KVC1MAW, is designed for achieving DC-DC conversion from low voltage to high voltage constant current power supply. 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, nondestructive inspection high voltage power supply, semiconductor manufacturing equipment high voltage power supply, capillary electrophoresis high voltage power supply, nondestructive detection high voltage power supply, particles injection high voltage power supply in semiconductor technology, physical vapor phase deposition high voltage power supply, nanolithography high voltage power supply. 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, and capacitor charger. Microwave heating, radio frequency amplification, nanotechnology application, electrostatic technology application, high voltage power supply for nuclear power and other products.

DESCRIPTION

Draw a clear distinction between input lead and output lead: input 24V (red lead), ground electrodes (black lead), regulation wire (white lead), reference voltage 5V (yellow lead), shutdown (blue 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.

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.

SAFETY PRECAUTIONS

The internal protection circuit is provided in the high voltage power supply, but the high voltage short circuit shall be avoided.

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 ℃, unless otherwise noted

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit/Note
Input Voltage		VPS		22	24	26	V
Quiescent Input Current		I_{INQQ}	I_{OUT} = 0mA	80	90	100	mA
Full Load Input Current		I_{INFLD}	I_{OUT} = 1.0mA	370	380	390	mA
Input Voltage Regulation Ratio		$\Delta V_{OUT}/\Delta VPS$	VPS = 22V to 26V		0.2		%
Output Voltage		V_{OUT}	I_{OUT} = 1.0mA			6000	V
Constant Output Current		I_{OUT}	VPS = 22V to 26V			1.0	mA
Stability of Reference Voltage		V_{REF}	−20 ~ 50°C	4.98	5	5.02	V
Load					6		MΩ
Regulation Mode				0 ~ 5V or 10k potentiometer			
Control Input vs. Output Linearity		$\Delta V_{REF}/\Delta V_{OUT}$			<0.2		%
Load Regulation Rate			1.0mA		≤0.05		%
Instantaneous Short Circuit Current		I_{SC}			<500		mA
Shutdown Supply Current		I_{SHDN}				18	mA
Shutdown Logic Input Current		I_{LOGIC}				3	uA
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 ~ 50°C		<0.01		%/°C
Time Drift	Short Time Drift				<0.5		%/ min
	Long Time Drift				<1		%/h
Output Voltage Temperature Stability			−20 ~ 50°C		<±1		%
Operating Temperature Range		T_{opr}		−20		50	°C
Storage Temperature Range		T_{stg}		−55		100	°C

External Dimensions			82×55×28			mm
Weight				210		g
				0.46		lbs
				7.4		Oz

TESTING DATA

I. Charging Testing

High voltage power supply testing data (Test condition: the load is 1 μF capacitor)

It is used for charging 1 μF capacitor with 6kV voltage and 1MA constant current. The standard charging time is 6s, which can also be customized based on users' requirements.

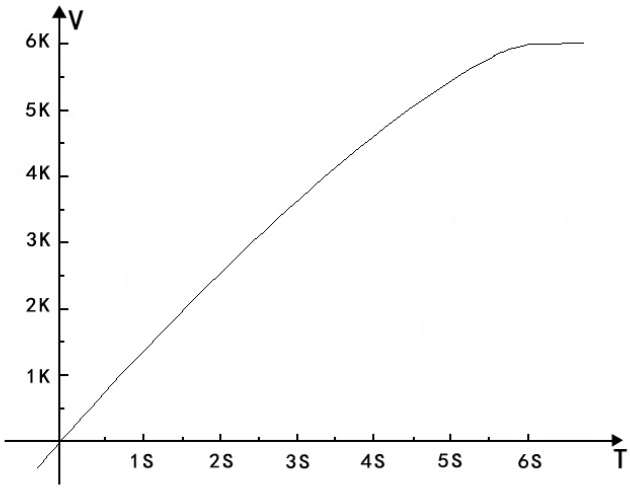


Figure 2. Charging Curve

II. DC Testing

High voltage power supply testing data (Test condition: the load is 6 MΩ)

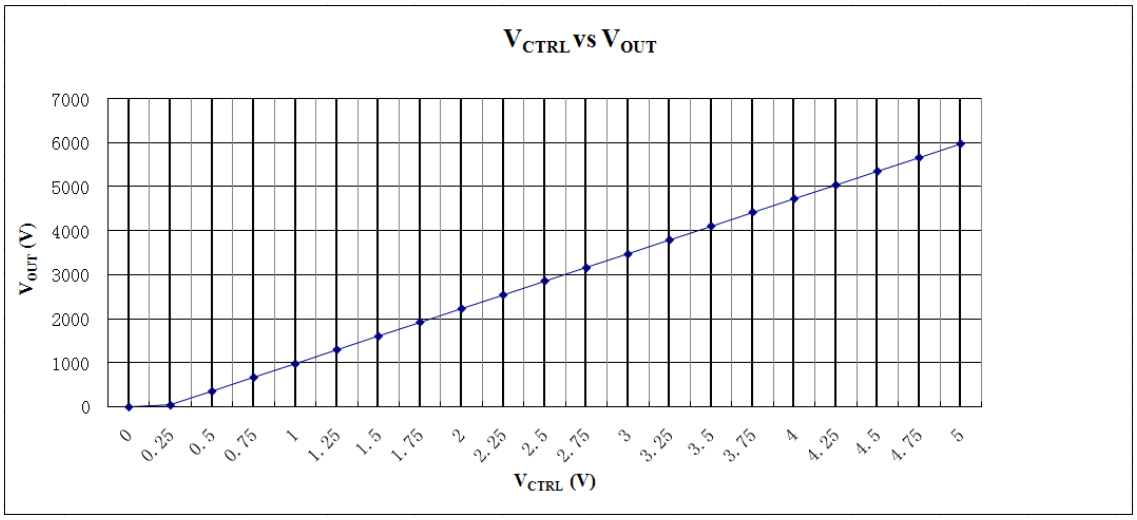


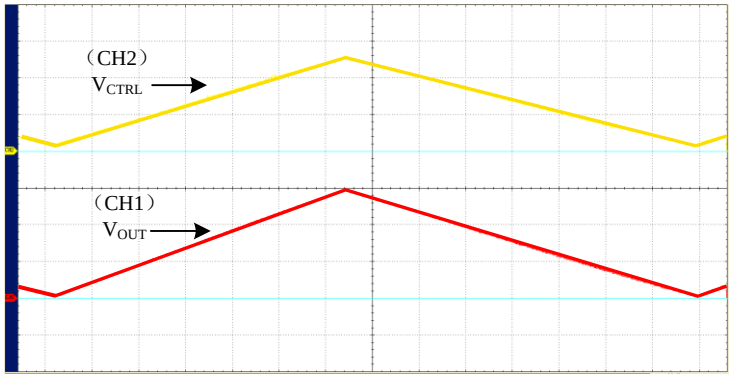
Figure 3. V_{CTRL} vs. V_{OUT}

III. AC Testing

Waveform curve and rise & fall time are tested by using the control voltage supplied by signal generator.

Under the testing condition of modulation frequency 0.1Hz, control voltage 0.25 ~ 5V, and 6MΩ load, the output voltage is 40 ~ 6000V.

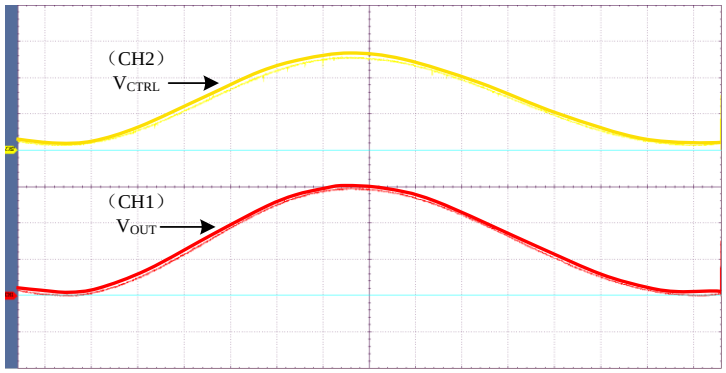
Note: as shown in the figures below, the output voltage is represented by yellow line and the control voltage by red line.



CH1: 2000V/Div CH2: 2V/Div M: 500ms

V_{CTRL}: 0.25V~5V V_{OUT}: 40V~6000V

Figure 4. Triangle Wave



CH1: 2000V/Div CH2: 2V/Div M: 500ms

V_{CTRL}: 0.25V~5V V_{OUT}: 40V~6000V

Figure 5. Sine Wave

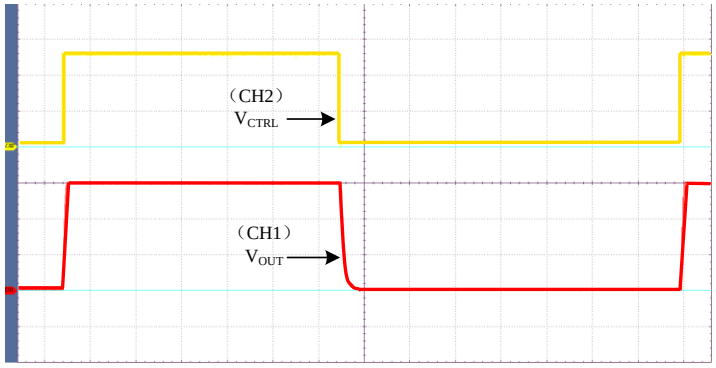


Figure 6. Square Wave

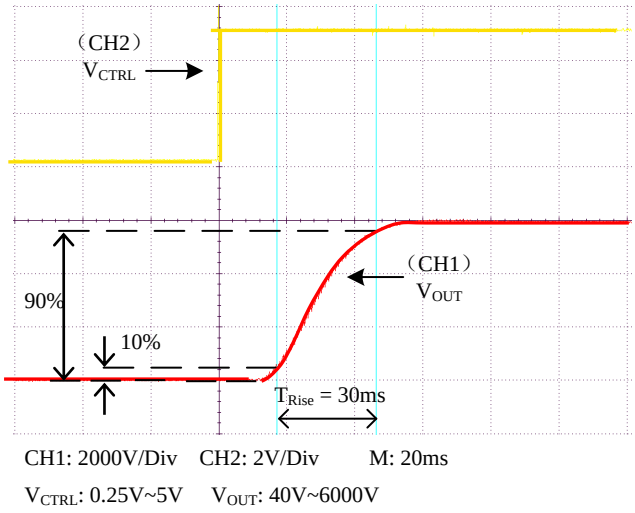


Figure 7. Rise Time

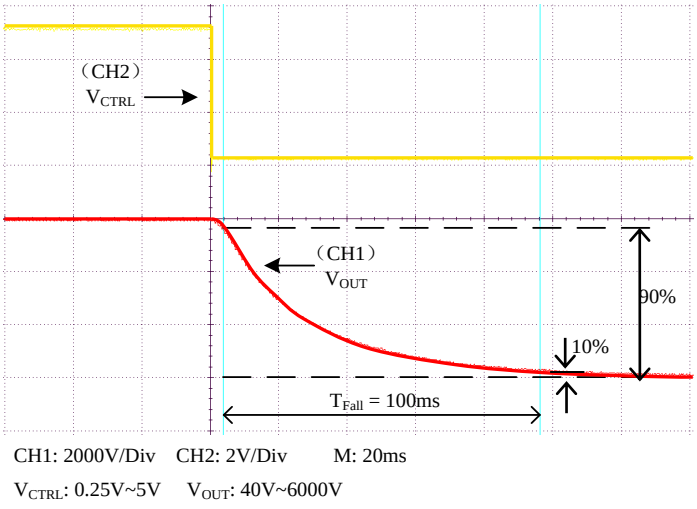


Figure 8. Fall Time

As shown in Figure 6, when a square wave of 0.25V ~ 5V, F=0.10Hz is applied to Control, measure the waveform. The rise time is about 30ms.

As shown in Figure 7, when a square wave of 0.25V ~ 5V, F=0.10Hz is applied to Control, measure the waveform. The fall time is about 100ms.

THE CONNECTION DIAGRAM OF MODULE'S PERIPHERAL CIRCUIT

The leads colors in the figures below are identical with those in the physical AHV24V6KVC1MAW.

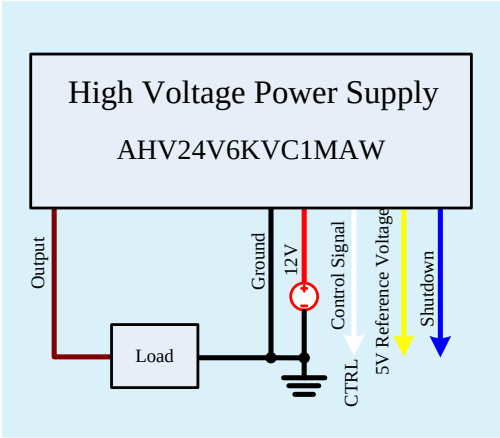


Figure 9. Control by External Signal Source

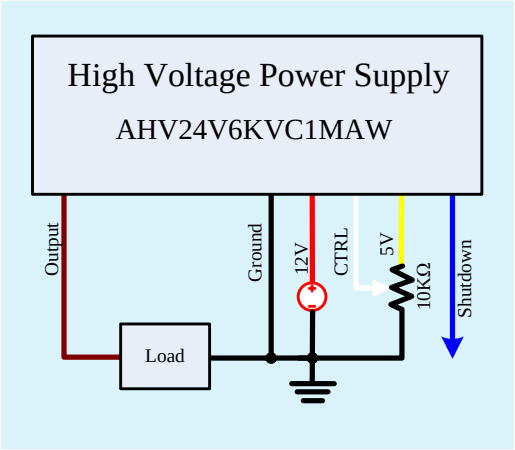


Figure 10. Constant Output Voltage

NAMING INSTRUCTIONS

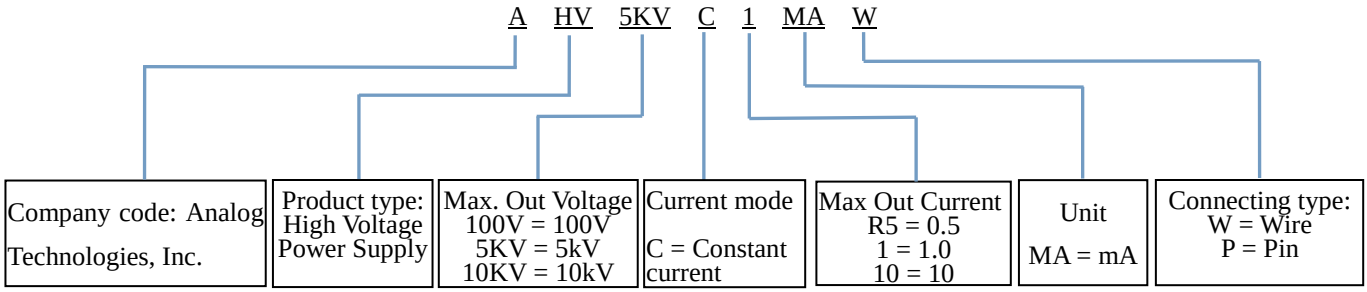


Figure 11. Naming Rules of AHV24V6KVC1MAW

DIMENSIONS

I. Dimension of the leads.

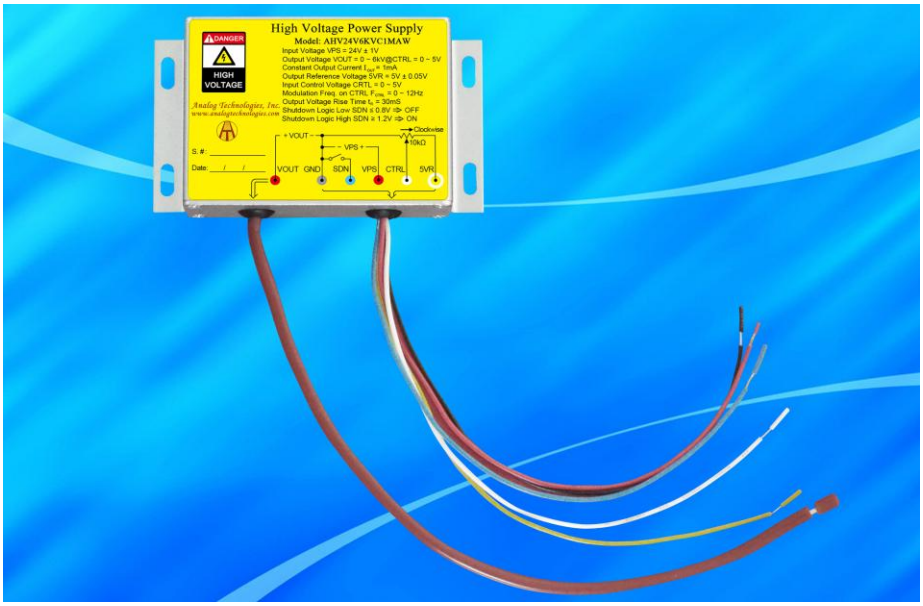


Figure 12. Leads of AHV24V6KVC1MAW

Leads	Diameter (mm)	Length (mm)
Thick brown lead	4.5	26
Yellow, red, blue, black and white leads	1.5	23

II. Dimension of AHV24V6KVC1MAW.

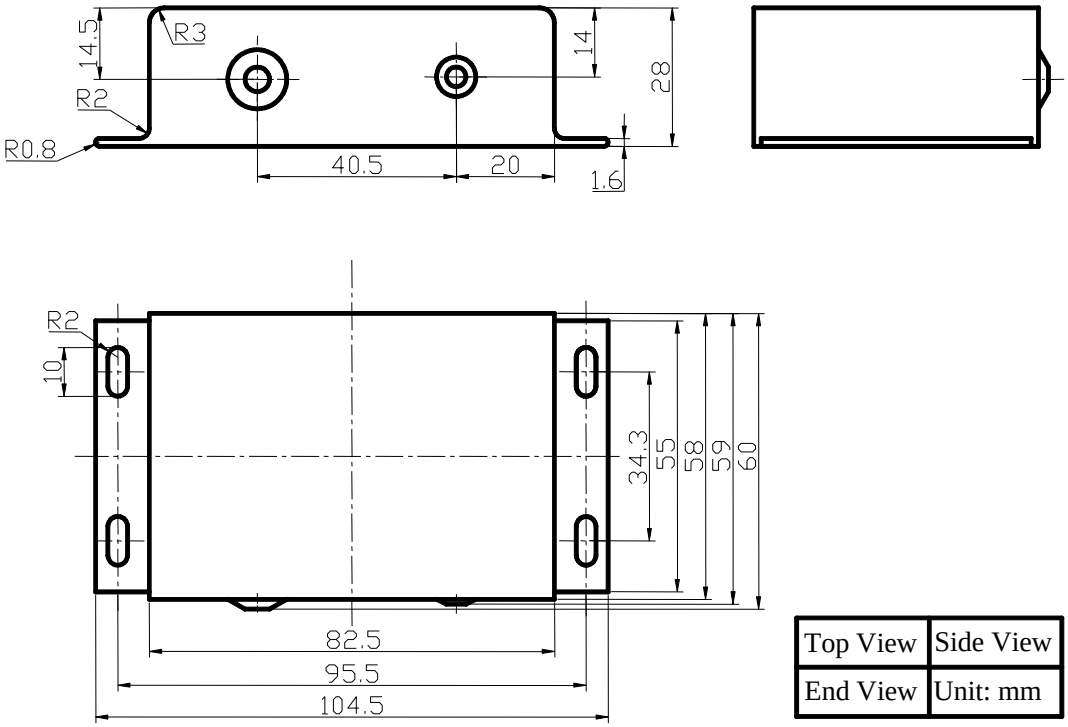


Figure 13. Dimensions for AHV24V6KVC1MAW

PRICES

Quantity	1~9pcs	10~49pcs	50~99pcs	≥100
AHV24V6KVC1MAW	$130	$120	$110	$100

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