

Figure 1. Physical Photo of ATHV12V3KV10MAW

### FEATURES

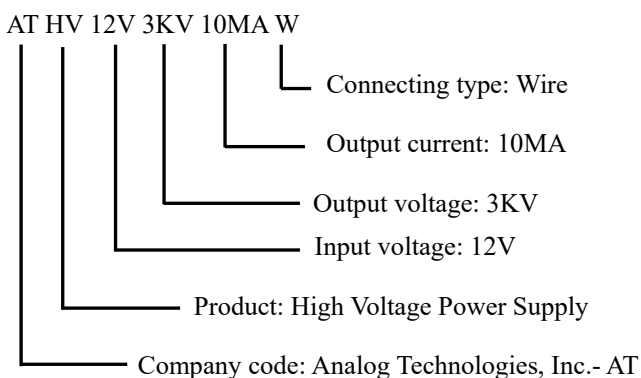
- High precision
- Full modulation range on output voltage
- Linear regulation

### APPLICATIONS

This power module, ATHV12V3KV10MAW, is designed for achieving DC-DC conversion from low voltage to high voltage, and it can be widely used for industrial measurement and control, energy spectrum analysis, medical equipment, environmental monitoring, etc.

### DESCRIPTION

#### Naming instructions



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), 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.

### 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

Parameter	Test Condition	Min.	Typ.	Max.	Unit/Note
Power Supply Voltage	25°C	11	12	13	V
Ambient Operating Temperature			-20~50		°C
Maximum Output Voltage	25°C		3000		V
Maximum Output Current	25°C		1		mA
Stability of Reference Voltage-V <sub>REF</sub>	25°C	4.98	5	5.02	V
Regulation mode	25°C		0 ~ 5V or 10K potentiometer		
Control input impedance	25°C		300		KΩ
Temperature drift	V <sub>REF</sub> temperature drift	-20°C ~50°C	<0.2%		
	V <sub>OUT</sub> temperature drift		<0.5%		
Time drift	Short time drift	25°C	<0.5%/ min		
	Long time drift	25°C	<1%/h		
Load regulation rate	300 ±100 KΩ		±0.5%		
Control Input vs. Output linearity	25°C		<0.2%		
External dimensions			82×55×28		mm
Weight			210		g
			7.4		Oz

TESTING DATA

I. DC Testing

High voltage power supply testing data (Test condition: the load is 300 KΩ)

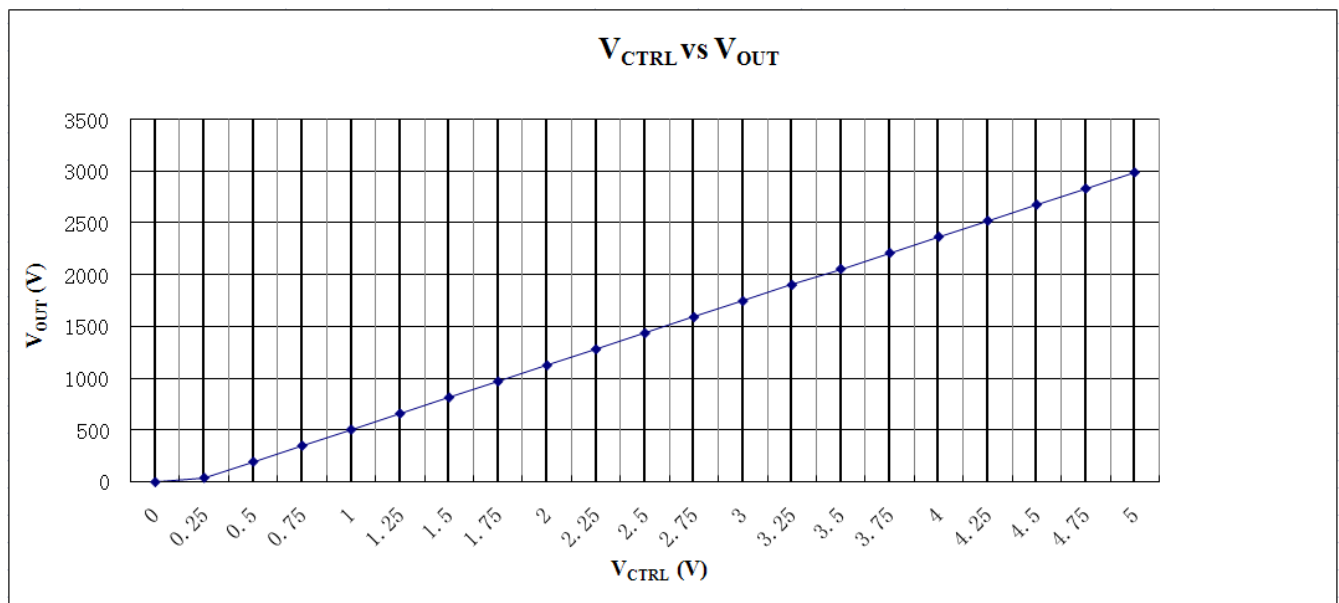


Figure 2. V<sub>CTRL</sub> vs. V<sub>OUT</sub>



II. 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 300 KΩ load, the output voltage is 40 ~ 3000V.

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

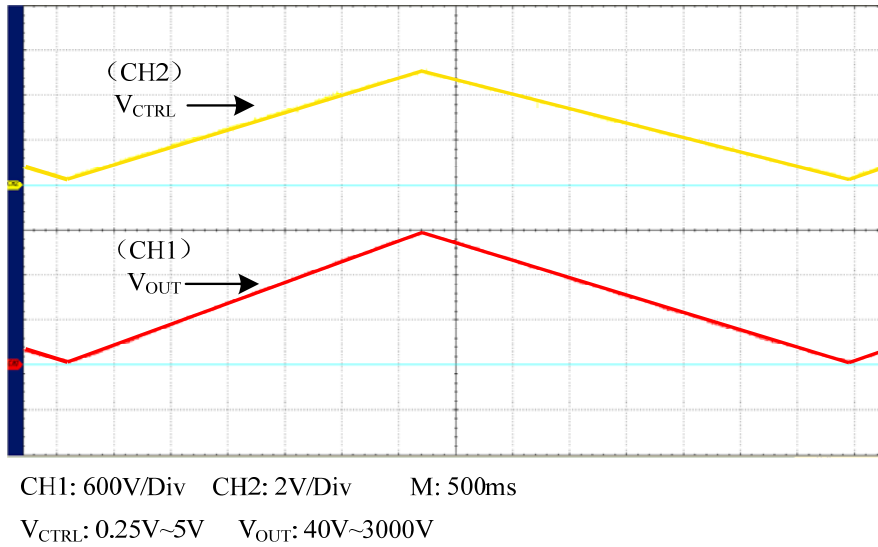


Figure 3. Triangle Wave

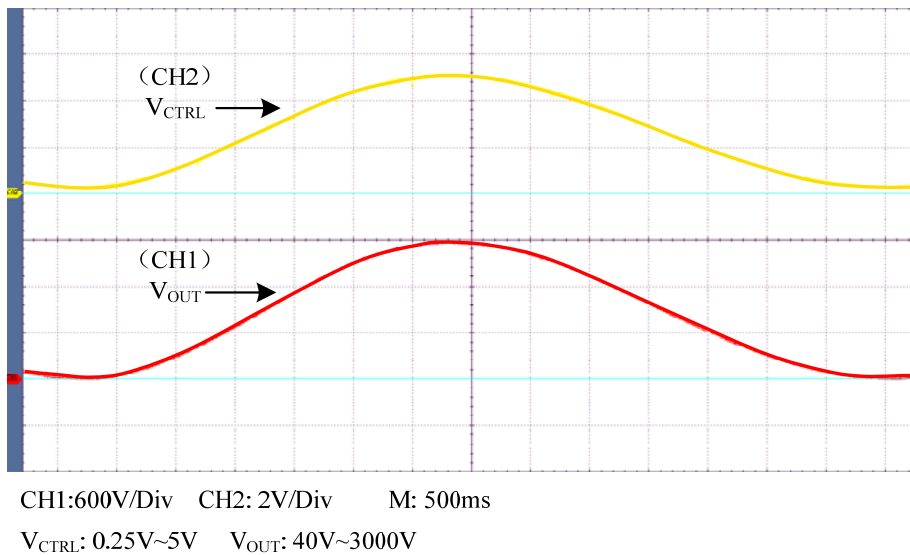
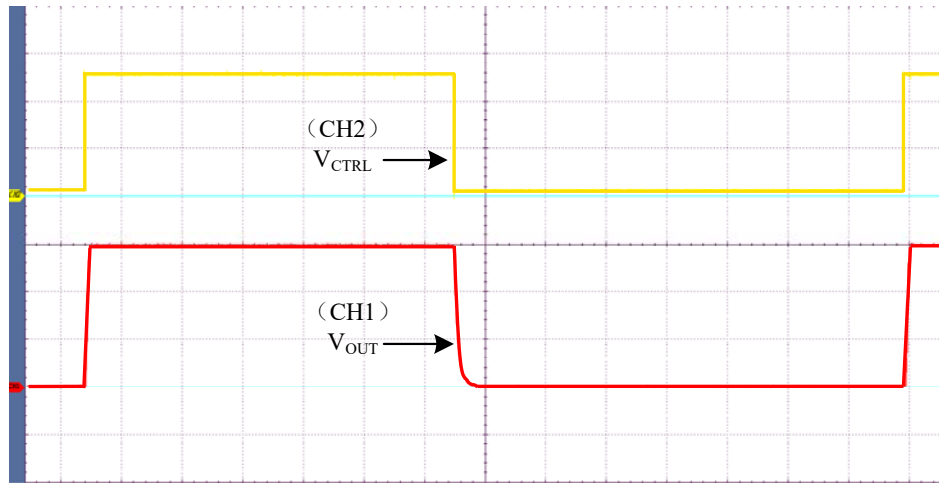
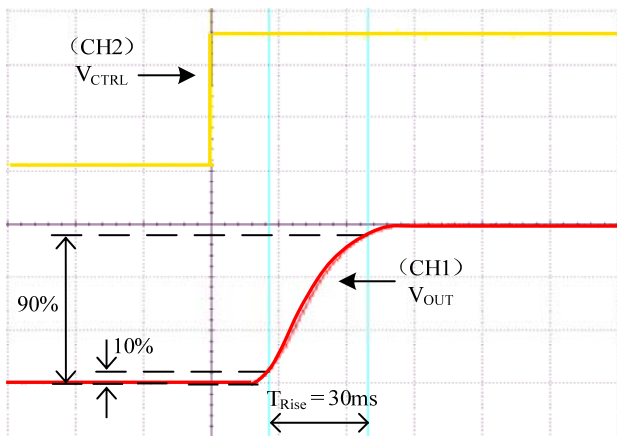


Figure 4. Sine Wave



CH1: 600V/Div CH2: 2V/Div M: 500ms  
V\_CTRL: 0.25V~5V V\_OUT: 40V~3000V

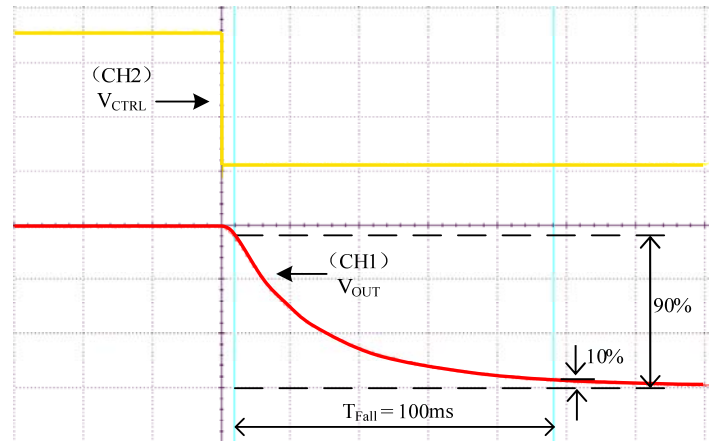
Figure 5. Square Wave



CH1: 600V/Div CH2: 2V/Div M: 20ms  
V\_CTRL: 0.25V~5V V\_OUT: 40V~3000V

Figure 6. Rise 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.



CH1:600V/Div CH2: 2V/Div M: 20ms  
V\_CTRL: 0.25V~5V V\_OUT: 40V~3000V

Figure 7. Fall Time

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 ATHV12V3KV10MAW.

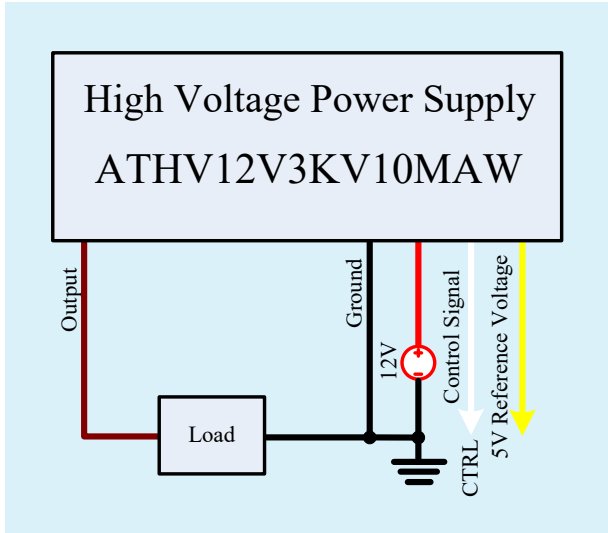


Figure 8. Control by External Signal Source

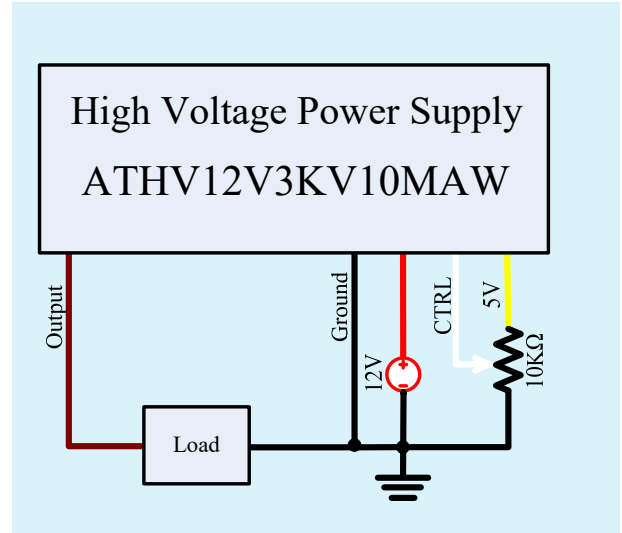


Figure 9. Constant Output Voltage

DIMENSIONS

I. Dimension of the leads.



Figure 10. Leads of ATHV12V3KV10MAW

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



II. Dimension of ATHV12V3KV10MAW.

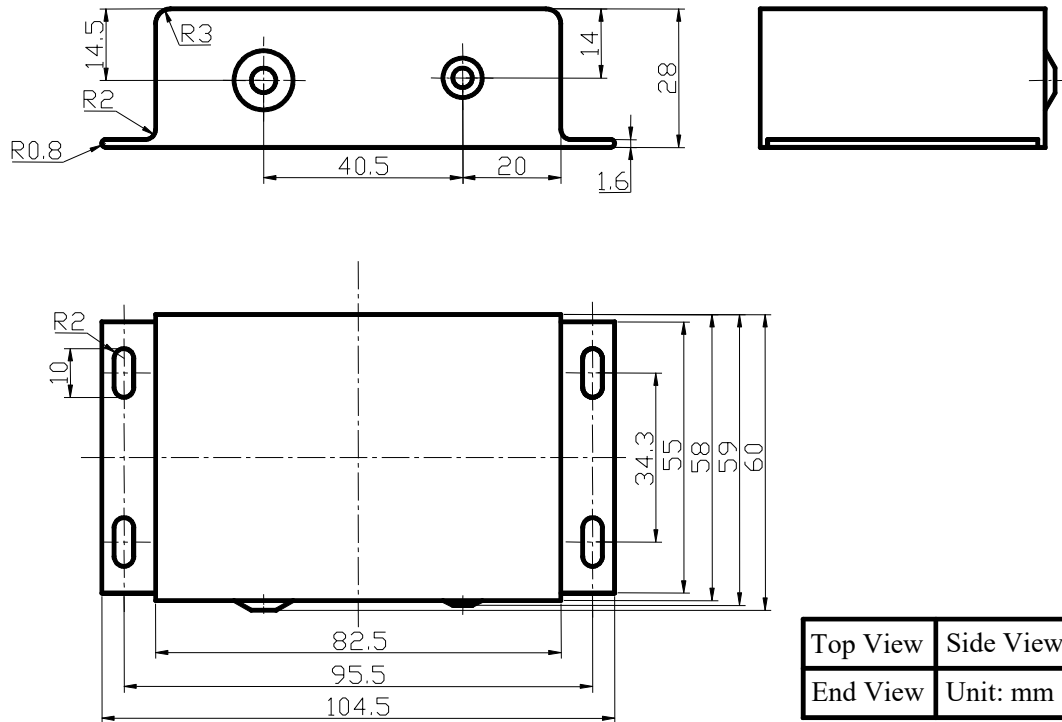


Figure 11. Dimensions for ATHV12V3KV10MAW

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