

## Microcircuits for Miniaturisation

One of the attributes of microcircuits made on ceramic substrates is that very high performance can be achieved in the smallest of sizes. The inherent strength, thermal conductivity and multilayer capabilities can make a ceramic hybrid circuit the choice for the most demanding application.

### Surge protected connector.

The sensitivity of electronic systems to electromagnetic pulse, lightning strike or other interference, means that transient protection may be needed in the system. This protection can be integrated into connectors, safeguarding the inputs and outputs of electronic systems.



## 13mm Disc Resistors

Welwyn were asked to design a circuit to provide lightning strike protection between the pins of a circular connector. The design called for high impulse energies to be absorbed in resistor elements, and high voltage isolation provided between pins. Another supplier had proposed a design, but this failed under critical conditions.

Welwyn's long experience of lightning strike resistors allowed us to design a part, which successfully withstands 60A peak current and 3000V. Only a ceramic disc can pack in six pin connections and two pulse resistors into a 13mm disc.



### Tyre Pressure Sensor.

The tyres on aircraft have to be strictly maintained and their pressure checked regularly. So that pressures can be quickly and easily taken and recorded Welwyn have designed a wireless sensor. The sensor is small and circular and fits into the valve stem of an aircraft tyre. The circuitry allows the pressure to be sensed and the measurement can be taken with a small hand-held reader. No gauges have to be applied to the tyre, and the results can be logged electronically.

The design has active components mounted on a stack of circular ceramic substrates. This method of construction makes the complex circuitry small enough to fit the valve stem, and robust enough to withstand the high vibration and temperature stresses on the tyre.

## Replacement of obsolete packages.

A customer approached Welwyn with the problem of replacing a semiconductor device, which had become obsolete. So that the customer did not have to redesign their PCB, a replacement part, which emulated the function of the semiconductor, was needed. Welwyn were able to supply a surface mounted ceramic substrate with several active devices, which gave the right circuit function.

The advantage of this approach is that in small volume high cost systems expensive redesigns, and qualifications can be avoided.

