High Voltage Amplifier/Piezo Driver

AHVA250V2X40MA

Figure 1. The Physical Photos of AHVA250V2X40MA

- Compact Size: 181.5(L)×149.0(W)×38.3(H) mm
- High Current Capability: Up to 40mA
- High Slew Rate: 100V/μs
- Wide Output Voltage Range: V_{OUT} = 0 ~ 250V@V_{IN} = 24V
- Offset Voltage Range: 10V
- Bandwidth: Up to 20kHz
- Weight: 2.2lb (1.0kg)

APPLICATIONS

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

DESCRIPTION

The AHVA250V2X40MA 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 250V output voltage. The analog output voltage can swing almost from 0 to 250V when it is powered by a 24V power supply. There is three LEDs indicating if the amplifier works properly.

MAIN FEATURES

- Built-in High Voltage Converter

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	LPGD	Digital Output	Loop good indication. When the amplifier is working properly, this pin goes high; otherwise, it goes low.
4	SBDN	Digital Input	This is a duplex pin. It sets the amplifier into Off, Standby or On mode.
5	AGND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.
6	10VR	Analog Output	10V voltage reference.
7	AIO	Analog Input	Output current indication. When going from 0 to 10V, it indicates the output current is from 0 to 40mA.
8	ACO	Analog Output	Output voltage indication. When going from 0 to 10V, it indicates the output voltage is from 0 to 250V.
9	BIASO	Analog Input	Output voltage setting. When going from 0 to 10V, it indicates the output voltage is from 0 to 250V. The pin is controlled by a potentiometer.
10	GND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.

Pin #	Name	Type	Description
BNC 1	ACIN	Analog Input	Output voltage setting. When going from 0 to 10V, it indicates the output voltage is from 0 to 250V.
BNC 2	AC+DC	Analog Input	AC+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		250	V
Output Current	I_{OUT}		0		38	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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
10VR Pin (Pin 6)						
Voltage Reference	V_{REF}			10		V
Maximum Input Power				10		W
Maximum Slew Rate				100		V/μs

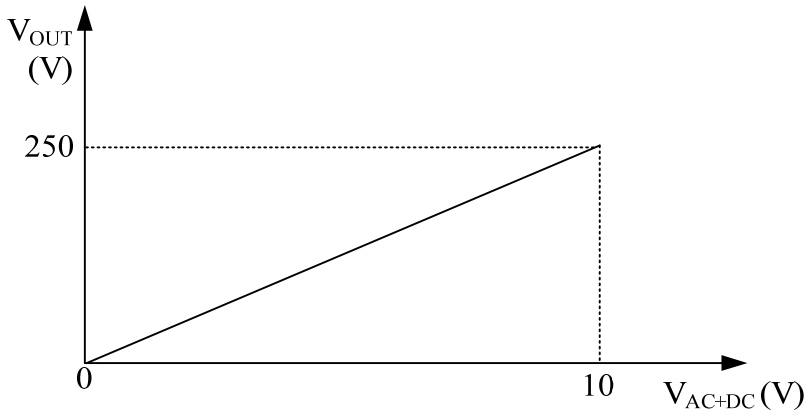
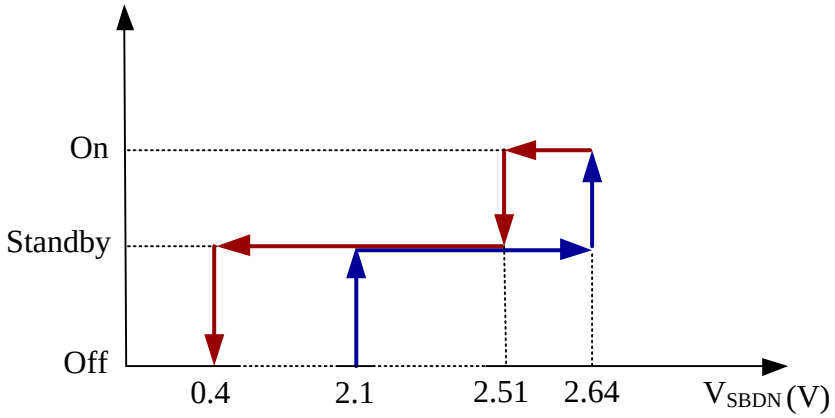


Figure 2. V_{OUT} vs. V_{VIN}



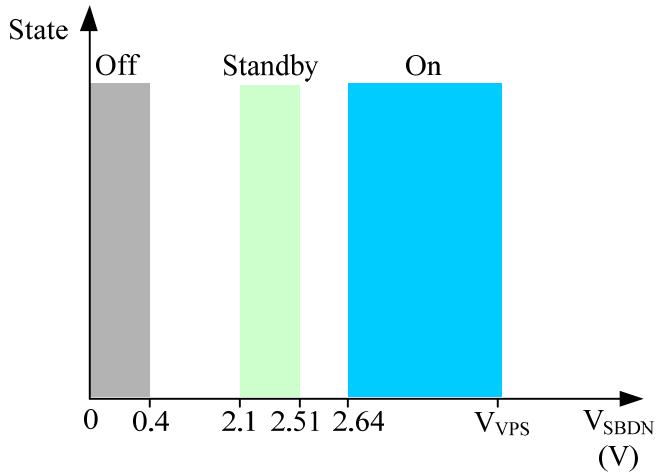


Figure 3. The States of Amplifier vs. V_{SBDN}

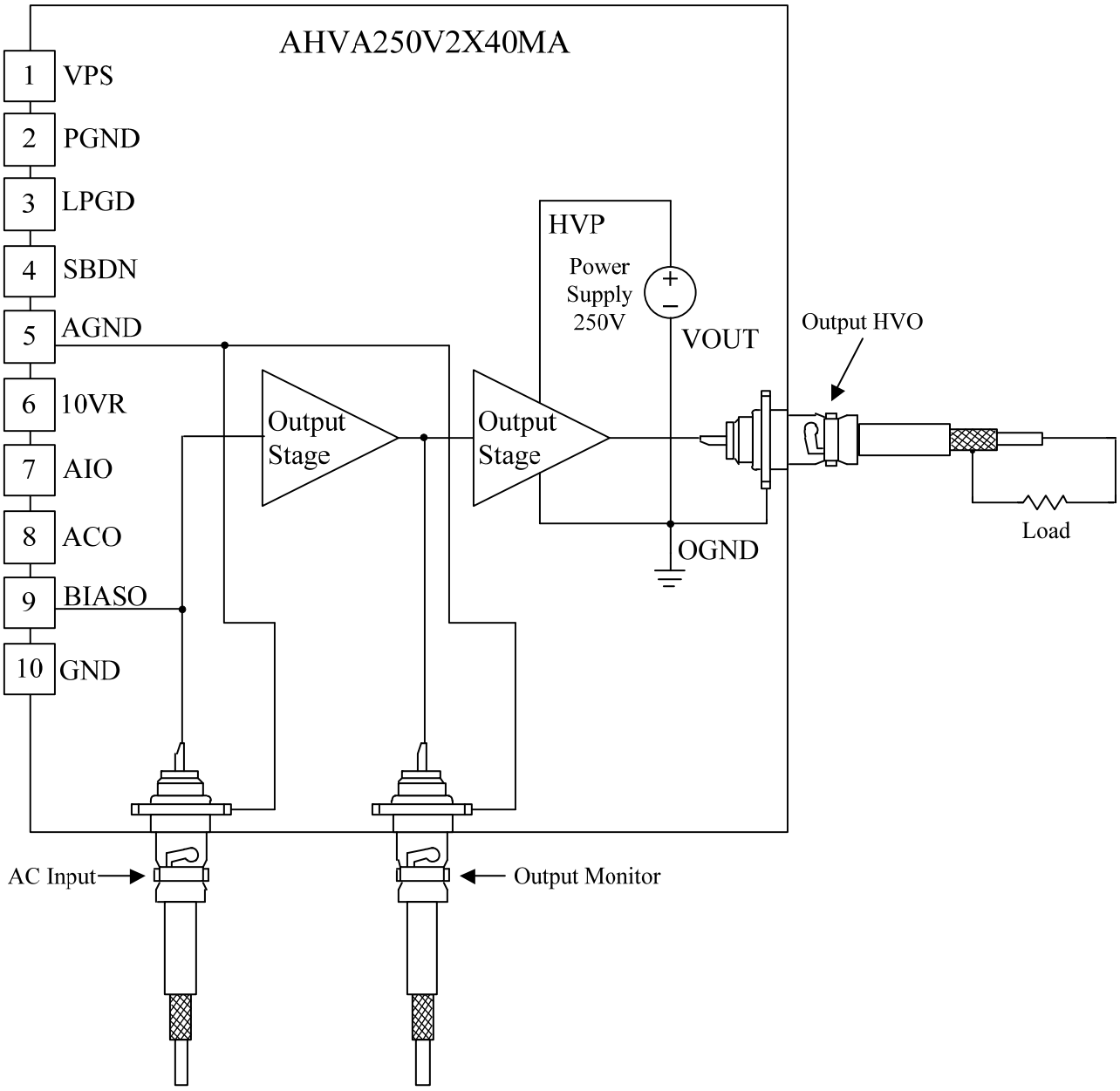


Figure 4. Schematic for Driving the Load

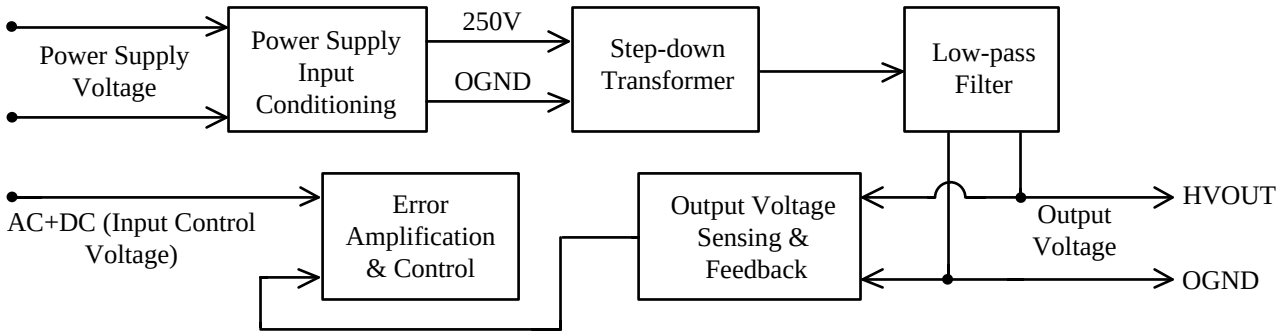


Figure 5. Block Diagram

DIMENSIONS

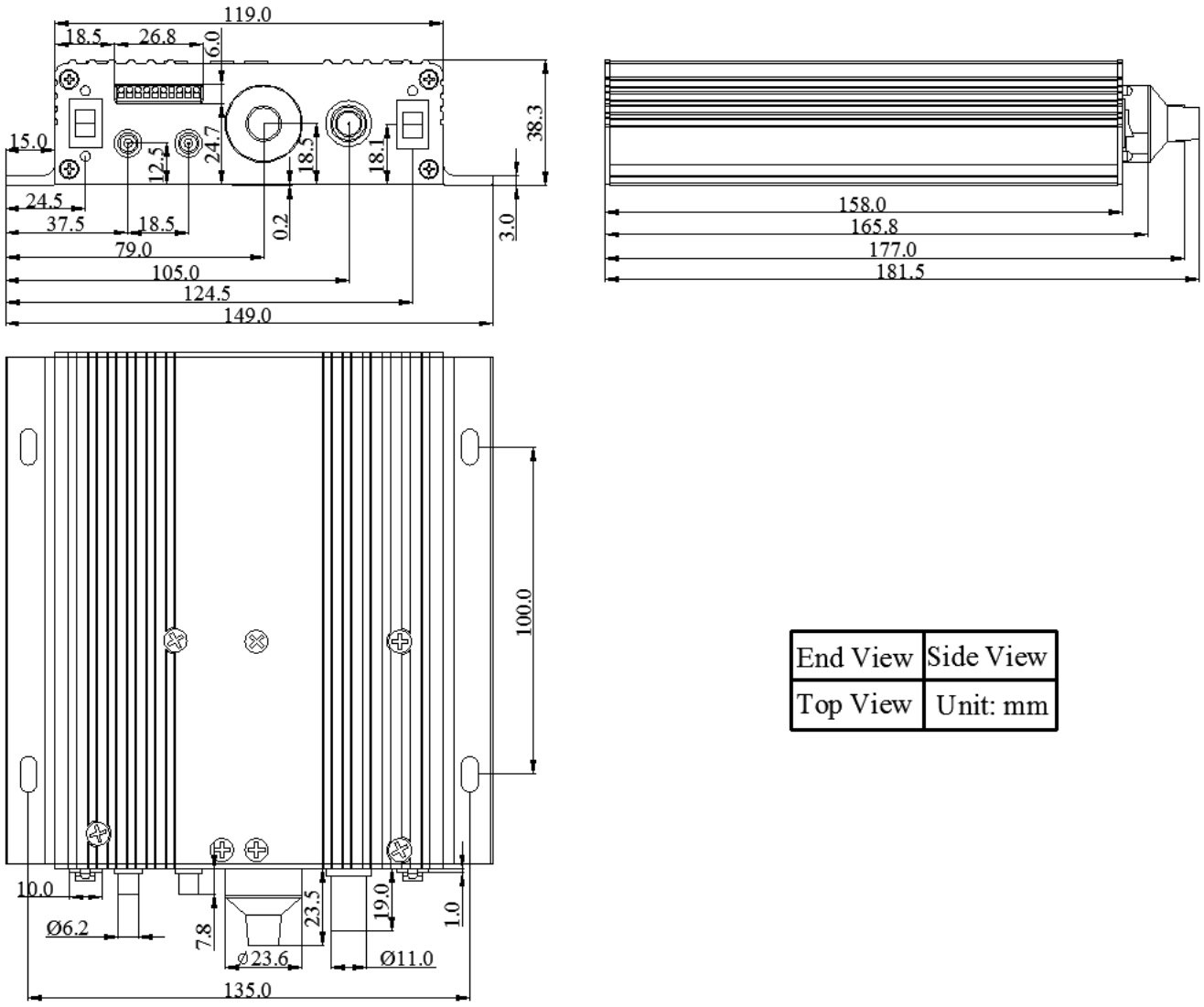


Figure 6. Dimensions of AHVA250V2X40MA

ORDERING INFORMATION

Table 3. Part Number

Part Number	Description
AHVA250V2X40MA	250V high voltage amplifier

Table 4. Unit Price

Quantity (pcs)	1 – 4	5 – 8	9 – 12	13 – 16	17 – 20	≥21
Unit Price	$1199	$1149	$1099	$1049	$999	$949

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