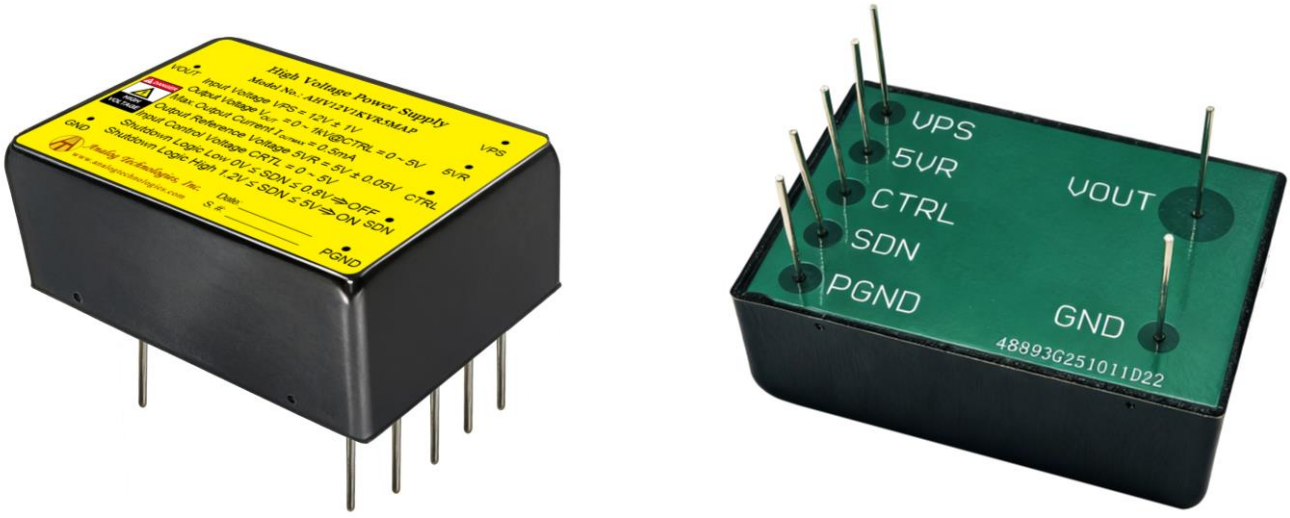



Figure 1. Physical Photo of AHV12V1KVR5MAP

## FEATURES

Low Power Consumption

High Efficiency

High Stability

Small Output Ripple, Time Drift, and Temperature Drift

Overload and Short Circuit Protection

Continuous Linear Adjustment for Output Voltage

Metal Enclosure for Zero EMIs

Easy Control and Installation

## APPLICATIONS

This power module, AHV12V1KVR5MAP, is designed for achieving DC-DC conversion from low voltage to high voltage.

## DESCRIPTION

AHV12V1KVR5MAP is a combination of switching step-up technology and linear regulation, which converts the low input voltage into a stable high output voltage. It comes with output short-circuit protection and a wide range of output voltage adjustments. This high voltage power supply also features ultra-small size, light weight, moisture proof, shockproof, metal enclosure, and zero EMIs. This is a high stability high voltage power supply, ideal for photomultiplier tube, optical measurement, light control technology, nuclear physics, medical equipment, precision instruments, etc.

## 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.


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## SPECIFICATIONS

Table 1. Characteristics. $T_A$ = 25°C, unless otherwise noted

| Parameter | | Symbol | Condition | Min. | Typ. | Max. | Unit/Note |
|---|---|---|---|---|---|---|---|
| Input Voltage | | $V_{VPS}$ | | 11 | 12 | 13 | V |
| Quiescent Input Current | | $I_{INQQ}$ | $I_{OUT}$ = 0mA | 20 | 30 | 40 | mA |
| Full Load Input Current | | $I_{INFLD}$ | $I_{OUT}$ = 1.0mA | 120 | 130 | 140 | mA |
| Input Voltage Regulation Ratio | | $\Delta V_{OUT}/\Delta V_{VPS}$ | $V_{VPS}$ = 11V to 13V | | 0.2 | | % |
| Output Voltage | | $V_{OUT}$ | $I_{OUT}$ = 0 to 1.0mA | 0 | | 1000 | V |
| Maximum Output Current | | $I_{OUTMAX}$ | $V_{VPS}$ = 11V to 13V | | | 0.5 | mA |
| Stability of Reference Voltage | | $V_{REF}$ | −20 ~ 50°C | 4.98 | 5 | 5.02 | V |
| Load | | | | | 2 | | MΩ |
| Regulation Mode | | | | 0 ~ 5V or 10k potentiometer | | | |
| Control Input vs. Output Linearity | | $\Delta V_{REF}/\Delta V_{OUT}$ | | | <0.2 | | % |
| Load Regulation Rate | | | 0 to 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 | | 55 | °C |
| Storage Temperature Range | | $T_{stg}$ | | −40 | | 85 | °C |
| External Dimensions | | | | 55×35×20 | | | mm |
| Weight | | | | | 210 | | g |
| | | | | | 0.46 | | lbs |
| | | | | | 7.4 | | Oz |


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## TESTING DATA

I. DC Testing

High voltage power supply testing data (Test condition: the load is 2 MΩ)

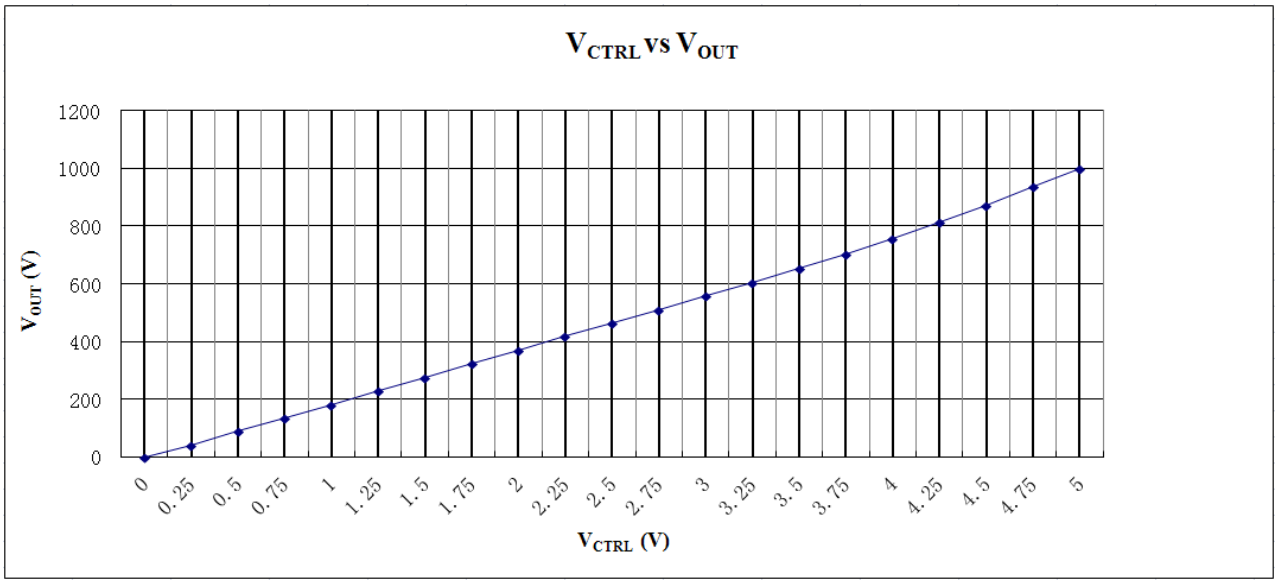


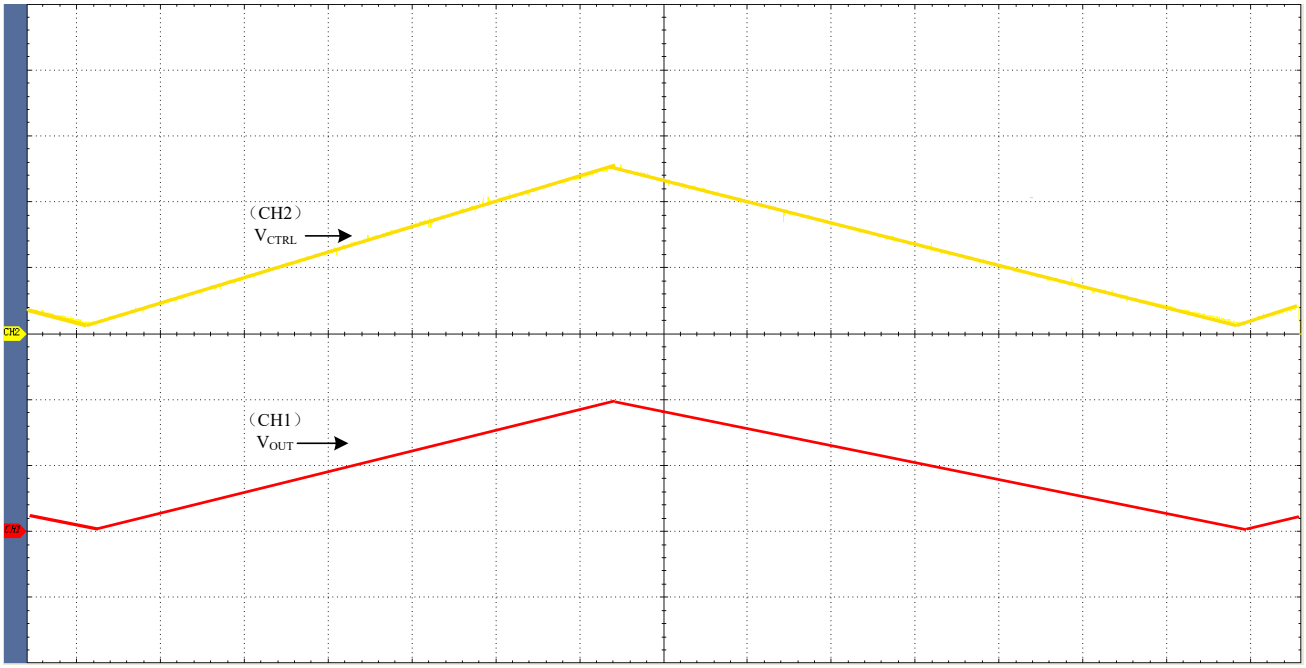

Figure 2. $V_{CTRL}$ vs. $V_{OUT}$

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 2MΩ load, the output voltage is 40 ~ 1000V.

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

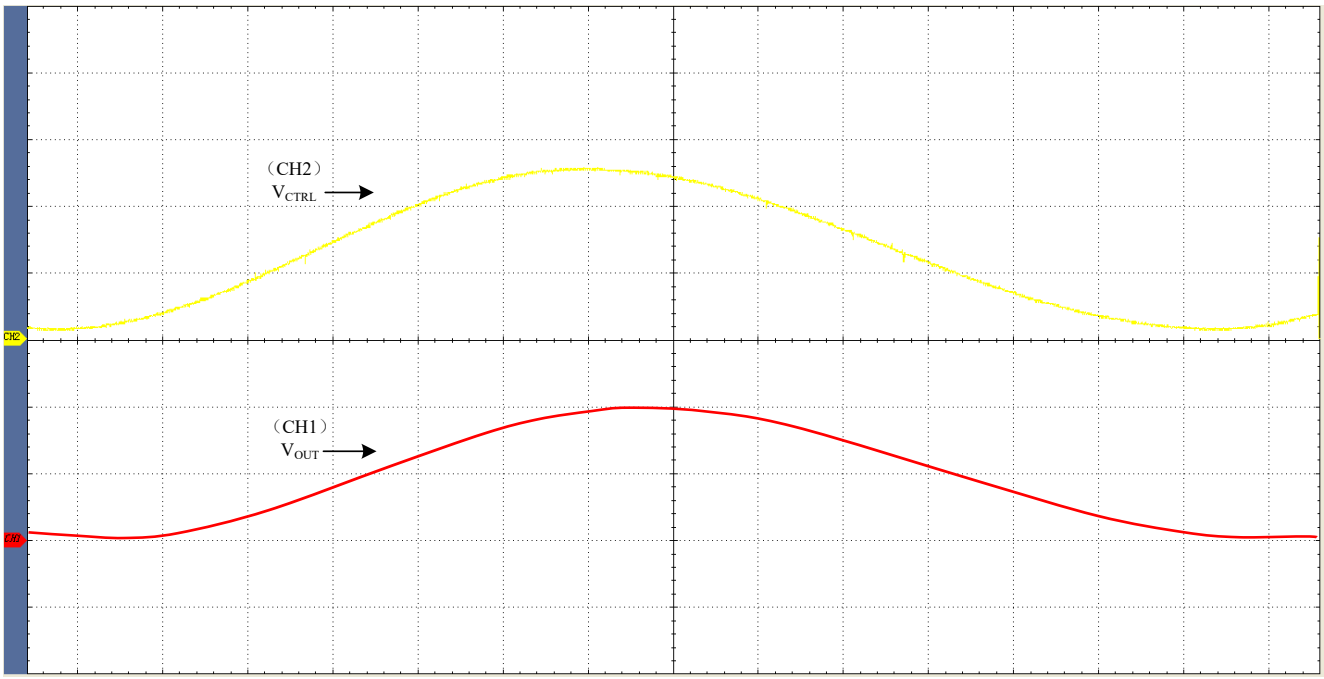

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CH1: 500V/Div CH2: 2V/Div M: 500ms

$V_{CTRL}$: 0.25V ~ 5V $V_{OUT}$: 40V ~ 1000V

Figure 3. Triangle Wave

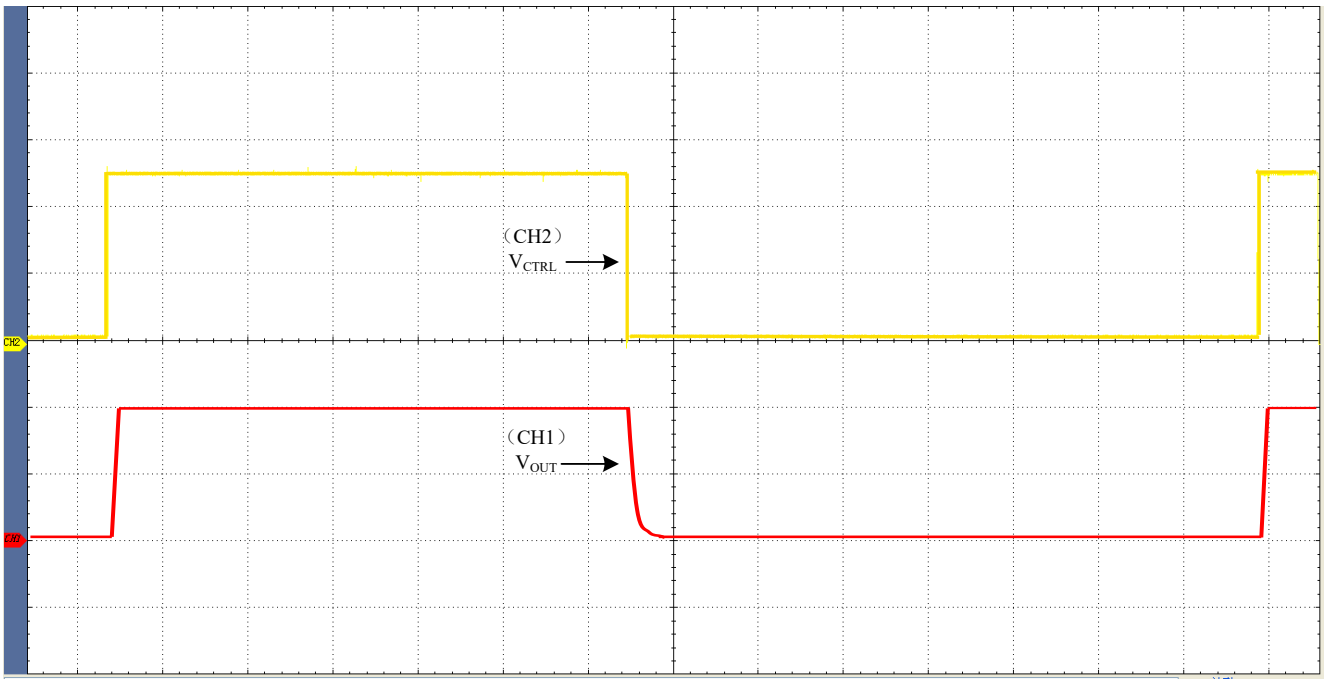



CH1: 500V/Div CH2: 2V/Div M: 500ms

$V_{CTRL}$: 0.25V ~ 5V $V_{OUT}$: 40V ~ 1000V

Figure 4. Sine Wave

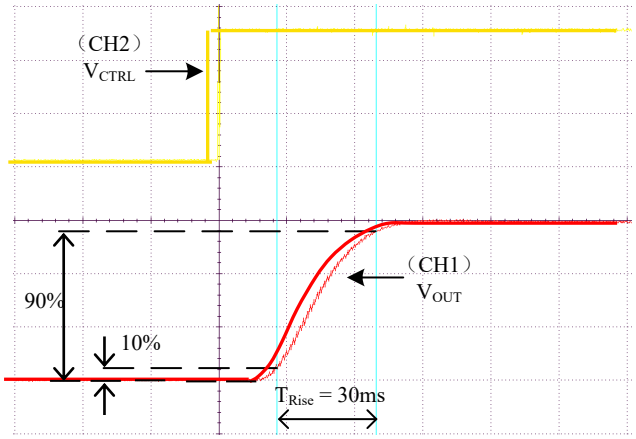

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CH1: 500V/Div CH2: 2V/Div M: 500ms

$V_{CTRL}$: 0.25V ~ 5V $V_{OUT}$: 40V ~ 1000V

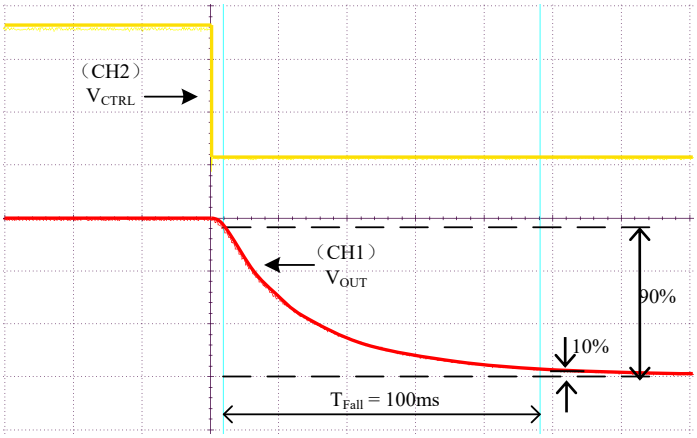
Figure 5. Square Wave




$V_{CTRL}$: 0.25V ~ 5V $V_{OUT}$: 40V ~ 1000V

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.




$V_{CTRL}$: 0.25V ~ 5V $V_{OUT}$: 40V ~ 1000V

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.


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## THE CONNECTION DIAGRAM OF MODULE'S PERIPHERAL CIRCUIT

The leads colors in the figures below are identical with those in the physical AHV12V1KVR5MAP.

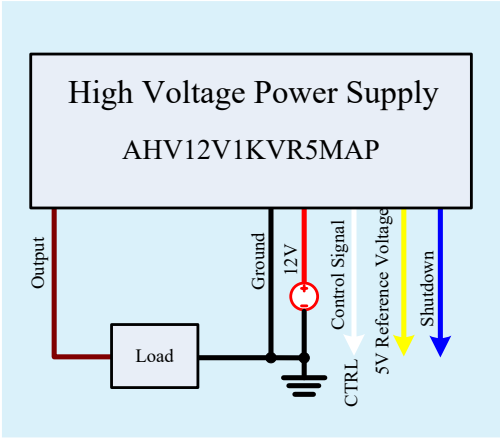



Figure 8. Control by External Signal Source

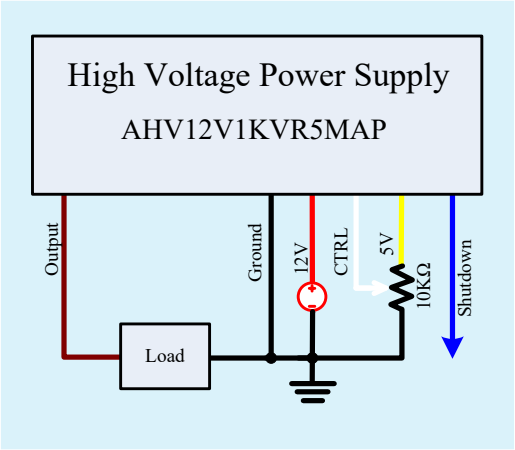



Figure 9. Constant Output Voltage

## NAMING PRINCIPLE

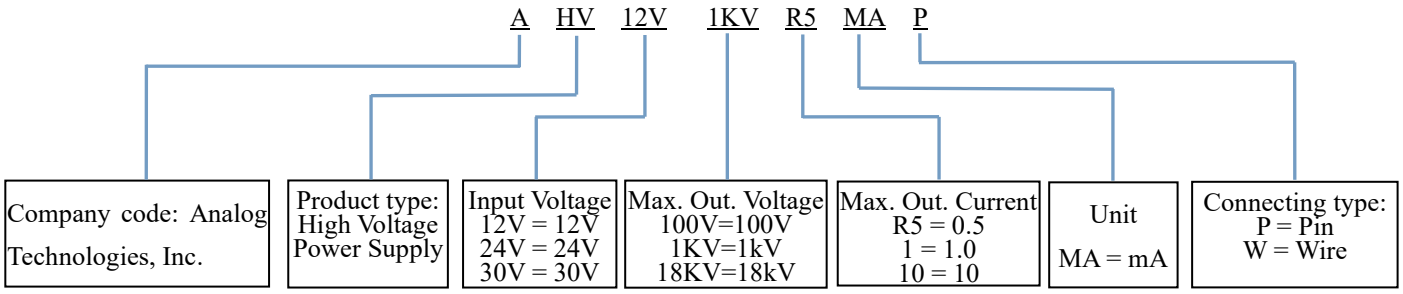



Figure 10. Naming Principle of AHV12V1KVR5MAP

## DIMENSIONS

I. Pin layout

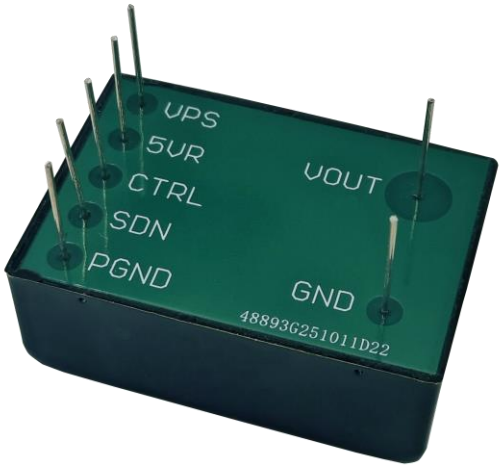



Figure 11. Pin Layout for AHV12V1KVR5MAP


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II. Dimension of AHV12V1KVR5MAP.

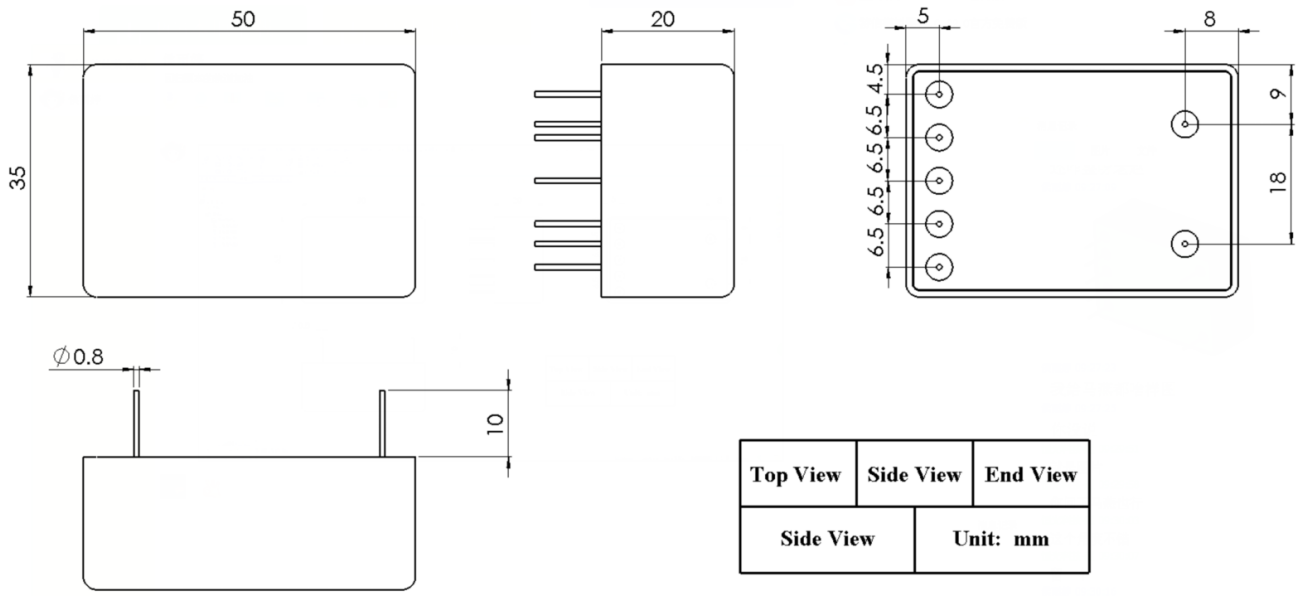



Figure 12. Dimensions for AHV12V1KVR5MAP

## Ordering Information

| Part Number | Buy Now |
|---|---|
| AHV12V1KVR5MAP | |

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