

# UMHV Series

Ultra-Miniature High Voltage DC to DC Converter

**Ultra-Miniature Case Size (0.5" x 0.5" x 0.5")**

**High Impedance Programming Input (10k $\Omega$ )**

**Extremely Low Quiescent Current (5mA typical)**

**No External Components Required**

**PCB Mountable**

**Low Ripple and EMI/RFI**

**High Input/Output Isolation**

**Wide Operating Temp Range (-55°C to +70°C)**

**Available in positive or negative outputs**



## Mechanical Characteristics

- **Size:** 0.5" x 0.5" x 0.5"
- **Weight:** 4.1 grams typical
- **Packaging:** Encapsulated in high performance epoxy
- **Case Material:** Thermoset plastic (Diallyl Phthalate)

## Environmental Characteristics

- **Operating Temp Range:** -55°C to +70°C
- **Storage Temp Range:** -55°C to +85°C

## Description

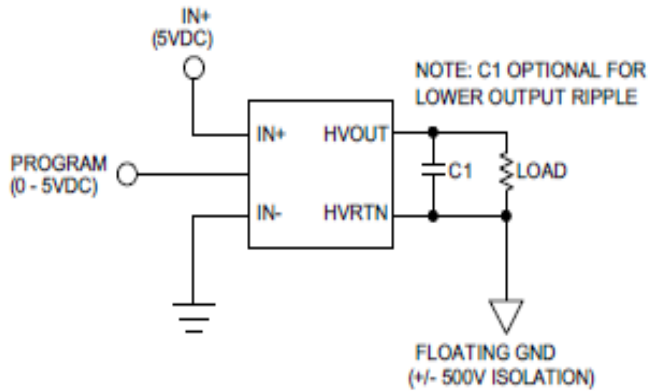
The **UMHV Series** is a family of ultra-miniature single-output DC to DC converters supplying up to 5kV in 0.125 cubic inches (0.5" x 0.5" x 0.5"). These ultra-compact converters are ideal for applications requiring small size and ease of use. A high impedance programming input makes it very easy to use, eliminating the need for a low impedance adjustable power source voltage.

HVM's proprietary resonant converter design minimizes quiescent current and operating noise while delivering maximum performance and reliability. A special feature of this power supply is its extremely low input current, typically 1/10th of that of similar devices on the market, making it ideal for battery powered applications.

The devices operate directly from 5VDC or 12VDC  $\pm$  0.5VDC input. Output voltage is independent of input power voltage and is proportional to the programming voltage (0 to IN+ produces 0 to full scale output) and features excellent linearity. The output power rating is 0.5W and the input to output isolation is  $\pm$  500V. The UMHV Series is very stable over a wide operating temperature range.

Available with alternate output voltages, consult sales for additional information.

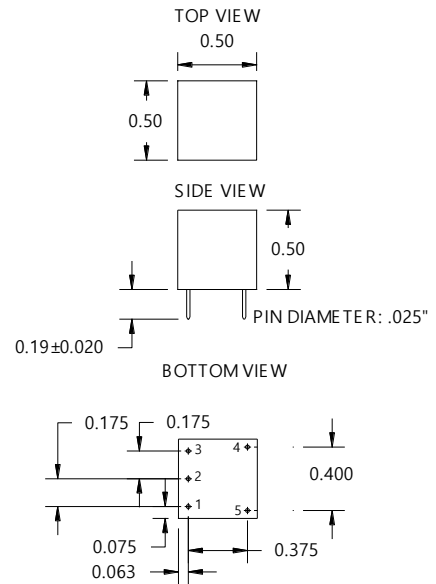
### APPLICATION SCHEMATIC



### ELECTRICAL CHARACTERISTICS

<b>Input Power Voltage (V+):</b>	5V or 12V $\pm$ 10%
<b>Programming Voltage:</b>	0 to 5V input results in 0 to rated output voltage
<b>Programming Input Impedance:</b>	10k $\Omega$
<b>Output Tolerance at No Load:</b>	$\pm$ 5%
<b>Input-Output Isolation:</b>	$\pm$ 500Vdc
<b>Load Regulation:</b>	<20% (drop from no load to full load)
<b>Output Ripple:</b>	<2% typical at full load; Note: additional external capacitance can be added to reduce ripple
<b>Oscillator Frequency:</b>	45 kHz – 80 kHz
<b>Efficiency:</b>	55% typical at full load

### MECHANICAL



Unless otherwise specified, dimensions are in inches.

Tolerances  
 X.XX =  $\pm$  0.01"  
 X.XXX =  $\pm$  0.005"

PIN#	FUNCTION
1	Program
2	IN -
3	IN +
4	HVOUT
5	HVRTN

Note: White dot on bottom view indicates pin 1.



## Model Selection Guide

Model	Input Voltage	Output Voltage	MAX Output Current	Input Current	
				NO Load	MAX Load
UMHV0505	5V	0 to $\pm$ 500V	1mA	<10mA	<175mA
UMHV1205	12V	0 to $\pm$ 500V	1mA	<10mA	<100mA
UMHV0510	5V	0 to +1kV	500 $\mu$ A	<10mA	<175mA
UMHV0510N	5V	0 to -1kV	500 $\mu$ A	<10mA	<175mA
UMHV1210	12V	0 to +1kV	500 $\mu$ A	<10mA	<100mA
UMHV1210N	12V	0 to -1kV	500 $\mu$ A	<10mA	<100mA
UMHV0512	5V	0 to +1.2kV	417 $\mu$ A	<10mA	<175mA
UMHV0512N	5V	0 to -1.2kV	417 $\mu$ A	<10mA	<175mA
UMHV1212	12V	0 to +1.2kV	417 $\mu$ A	<10mA	<100mA
UMHV1212N	12V	0 to -1.2kV	417 $\mu$ A	<10mA	<100mA
UMHV0520	5V	0 to +2kV	250 $\mu$ A	<10mA	<175mA
UMHV0520N	5V	0 to -2kV	250 $\mu$ A	<10mA	<175mA
UMHV1220	12V	0 to +2kV	250 $\mu$ A	<10mA	<100mA
UMHV1220N	12V	0 to -2kV	250 $\mu$ A	<10mA	<100mA
UMHV0530	5V	0 to +3kV	167 $\mu$ A	<15mA	<175mA
UMHV0530N	5V	0 to -3kV	167 $\mu$ A	<15mA	<175mA
UMHV1230	12V	0 to +3kV	167 $\mu$ A	<15mA	<100mA
UMHV1230N	12V	0 to -3kV	167 $\mu$ A	<15mA	<100mA
UMHV0540	5V	0 to +4kV	125 $\mu$ A	<15mA	<175mA
UMHV0540N	5V	0 to -4kV	125 $\mu$ A	<15mA	<175mA
UMHV1240	12V	0 to +4kV	125 $\mu$ A	<15mA	<100mA
UMHV1240N	12V	0 to -4kV	125 $\mu$ A	<15mA	<100mA
UMHV0550	5V	0 to +5kV	100 $\mu$ A	<15mA	<175mA
UMHV0550N	5V	0 to -5kV	100 $\mu$ A	<15mA	<175mA
UMHV1250	12V	0 to +5kV	100 $\mu$ A	<15mA	<100mA
UMHV1250N	12V	0 to -5kV	100 $\mu$ A	<15mA	<100mA