



# JULIA JEAN, LLC

## HIGH-POWER ON-CHIP ELECTRON BEAMS & AMPLIFIERS

### EMPOWERING NEXT GENERATION DOMINANCE

Performance requirements for high-power, high-speed transmission of radio frequency and microwave signals are limited by the materials used in today's amplification technologies. Electron beams and power amplifiers used in satellite communications and radar cannot support demands for increasing speed and power without adverse consequences to longevity. New solutions are required to meet the military's imminent bandwidth and range needs.

Don't let the limitations of current technologies define and undermine future defense capabilities. Our proprietary, disruptive, on-chip cold electron source provides a powerful amplification and a controllable beam to resolve these deficiencies for long-range and active phased array applications.



### BENEFITS

**Resilient.** Beam stability and reliability under harsh environments or high-power operation lead to longer lifetime.

**Efficient.** Energy efficiency reduces overall energy consumption and can increase payload capacity.

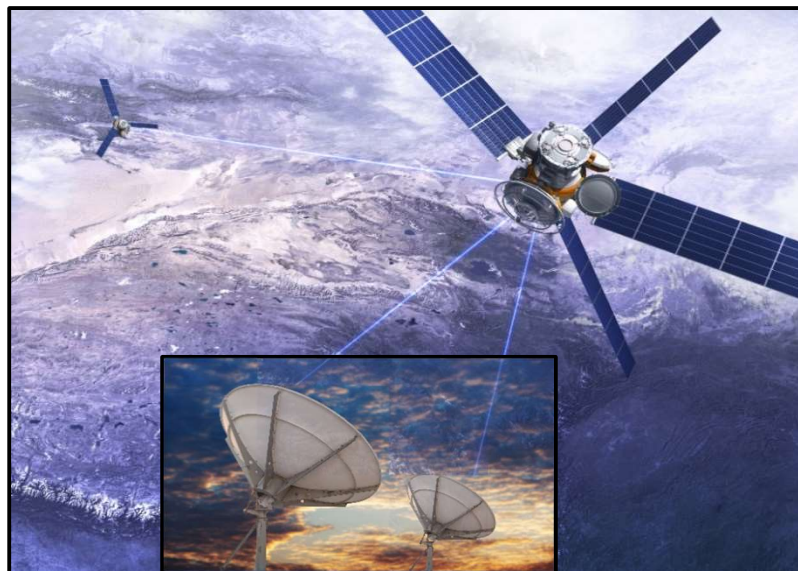
**Flexible.** Standard lithography processing allows for straightforward design modification for tailored and individually addressable beam control.

**Fast.** Source-switching, combined with high current density, allows for high-frequency operation.

**Adaptable.** Our sources are readily swapped with existing alternatives and can be customized to meet customer specs.

Please contact us to discuss your requirements.

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### APPLICATIONS

**ELECTRONIC WARFARE/DIRECTED ENERGY.** Jamming & Munitions

**RADAR.** Military, Marine, Commercial & Weather

**SATELLITE COMMUNICATIONS.** Space & Earth

"The wafer scale vacuum electron device technology being researched by Julia Jean, LLC has the potential for the order of magnitude improvement that is needed in order to keep up with the needs of our U.S. government customers."  
– a Prime Satcom Integrator

### TECHNICAL INFORMATION

**Capacity.** Potential for 4x power & 2x speed enhancement

**Compact.** Reduced heat management volume

**Compatible.** Interoperable among disparate systems

**Geometry.** Multiple-electrode capability

**Power.** 1-10 A/cm<sup>2</sup> continuous or pulsed current density

**Longevity.** Nanostructured for built-in redundancy

**Material.** Scalable silicon carbide wafer-based fabrication

