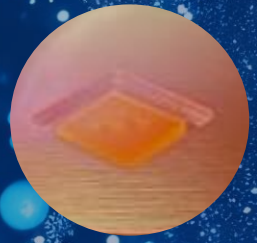


Diamond Optically Gated Field Effect Transistor (DOG-FET)



An Ultra-Wide Bandgap (UWB) semiconductor switch for high-voltage & high-power applications



- Superior thermal conductivity & carrier mobility from diamond
- Extremely EMI resistant
- Very low jitter
- Directly addressable with light source simplifies system design and cost



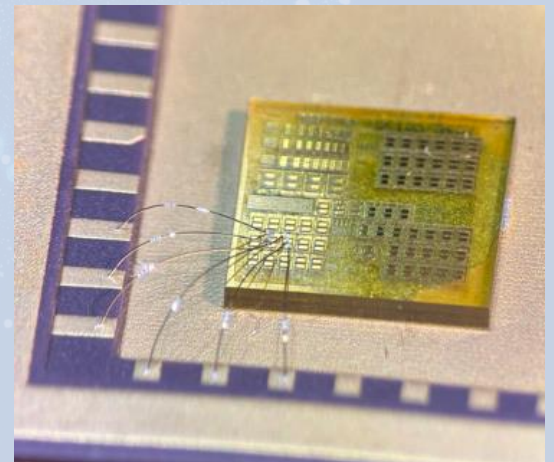
- Compact compared to current silicon-based switches
- Low operating cost relative to other photoconductive switches
- UWB material alternative to GaN without supply chain constraints



Applications include:

Resilient Power Grid
Next-Generation Datacenters
Communications
Aerospace & Defense

LLNL researchers have developed DOG-FET with Gate-All-Around (GAA) structure, a power electronic device that is well suited for future medium-voltage direct current (MVDC) and high-voltage direct current (HVDC) systems.



LLNL has filed for patent protection of this technology (internal case Nos. IL-13772, IL-13910 and IL-13911).
US Patent Application No. **2024/0204128**, HIGH VOLTAGE AND HIGH-POWER DIAMOND BASED JUNCTION-GATE FIELD EFFECT TRANSISTOR (JFET) SWITCH WITH PHOTO-CONTROLLED GATE published 06/20/2024

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