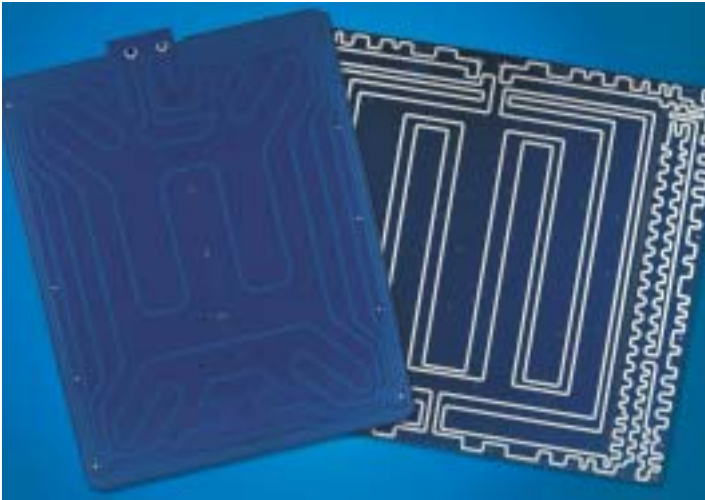


# Large Thick Film Heater Panels



## Features and Benefits

### Large single piece heater construction

- Superior flatness and temperature uniformity specifications

### Material compatibility

- Vacuum applications to 10<sup>-6</sup> millitorr
- Designed for ultra-pure applications

### Thick film heater circuit

- Operating temperature to 550°C (1022°F)
- Consistent part-to-part temperature uniformity

## Agency Approvals

- Thick film heaters UL® recognized under File E52951

## Applications

Pre-heat station

Bake-out station

Annealing station

Solar panels

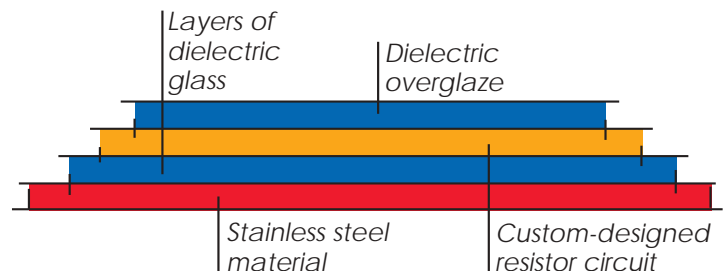
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Processing requirements for wafer, solar panel and display technologies are growing in physical size in order to increase throughput and reduce the cost of each manufactured device. For example, more chips can be produced on a 300 mm wafer than on a 200 mm wafer and large glass panels can produce more flat panel displays. In addition to size, new processes require tools that can operate at higher, more accurate and more uniform temperatures. Applications may be in atmospheric or vacuum environments.

Watlow developed our large thick film heater capabilities to address the industry's growing processing requirements. Our large panel thick film on stainless steel construction provides uniform heating to 550°C (1022°F) in a vacuum environment. Using thick film technology, overall weight of the assembly is greatly reduced and the single piece heater construction gives us the ability to manufacture a very thin profile heater. Temperature uniformity and accuracy come from our ability to precisely pattern and distribute the wattage of a thick film heater circuit and to maintain flatness requirements across a very large surface area. Thick film technology also gives designers the ability to zone heater circuits and reduce potential hot and cold spots resulting from boundary conditions. The ability to apply precision heater circuits on a larger stainless steel surface makes thick film heaters the ideal choice for large processing tools.

Compared to alternative heating technologies on the market today, thick film heaters are very process friendly and operate with negligible process contamination through outgassing.

## Construction of Thick Film on Stainless Steel Heater



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