SMHV Series

Sub-Miniature Regulated HV DC to DC Converter

PRELIMINARY SPECIFICATION

HVM TECHNOLOGY

Features

- Sub-Miniature Case Size (0.85” x 0.85” x 0.6”) in a Low Profile PCB Mount Configuration
- 5V Input, Models up to 10kV @ 1W
- Excellent Output Regulation and Stability
- Adjustable from 0 to Full Output
- Extremely Low Ripple and EMI/RFI
- High Impedance Programming Input (100kΩ)
- Extremely Low Quiescent Current (10mA Typical at Full Output at No Load)
- Voltage and Current Monitor Outputs
- Current Limiting Input Plus Enable/Disable Input
- Wide Operating Temp Range (-55°C to +70°C)

Description

The SMHV Series is a family of sub-miniature single-output, fully regulated DC to DC converters supplying up to 10kV @1W in 0.434 cubic inches (0.85” x 0.85” x 0.6”). These ultra-compact converters are ideal for applications requiring small size, high performance, and ease of use. HVM’s proprietary, ultra-compact resonant converter design minimizes quiescent current and operating noise while delivering maximum performance and reliability.

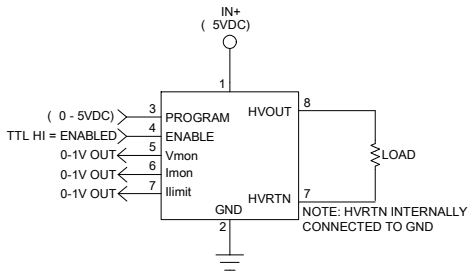
The devices operate directly from 5VDC ± 0.5VDC input. Output voltage is independent of input power voltage and is proportional to the programming voltage (0 to 5V produces 0 to full scale output) and features excellent linearity.

An enable pin allows the user to independently enable or disable the device, which results in standby operation with input current of less than 2mA. Voltage and current monitor outputs provide the user with operational information for maximum control.

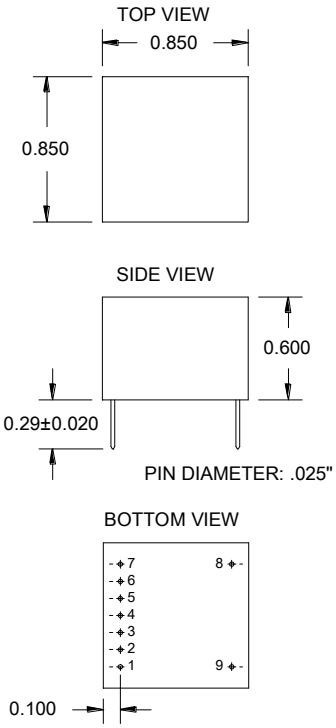
The SMHV Series has additional features such as voltage and current monitor outputs, current limit control input, as well as an enable/disable input.

The SMHV Series is very stable over a wide operating temperature range.

Application



Mechanical



PIN #	FUNCTION
1	Vin
2	GND
3	Program
4	Enable
5	Vmonitor
6	Imonitor
7	Ilimit
8	HVout
9	HVRTN

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SMHV Series

Ultra-Miniature HV Power Supply

Mechanical Characteristics

Size: 0.85”L x 0.85”W x 0.6”H
Weight: 15 grams typical
Packaging: Encapsulated in high performance epoxy
Case Material: Thermoset plastic (Diallyl Phthalate) – Optional Metal Shielded Case Available

Electrical Characteristics (at +23◦C)

Input Power Voltage (V+): 5V ± 10%
Programming Voltage: 0 to 5VDC results in 0 to rated output
Programming Input Impedance: 10kΩ
Output Tolerance at No Load: ± 5%
Output Voltage Monitor: 0 to 1VDC output, corresponding to 0 to 100% of rated output (see Table 1)
Output Current Monitor: 0 to 1VDC output, corresponding to 0 to 100% of rated current (see Table 1)
Input-Output Isolation: Not isolated, HVRTN internally connected to GND
Load Regulation: 0.1% (over entire load range)
Line Regulation: 0.01%
Output Ripple: <.01% typical at full load
Oscillator Frequency: 45 kHz – 80 kHz
Efficiency: 70% typical at full load

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Environmental Characteristics

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

Model	Input Voltage	Output Voltage	MAX Output Current	Input Current	
				No Load	Max Load
SMHV0505	5V	0 to +500V	2mA	<10mA	<300mA
SMHV0505N	5V	0 to -500V	2mA	<10mA	<300mA
SMHV0510	5V	0 to +1kV	1mA	<10mA	<300mA
SMHV0510N	5V	0 to -1kV	1mA	<10mA	<300mA
SMHV0520	5V	0 to +2kV	500µA	<10mA	<300mA
SMHV0520N	5V	0 to -2kV	500µA	<10mA	<300mA
SMHV0530	5V	0 to 3kV	333µA	<15mA	<300mA
SMHV0530N	5V	0 to -3kV	333µA	<15mA	<300mA
SMHV0540	5V	0 to +4kV	250µA	<15mA	<300mA
SMHV0540N	5V	0 to -4kV	250µA	<15mA	<300mA
SMHV0550	5V	0 to +5kV	200µA	<15mA	<300mA
SMHV0550N	5V	0 to -5kV	200µA	<15mA	<300mA
SMHV0560	5V	0 to 6kV	167µA	<20mA	<300mA
SMHV0560	5V	0 to -6kV	167µA	<20mA	<300mA
SMHV0580	5V	0 to +8kV	125µA	<20mA	<300mA
SMHV0580N	5V	0 to -8kV	125µA	<20mA	<300mA
SMHV05100	5V	0 to +10kV	100µA	<20mA	<300mA
SMHV05100N	5V	0 to -10kV	100µA	<20mA	<300mA