High Voltage Amplifier/Piezo Driver

AHVA500V2X10MA

Figure 1. The Physical Photos of AHVA500V2X10MA

MAIN FEATURES

- Built-in High Voltage Converter
- Compact Size: 181.5(L)×149.0(W)×38.3(H) mm
- High Current Capability: Up to 10mA
- High Slew Rate: 100V/μs
- Wide Output Voltage Range: V_{OUT}=0~500V@V_{IN}=24V
- Offset Voltage Range: 10V
- Bandwidth: Up to 220kHz
- Weight: 2.2lb (1.0kg)

APPLICATIONS

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

DESCRIPTION

The AHVA500V2X10MA 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 0 to 500V output voltage. The analog output voltage can swing almost from 0 to 500V 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 to 10V, it indicates the output voltage is from 0 to 500V.
8	OFFSO	Analog Input	Output voltage setting. When going from 0 to 10V, it indicates the output voltage is from 0 to 500V. The pin is controlled by a potentiometer.
9	GND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.

Pin #	Name	Type	Description
BNC 1	INPUT	Analog Input	Output voltage setting. When going from 0 to 10V, it indicates the output voltage is from 0 to 500V.
BNC 2	INPUT+DC	Analog Input	INPUT+DC input control signal indication.
BNC 3	VOUT	Analog Output	Output voltage for driving the load.
	OGND	Output Ground	Connect this pin to the load return terminal.

SPECIFICATIONS

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Power Supply Input						
Input Range	V_{VPS}		23	24	25	V
Input Current	I_{IN}		0		4	A
Voltage Output						
Output Voltage	V_{OUT}		0		500	V
Output Current	I_{OUT}		0		10	mA
SBDN Pin (Pin 3)						
SBDN Voltage	$V_{SBDN-ON}$		2.64		V_{VPS}	V
	$V_{SBDN-STANDBY}$		2.1		2.5	V
	$V_{SBDN-OFF}$		0		0.4	V
	$V_{SBDN-SB-HI}$ Going up from Standby to On threshold voltage		2.508		2.64	V
	$V_{SBDN-SB-LOW}$ Going down from On to Standby threshold voltage		2.5		2.6	V
	$V_{SBDN-OFF-HI}$ Going up from Off to Standby threshold voltage				2.1	V
	$V_{SBDN-OFF-LOW}$ Going down from Standby to Off threshold voltage		0.4			V
SBDN Current	I_{SBDN}			10	20	µA
10VR Pin (Pin 5)						
Voltage Reference	V_{REF}			10		V
Maximum Input Power				15		W
Maximum Slew Rate				100		V/µs

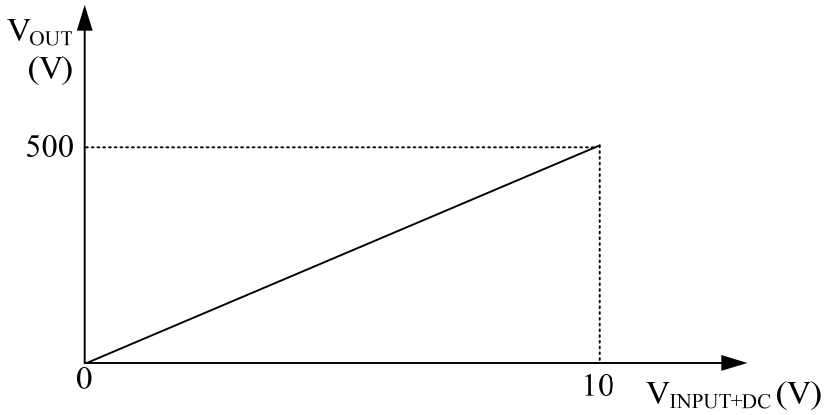

Figure 2. V_{OUT} vs. V_{VIN}

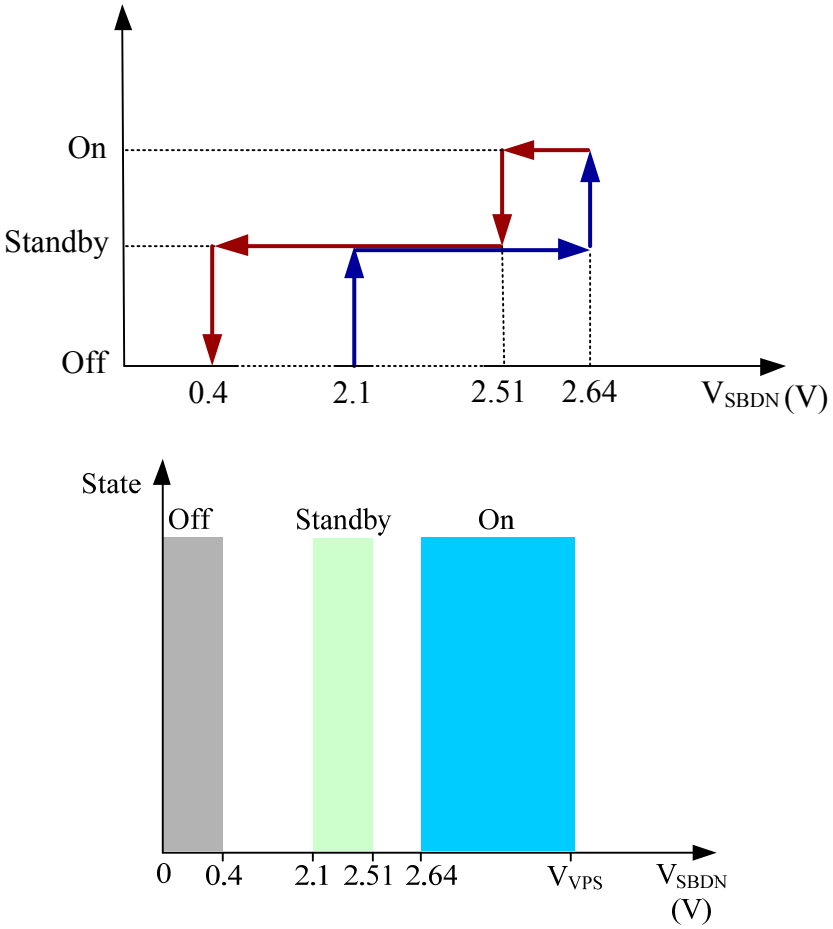

Figure 3. The States of Amplifier vs. V_{SBDN}

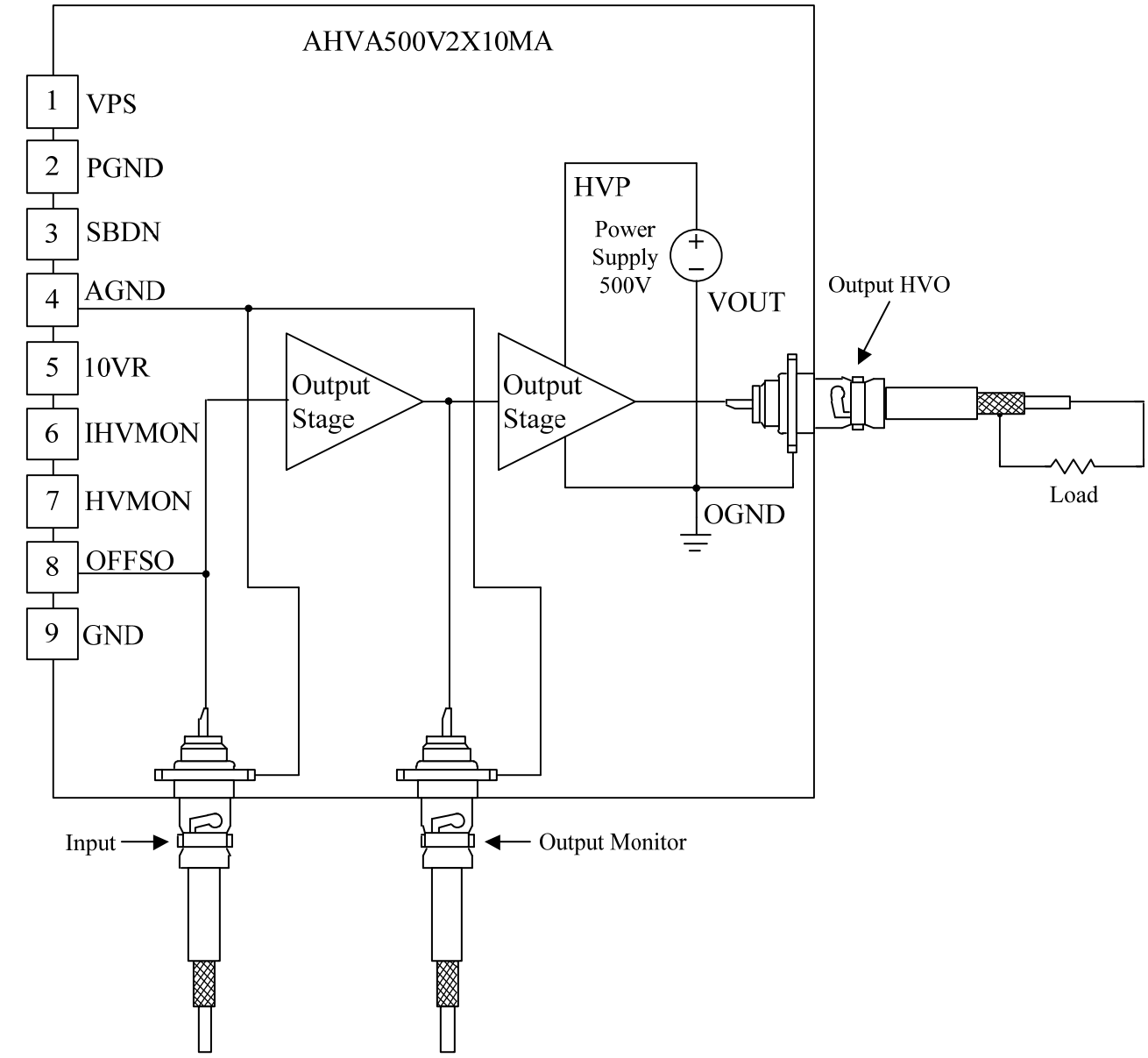

Figure 4. Schematic for Driving the Load

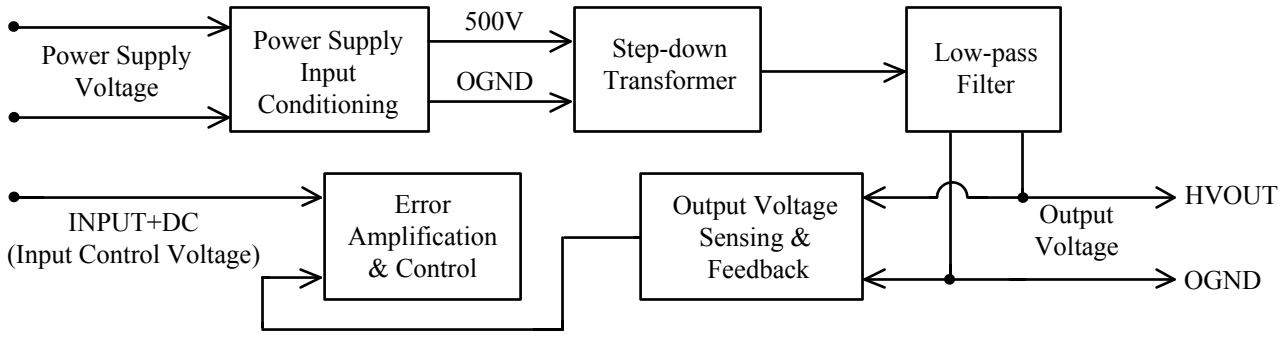

Figure 5. Block Diagram

DIMENSIONS

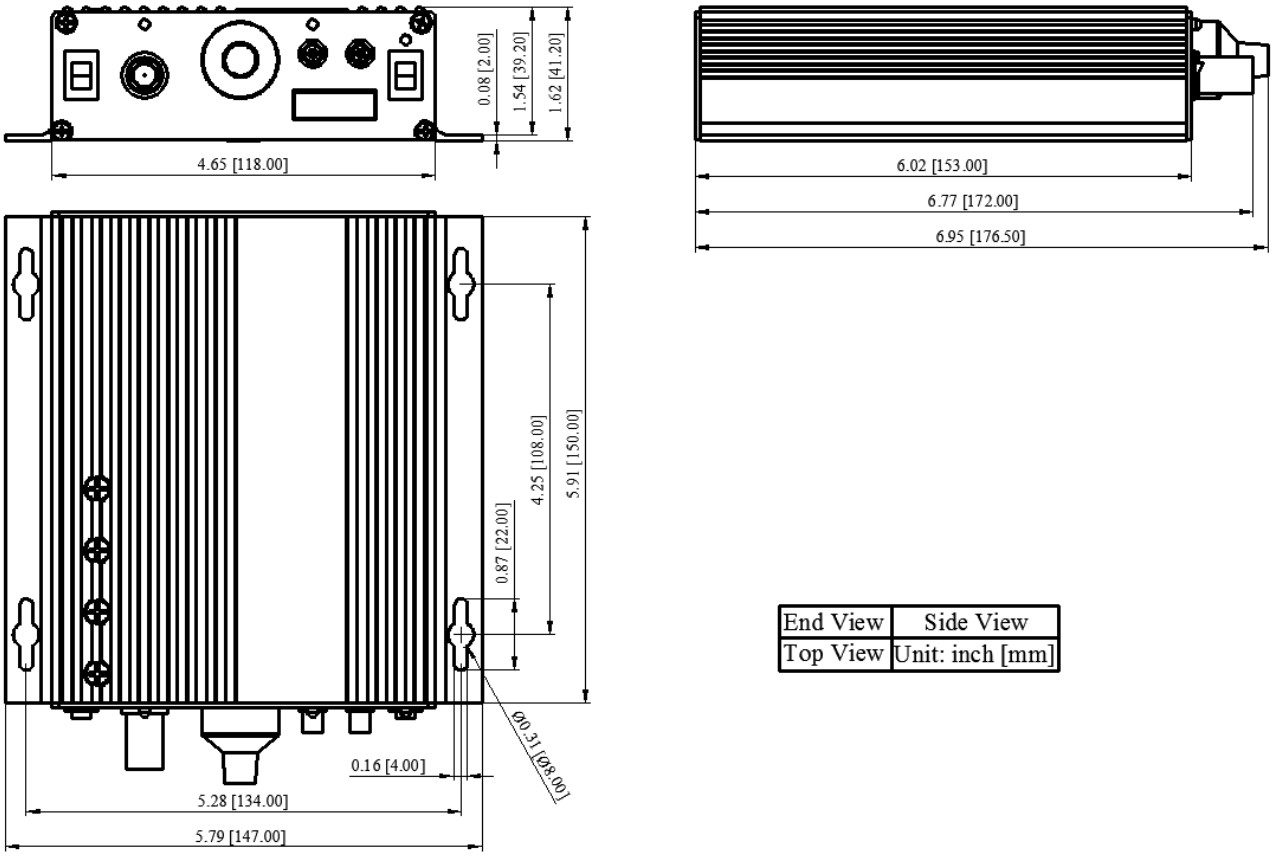

Figure 6. Dimensions of AHVA500V2X5MA

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