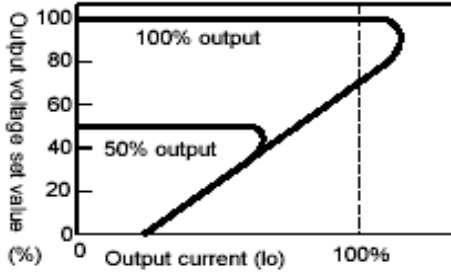


### Over current protection

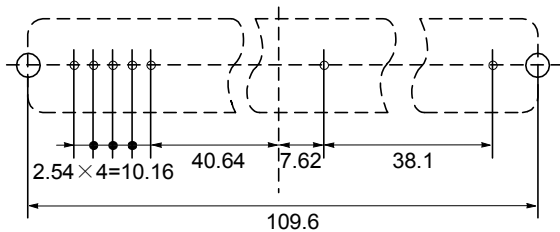
The VHV series installed the over current protection to protect from the over load and load short. When the product status is in over load or load short mode, the output voltage will be decreased, and once the problem has been removed, the voltage will automatically recover.



VHV Series  
Over current protection  
characteristic

The over current protection has a hold back characteristic. The load should be set more than minimum resistor value which according to each series.

### Recommended pattern



7-  $\circ$  Diameter :  $\phi$  1.2      2-  $\bigcirc$  Diameter :  $\phi$  2.5

1)The VHV series uses a metallic case. When mounting to a double-sided PCB, the wiring for the converter should be on the soldering side.

Also, this converter will generate high voltages so the creepage distance of pattern should be taken in when designing.

2)When mounting to a double-sided PCB, the land of the parts side of the high voltage output pin should be as small as possible.

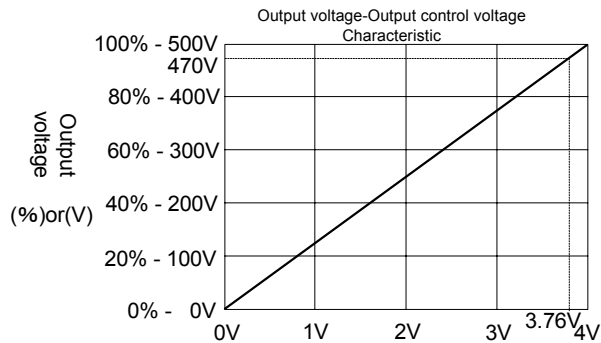
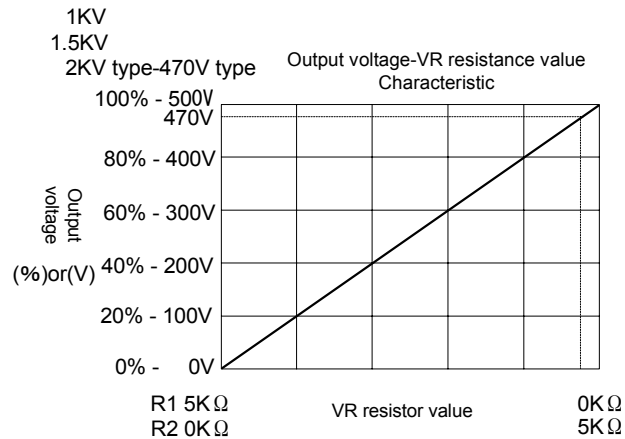
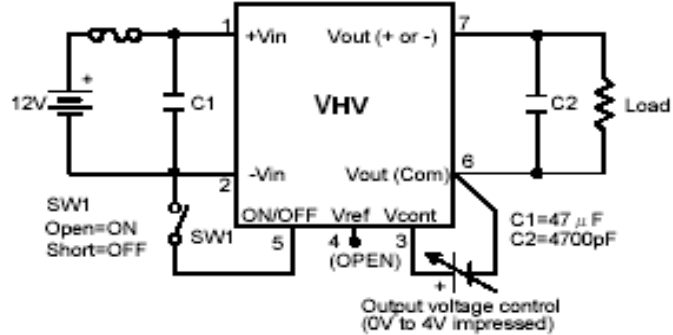
3)The case of VHV series should be connected to the -Vin and Vout (Com).

4)The metallic case does not need to be connecting to ground.

However, when using and ground with the metallic case, make the impedance lower as possible between the ground.

### Output voltage setting/adjusting

The output voltage on the VHV series can be set and adjusted using an external voltage or external adjustable resistor.



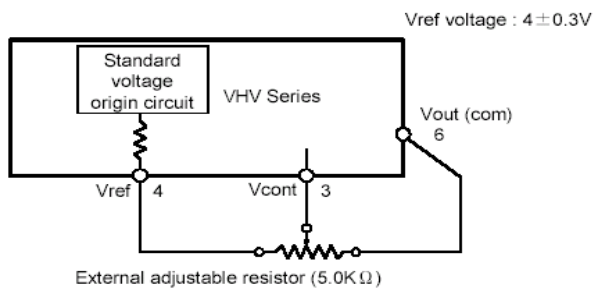
- The above characteristics (Output voltage -VR resistor value characteristic) graph is an indication of the resistance value R1 and R2. Please check the output voltage by the adjustable resistor etc. and adjust at the actual using.
- Do not impress voltage higher than 4V+5% on the Vcont.
- Choose an adjustable resistor appliance with good temperature characteristics.
- When the resistance value is 5.0K $\Omega$ (R1=0 $\Omega$ , R2=5K $\Omega$ ), the max.voltage 4.0V will impress to Vcon pin. Therefore, the margin of error for the resistance value will largely affect the max output voltage, so use the resistance value as 5.0K $\Omega$ ±5%.

### ■ Vref pin (standard voltage output)

When adjusting the output voltage with an adjustable resistor, this pin is used. Vref has a standard output voltage of 4V. In this case, use an external resistor with a resistance of 5KΩ.

The resistance(the margin of error) of external adjustable resistor will affect the setting value of Vref pin voltage, so use a resistor with an accuracy of 5KΩ±5%.

The type of adjustable resistor will not matter, however one with a well temperature coefficient is recommended.

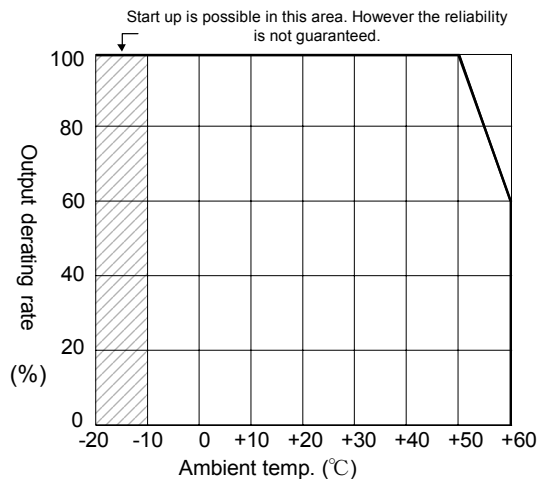


### ■ Temperature derating

When using the product where the ambient temp. is higher than 50°C, follow the derating graph below.

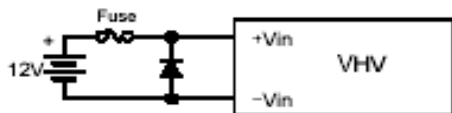
The minimum load resistance is set for each series.

When using higher than 50°C, set the load resistance high by following the below graph.



### ■ Prevention of inverse input connections

The converter may break if the polarities are reversed. If there is a possibility in which the connections may be reversed, connect a diode and fuse to the input pin like below.



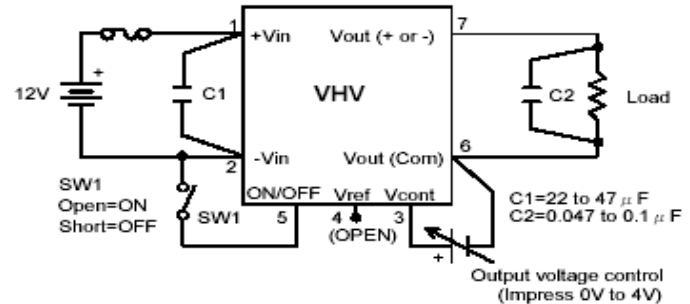
### ■ Recommended soldering conditions

Soldering conditions for each part is as follows:

- 1) Using a soldering iron 340 to 360°C 5 sec.
- 2) Using a soldering tub 230 to 260°C 10 sec.

### ■ Lowering the output noise even farther

The VHV series does need any external parts, however to lower the output noise even farther, connect a capacitor C2 like the figure below.



input/output wiring, creepage and area distance, while keeping the wiring as thin as possible and layout the C2 near the Load.

#### Point!

- 1) When choosing a capacitor that connect to the input, choose one which is a high frequency characteristic capacitor.
- 2) Common line should be designed thick and short to make same impedance small.
- 3) The capacitor which is connected to the output side should be able to withstand the pressure, and connect to the load side. At this time, the capacitor lead should be shortened. Also, when the load response time is a problem, please be aware of the time constant.



2W to 2.6W high voltage DC-DC converter

## **0V-470V, 1000V, 1500V, 2000V VHV Series**

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### ■ Guarantee

This product shall be guaranteed for year. During this period, if there should be any failure definitely due to our designing or manufacturing, we will repair or replace it with a new one at our expense. However, in any case that the product is modified and/or has made any internal remodeling by the buyer, the product can no longer be guaranteed. This guarantee shall cover only the VHV series.

- If you have any further technical questions for this product, please contact to us.

E-mail: [information@volgen.com](mailto:information@volgen.com)

<http://www.volgen.com>