

**FEATURES & SPECIFICATIONS**

**Pool-Boiling Passive Heat Sink Products Offering Unparalleled Performance, Weight, and Reliability  
– Ultra-Thin Chamber; Available in 27mm and 25.5mm Total Heights**

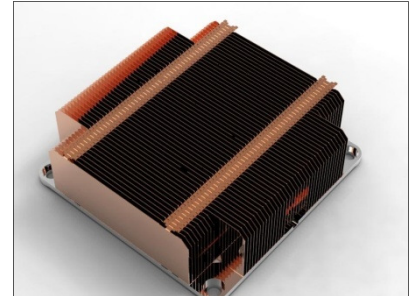
MS1011 1U and blade heat sinks are built with Vapro's proprietary Liquid Chamber® which is an ultra-thin (2.5mm), near-uniform thermal spreader that utilizes 2-phase pool-boiling principles.

Because of the excellent heat spreading capability of the base, the heat sinks deliver lower thermal resistance than almost any other solutions available in the market today.

Liquid Chamber® has very simple and elegant internal structures which all but eliminate performance and reliability problems that vapor chamber products often face.

The simple construction of the copper chamber, together with the adoption of an aluminum bracket, makes the base of the heat sink extremely light, allowing adoption of 72 copper fins while remaining below 365g in the total weight of the heat sink – or as light as 189g with 55 aluminum fins.

The standard heat sink comes with four screws and springs. Thermal grease of choice may be pre-applied on the base upon customer's request.



**Features and Benefits**

- ☐ Low thermal resistance: the near-uniform heat spreading at the base and extra fin height enabled by thin, 2.5mm base allow low thermal resistance that is difficult to achieve with other solutions.
- ☐ Available in two heights (25.5mm & 27.0mm) and six different fin configurations to meet wider range of needs.
- ☐ Covers high power: covers up to 140W without a dry-out. Performance improves at higher power.
- ☐ Orientation-free: the heat sink works in any orientation, with minimal impact on performance.
- ☐ Light weight: 189g, 208g, 298g, 310g, 350g, 365g  
Weight figures include screws and springs
- ☐ Reliability: the simplicity of the design affords great tolerance to extreme conditions, including freezing and thawing that cause failures in many vapor chambers.
- ☐ Dependability: MS1011 products are 100% inspected and pre-tested before shipping.

**SELECTION GUIDE**

Part Number	MS1011AH-Cu	MS1011AH-AI	MS1011AL-Cu	MS1011AL-AI	MS1011DH-Cu	MS1011DL-Cu
Total Height (mm)	27.0	27.0	27.0	27.0	25.5	25.5
Number of Fins	72	72	55	55	72	55
Fin Material	Copper	Aluminum	Copper	Aluminum	Copper	Copper
Total Weight (g)	365	208	310	189	350	298

SPECIFICATIONS

**Specification Common to All Products**

**Processor Cooling Capability:** All Sandy Bridge and other Intel-based CPUs with LGA2011 socket.

**Fin Thickness:** All fins are 0.2mm thick, regardless of the material used (copper or aluminum)

**Base Construction:** 2.5mm-Thick Liquid Chamber® made of copper, with plated aluminum Bracket

**Operating temperature:** 0°C to +85°C

**MS1011AH-Cu**

**Performance (°C/W):** See chart below

**Physical:**

Weight: 365g

Dimension: 91.5 x 91.5 x 27.0 (mm's)

Base Height: 2.5mm

Fin Height: 24.5mm

Fins: 72 copper fins

**MS1011AH-Al**

**Performance (°C/W):** See chart below

**Physical:**

Weight: 208g

Dimension: 91.5 x 91.5 x 27.0 (mm's)

Base Height: 2.5mm

Fin Height: 24.5mm

Fins: 72 aluminum fins

**MS1011AL-Cu**

**Performance (°C/W):** See chart below

**Physical:**

Weight: 310g

Dimension: 91.5 x 91.5 x 27.0 (mm's)

Base Height: 2.5mm

Fin Height: 24.5mm

Fins: 55 copper fins

**MS1011AL-Al**

**Performance (°C/W):** See chart below

**Physical:**

Weight: 189g

Dimension: 91.5 x 91.5 x 27.0 (mm's)

Base Height: 2.5mm

Fin Height: 24.5mm

Fins: 55 aluminum fins

**MS1011DH-Cu**

**Performance (°C/W):** See chart below

**Physical:**

Weight: 350g

Dimension: 91.5 x 91.5 x 25.5 (mm's)

Base Height: 2.5mm

Fin Height: 23.0mm

Fins: 72 copper fins

**MS1011DL-Cu**

**Performance (°C/W):** See chart below

**Physical:**

Weight: 298g

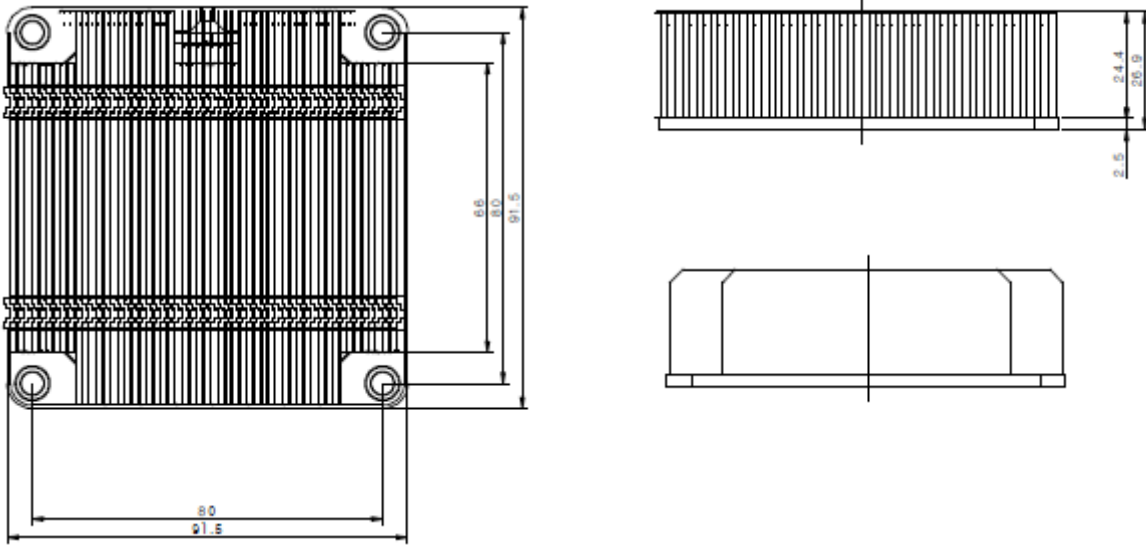
Dimension: 91.5 x 91.5 x 25.5 (mm's)

Base Height: 2.5mm

Fin Height: 23.0mm

Fins: 55 copper fins

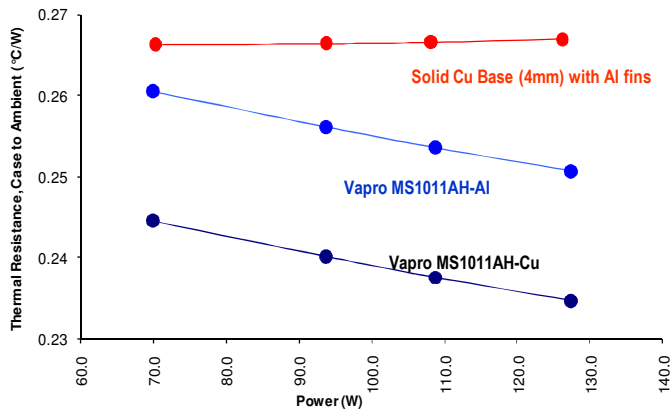
**PHYSICAL DIMENSIONS – MS1011AL shown**



**PERFORMANCE**

**Thermal Resistance (Mean+3σ) vs Power**

Ambient Temperature of 44°C, 16CFM



**Airflow v. Pressure Drop**

