Components

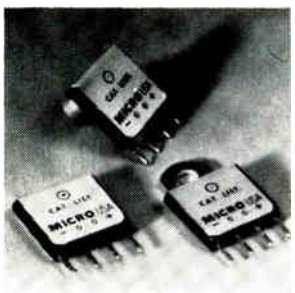
Power klystron is air-cooled

S-band tube for airport surveillance radar puts out 2 megawatts of pulsed power

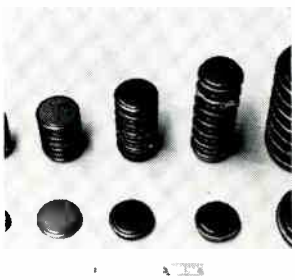
A target-cluttered radar display screen is difficult enough to read, but if any system noise is present, the screen can become totally illegible. Part of the problem, according to Richard T. Schumacher, product manager for super-power tubes at Varian Associates, is that airport radars use magnetrons as a power source. These suffer from phase shift—their frequency tends to change from pulse to pulse, which introduces additional noise. Klystrons, on the other hand, are more stable but they've been limited by low efficiency and water-cooling problems. Varian's answer was to design an efficient klystron that can be air-cooled.

Designed specially for airport surveillance radar systems, the new tube, called the VA-87E, is capable of producing 2 megawatts of pulsed power in the 2.7-to-2.9-gigahertz (S-band) range with an efficiency of about 50%. Integrated random noise and peak spurious output are about 70 decibels below the carrier level; saturation gain is 50 dB or more.

Airports have been slow in switching to klystrons, says Schumacher, because of their cost and the fact that magnetrons have been good enough. Although more susceptible to clutter, magnetrons operate on lower voltages than klystrons and can be air-cooled, whereas the less-efficient conventional klystrons had to be water-cooled. "The new klystron," says Schumacher, "is more efficient and

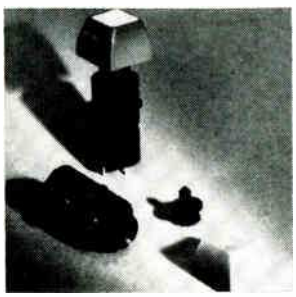


Hall-effect switches, models 1SS2, 3, and 4, have magnetic flux concentrators that allow operation at greater distances than before. Units switch at up to 10,000 cycles/s. Output level is 0.3 v dc max in low state, 3 v minimum when magnetic field is applied. Micro Switch, 11 W. Spring St., Freeport, Ill. [341]

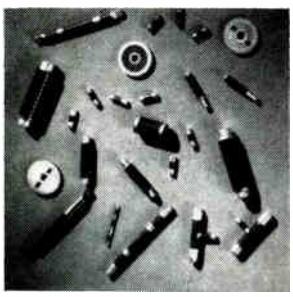


Sealed, non-gassing mercuric oxide cadmium batteries have shelf life of 5-10 years and operational temperature capability of −65° to 164° F. They are available in five capacities from 500 mA/hr to 12 A/hr. Voltage can be any multiple of 0.9 v. Elca Battery Co., 1140 W. Evelyn Ave., Sunnyvale, Calif. [342]

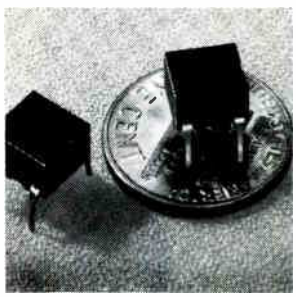
Miniature cermet variable resistor type SP, with ⅜-in. diameter, is for small panel spaces. The potentiometer is stable under severe conditions, dissipates 1 W at 70°C, and has resistance range from 50 ohms to 1 megohm. Rotational life is 25,000 cycles. Allen-Bradley Co., 1301 S. Second St., Milwaukee, Wis. 53204 [343]



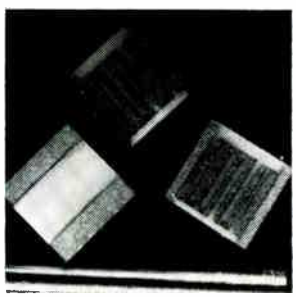
Keyboard switch model S830 features momentary and alternate action. Five snap-on adapters mate with most keytops. Designed for interchange with other switch types, unit is rated at 100 million operations at logic levels. Keytops are available in seven shapes. C. P. Clare and Co., Pratt Ave., Chicago, Ill. [344]



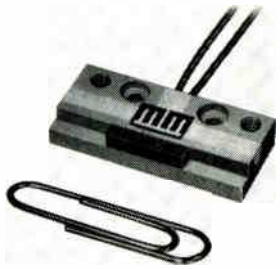
Thin film resistors are designed for microwave applications. Film is deposited by pyrolytic carbon process. Substrate is aluminum or beryllium oxide. Temperature coefficient of resistance is 250 ppm/°c, and standard resistance tolerance is 1%. Midwest Microwave Inc., 3800 Packard Rd., Ann Arbor, Mich. [345]



Square-style film element trimmers designed for automatic packaging come in single-turn (type 87) and 12-turn (type 85) series. Pin spacing is compatible with DIP machinery, and sealed cases withstand soldering. Units are rated at 0.5 W at room temperature. Dale Electronics Inc., P.O. Box 609, Columbus, Neb. [346]



Metal film chip resistors offer good stability and low resistance values. They measure 50 and 75 mils square and have gold terminations for bonding to film conductor patterns. Resistance range is 1 to 100 ohms, coefficient of resistance less than 100 ppm/°C. Airco Speer Electronics, St. Mary's, Pa. [347]



Ferrous-operated proximity reed switch, model 26-23, for industrial control is highly stable unit with 2-millisecond response. Actuation range is .075 to 0.150 in. in .025-in. steps. Initial contact resistance at 25 mA is 0.5 ohm max for laboratory grade. McClintock Matrixes Inc., Woodbury, Conn. [348]

Circle 85 on reader service card→