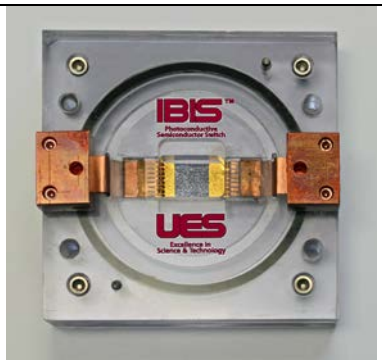
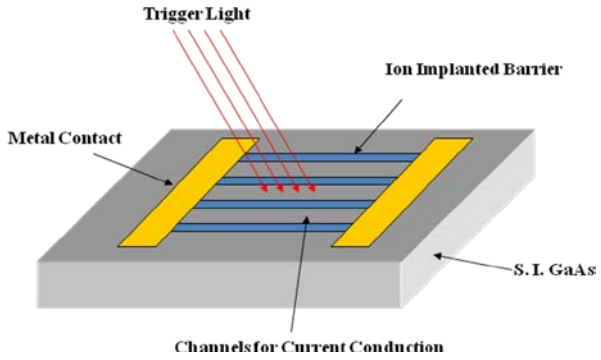
IBIS™ Photoconductive Semiconductor Switch

UES's IBIS™ PCSS is a high gain optically triggered photoconductive semiconductor switch. Based on gallium arsenide (GaAs), the switch can support voltage hold-off to >67 kV/cm or>100 kV total and current density of >1000 A/cm^2 with rise-times and timing jitter of 600-800ps and long lifetimes. The IBIS PCSS switch won an R&D 100 Award in 2015, recognizing it as one of the most innovative products introduced. The patented UES PCSS solution uses ion implantation to create channels on Ga-As surfaces. The resultant channels eliminate filamentary effect breakdown, while preserving the high speed, and high power handling capabilities of the PCSS. IBIS PCSS can operate in linear or avalanche mode

IBIS PCSS Switch	PCSS Operation Schematic
	

Property Profile

PCSS Test Parameters	IBIS™ Results
Operating Voltage	Up to 75 kV
PCSS Electric Field	60 kV/cm (1 cm lateral gap device)
Total PCSS Current	~ 1 kA amps (using 2 cm wide and 1 cm gap switch)
Individual Channel Current	5 to 25 amps ; 20 amps per ch. @ 1 kA
Power Handling	75MW power
Functional PCSS Switch Dimensions	1 cm x 1 cm; 1 cm x 2 cm; 1.5 cm x 1 cm; 1.5 cm x 2 cm
PCSS Current Risetime	600 - 800 psec
Optical Energy Incident on the Switch Surface	50 - 150 mJ/cm^2
PCSS Current Density	500 amps/linear cm
Autonomous EMP Module Details:	A small-footprint configurable, transportable module, with 1 m^2 aperture per module; small footprint compared with point source; Peak electric field of 70-90 kV/meter in test volume

Intellectual Property

- Patents: UES has protected the PCSS technology through patent filings (US20140264684 A1)
- Government Interests: The PCSS technology was developed by UES with SBIR funding from DTRA.

Active Partnerships Welcome

Founded in 1973, UES, Inc. is an innovative science and technology company that provides its government and industry customers with superior research and development expertise and world-class support. We take great pride in developing products and services from our technologies for commercialization and transition.

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