



# 450mm Aluminum Pedestal Heater

## FRONT-END PROCESS HEATING SOLUTION FOR 450mm WAFER FABRICATION

This pedestal heater design is ideal for heating large 450mm wafers inside of vacuum process chambers. The part is manufactured using our proprietary low pressure permanent mold casting process with electrical heater elements "Cast-in." An electron beam welding process joins an aluminum 6061 shaft to the cast aluminum 356 body to provide an electrical feed-through for electrical connections. The final assembly is precision machined into a wafer pedestal heater. Following a full inspection

and cleaning, the part is complete and ready to install. Our base design and manufacturing processes can be modified to meet specific requirements, including customized machining, coatings and assembly. Cast Aluminum Solutions has over 20 years of experience in the design and manufacture of pedestal heaters and we are a qualified supplier to many of the leading semiconductor equipment manufacturers worldwide.

### APPLICATIONS

**Semiconductor processing**    **Semiconductor research and development**

### FEATURES AND BENEFITS

#### **Aluminum material**

Excellent thermal characteristics and good compatibility with most process environments  
Available with hardcoat anodize finish for better abrasion and corrosion resistance

#### **Electron beam welded construction**

In-chamber heating solution for high vacuum

#### **Two tubular heater elements "cast-in"**

Independently controllable inner and outer heater elements allow customized temperature profiles, thermocouple sensors are included

#### **Precision machined part**

Meets industry standards for dimensional tolerances and surface finishes

#### **World class performance**

"Cast-in" reliability assures long product life

Operating temperatures up to 400°C for a wide range of applications

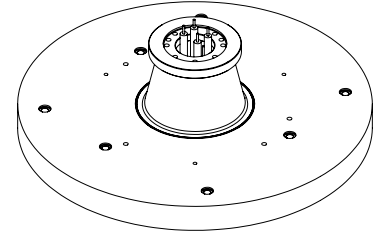
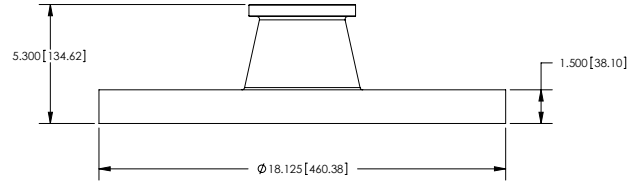
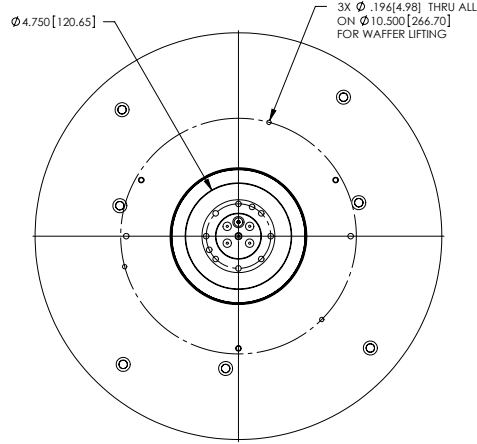
Temperature uniformity of  $\pm 0.5\%$  of set point based on initial FEA (finite element analysis)



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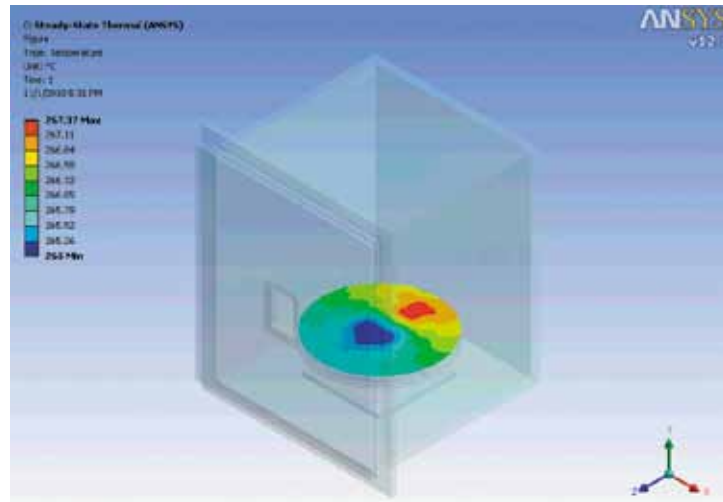
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## DIMENSIONS



## TEMPERATURE UNIFORMITY

An initial Finite Element Analysis (FEA) optimization for temperature uniformity shows a predicted performance of better than  $\pm 0.5\%$  of set point on the wafer as modeled in our vacuum chamber.



Cast Aluminum Solutions is using additional FEA iterations in combination with product testing to further improve thermal performance.



## SPECIFICATIONS

Material: Aluminum 356

Surface flatness: 0.013 mm  
(.0005 in)

Power: 7000 Watts total  
at 208 Volts

Temperature uniformity:  
 $\pm 0.5\%$  of set point (FEA  
predicted)

Cleaning: Ultrasonic wash  
followed by IPA wipe

## CONTACT US

Our team of sales engineers, account managers and customer service professionals strive to achieve total customer satisfaction and we welcome the opportunity to serve you.