

Focused on Today... A Clear Vision of Tomorrow

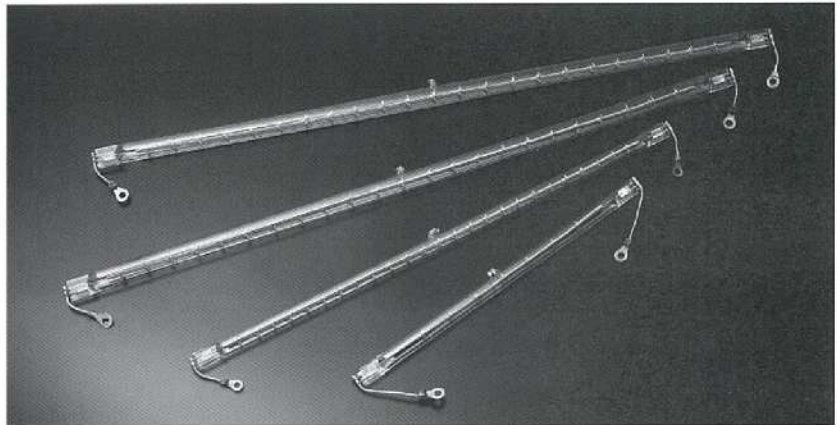
## Quartz Halogen Infrared Lamps

### Energy Sources for Semiconductor Production

#### Semiconductor Processing Equipment Applications

Quartz halogen lamps are primarily used in reactors produced by semiconductor equipment manufacturers such as ASM, Applied Materials, and others.

*Please note the accompanying lamp chart on page 2 which provides detailed information.*



#### Description

Tubular quartz infrared lamps are high-powered heat sources incorporating a tungsten filament within a highly transparent quartz envelope. Supports center the filament within the tube. Because the lamps are of the halogen type, the infrared depreciation is negligible during lifetime. Quartz infrared lamps convert approximately 90% of electricity into radiated heat, and 6% into visible light.

The heat transfer is operated by radiation from the lamp to the wafers. The fact that both the lamp tube and the chamber are made of quartz, there is practically no loss of energy from the filament to the wafer.

The combined advantages of Quartz Infrared Halogen lamps being high-temperature heat sources and a possible high-radiant energy concentration (lamps can be installed close together) offers an optimal power density of equipment and shorter process time: High temperature in very short time on the wafer and short process cycle.

In combination with the reflectors, the infrared radiation can be evenly distributed to the wafer, so the right and even temperature can be achieved on the whole wafer. The efficiency of the process results in Rapid Thermal Responses: full emitted power within 100 milliseconds. Power of the lamps is fully controllable: the required irradiation level can be adjusted instantly (between 0 and 100%).

#### Applications

- CVD Chemical Vapor Deposit
- Polysilicon Deposition
  - Epitaxial Layer
- RTP Rapid Thermal Process
- Oxidation
  - Ion Implant Annealing

#### Features and Benefits

Rhenium quartz infrared lamps convert approximately 90% of electricity into radiated heat.

No loss of energy from the filament to the wafer.

Rapid thermal responses.

The people involved in the manufacturing process have many years of experience making quartz halogen lamps.

High quality control standards during the entire manufacturing process insures a superior long-lasting lamp.

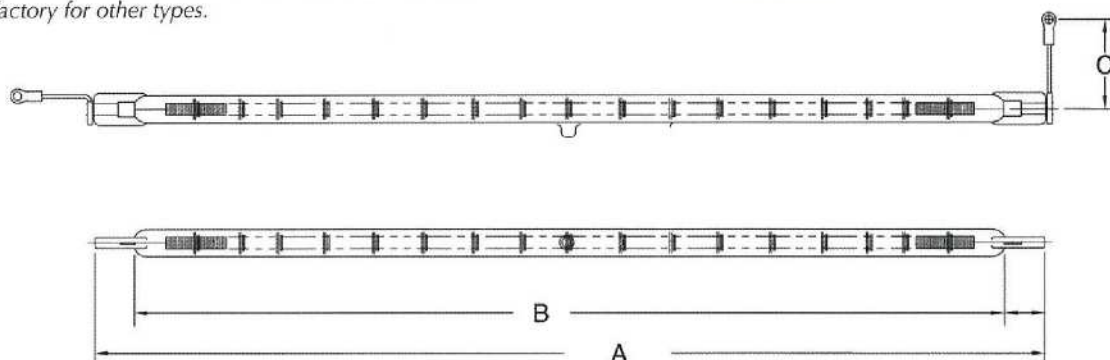
# Quartz Halogen Infrared Lamps

## Quality

Rhenium quartz lamps are hand made beginning with the Tungsten wire and manufactured in a temperature-and humidity-controlled environment. This insures no impurities are introduced into lamps during the manufacturing process. Further, this specially made non-sagging Tungsten wire makes it possible to produce filaments without distortion. We employ state-of-the-art manufacturing equipment as well as our own proprietary manufacturing techniques to insure a high quality, long-lasting-life lamp.

Part Number	Reactor Type	Wattage	Voltage	Color Temp.	Life Hrs	Dim A	Dim B	Dim C
9-6K-480V-1.2A	APPLIED	6000	480	3150K	1000	11.63"	10.25"	1.25"
10-8K-480V-1.2A	ASM 2000/2500	6000	480	3150K	1000	13.50"	12.25"	1.25"
6.2-1.2K-144V-2B	TEMISCAL	1200	144	3000K	1000	8.625"	7.35"	2"
9-4K-240V	IBIS	4000	240	3150K	1000	11.63"	10.25"	NA
10-6K-480V-1.2A	APPLIED 7700/7800	6000	480	3150K	1000	13.50"	12.25"	1.25"
T16-6K-480V-2.5PT-2A	SPEC AMP	6000	480	3150K	1000	16"	14.50"	2"

Consult factory for other types.



## Handling Instructions

- Avoid touching the quartz halogen lamp with bare hands. The salts and oils on human hands can cause devitrification, which can break down the quartz body and may reduce lamp performance.
- If the quartz body is contaminated, clean with a lint-free cloth and alcohol.
- Since lamp temperatures can exceed 600 degrees, do not handle lamps until after they have cooled. Burns at these temperatures can be severe.

## Who We Are

The Rhenium Lamp Group is part of Rhenium Alloys, which has long been a supplier of high-quality rhenium alloy and other advanced materials used in the space, nuclear, semiconductor, electronic, and other technologies throughout the world. By having the unique ability to control the material process from the raw material to finished lamp, we are able to offer the highest quality lamps available.



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