Voltage multipliers

Voltage multipliers are DC-to-AC power conversion devices, comprised of multiple stages of diodes and ceramics capacitors that produce a high potential DC voltage from a lower voltage AC source.
Hereafter are some examples of Voltage Multipliers realized by Exxelia's companies.
As the product must fit exactly the customer's application, they are mainly custom designed.

Temex ceramics

The products we developed are coated and miniaturized. The advantage is to have this function in low space environments. We developed those products after the request of a major Nigh Vision company to compete the only one manufacturer in the world for this Voltage Multiplier technology. We were helped by the French ministry of defense to develop similar products to give our customer what become today its N°1 procurement source, also ITAR free.

The products we sell them are used in an ultra-small power supply card embedded in Image Intensifier Tubes (or photomultiplier tubes) for night vision googles. This is a huge market where our VM totally fit the need of the manufacturers.

The only advantage of this technology is its size; the same design can be easily and much cheaply realized on a board where space is enough. It's only relevant with application where minimum volume is required for power supplies for laser designation, laser range finder, night vision googles, electro optical pods for miniature UAV, etc.

We are today developing new versions of voltage multipliers 50% smaller (5mm) with the same performances!

- Ultra small size (10mm)
- Highly Efficient
- ITAR Free
- Half wave voltage multiplier with uniform stress on diodes
- Typical Frequency between 10 to 100Khz
- DC output up to 10KVdc
- Output Current up to 150µA
- Custom design is available

Datasheets of current products available at http://www.temex-ceramics.com/site/fr/volt-multipliers.html

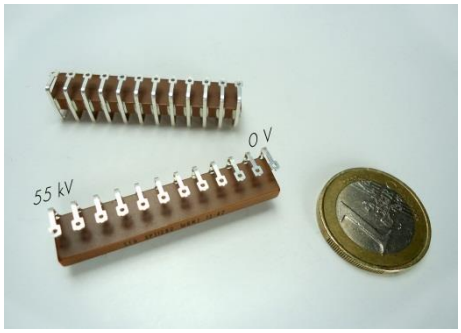
Eurofarad

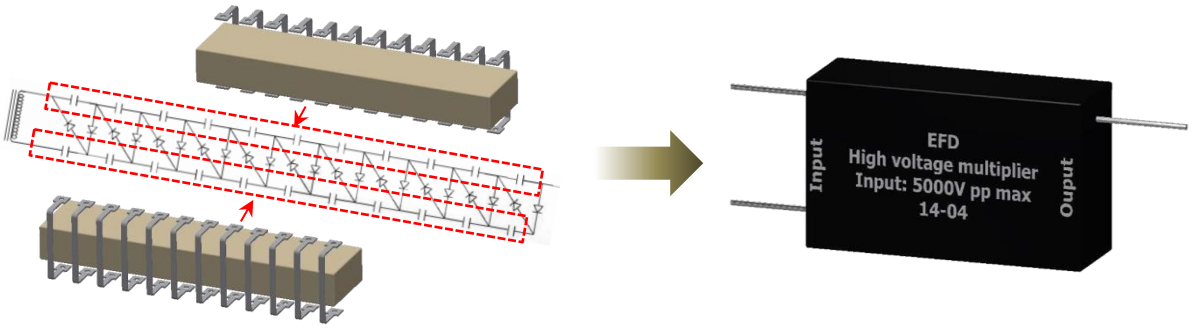
Eurofarad has developed new voltage multipliers for photomultiplier tubes. These systems consist in high sensitivity light sensors which transform a luminous signal in an electrical one. In these equipment, the photons to analyze bang into a target which emits electrons. Thanks to different electrodes with rising electrical potentials, these electrons are accelerated and multiplied before reaching an anode which converts them into an electrical current.

The measurement of this current enables to quantify the initial luminous flux. These systems are used in applications as medical and space imaging, spectrophotometers or systems of chemical analysis.

Technical characteristics

- X7R dielectric
- 11 steps
- 1000pF per step
- 5kV per step
- Output : 55kVDC, 300µA, 100kHz





Eurofarad can propose the single capacitor array or the whole voltage multiplier.

Full Wave Voltage multiplier is under development. A new product based on the design described above is also under development with the following characteristics : 14steps, 1000pF and 15kV per step.

- ITAR free
- Versatile design
- Uniform stress on diodes and capacitors
- Wide range of multiplier stages
- Wide range of electrical configurations on request (positive output, negative output, multiple output)

These products are perfectly adapted for the following applications : laser designation, power supplies, Xray systems, radars, Travelling Wave Tube.