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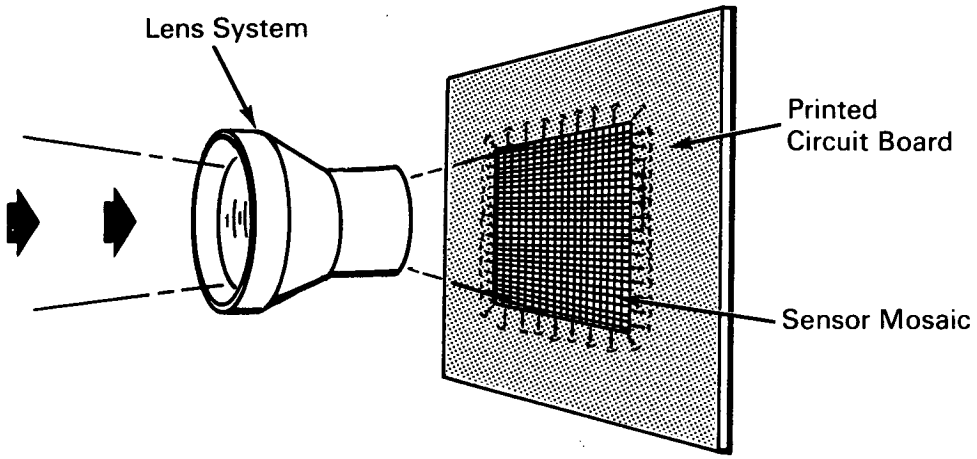
# NASA TECH BRIEF



## New Television Camera Eliminates Vidicon Tube




**The problem:**

To design a highly reliable television camera of reduced size, weight, and power consumption.

**The solution:**

A camera system that uses a solid state imaging device in the form of a phototransistor mosaic sensor instead of a vidicon tube for light sensing and image conversion.

**How it's done:**

The sensor is a square mosaic made up of 2,500 phototransistors with 50 light-sensitive semiconductor elements on a side. Each element is composed of a 3-layer phototransistor controlling its own current which is modulated by the light striking it. Each phototransistor has an independent base region, with the emitters interconnected by evaporated aluminum strips in 50 isolated columns. Readout is accomplished by applying voltage to a 50-element collector strip and sequentially commutating the rows of emitter elements so that one element is read at a time with all other elements cut off. Fifty emitter follower amplifiers in the emitter element readout circuitry enhance camera sensitivity by providing high input impedance to each element and low output impedance for the switching circuit.

Flip-flop binary logic provides the pulse sequence for mosaic multiplexing by pulsing the emitter readout switches, by applying voltage pulses to the collector strips, and by synchronizing the horizontal and vertical sawtooth generators for the monitor.

**Notes:**

1. The camera uses a standard 16-mm lens, measures 6 x 4 x 3½ inches in size, and requires 4 watts of power.
2. The digital logic circuits scan the sensor mosaic at 60 frames per second to produce pictures composed of a series of dots rather than lines.

(continued overleaf)

3. The 5-Mc video bandwidth signal can be transmitted over commercial telephone lines.
4. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B66-10112

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C., 20546.

Source: Westinghouse Electric Corporation
under contract to
Marshall Space Flight Center
(M-FS-472)