High Voltage Amplifier/Piezo Driver

AHVA1KV1KVF2X10MA

Figure 1. Photos of AHVA1KV1KVF2X10MA

FEATURES

- Built-in High Voltage Converter
- Compact Size: 232.5(L)×230(W)×61(H) mm
- High Current Capability: Up to 10mA
- High Slew Rate: 150V/μs
- Wide Output Voltage Range: $V_{OUT} = -1kV \sim 1kV$@ $V_{IN} = 24V$
- Offset Voltage Range: $-10V \sim 10V$
- Bandwidth: Up to 20kHz

APPLICATIONS

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

DESCRIPTION

The AHVA1KV1KVF2X10MA is an electronic module for amplifying an analog input voltage into a high voltage output. It comes with a high voltage DC-DC converter, which converts the 24V input voltage into a −1kV to 1kV output voltage. The analog output voltage can swing almost from −1kV to 1kV when it is powered by a 24V power supply. There is three LEDs indicating if the amplifier works properly. Figure 1 shows its photos.

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	−10VR	Analog Output	−10V voltage reference.
7	AC+DC	Analog Input	AC+DC input control signal indication.
8	BIASO	Analog Input	Output voltage setting. When going from −10V to 10V, it indicates the output voltage is from −1kV to 1kV. The pin is controlled by a potentiometer.
9	GND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.
BNC 1	ACIN	Analog Input	Output voltage setting. When going from −10V to 10V, it indicates the output voltage is from −1kV to 1kV.
BNC 2	ACO	Analog Output	Output voltage indication. When going from −10V to 10V, it indicates the output voltage is from −1kV to 1kV.
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}		−1000		1000	V
Output Current	I_{OUT}		0		9	mA
SBDN Pin (Pin 4)						
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
LPGD Pin (Pin 3)						
LPGD Voltage	$V_{LPGD-LOW}$	V_{DD} = 5V Sourcing current = 8mA			0.6	V
	$V_{LPGD-HI}$	V_{DD} = 5V Sourcing current = 3.5mA	V_{DD}−0.7			V
10VR/−10VR Pin (Pin 6 and Pin 7)						
Voltage Reference	V_{REF}			−10/+10		V
Maximum Input Power				100		W
Maximum Slew Rate				150		V/µs

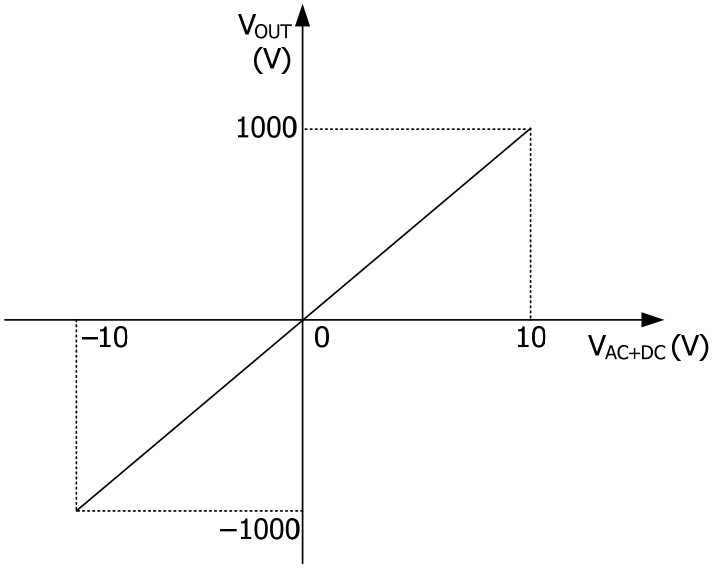

Figure 1. V_{OUT} vs. V_{VIN}

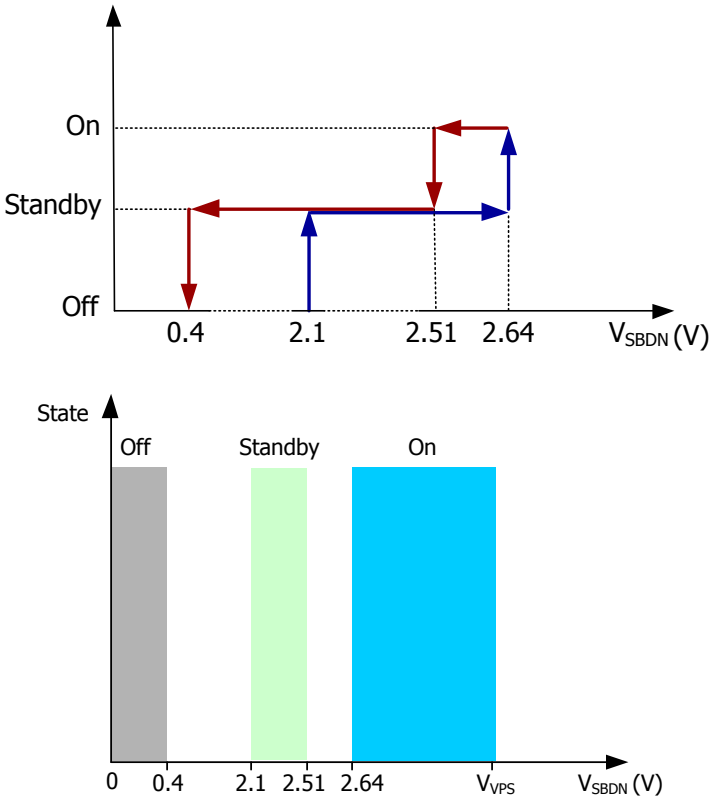

Figure 2. The States of Amplifier vs. V_{SBDN}

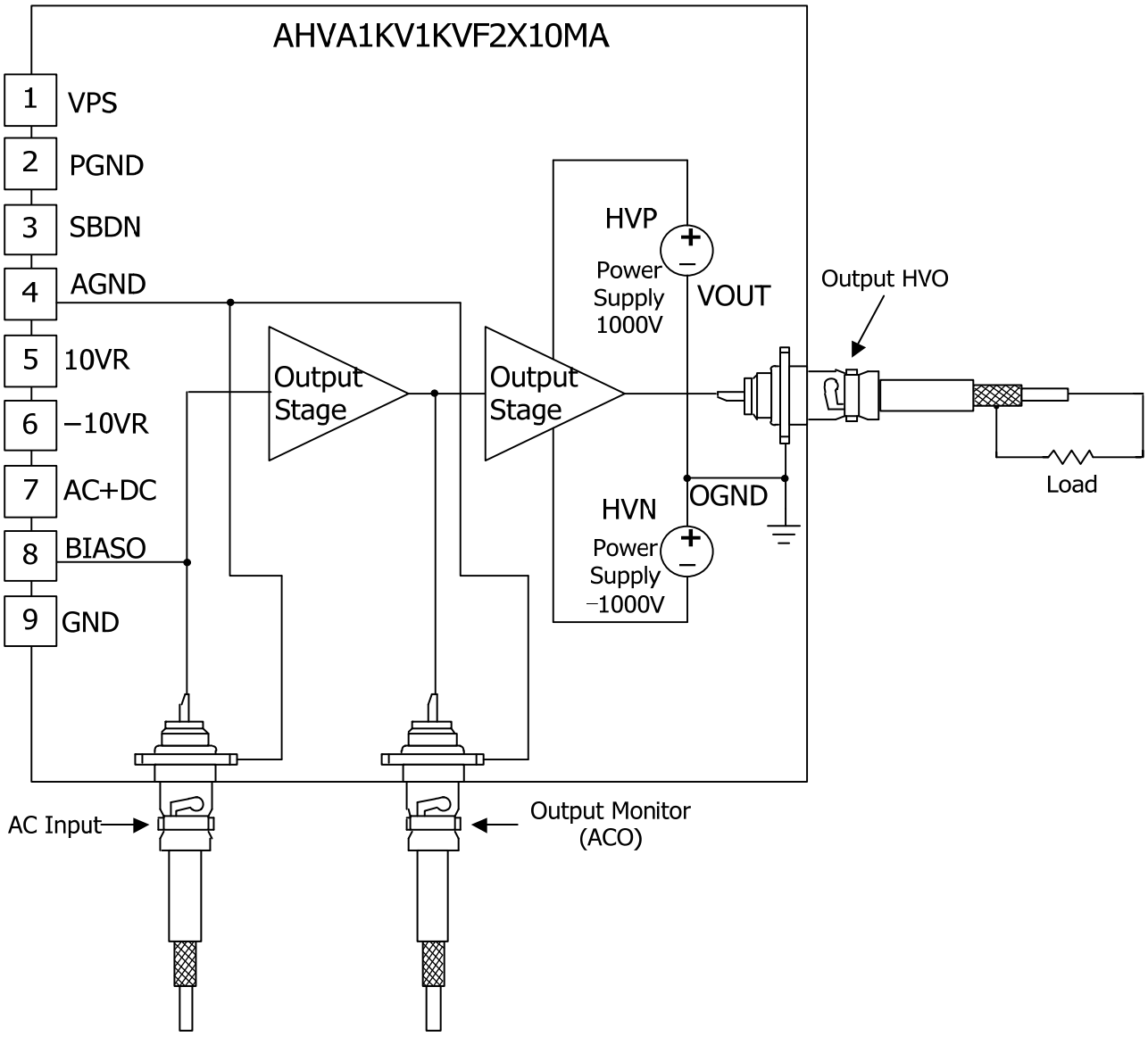

Figure 3. Schematic for Driving the Load

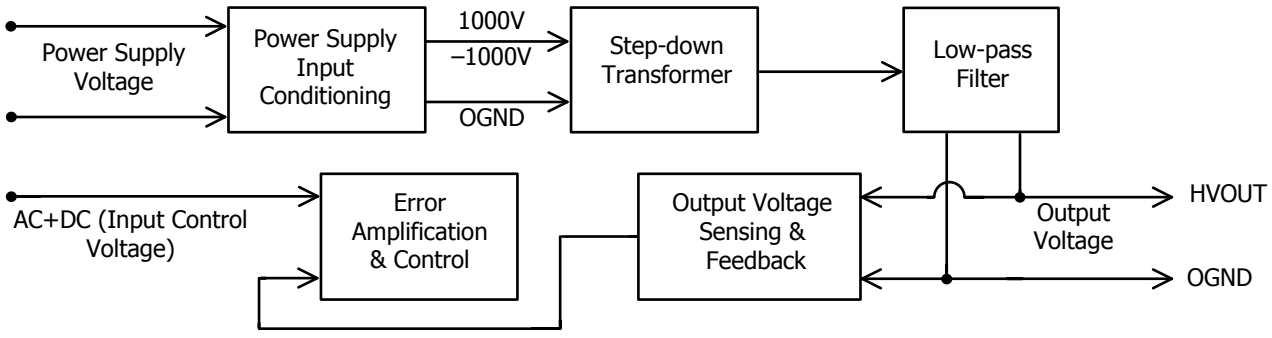

Figure 4. Block Diagram

MECHANICAL DIMENSIONS

Figure 5 shows the dimensions of this high voltage amplifier.

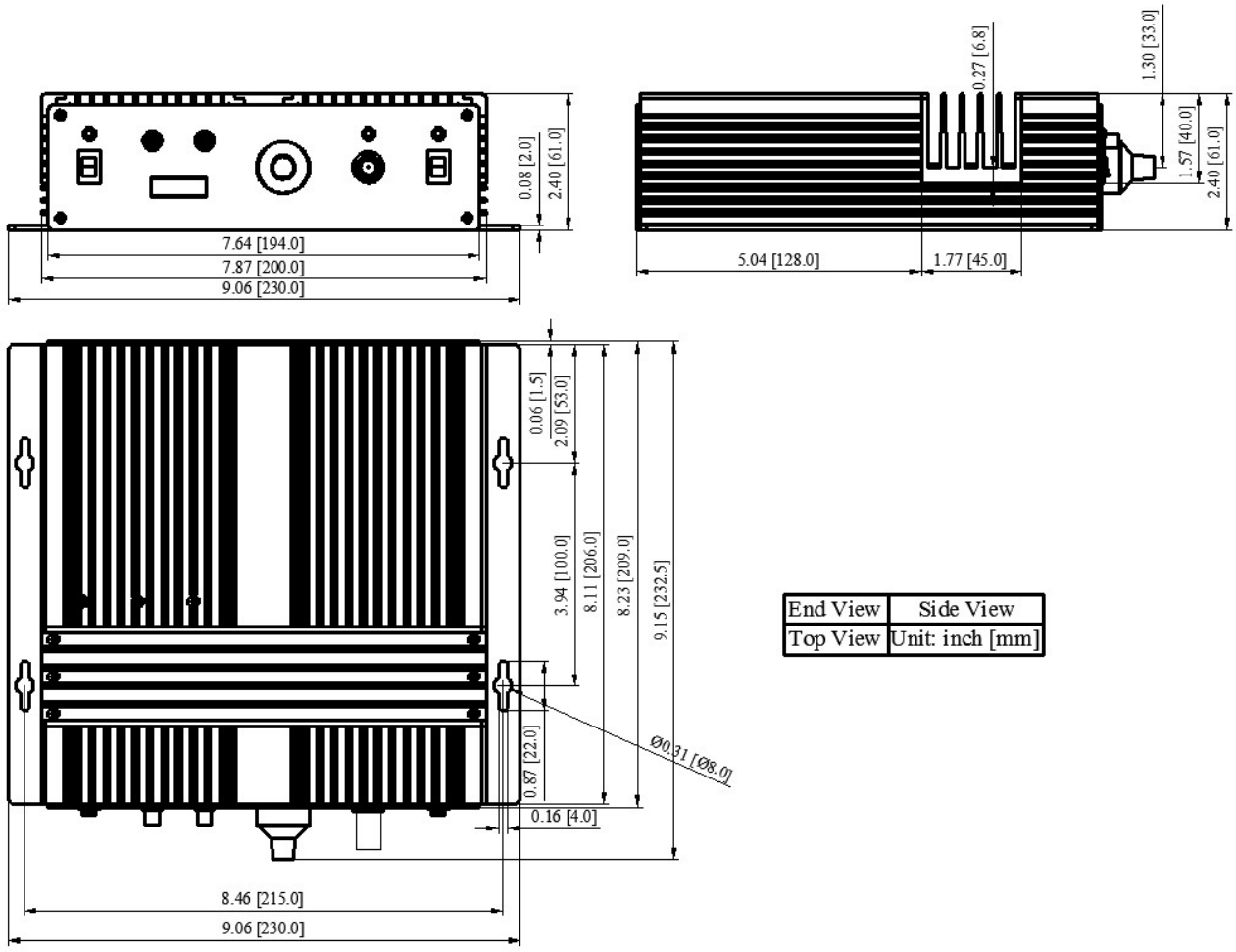

Figure 5. Dimensions of AHVA1KV1KVF2X10MA

ORDERING INFORMATION

Table 3. Part Number

Part Number	Description
AHVA1KV1KVF2X10MA	±1kV high voltage amplifier

NOTICE

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