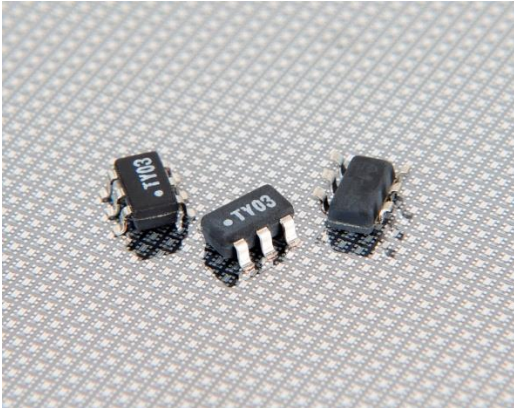


RADFETs – Space Technology for Terrestrial Applications

Tyndall's Radiation Sensing Field Effect Transistors (RADFETs) have originally been developed under European Space Agency's sponsorship for radiation dose monitoring in space. The need to accurately measure ionising radiation doses is not limited to space exploration, but also exists in clinical environments (radiotherapy and radiology), homeland security domain (e.g. for first responders), nuclear facilities, high energy physics laboratories. All these applications require simple, cost-effective device which can accurately measure radiation doses of interest. Tyndall's RADFET technology provides the solution.



RADFET chips built into a personal dosimeter used by European astronauts at the International Space Station.



Handheld RADFET reader developed at Tyndall.

RADFET is a MOS transistor optimised for radiation sensitivity. RADFET chip is a cube with a side of 0.5mm. Ionising radiation induces charge in the RADFET, which changes one of the basic transistor's parameters – threshold voltage. Threshold voltage can easily be measured by passing a specified current through the RADFET and measuring a DC voltage at the device output. That DC voltage is indicative of the absorbed radiation dose.

Main advantages of the RADFETs over other dosimeters are:

- zero or very low power consumption – eliminating cables/wires and extending reader's battery life,
- simple, immediate, non-destructive read-out,
- low cost – up to 10 times lower than existing solutions,
- small size – smallest active volume of all dosimeters, and flexibility for integration in different product forms
- electronic output signal – easy integration with computers and wireless networks.

RADFET-based dosimetry systems can take different forms, e.g.:

- handheld reader with disposable RADFET patches,
- handheld reader with built-in RADFET(s),
- wrist watch type device,
- badges, staff-cards, rings, etc. with built-in RADFETs.

Currently commercially available RADFETs from Tyndall cover a dose range of 1 cGy to > 1000 Gy. Novel patented devices with the minimum detectable dose as low as 0.01 mGy are in an advanced stage of development.

Applications (currently available and under development):

- Radiotherapy (built-in in FDA approved OneDose/DVS products by Sixel Technologies for QA in RT),
- High energy physics and nuclear facilities (> 2,000 RADFETs built-in in the LHC ring at CERN),
- Accidental personal dosimetry (> 200,000 RADFETs delivered for wrist watch military dosimeter),
- Radiology (CT scans, dental and ordinary X-rays, fluoroscopy procedures),
- Personal dosimetry for radiation workers in clinical and industrial environments,
- Personal dosimetry for general population (e.g. personal monitoring badges, RADFET modules built in mobile phones, etc.).

We are interested in creating commercial relationships with potential distributors, end users, and partners. Please contact us for further details.