



# User manual for Alps Energy Harvester SPGA series

- 1) Operation
- 2) Mounting
- 3) Output characteristic
- 4) Reference Circuit
- 5) Precaution

Nov.2018  
C2 Engineering Dept.

Perfecting the Art of Electronics

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# 1) Operation

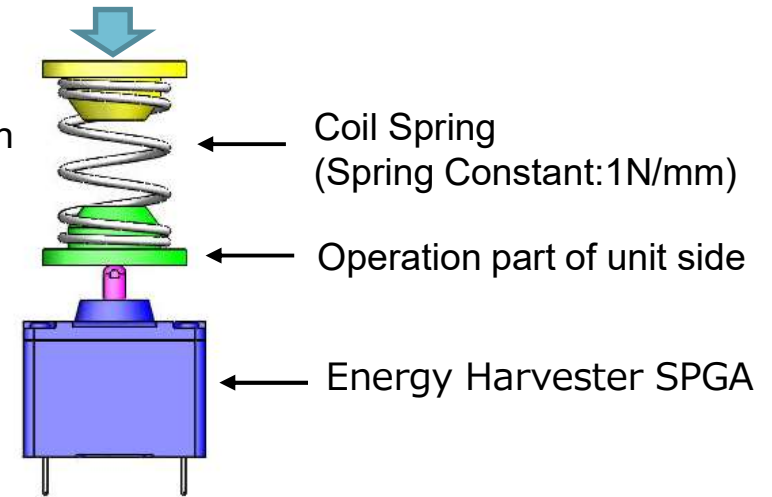
## Design guideline / SPGA

### Recommended operating condition

Please press by below condition in order to secure the stable power generation amount.

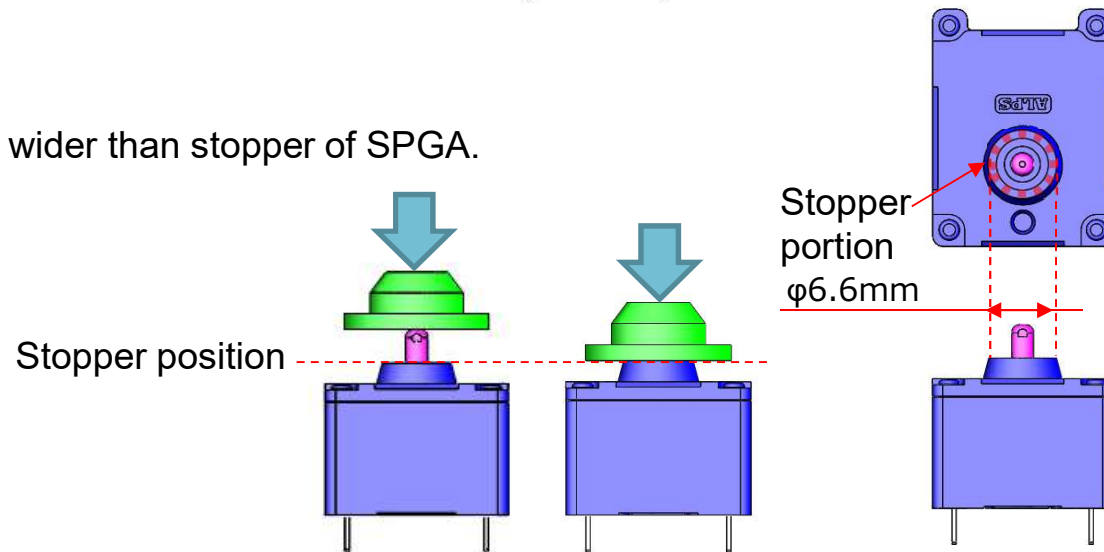
- Product shall be pressed by actuator with right figure construction
- Operation velocity : 20mm/s. min.
- Actuator shall be pressed straight.
- Operation parts of unit side is recommended to be flat shape.

### Recommended actuator construction



### Precautions

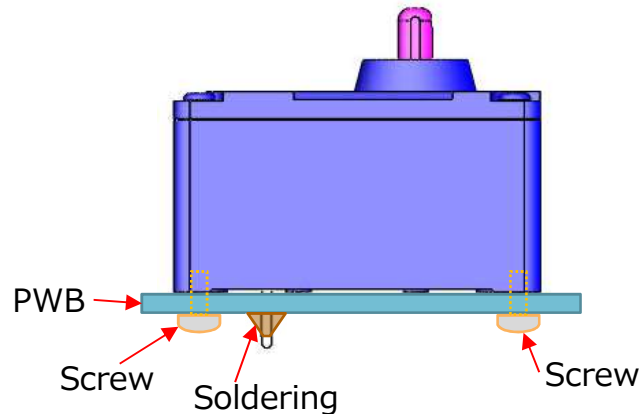
- Please press by the flat one that is wider than stopper of SPGA.



# 2) Mounting

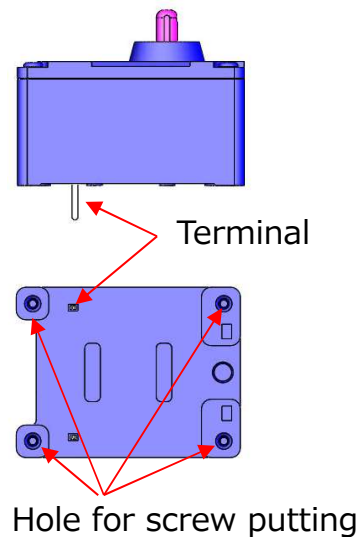
Design guideline / SPGA

## • Recommended mounting method

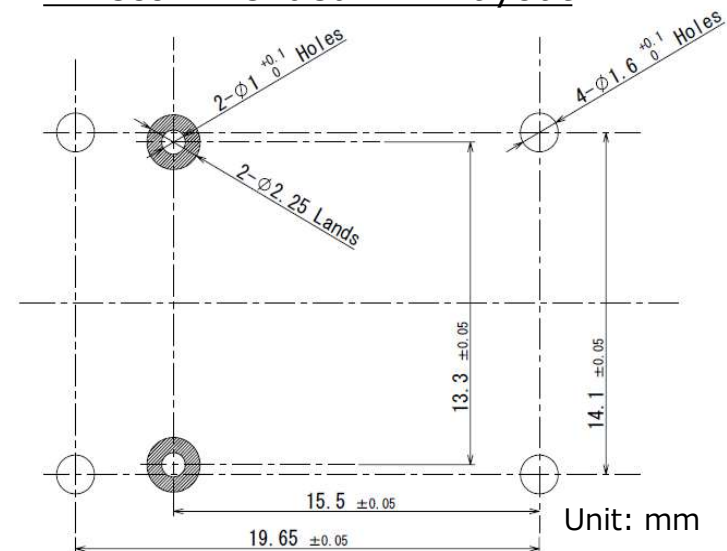


Please use this product attached to PWB.  
Please should be installed this product by not only soldering the terminal but also putting screw to the boss hole when you Install this product.

Recommended screw  
Taptite screw (P tite)  
Nominal diameter of screw M1.4



## • Recommended PWB layout

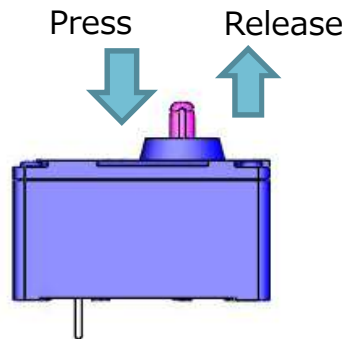


# 3) Output characteristic

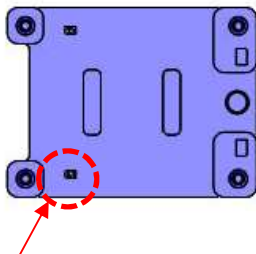
Design guideline / SPGA

## • Output characteristic (Press / release voltage)

SPGA generates reverse polarity electric generation when you "press" and "release" the device.



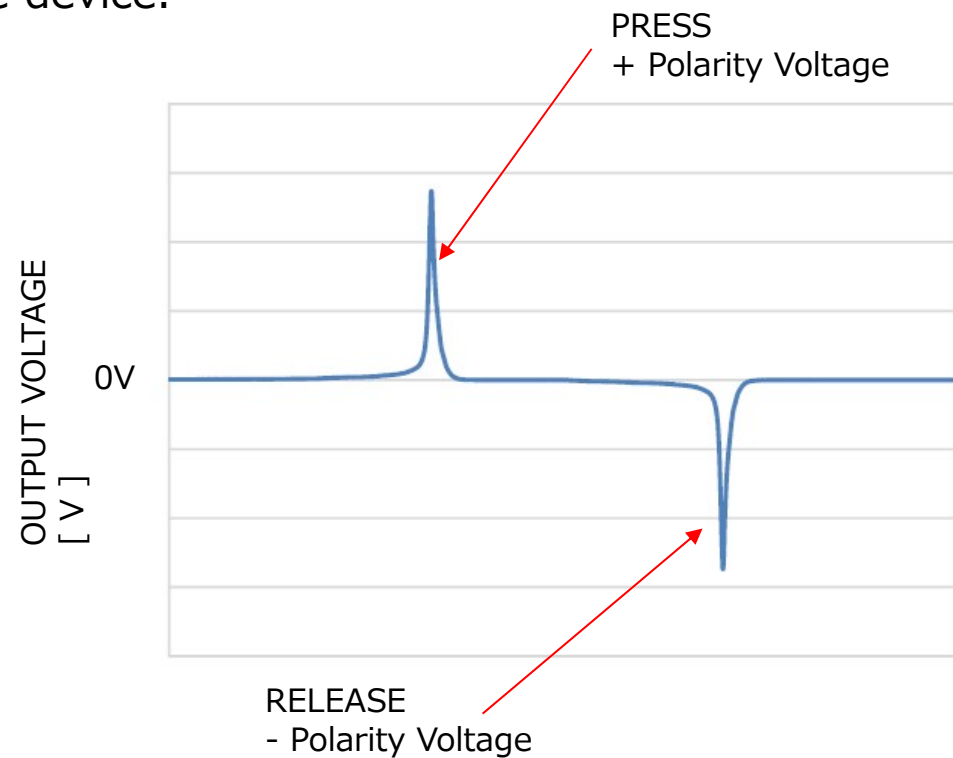
## • Terminal polarity (Press / release voltage)



+ Polarity Connect

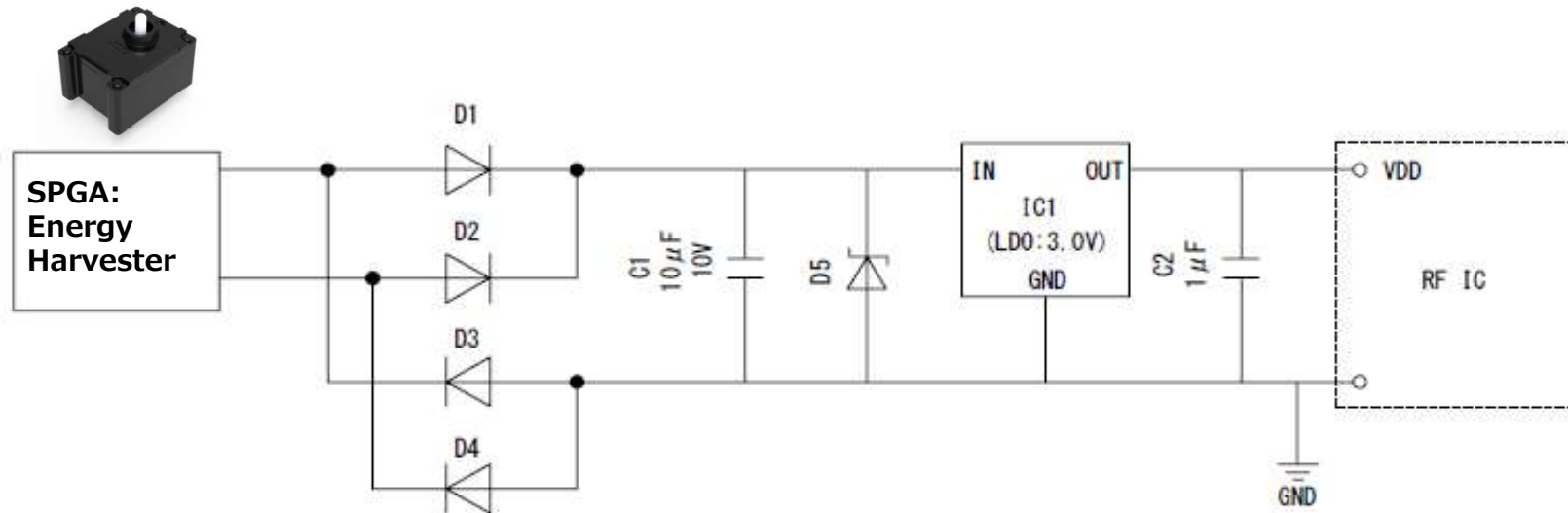
### • Caution

Please be aware that reverse polarity connection will reverse output voltage.



# 4) Reference circuit

- Reference circuit diagram for creating VDD from SPGA.



SPGA generates reverse polarity electric generation when you “press” and “release” the device. Due to this, it performs full-wave rectification on D1-D4 and after that , it charges on C1 and generates VDD on IC1(LDO).

## 5) Precaution in use

1. For this product using electromagnetic induction, it cannot be used in strong magnetic fields. Please check carefully at your company whether there is any problem with the installation environment of your module.
2. This product does not support waterproof / dustproof standards. When waterproof and dustproof are necessary, please correspond in your module.
3. This product is not washable. If you wash it, it may deteriorate mechanically and electrically.
4. Please should be installed this product by not only soldering the terminal but also putting screw to the boss hole when you install this product.
5. In principle, this product shall be operated the center of the lever straight.
6. Please shall be kept this product separated from the magnetic substance by 5 mm or more, because there is risk of decrease in performance.

# Caution about this material

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