

Application Note

Issue Date: 22nd February 2005



Conformal Coating

Overview: Conformal Coating is the process of spraying a dielectric material onto a component to protect it from environmental stress such as moisture, fungus, dust, corrosion and abrasion. Commonly used conformal coating materials include silicone, acrylic, urethane and epoxy. A spray valve system is the ideal equipment for applying conformal coating materials.

Application Description

This application sprays 17.5mg, +/- 1mg, of a conformal coating material onto two separate areas on a PCB. Each coating area is limited to a diameter of 0.750" or 19.05mm. The spray cycle time for one PCB must be 10 seconds or less.

Product and Equipment Used

- A TS5540-046R (round nozzle/air cap) Spray Valve
- A TS5110 Spray Valve Controller
- A TS3030 XYZ Table
- A 73003RHB Receiver Head Assembly, 30cc
- An Ohaus Explorer Pro EP114 Precision Balance

Material Applied

Dow Corning 1-2620 Conformal Coating with viscosity of 250 cps (mPa.s) and packaged in a 30cc syringe.

Setup Process

- Install the TS5540-046R Spray Valve on the XYZ Table
- Set the distance from the spray surface to the spray nozzle at 3.0" (7.62cm)
- Set material pressure to 15 psi
- Set atomized air pressure to 50 psi
- Set spray cycle time as follow: SP-2 = 0.20 second; SP-1 and SP-3 = 0.010 second
- Set XYZ table travel velocity = 2.0" (5.08cm)/second
- Record the weight of 25 shots



Results

The TS5540-046R Valve sprays Dow Corning Conformal Coating very precisely and consistently.

- Average diameter of spray pattern measured = 0.75" (19.05mm)
- No overspray observed
- Average weight of spray material per board measured = 0.0174g (0.001oz)
- Variation rate measured = 2.17%
- Time to complete one board = 7.0 seconds

Repeatability Rate Chart

