PRODUCT BULLETIN

MODEL 3140
MODEL 3150

High Vacuum Furnace

FOR HIGH RELIABILITY MICROELECTRONIC PACKAGE ASSEMBLY

The 3140 and 3150 are high vacuum furnaces offered by SST International for high-reliability microelectronic package assembly. Packages are hermetically sealed with very low internal gas pressures and moisture levels. Prior to package sealing, integral getters may also be activated to ensure long-term internal package vacuum levels.

Both the 3140 and 3150 systems provide precise automatic control of both heating and cooling. Temperatures up to 500 ºC are easily achieved in vacuum levels below 1 x 10^{-6} torr and in positive inert gas pressures up to 15 psig. The 3140 utilizes a cryogenic vacuum pumping system for the most effective pumping of water molecules. The 3150 utilizes a turbomolecular drag pump for the best pumping of hydrogen gas molecules. Both systems are backed by an oil-free roughing pump. Digital vacuum level gauging is provided to monitor and control vacuum levels. Machine control is provided by an embedded control system operating in a Microsoft Windows® environment. An unlimited number of process profiles can easily be created and stored in the controller. Run data is archived for quality control and off-line data analysis. Internet and intranet network connectivity is available as an option, permitting remote monitoring, troubleshooting and maintenance capabilities. Custom-designed resistive graphite heating fixtures (ordered separately) are matched to user application requirements for optimum system performance. An automatically controlled linear motion stage provides component separation during thermal processing and getter activation.

TYPICAL APPLICATIONS

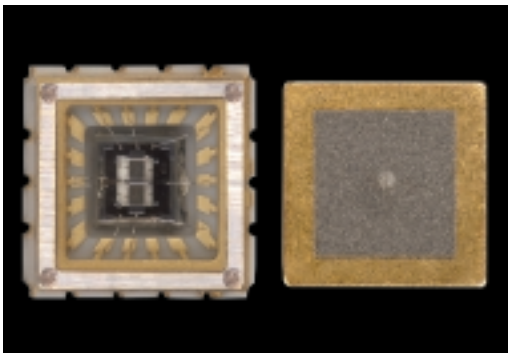
- MEMS Package Sealing
- Infrared Sensor Package Sealing
- Crystal Oscillator Package Sealing
- Getter Activation
- Hermetic Package Sealing
- Wafer Level Packaging
- Void-Free Eutectic Die Attach
- Low Moisture Package Sealing
- Nobel Gas Miniature Lamp Sealing
- Military Electronic Package Sealing

SST International

"World Leader in Package Assembly"

CONTROL SYSTEM

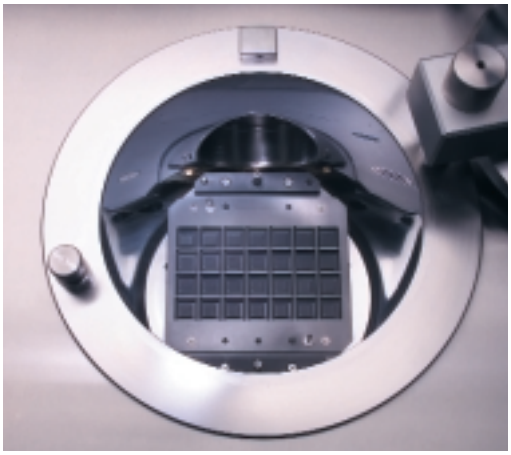
The 3140 and 3150 utilize distributed logic systems that link intelligent temperature and pressure controllers to a Windows® based central control. All process parameters are controlled automatically with user-edited programs for each application. Multiple temperature ramps and soaks, vacuum and pressure cycling, getter activation and component separation are easily programmed as time-based events. Furnace operating characteristics are continuously monitored and the operator is alerted to any fault conditions. The operator interface features a color touch-screen display. For process engineers and maintenance personnel a standard computer keyboard is provided behind a locking front panel. All process profile results, including ultimate vacuum levels, are stored directly on the system hard drive.



Ceramic MEMS Package with Getter Attached to Lid

SELECTED 3140/3150 OPTIONS

- Custom Graphite Tooling
- Extended Temperature Range (1000 °C)
- Residual Gas Analyzer (RGA)
- Electrical Getter Activation
- Multiple Zone Temperature Recording
- Moisture Level Recording
- Internet Connectivity
- Cooling Water Chiller/Pump
- Light Tree
- Color Inkjet Printer
- CE Certification for European Market



All Stainless Steel Process Chamber with Resistive Heating Fixture

SPECIFICATIONS*

	3140	3150
Vacuum Pump Type	Cryogenic	Turbomolecular Drag
Minimum Vacuum Level	1 x 10^{-6} torr (1 x 10^{-6} mbar)	
Operating Temperature Range	RT to 500 °C (1000 °C option)	
Thermal Work Zone	35 in^2 (225 cm^2)	
Maximum Chamber Gas Pressure Level	15 psig (2 bar)	
Process Gasses (three inputs)	N_2 required, (Ar, He, forming gas optional) @ 90 psig (7 bar) minimum pressure	
Electrical Service	208-240 volts, 60 amps, 60/50 Hz, 1 phase, 5 kilowatt average, 15 kilowatt peak	
Cooling Water Required	2 GPM (8 lpm) @ 20-25 °C, 2 kilowatt capacity minimum	
Compressed Air Required	90 psig (7 bar)	
Work Surface Height	37 in (95 cm) adjustable	
Overall Size (W x D x H)	94 x 54 x 53 in (239 x 137 x 135 cm)	
Helium Compressor Size (W x D x H)	20 x 22 x 17 in (50 x 57 x 43 cm)	not applicable
Total Weight	2200 lb (1000 kg)	2000 lb (900 kg)

* Specifications subject to change

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