



## Radiation Hardened Dual Gate Semiconductor Transistor Device with Improved MOSFET and JFET Structures

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- Electrical Engineering
- NSWC Crane

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The US Navy seeks a partner for licensing and collaboration on a device for controlling current or mitigating electromagnetic or radiation interference effects using common semi-conductive channel region generating structures formed by common semi-conductive electrical current or voltage controlled structures.

Presently, dual gate MOSFETS are built by packaging two MOSFETS in series; however, this does not address radiation effects, overall cost, weight, and size. Existing MOSFETS are prone to total ionizing dose induced threshold voltage shifts from ionizing radiation environments that can lead to functional failures.

NSWC Crane has designed, developed, and patented a new type of dual gate transistor which combines the operation of a junction field effect transistor (JFET) with a metal oxide semiconductor field effect transistor (MOSFET) to create a unique design. The design combines aspects of a MOSFET and a JFET, which allows a drain-to-source current to be controlled by a MOS gate as well as a side JFET gate. The device is a new concept, unlike any other on the market, with only one top gate and one side gate. The device can be easily fabricated a monolithic device, merging the functions of the MOSFET with a MOS gate and the buried gate into a monolithic gate.

**People:**

- Duncan, Adam (Project leader)
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**Intellectual Property:**

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