THE HEAT IS ON WHEN YOU TEST AT 125°C

Many integrated circuits used in high stress environments (for example, automobile under-hood) must be qualified at high temperatures to ensure they meet their design specifications. Automated Test Equipment (ATE) system designers face the challenge of how to stress the device under test (DUT) during design or production test. Traditionally, the interface between the ATE system and the DUT has been a load board, which is a printed circuit board fitted with a test socket for the DUT and switchable signal traces leading to it. Test signals are switched to and from the various DUT pins using relays under program control from the ATE.

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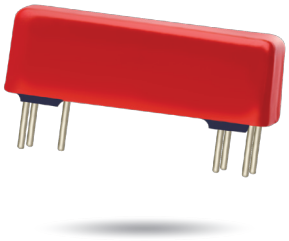
Testing DUT's at high temperature presents some interesting logistical problems. Entire ATE systems cannot be placed in a heated test chamber since they are massive and not designed for use at elevated temperatures. Nor is it practical to place only the DUT test socket in the chamber, since it is important to keep signal paths from the ATE short to maintain signal integrity. The answer is either to place the entire load board and DUT socket inside the test chamber, or blast hot air at the DUT, which inevitably heat stresses the adjacent components because of overspill.

To make high temperature testing work, the load card and all its components including the switching relays must be rated for reliable operation at the test temperature, typically 125°C. Reed relays have long been the choice at lower testing temperatures because of their high reliability, very low on-resistance (typically less than 100 milliohms) and extremely high electrical isolation when turned off (a million megohms or higher). However, reed relays are usually specified for a maximum operating temperature of 85°C.

Coto's new 2970 series Form-A and Form-C relays can take the heat. Since physics decrees their coil wire resistance will increase with temperature, the 2970 relays are specifically designed for enhanced coil power at 125°C, ensuring that the reed switches close firmly. This overdrive ensures long switching life and stable contact resistance at high temperatures. Furthermore, the relays' small footprints and integral magnetic shielding allows dense packing close to the DUT socket, making them ideal for high speed, high pin count IC testing.

Until now, the lack ATE grade high temperature reed relays has led some ATE system designers to use solid state relays (SSR's) instead. While SSR's have the advantage of solid state operation, their benefits in ATE are less convincing, due to difficult component design tradeoffs between on-resistance and maximum switchable voltage, susceptibility to damage from electrostatic discharge and abusive test loads, and much higher leakage in the off state. High temperature operation can also cause reliability problems such as thermal runaway.

Like all of Coto's reed relays, each 2970 series relay undergoes the most exhaustive testing in the industry before it is shipped, including twelve different parametric tests for static and dynamic contact resistance, operate and release times and voltages, insulation resistance, and others.



To find out how Coto can aid you in your design efforts, please contact us at the web address below.

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