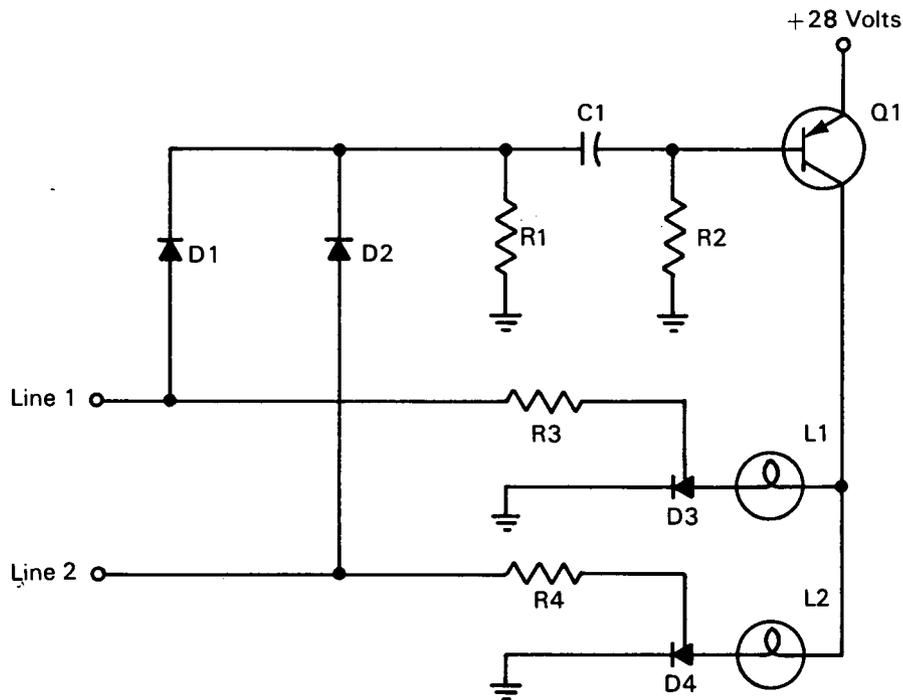


NASA TECH BRIEF



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An Electronic Circuit for Sensing Malfunctions in Test Instrumentation



The problem:

During the test and checkout of complex systems, a method must be established in order to differentiate between malfunctions occurring in the system undergoing test and malfunctions within the test instrumentation itself.

The solution:

A monitoring device has been designed and developed that quickly isolates the origin of the malfunction. Electronic circuits in the monitor use

transistors to commutate silicon controlled rectifiers by removing the drive voltage; display circuits are then used to monitor multiple discrete lines.

How it's done:

All monitored lines are connected to the "OR" circuit composed of D1, D2, and R1. This circuit detects the presence of pulses on the lines; a composite pulse is passed to the differentiation elements, C1 and R2, which form a narrow positive pulse. This pulse turns off the commutation transistor, Q1, which

(continued overleaf)

in turn commutates the silicon controlled rectifiers, D3 and D4, causing them to reset. Because only the leading edge of the incoming pulses is used to reset the rectifiers, the remaining pulse time fires the rectifiers on lines carrying pulses. The fired rectifiers enable the appropriate lamp to light which indicates the origin of the malfunction. At least twenty lines can be connected to the monitoring circuit provided that no more than twenty lamps are lighted at the same time.

Note:

No further documentation is available. Inquiries may be directed to:

Technology Utilization Officer
Kennedy Space Center
Kennedy Space Center, Florida 32899
Reference: B69-10392

Patent status:

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

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