

Figure 1.1. Physical Photos of AHVA250V2X100MA



Figure 1.2. 3D View of AHVA250V2X100MA

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MAIN FEATURES

- Built-in High Voltage Converter
- Compact Size: 176.5(L)×147.0(W)×41.2(H) mm
- High Current Capability: Up to 100mA
- High Slew Rate: 100V/μs
- Wide Output Voltage Range: V_{OUT}=10~250V@V_{IN}=24V
- Offset Voltage Range: 10V
- Bandwidth: Up to 10kHz
- Weight: 2.2lb (1.0kg)

APPLICATIONS

High voltage amplifications for driving piezos and other high voltage loads.

DESCRIPTION

The AHVA250V2X100MA is an electronic module for amplifying an analog input voltage into a high voltage output. Figure 1 shows its physical photo. It comes with a high voltage DC-DC converter, which converts the 24V input voltage into a 10 to 250V output voltage. The analog output voltage can swing almost from 10 to 250V when it is powered by a 24V power supply. There is three LEDs indicating if the amplifier works properly.

CAUTION

First, set up the AC power supply and fix it stably and firmly. Then make sure that the two switches of the high voltage amplifier are OFF. Connect the 24V DC power supply to the VPS and PGND of the high voltage amplifier. After the connection is complete, turn on the low voltage switch and set the input AC voltage or DC voltage. Then use the output monitor to check whether the input set voltage is correct. Finally turn on the high voltage switch.

Table 1. Descriptions of Terminal Block Pin Functions

Pin #	Name	Type	Description
1	VPS	Power Input	Power supply 24V.
2	PGND	Power Ground	Power ground pin.
3	SBDN	Digital Input	This is a duplex pin. It sets the amplifier into Off, Standby or On mode.
4	AGND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.
5	10VR	Analog Output	10V voltage reference.
6	IHVMON	Analog Input	-
7	HVMON	Analog Output	Output voltage indication. When going from 0.4V to 10V, it indicates the output voltage is from 10V to 250V.
8	OFFSO	Analog Output	Output voltage setting. When going from 0.4V to 10V, it indicates the output voltage is from 10V to 250V. The pin is controlled by a potentiometer.
9	GND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.
BNC 1	Input	Analog Input	Output voltage setting. When going from 0.4V to 10V, it indicates the output voltage is from 10V to 250V.
BNC 2	Input+Offset Monitor	Analog Output	Input+Offset input control signal indication.
BNC 3	HVOUT	Analog Output	Output voltage for driving the load.
	OGND	Output Ground	Connect this pin to the load return terminal.

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SPECIFICATIONS

Table 2. Characteristics (Test ambient temperature T_A = 25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Power Supply Input (Pin 1)						
Input Range	V_{VPS}		23	24	25	V
Input Current	I_{IN}		0		4	A
Voltage Output (BNC 3)						
Output Voltage	V_{OUT}		10		250	V
Output Current	I_{OUT}		0		100	mA
SBDN Pin (Pin 3)						
Off State	$V_{SBDN-OFF}$		0		0.4	V
	$V_{SBDN-OFF-HI}$ Going up from Off to Standby threshold				2.1	V
	$V_{SBDN-OFF-LOW}$ Going down from Standby to Off threshold		0.4			V
SBDN State	$V_{SBDN-STANDBY}$		2.1		2.51	V
	$V_{SBDN-SB-HI}$ Going up from Standby to On threshold				2.64	V
	$V_{SBDN-SB-LOW}$ Going down from On to Standby threshold		2.51			V
On State	$V_{SBDN-ON}$		2.64		V_{VPS}	V
SBDN Current	I_{SBDN}			10	20	µA
10VR Pin (Pin 5)						
Voltage Reference	V_{REF}			10		V
Maximum Input Power				250		W
Maximum Slew Rate				100		V/µs

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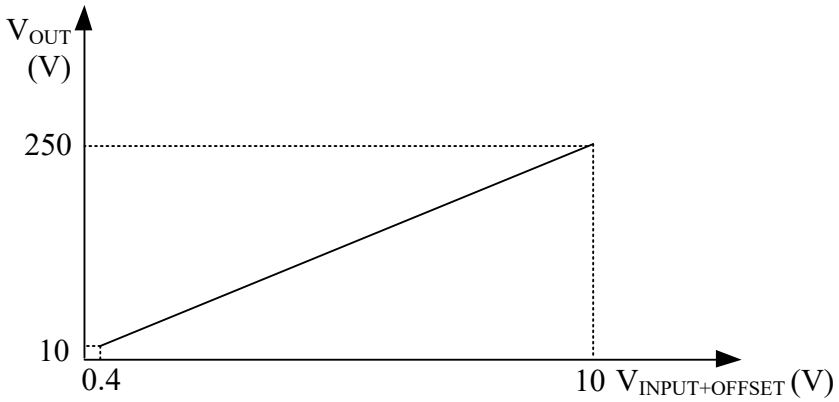


Figure 2. $V_{INPUT+OFFSET}$ vs. V_{OUT}

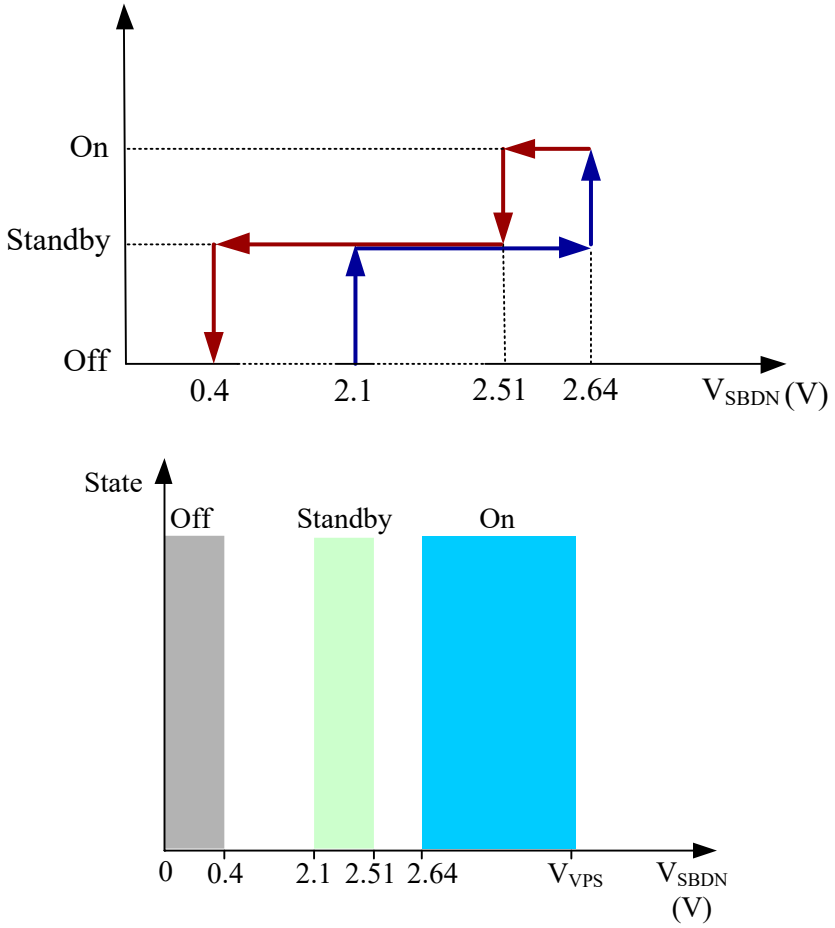


Figure 3. V_{SBDN} vs. Amplifier States

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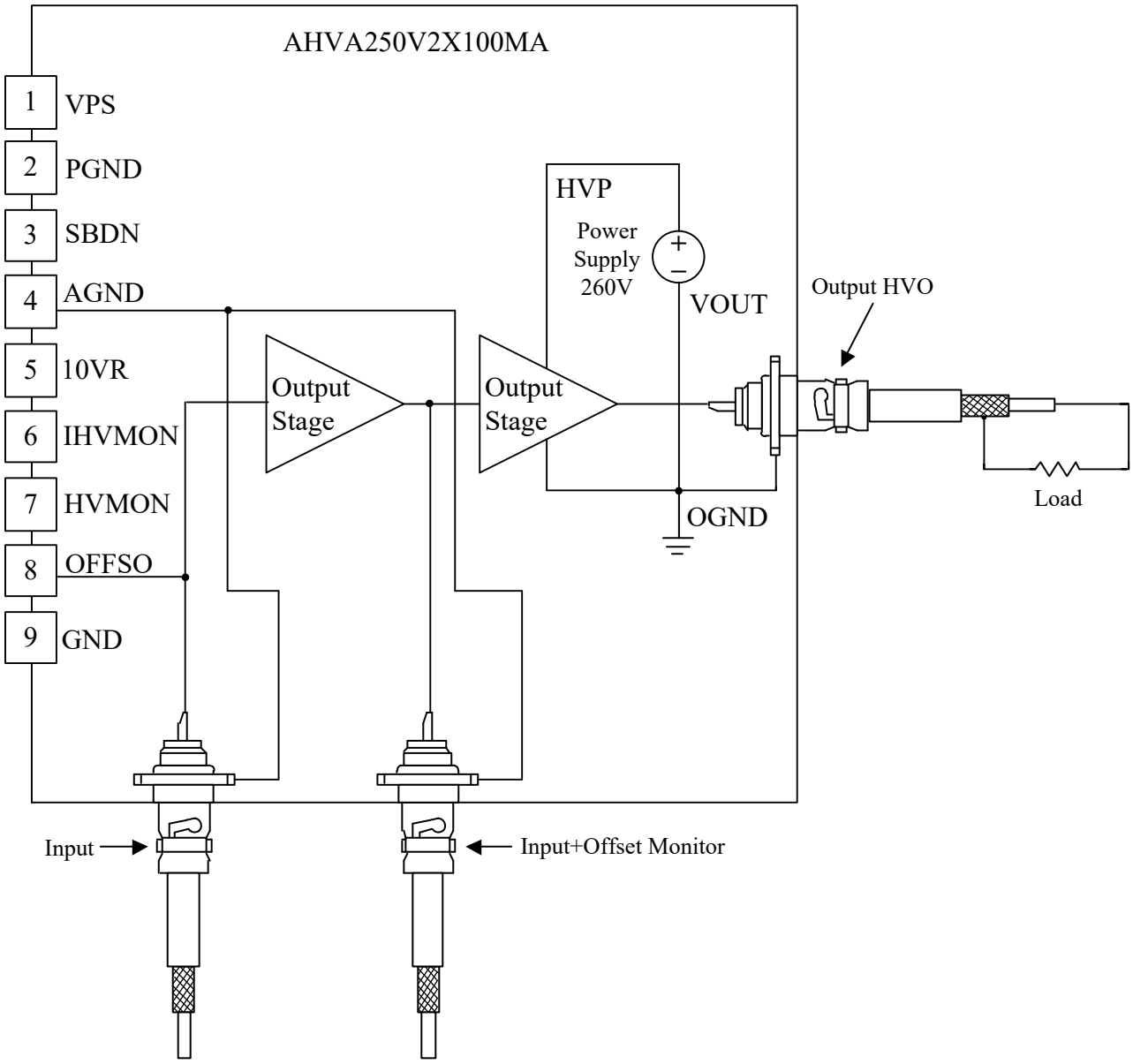


Figure 4. Schematic for Driving the Load

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As shown in Figure 5 ~ Figure 8, when a sine wave of
0.4V ~ 10V, f = 100Hz/10kHz/20kHz/35kHz, is applied to AC input pin, measure the waveform of HVO. Gain=25.

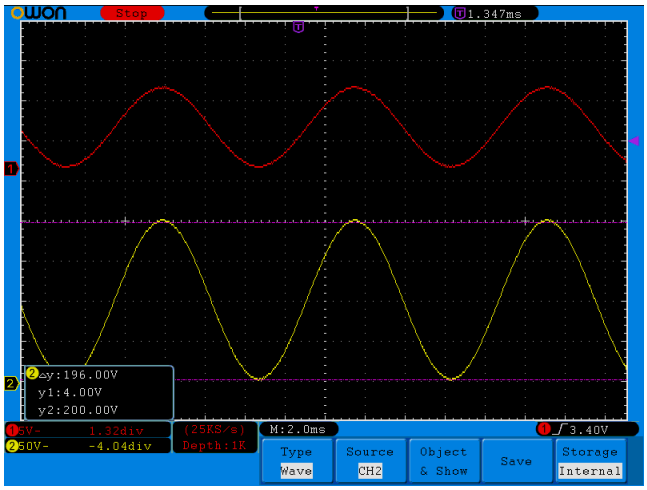


Figure 5. f=100Hz

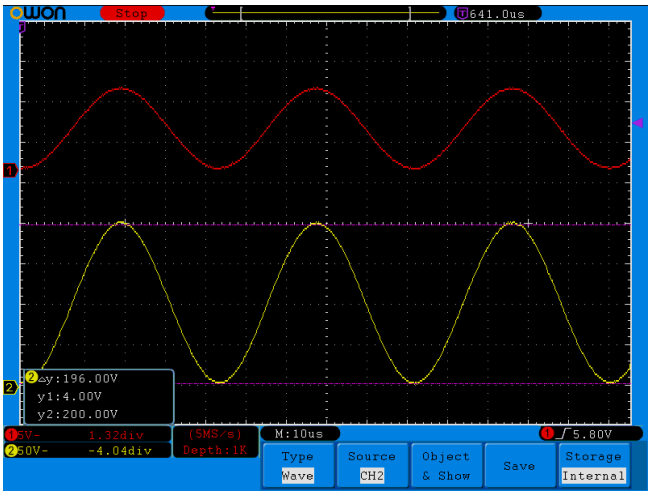


Figure 7. f=20kHz

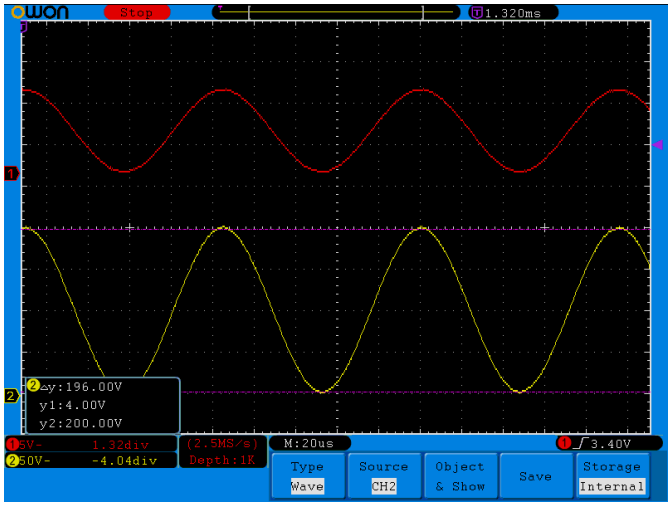


Figure 6. f=10kHz

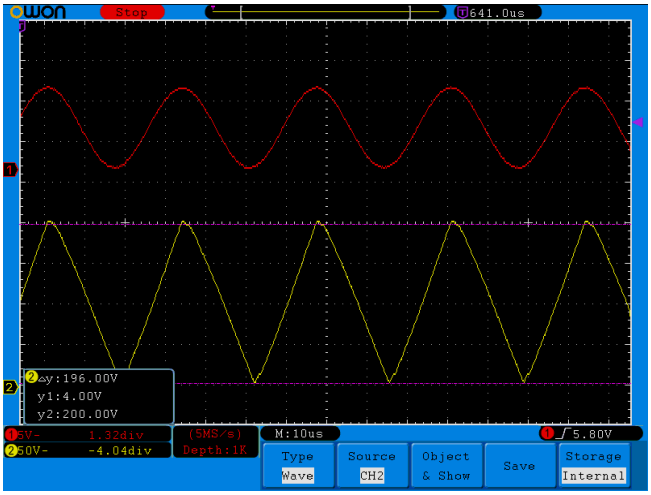


Figure 8. f=35kHz

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As shown in Figure 9 & Figure 10, $V_{Input+Offset}$ = 0 ~ 10V, V_{OUT} =1V ~ 250V, the output waveform delay time is 60μs.

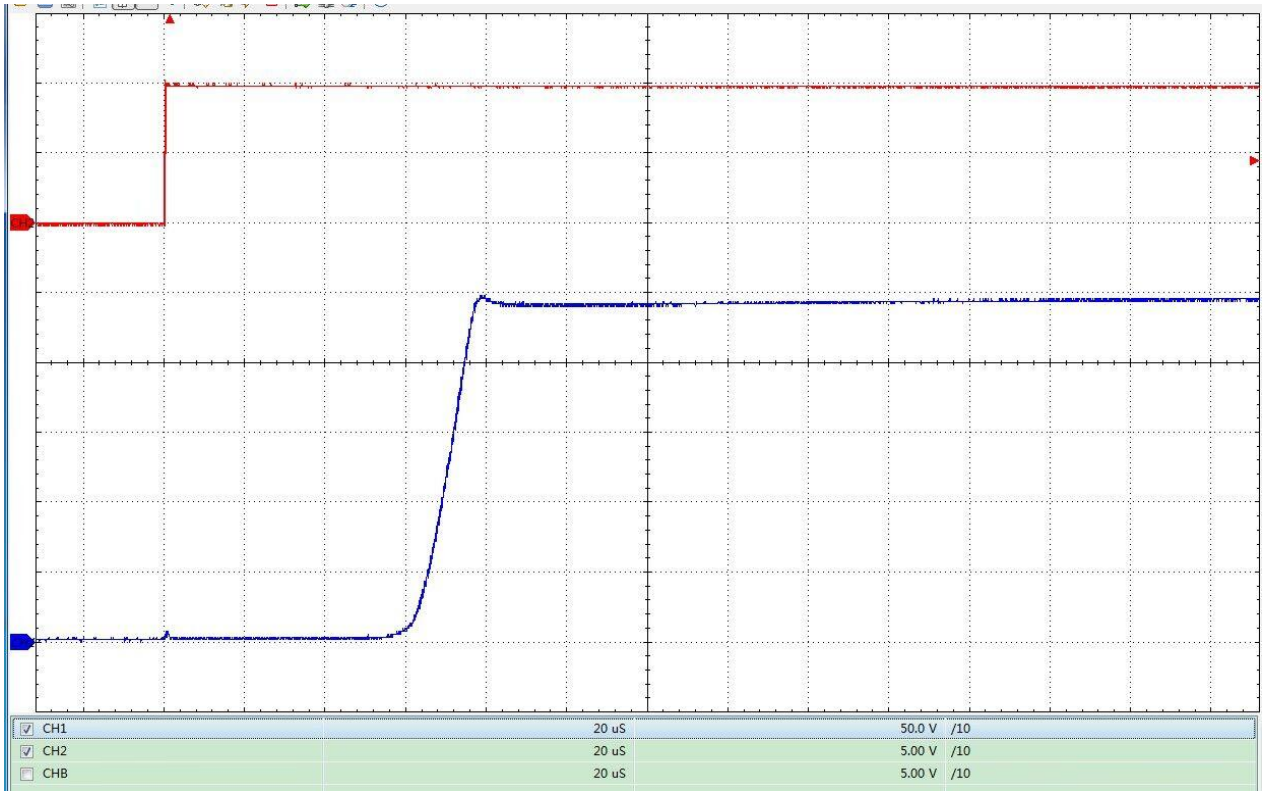


Figure 9.

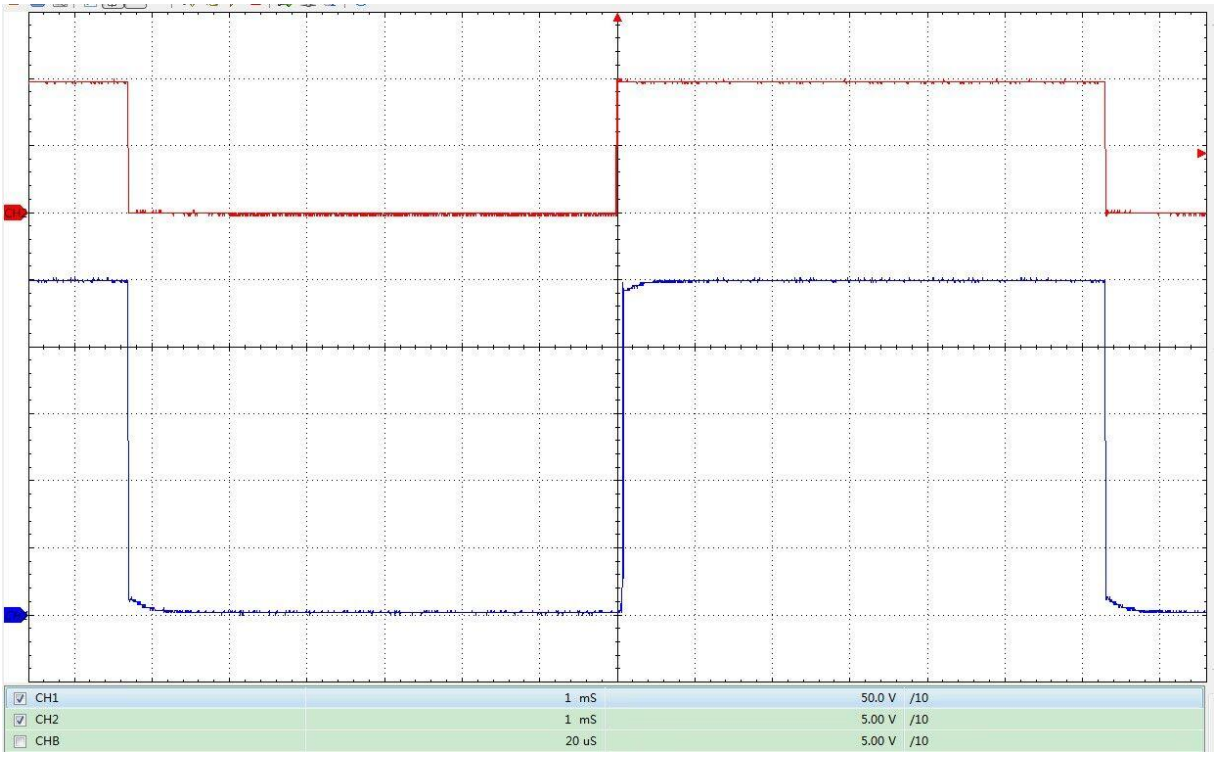


Figure 10.

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DIMENSIONS

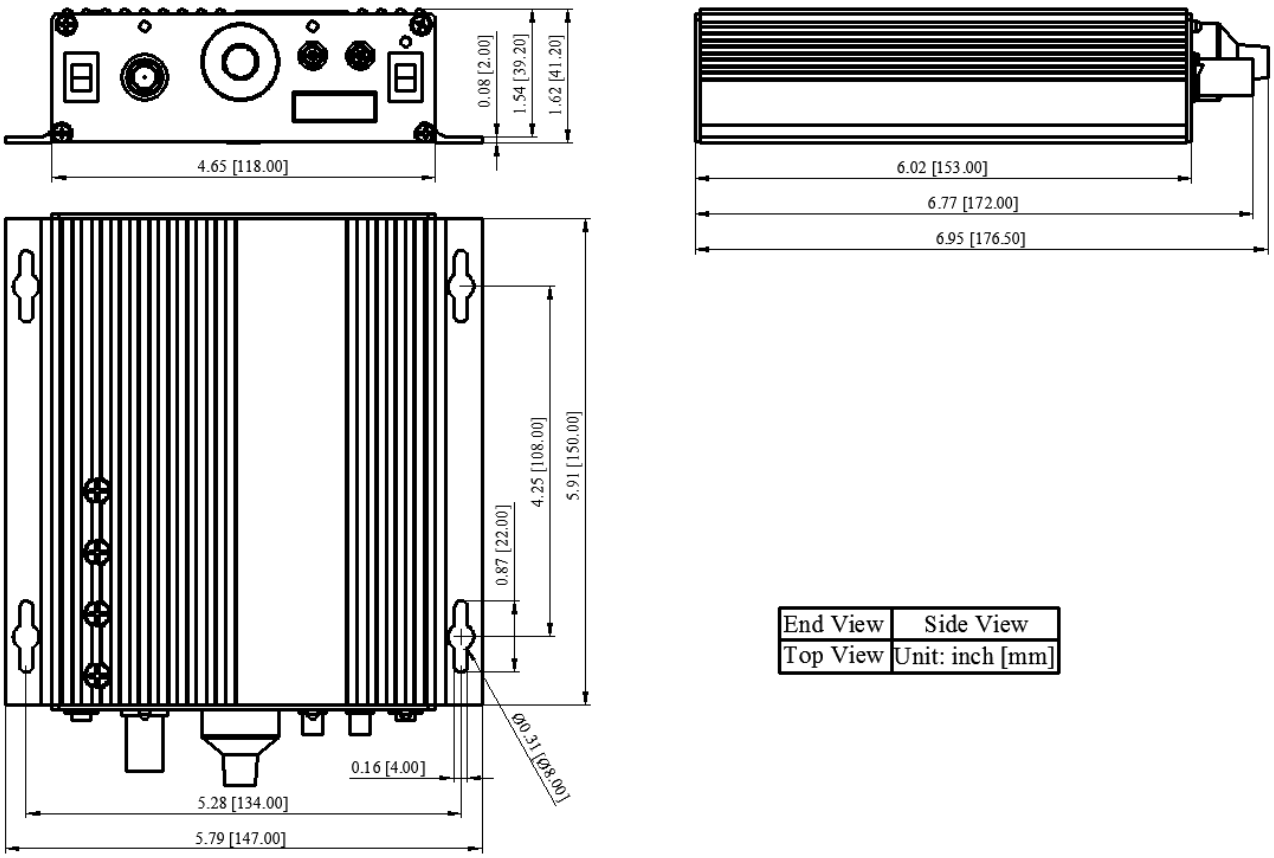


Figure 11. Dimensions of AHVA250V2X100MA

ORDERING INFORMATION

Table 3. Part Number

Part Number	Description
AHVA250V2X100MA	250V high voltage amplifier

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NOTICE

1. It is important to carefully read and follow the warnings, cautions, and product-specific notes provided with electronic components. These instructions are designed to ensure the safe and proper use of the component and to prevent damage to the component or surrounding equipment. Failure to follow these instructions could result in malfunction or failure of the component, damage to surrounding equipment, or even injury or harm to individuals. Always take the necessary precautions and seek professional assistance if unsure about proper use or handling of electronic components.
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