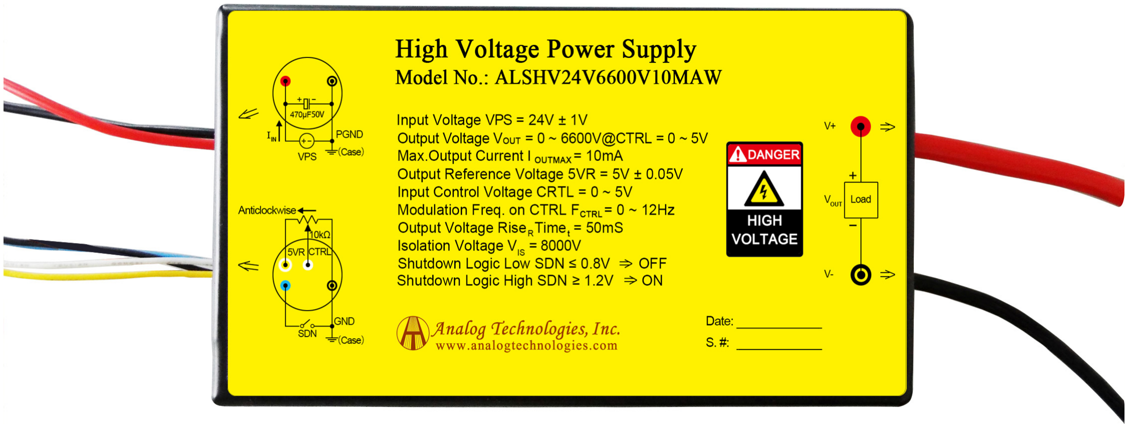


Figure 1. Physical Photo of ALSHV24V6600V10MAW

FEATURES

High precision

Full modulation range on output voltage

Linear regulation

Input to Output Isolation

Overload and Short Circuit Protection

Metal Enclosure for Zero EMIS

Easy Control and Installation

APPLICATIONS

This power module, ALSHV24V6600V10MAW is designed for achieving DC-DC conversion from low voltage to high voltage. High voltage power supply is widely used in industrial measurement and control, energy spectrum analysis, and medical equipment such as: Lightning surge tester X-ray machine, vacuum/plasma processing, semiconductor fabrication equipment, analytical instrumentation, medical diagnostic and therapeutic systems, test equipment, and research and academic applications, etc.

DESCRIPTION

Draw a clear distinction between input lead and output lead: input 24V (red lead), ground electrodes (black lead), regulation wire (white lead), reference voltage 5V (yellow lead), shutdown (blue lead), Positive output high voltage (thick red lead), and Negative output high voltage (black lead).

While regulating the potentiometer, connect the intermediate tap of the potentiometer with white lead, and connect the other two ends to ground (black lead) and reference voltage (yellow lead) respectively. Switch on the power, and regulate the potentiometer to have the required output voltage.

ALSHV24V6600V10MAW converts an input DC voltage of 24V, to an output voltage of 6600V with high efficiency. The whole converter is shielded by a heavy duty metal enclosure, which blocks EMIs from coming out of the module and going into the module. This feature is particularly important for noise intensive environment.

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.

SPECIFICATIONS

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

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit/Note
Input Voltage		VPS		23	24	25	V
Quiescent Input Current		I_{INQ}	I_{OUT} = 0mA	400	450	500	mA
Full Load Input Current		I_{INFLD}	I_{OUT} = 10mA	3.5	3.6	3.7	A
Input Voltage Regulation Ratio		$\Delta V_{OUT}/\Delta VPS$	VPS = 23V ~ 25V		0.1		%
Output Voltage		V_{OUT}	I_{OUT} = 0 ~ 10mA	0		6600	V
Maximum Output Current		I_{OUTMAX}	VPS = 23V ~ 25V			10	mA
Stability of Reference Voltage		V_{REF}	−20 ~ 50°C	4.95	5	5.05	V
Load					660		kΩ
Regulation Mode				0 ~ 5V or 10k potentiometer			
Isolation Voltage		V_{IS}			8000		VDC
Control Input vs. Output Linearity		$\Delta V_{REF}/\Delta V_{OUT}$			<0.2		%
Load Regulation Rate			I_{OUT} = 0 ~ 10mA		≤0.05		%
Instantaneous Short Circuit Current		I_{SC}			<150		mA
Shutdown Supply Current		I_{SHDN}				15	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			≥75		%
Temperature Coefficient		TCV_O	−20 ~ 50°C		<0.1		%/°C
Time Drift	Short Time Drift				<0.3		%/ min
	Long Time Drift				<0.5		%/h
Output Voltage Temperature Stability			−20 ~ 50°C		<±0.5		%
Operating Temperature Range		T_{opr}		−20		55	°C
Storage Temperature Range		T_{stg}		−55		85	°C
External Dimensions				140×100×55			mm
Weight					1000		g
					2.21		lbs
					35.27		Oz

TESTING DATA

I. DC Testing

High voltage power supply testing data (Test condition: the load is 660 KΩ)

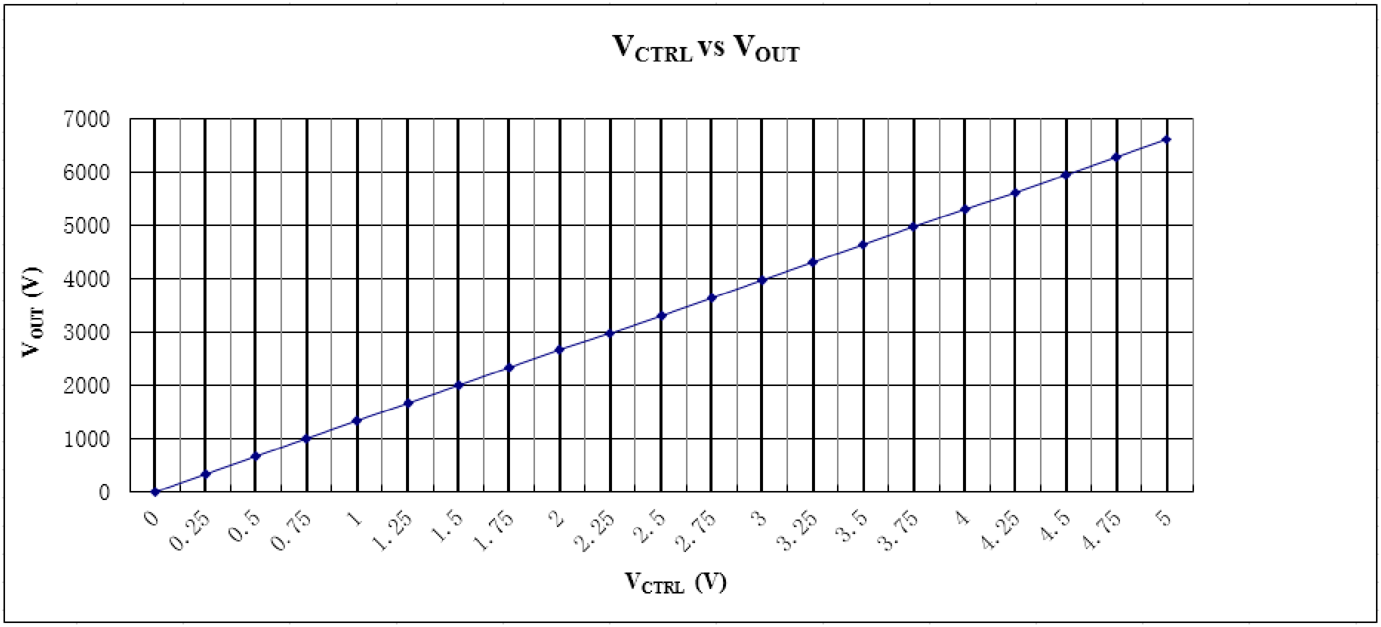


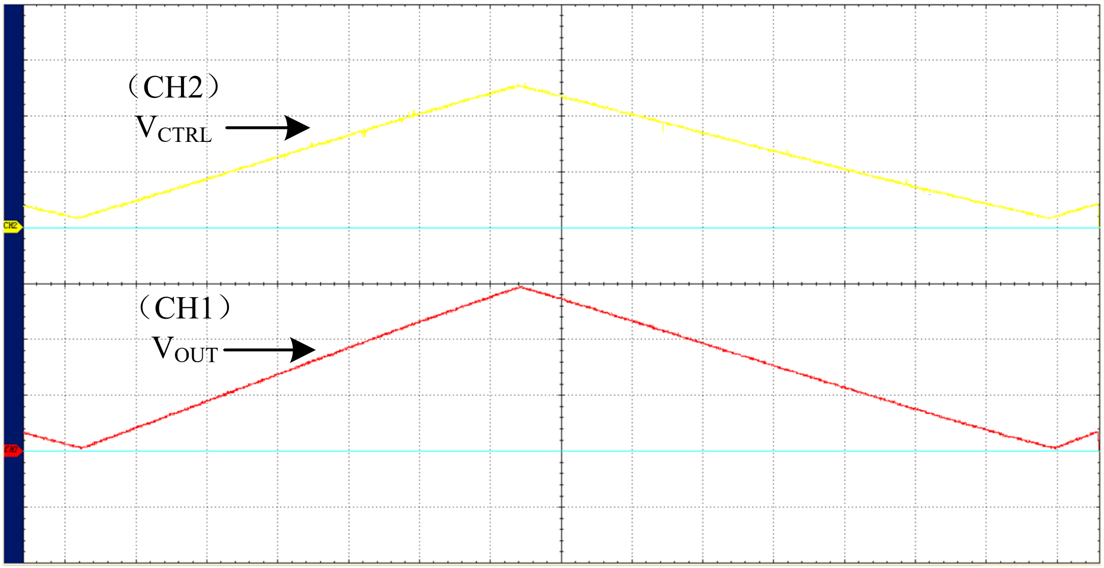
Figure 2. V_{CTRL} vs. V_{OUT}

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 660KΩ load, the output voltage is 330 ~ 6600V.

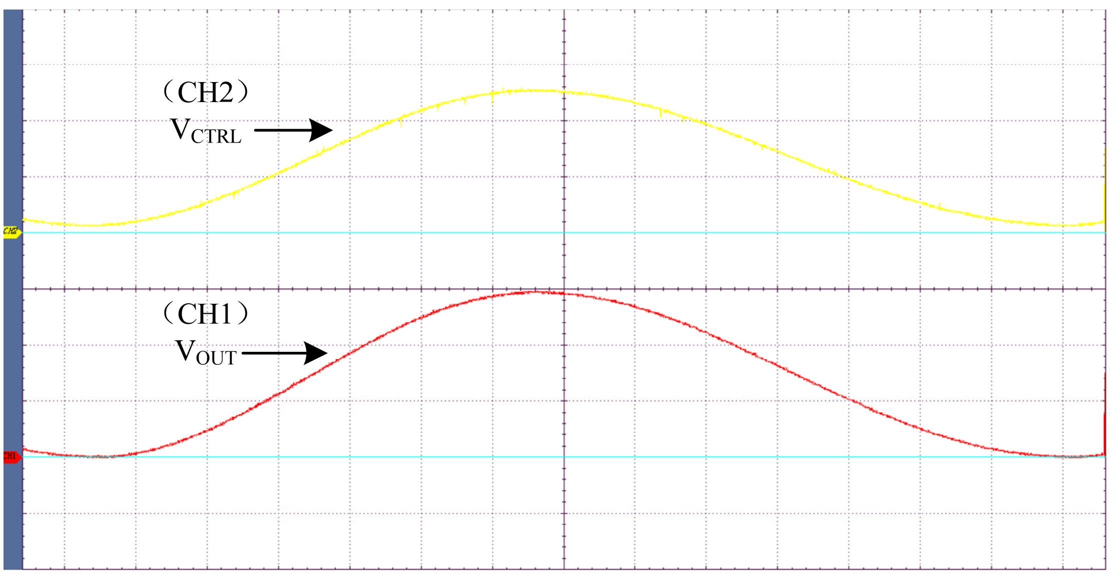
Note: as shown in the figures below, the output voltage is represented by yellow line and the control voltage by red line.



CH1: 2200V/Div　CH2: 2V/Div　　M: 500ms/Div

V_{CTRL}: 0.25V ~ 5V　　V_{OUT}: 330V ~ 6600V

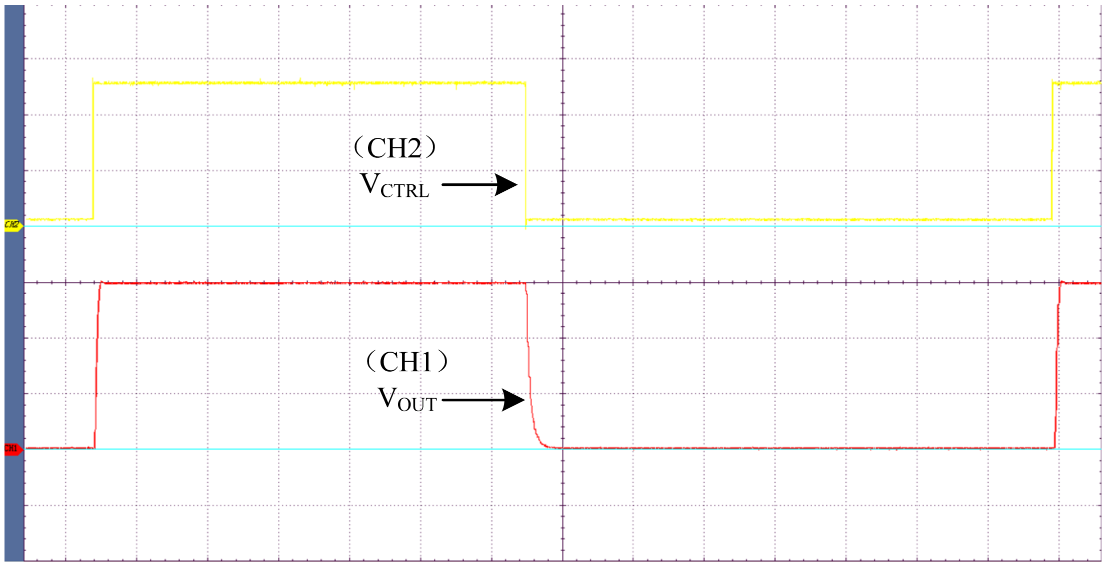
Figure 3. Triangle Wave



CH1: 2200V/Div　CH2: 2V/Div　　M: 500ms/Div

V_{CTRL}: 0.25V ~ 5V　　V_{OUT}: 330V ~ 6600V

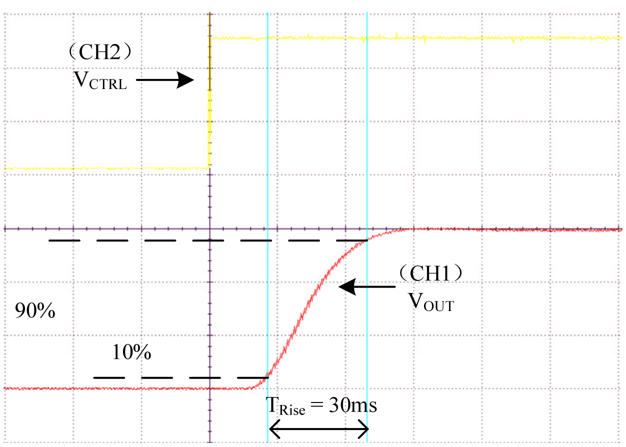
Figure 4. Sine Wave



CH1: 2200V/Div CH2: 2V/Div M: 500ms/Div

V_{CTRL}: 0.25V ~ 5V V_{OUT}: 330V ~ 6600V

Figure 5. Square Wave

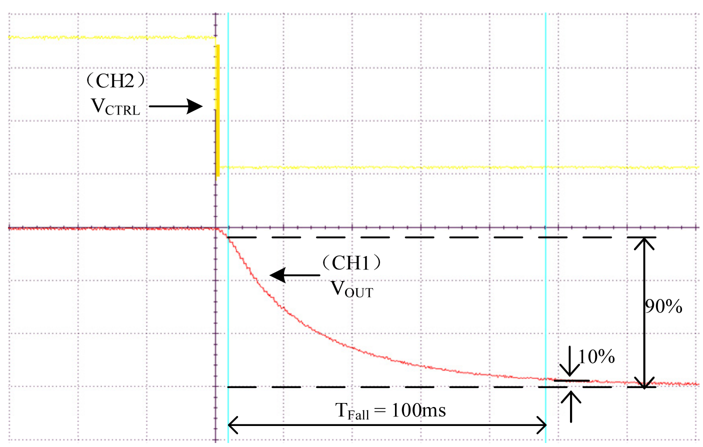


CH1: 2200V/Div CH2: 2V/Div M: 20ms/Div

V_{CTRL}: 0.25V ~ 5V V_{OUT}: 330V ~ 6600V

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.



CH1: 2200V/Div CH2: 2V/Div M: 20ms/Div

V_{CTRL}: 0.25V ~ 5V V_{OUT}: 330V ~ 6600V

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.

THE CONNECTION DIAGRAM OF MODULE’S PERIPHERAL CIRCUIT

The leads colors in the figures below are identical with those in the physical ALSHV24V6600V10MAW.

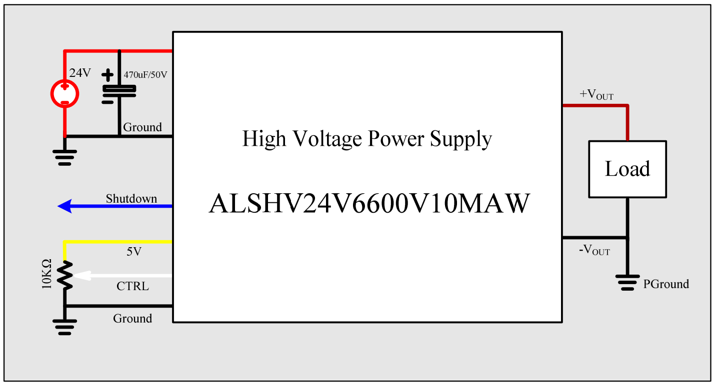


Figure 8. Positive Output

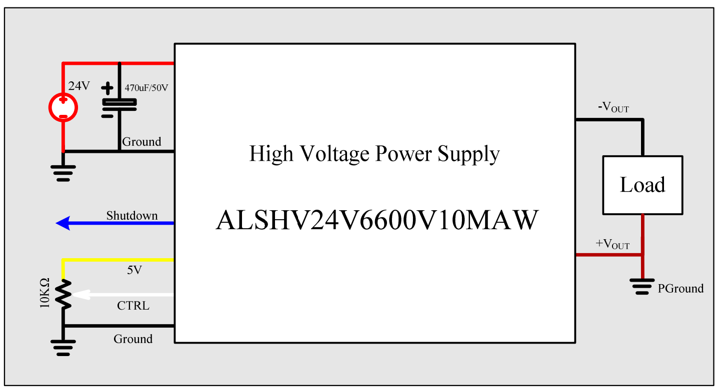


Figure 9. Negative Output

Naming instructions

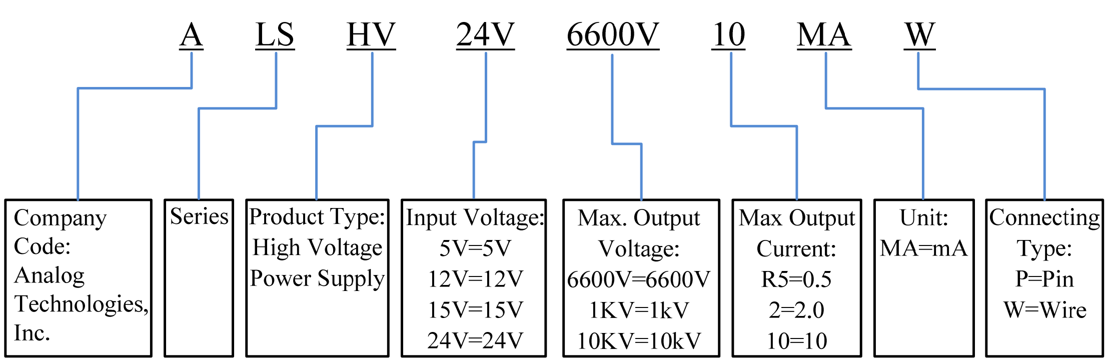


Figure 10. Physical Photo of ALSHV24V6600V10MAW

DIMENSIONS

I. Dimension of the leads.

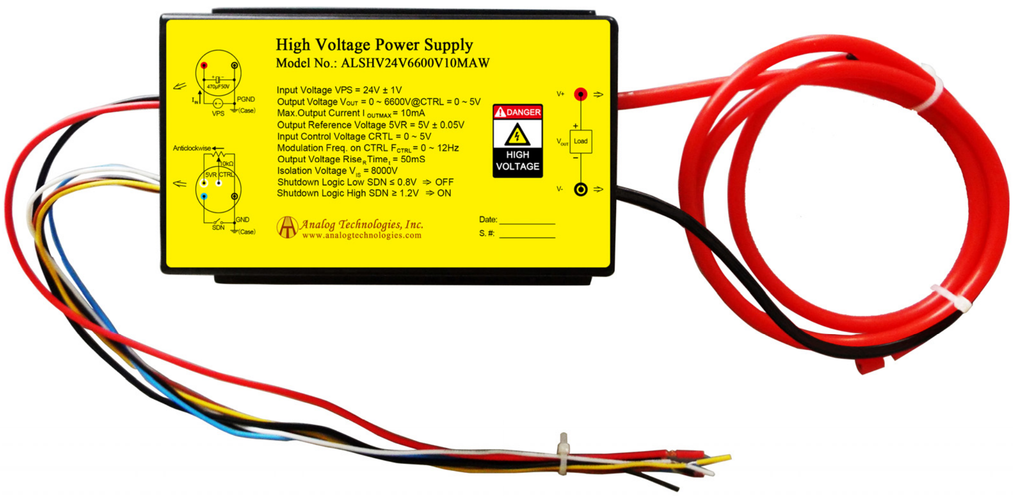


Figure 11. Leads of ALSHV24V6600V10MAW

Leads	Diameter (mm)	Length (mm)
Thick brown lead	4.5	120
Yellow, red, blue, black and white leads	1.5	23

II. Dimension of ALSHV24V6600V10MAW.

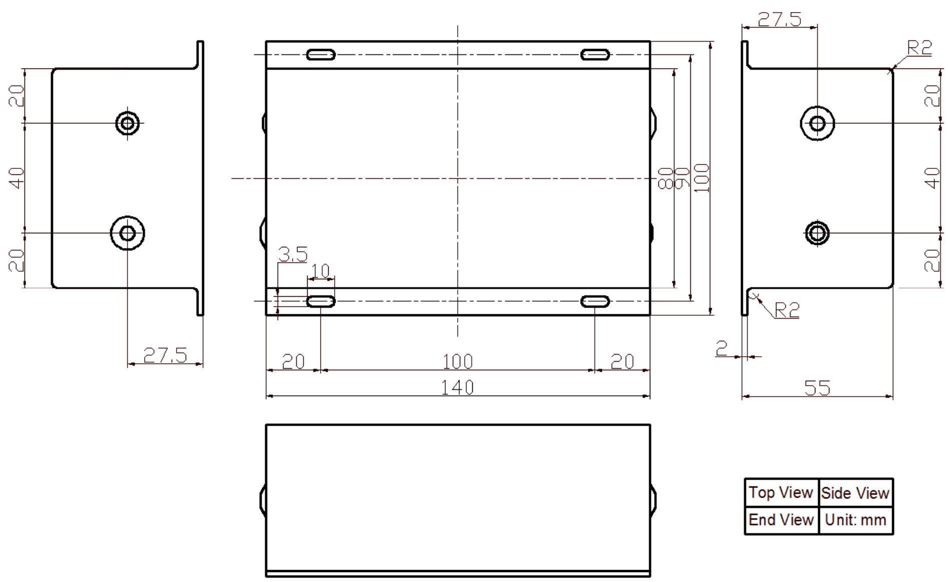


Figure 12. Dimensions for ALSHV24V6600V10MAW

PRICES

Quantity (pcs)	1~9	10~49	50~99	≥100
ALSHV24V6600V10MAW	$569	$559	$549	$539

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