

Electric Field Type Energy Harvesting Module

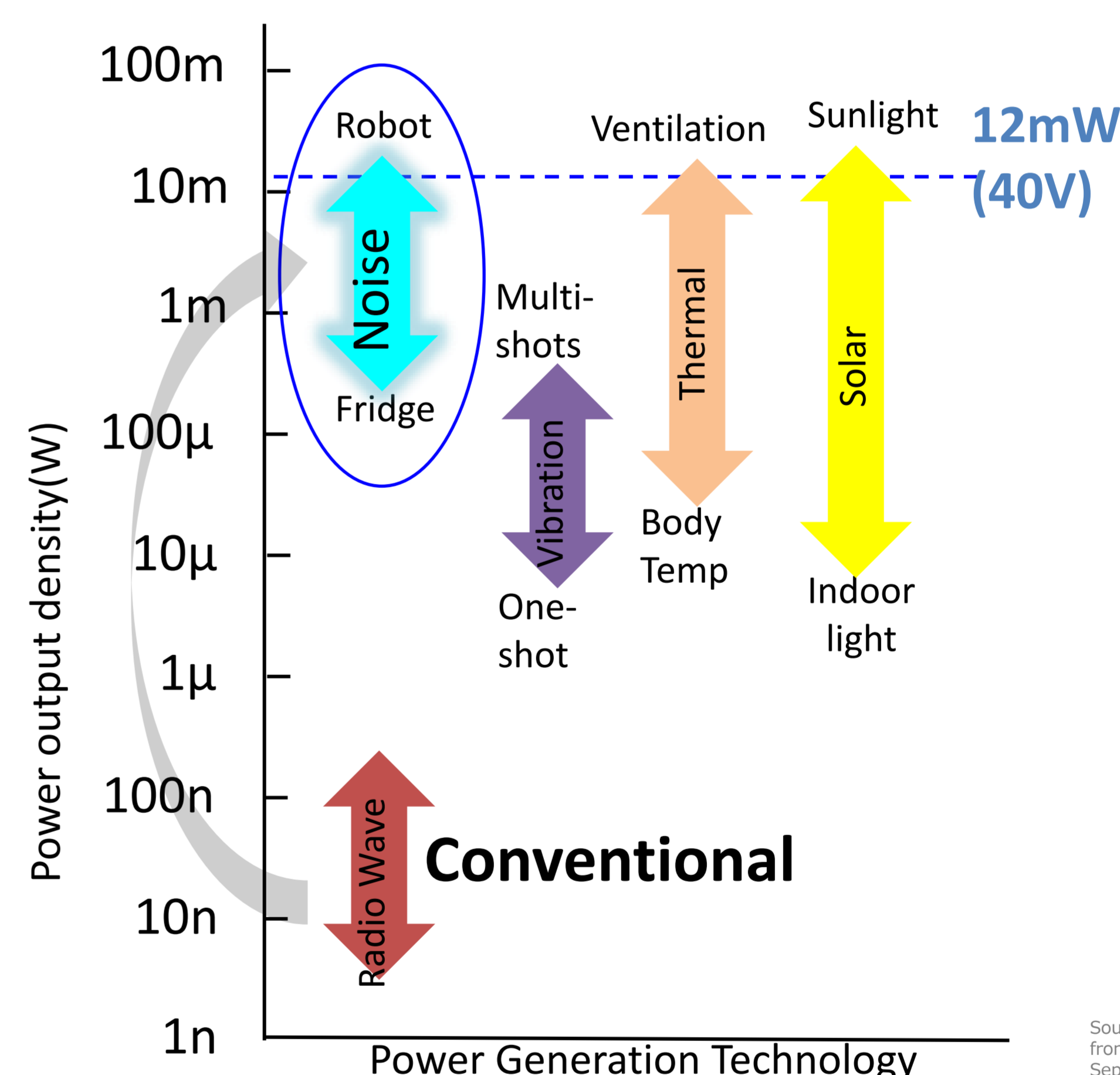
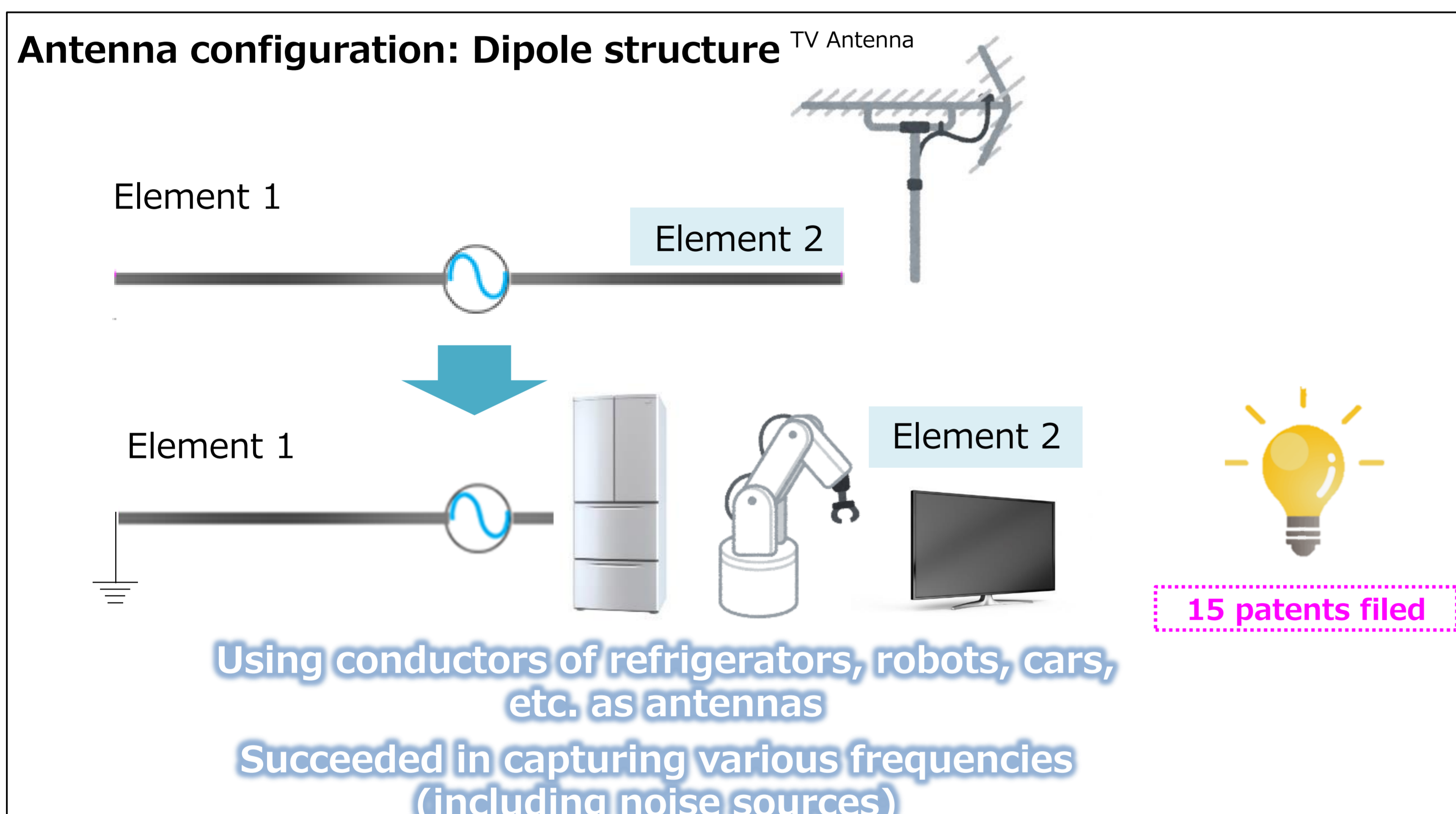


Energy harvesting module that efficiently generates electricity from electromagnetic noise energy
 - Contributing to solving power supply issues by popularizing and upgrading IoT devices -

Technical Background

Large conductor (Examples: refrigerators, robots, TVs, etc.) of dipole structure antenna
 Succeeded in constructing a huge antenna by making one element!

- ✓ Capable of consistently generating more power than conventional radio wave power generation
- ✓ No need for a dedicated antenna to match the frequency
- ✓ Simple configuration makes it compact and inexpensive



Features

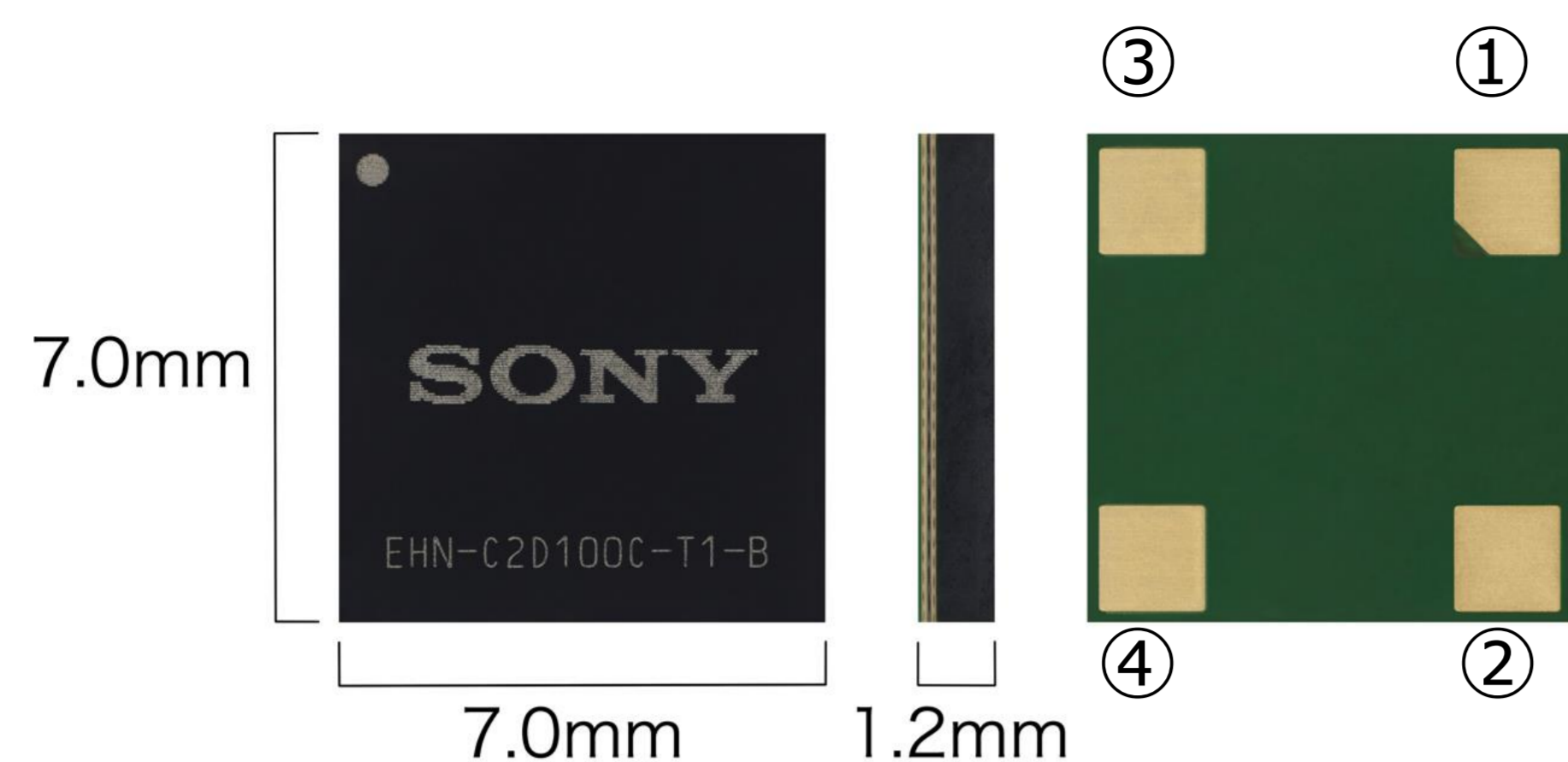
Development of a small energy-harvesting module that generates power from electromagnetic wave noise (first in the industry)

Main features are simple compact structure, large power generation, and easy installation

| | | | | | |
|---|--|--|---------------------------|---|---|
| <p>Power generation by Noises</p> | <p>Small (7mm x 7mm)</p> | <p>Darkroom use possible Dust-resistant</p> | <p>Safety</p> | <p>Semi-permanent harvesting</p> | <p>Patent filed (15 applications completed) As of December 1st, 2024</p> |
| <p>High Power generation (tens of µW-mW)</p> | <p>Easy installation and built-in devices</p> | <p>Multiple Use Increase power</p> | <p>Inexpensive</p> | <p>Use as a sensor</p> | <p>Contribution to SDGs</p> |

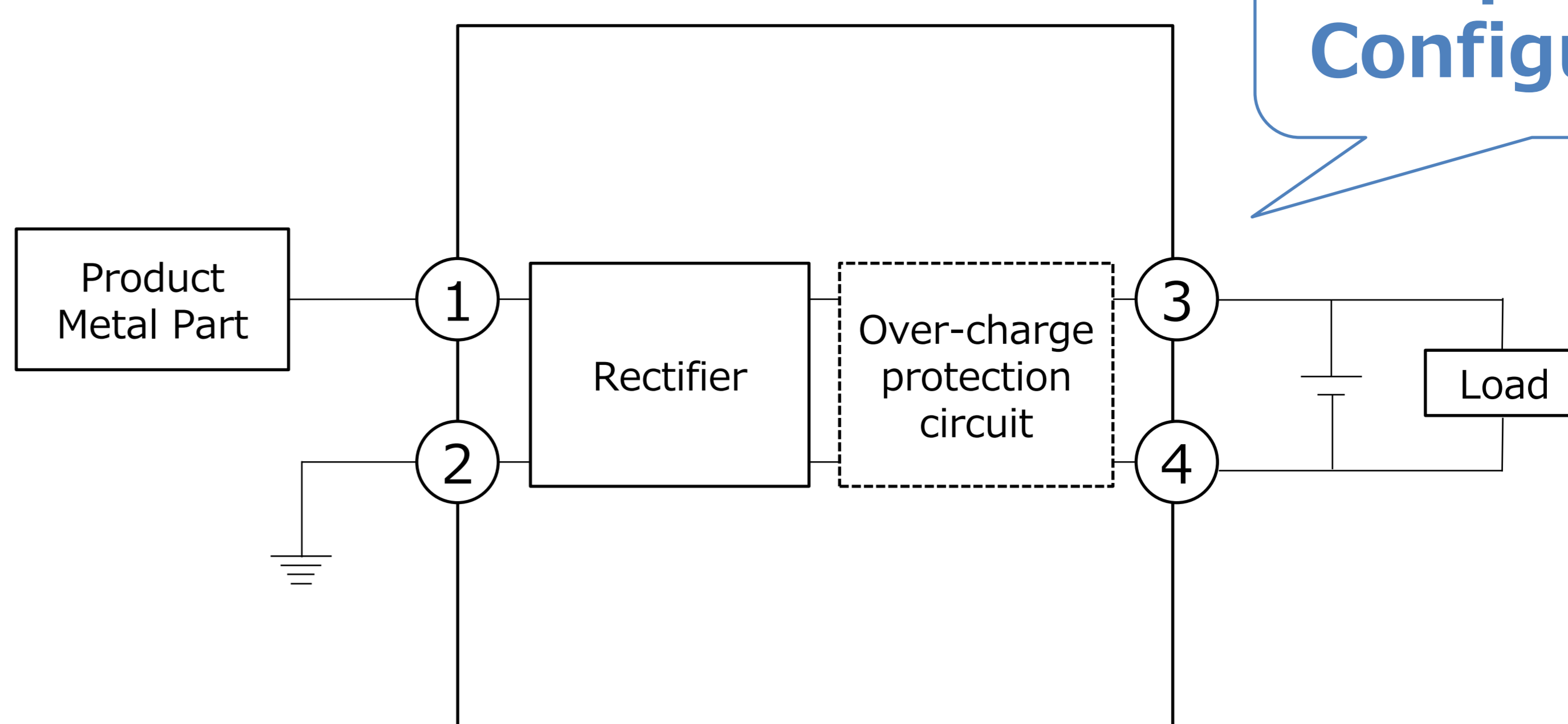
Specifications

Pin Description



| Pin Number | Pin Name | Function |
|------------|----------|------------------|
| ① | ANT1 | Connect to metal |
| ② | ANT2 | Connect to Earth |
| ③ | Output + | Hot |
| ④ | Output - | Ground |

Circuit Configuration



Simple Circuit Configuration!

Rating

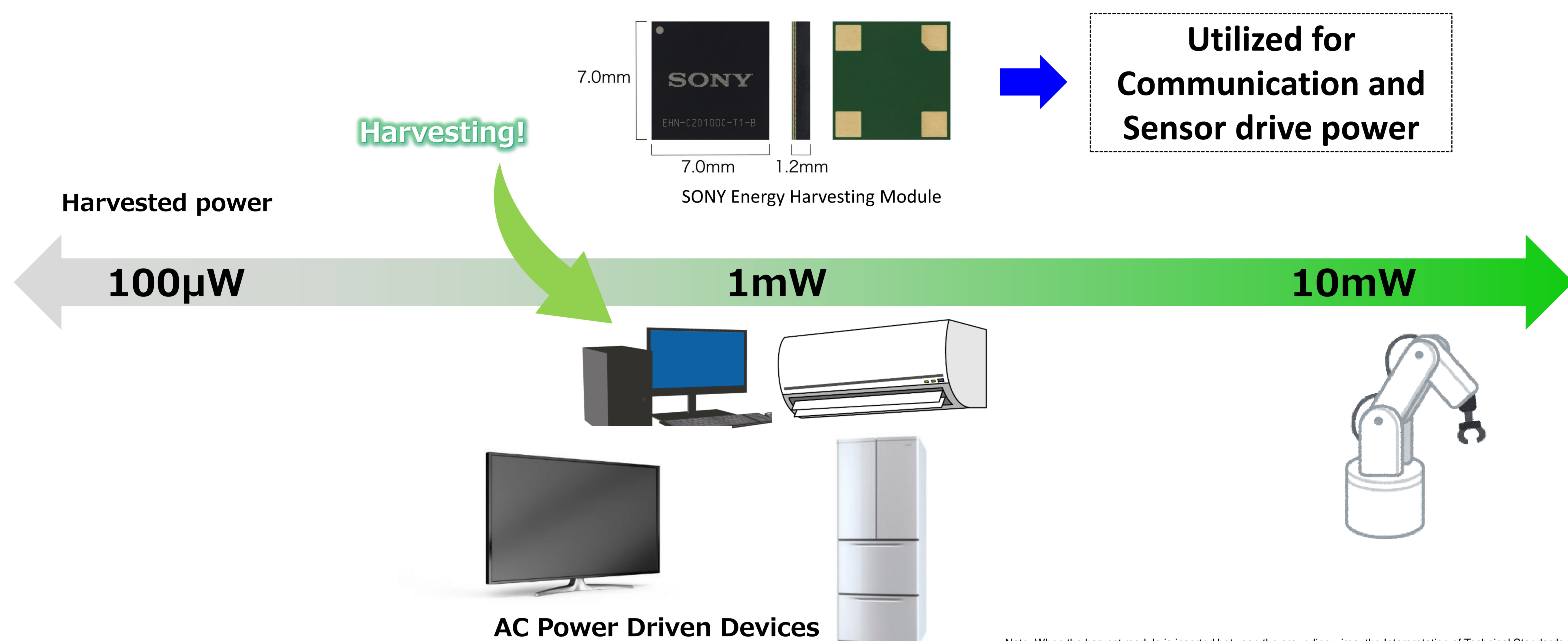
| Parameter | Symbol | Rating | Remarks |
|----------------|--------|-----------|--|
| Input Voltage | Vin | AC3V(MAX) | Voltage between (1)Device and (2)Earth(Module+10kΩ Connection) |
| Input Current | Iin | 5mA(MAX) | Current between (1)Device and (2)Earth(Module+10kΩ Connection) |
| Output Voltage | Vout | 2.7V(MAX) | ③ -(4) load connected(Battery, Capacitor) |
| Output Current | Iout | 5mA(MAX) | ③ -(4) load connected(Battery, Capacitor) |

Schedule

ES Sample Available(3Types)

Output 2.3V series : MAX2.7V
 3.3V series : MAX3.6V
 3.8V series : MAX4.3V

Harvesting Power



| Metal Part | Voltage | Current | Power | Measuring Resistance |
|------------------|---------|---------|--------|----------------------|
| Refrigerator | 15.2V | 0.15mA | 2.3mW | 100kΩ |
| Air Conditioner | 16.2V | 0.16mA | 2.6mW | 100kΩ |
| Industrial Robot | 19.0V | 1.73mA | 36.1mW | 10kΩ |

Harvesting from Equipment GND(Earth)

Note: When the harvest module is inserted between the grounding wires, the Interpretation of Technical Standards for Electrical Installation (Electrotechnical Interpretation) Section 17 of the "Interpretation of Technical Standards for Electrical Equipment" is provided. The amount of harvest depends on the harvesting environment, the mounting method, etc.

Application Example

