

## 901-910 SERIES CHIPSET HEAT SINKS



PIN FIN &  
ELLIPTICAL  
HEAT SINKS



Wakefield-Vette's 901-910 Series Heat Sinks for Chipset can match up to devices from Intel, Broadcom, Xilinx, TI, Motorola and many more! These heat sinks are designed for air flow applications. Enclosed pages have thermal performance data for natural forced convection values.

4 Springs at  
each corner



wakefield-vette  
New Chip Set Heat Sinks



Wakefield-Vette heat sink assembles onto chip set using the space that is between the PCB and the substrate of the solder balls. The solder balls provide a minimal gap of .5mm to .7mm. Attachment feature is below a .4mm thickness. The clipping system will not interfere or damage chip. Contact area is the edge of chip.



Thermal Cooling Solutions from SMART to FINISH

# 901-910 SERIES CHIPSET HEAT SINKS



**Material:** AL 6063

**Finish:** Black Anodize

All dimensions in millimeters (mm)

## Part Numbering System

| Series             | Chip Size        | Construction   | Height           | Spring Type *  | Finish         | Interface     |
|--------------------|------------------|----------------|------------------|----------------|----------------|---------------|
| <u>901-</u><br>XXX | <u>19-</u><br>XX | <u>1-</u><br>X | <u>12-</u><br>XX | <u>1-</u><br>X | <u>B-</u><br>X | <u>1</u><br>X |

|     |      |                   |           |                 |             |          |
|-----|------|-------------------|-----------|-----------------|-------------|----------|
| 901 | 19   | 1= Elliptical Fin | 12 = 11.6 | 1 = .9-2.1 CST  | B = BLK ANO | 0 = None |
| 902 | 21   | 2= Pin Fin        | 15 = 14.6 | 2 = 2.2-3.4 CST |             | 1 = T725 |
| 903 | 23   |                   | 18 = 17.6 |                 |             |          |
| 904 | 27   |                   | 21 = 20.6 |                 |             |          |
| 905 | 29   |                   | 23 = 22.6 |                 |             |          |
| 906 | 31   |                   | 28 = 27.6 |                 |             |          |
| 907 | 33   |                   | 33 = 32.6 |                 |             |          |
| 908 | 35   |                   |           |                 |             |          |
| 909 | 37.5 |                   |           |                 |             |          |
| 910 | 40   |                   |           |                 |             |          |

\*Note: When selecting part number chip set thickness (CST) relates to spring selection!



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## THERMAL PERFORMANCE



|     | HT | CHIP SIZE | PIN FIN            |                         |          |          | ELLIPTICAL FIN     |                         |           |          |
|-----|----|-----------|--------------------|-------------------------|----------|----------|--------------------|-------------------------|-----------|----------|
|     |    |           | NATURAL CONVECTION | FORCED CONVECTION (C/W) |          |          | NATURAL CONVECTION | FORCED CONVECTION (C/W) |           |          |
|     |    |           |                    | 200 LFM                 | 400 LFM  | 600 LFM  |                    | 200 LFM                 | 400 LFM   | 600 LFM  |
| 901 | 12 | 19mm      | 12.74 C/W          | 6.6 C/W                 | 4.79 C/W | 4.16 C/W | 14.77 C/W          | 6.63 C/W                | 5.09 C/W  | 4.38 C/W |
|     | 15 | 19mm      | 12.05 C/W          | 6.3 C/W                 | 4.51 C/W | 3.86 C/W | 14 C/W             | 6.12 C/W                | 4.63 C/W  | 3.95 C/W |
|     | 18 | 19mm      | 11.35 C/W          | 5.97 C/W                | 4.16 C/W | 3.47 C/W | 13.23 C/W          | 5.67 C/W                | 4.17 C/W  | 3.58 C/W |
|     | 21 | 19mm      | 10.66 C/W          | 5.66 C/W                | 3.89 C/W | 3.21 C/W | 12.46 C/W          | 5.28 C/W                | 3.87 C/W  | 3.24 C/W |
|     | 23 | 19mm      | 10.55 C/W          | 5.36 C/W                | 3.64 C/W | 2.99 C/W | 11.98 C/W          | 4.89 C/W                | 3.58 C/W  | 3.06 C/W |
|     | 28 | 19mm      | 10.27 C/W          | 4.91 C/W                | 3.36 C/W | 2.71 C/W | 11.5 C/W           | 4.38 C/W                | 3.26 C/W  | 2.80 C/W |
| 902 | 33 | 19mm      | 9.99 C/W           | 4.52 C/W                | 3.07 C/W | 2.49 C/W | 9.57 C/W           | 4.04 C/W                | 2.98 C/W  | 2.62 C/W |
|     | 12 | 21mm      | 12.4 C/W           | 6.61 C/W                | 4.37 C/W | 3.7 C/W  | 14.31 C/W          | 5.81 C/W                | 3.86 C/W  | 3.16 C/W |
|     | 15 | 21mm      | 11.73 C/W          | 5.84 C/W                | 4.09 C/W | 3.42 C/W | 13.57 C/W          | 5.3 C/W                 | 3.5 C/W   | 2.89 C/W |
|     | 18 | 21mm      | 11.06 C/W          | 5.51 C/W                | 3.76 C/W | 3.07 C/W | 12.83 C/W          | 4.95 C/W                | 3.35 C/W  | 2.66 C/W |
|     | 21 | 21mm      | 10.38 C/W          | 5.20 C/W                | 3.49 C/W | 2.84 C/W | 12.09 C/W          | 4.61 C/W                | 3.111 C/W | 2.47 C/W |
|     | 23 | 21mm      | 10.27 C/W          | 4.9 C/W                 | 3.26 C/W | 2.62 C/W | 11.63 C/W          | 4.32 C/W                | 2.91 C/W  | 2.32 C/W |
| 903 | 28 | 21mm      | 9.98 C/W           | 4.55 C/W                | 2.98 C/W | 2.42 C/W | 10.47 C/W          | 3.89 C/W                | 2.61 C/W  | 2.09 C/W |
|     | 33 | 21mm      | 9.7 C/W            | 4.18 C/W                | 2.73 C/W | 2.21 C/W | 9.3 C/W            | 3.57 C/W                | 2.37 C/W  | 1.95 C/W |
|     | 12 | 23mm      | 12.06 C/W          | 5.72 C/W                | 3.95 C/W | 3.24 C/W | 13.85 C/W          | 4.75 C/W                | 3.31 C/W  | 2.79 C/W |
|     | 15 | 23mm      | 11.41 C/W          | 5.39 C/W                | 3.67 C/W | 2.99 C/W | 13.14 C/W          | 4.38 C/W                | 3.05 C/W  | 2.53 C/W |
|     | 18 | 23mm      | 10.76 C/W          | 5.05 C/W                | 3.35 C/W | 2.67 C/W | 12.44 C/W          | 4.07 C/W                | 2.81 C/W  | 2.32 C/W |
|     | 21 | 23mm      | 10.11 C/W          | 4.74 C/W                | 3.1 C/W  | 2.46 C/W | 11.73 C/W          | 3.84 C/W                | 2.57 C/W  | 2.11 C/W |
| 904 | 23 | 23mm      | 9.99 C/W           | 4.44 C/W                | 2.87 C/W | 2.31 C/W | 11.28 C/W          | 3.59 C/W                | 2.4 C/W   | 1.97 C/W |
|     | 28 | 23mm      | 9.70 C/W           | 4.09 C/W                | 2.62 C/W | 2.12 C/W | 10.16 C/W          | 3.22 C/W                | 2.17 C/W  | 1.8 C/W  |
|     | 33 | 23mm      | 9.41 C/W           | 3.83 C/W                | 2.43 C/W | 1.96 C/W | 9.04 C/W           | 2.93 C/W                | 1.95 C/W  | 1.64 C/W |
|     | 12 | 27mm      | 11.38 C/W          | 4.84 C/W                | 3.11 C/W | 2.32 C/W | 12.93 C/W          | 4.34 C/W                | 3 C/W     | 2.53 C/W |
|     | 15 | 27mm      | 10.78 C/W          | 4.48 C/W                | 2.84 C/W | 2.12 C/W | 12.29 C/W          | 4.05 C/W                | 2.76 C/W  | 2.29 C/W |
|     | 18 | 27mm      | 10.17 C/W          | 4.13 C/W                | 2.56 C/W | 1.88 C/W | 11.64 C/W          | 3.73 C/W                | 2.5 C/W   | 2.07 C/W |
| 905 | 21 | 27mm      | 9.56 C/W           | 3.82 C/W                | 2.32 C/W | 1.72 C/W | 11 C/W             | 3.43 C/W                | 2.31 C/W  | 1.9 C/W  |
|     | 23 | 27mm      | 9.44 C/W           | 3.51 C/W                | 2.11 C/W | 1.6 C/W  | 10.58 C/W          | 3.21 C/W                | 2.11 C/W  | 1.71 C/W |
|     | 28 | 27mm      | 9.13 C/W           | 3.26 C/W                | 1.97 C/W | 1.49 C/W | 9.54 C/W           | 2.89 C/W                | 1.84 C/W  | 1.51 C/W |
|     | 33 | 27mm      | 8.82 C/W           | 3.07 C/W                | 1.82 C/W | 1.39 C/W | 8.51 C/W           | 2.62 C/W                | 1.66 C/W  | 1.35 C/W |
|     | 12 | 29mm      | 11.04 C/W          | 4.08 C/W                | 2.55 C/W | 1.98 C/W | 12.47 C/W          | 4.09 C/W                | 2.74 C/W  | 2.25 C/W |
|     | 15 | 29mm      | 10.46 C/W          | 3.82 C/W                | 2.32 C/W | 1.78 C/W | 11.86 C/W          | 3.81 C/W                | 2.52 C/W  | 2.02 C/W |
| 905 | 18 | 29mm      | 9.87 C/W           | 3.58 C/W                | 2.14 C/W | 1.58 C/W | 11.25 C/W          | 3.56 C/W                | 2.31 C/W  | 1.84 C/W |
|     | 21 | 29mm      | 9.28 C/W           | 3.33 C/W                | 1.96 C/W | 1.44 C/W | 10.63 C/W          | 3.3 C/W                 | 2.12 C/W  | 1.65 C/W |
|     | 23 | 29mm      | 9.16 C/W           | 3.13 C/W                | 1.82 C/W | 1.34 C/W | 10.23 C/W          | 3.06 C/W                | 1.91 C/W  | 1.49 C/W |
|     | 28 | 29mm      | 8.84 C/W           | 2.82 C/W                | 1.64 C/W | 1.2 C/W  | 9.24 C/W           | 2.72 C/W                | 1.69 C/W  | 1.33 C/W |
|     | 33 | 29mm      | 8.53 C/W           | 2.59 C/W                | 1.47 C/W | 1.07 C/W | 8.24 C/W           | 2.47 C/W                | 1.49 C/W  | 1.18 C/W |

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## THERMAL PERFORMANCE



|     | HT | CHIP SIZE | PIN FIN            |                         |          |          | ELLIPTICAL FIN     |                         |          |          |
|-----|----|-----------|--------------------|-------------------------|----------|----------|--------------------|-------------------------|----------|----------|
|     |    |           | NATURAL CONVECTION | FORCED CONVECTION (C/W) |          |          | NATURAL CONVECTION | FORCED CONVECTION (C/W) |          |          |
|     |    |           |                    | 200 LFM                 | 400 LFM  | 600 LFM  |                    | 200 LFM                 | 400 LFM  | 600 LFM  |
| 906 | 12 | 31mm      | 10.71 C/W          | 3.49 C/W                | 2.28 C/W | 1.69 C/W | 12.02 C/W          | 3.37 C/W                | 2.25 C/W | 1.87 C/W |
|     | 15 | 31mm      | 10.14 C/W          | 3.18 C/W                | 2.03 C/W | 1.5 C/W  | 11.43 C/W          | 3.13 C/W                | 2.02 C/W | 1.66 C/W |
|     | 18 | 31mm      | 9.57 C/W           | 2.93 C/W                | 1.86 C/W | 1.33 C/W | 10.85 C/W          | 2.85 C/W                | 1.79 C/W | 1.45 C/W |
|     | 21 | 31mm      | 9.01 C/W           | 2.72 C/W                | 1.69 C/W | 1.2 C/W  | 10.27 C/W          | 2.63 C/W                | 1.63 C/W | 1.31 C/W |
|     | 23 | 31mm      | 8.88 C/W           | 2.5 C/W                 | 1.54 C/W | 1.07 C/W | 9.88 C/W           | 2.44 C/W                | 1.5 C/W  | 1.19 C/W |
|     | 28 | 31mm      | 8.56 C/W           | 2.26 C/W                | 1.38 C/W | .96 C/W  | 8.93 C/W           | 2.21 C/W                | 1.36 C/W | 1.05 C/W |
| 907 | 33 | 31mm      | 8.24 C/W           | 2.09 C/W                | 1.27 C/W | .88 C/W  | 7.98 C/W           | 2.02 C/W                | 1.19 C/W | .93 C/W  |
|     | 12 | 33mm      | 10.37 C/W          | 3.32 C/W                | 2.18 C/W | 1.62 C/W | 11.56 C/W          | 3.23 C/W                | 2.09 C/W | 1.73 C/W |
|     | 15 | 33mm      | 9.82 C/W           | 3.14 C/W                | 1.99 C/W | 1.45 C/W | 11 C/W             | 2.97 C/W                | 1.88 C/W | 1.54 C/W |
|     | 18 | 33mm      | 9.28 C/W           | 2.89 C/W                | 1.78 C/W | 1.3 C/W  | 10.45 C/W          | 2.69 C/W                | 1.7 C/W  | 1.37 C/W |
|     | 21 | 33mm      | 8.73 C/W           | 2.67 C/W                | 1.60 C/W | 1.13 C/W | 9.9 C/W            | 2.5 C/W                 | 1.52 C/W | 1.22 C/W |
|     | 23 | 33mm      | 8.60 C/W           | 2.45 C/W                | 1.43 C/W | .99 C/W  | 9.54 C/W           | 2.3 C/W                 | 1.37 C/W | 1.08 C/W |
| 908 | 28 | 33mm      | 8.27 C/W           | 2.24 C/W                | 1.28 C/W | .87 C/W  | 8.62 C/W           | 2.08 C/W                | 1.23 C/W | .98 C/W  |
|     | 33 | 33mm      | 7.94 C/W           | 2.03 C/W                | 1.15 C/W | .77 C/W  | 7.71 C/W           | 1.89 C/W                | 1.08 C/W | .86 C/W  |
|     | 12 | 35mm      | 10.03 C/W          | 3.06 C/W                | 1.97 C/W | 1.49 C/W | 11.1 C/W           | 3.07 C/W                | 2.07 C/W | 1.64 C/W |
|     | 15 | 35mm      | 9.5 C/W            | 2.85 C/W                | 1.81 C/W | 1.34 C/W | 10.58 C/W          | 2.79 C/W                | 1.87 C/W | 1.46 C/W |
|     | 18 | 35mm      | 8.98 C/W           | 2.6 C/W                 | 1.64 C/W | 1.19 C/W | 10.06 C/W          | 2.54 C/W                | 1.69 C/W | 1.27 C/W |
|     | 21 | 35mm      | 8.46 C/W           | 2.4 C/W                 | 1.5 C/W  | 1.07 C/W | 9.53 C/W           | 2.35 C/W                | 1.52 C/W | 1.15 C/W |
| 909 | 23 | 35mm      | 8.32 C/W           | 2.19 C/W                | 1.34 C/W | .97 C/W  | 8.75 C/W           | 2.13 C/W                | 1.35 C/W | 1.01 C/W |
|     | 28 | 35mm      | 7.99 C/W           | 1.97 C/W                | 1.19 C/W | .83 C/W  | 7.93 C/W           | 1.94 C/W                | 1.19 C/W | .86 C/W  |
|     | 33 | 35mm      | 7.65 C/W           | 1.82 C/W                | 1.06 C/W | .7 C/W   | 7.11 C/W           | 1.69 C/W                | 1.02 C/W | .72 C/W  |
|     | 12 | 37.5mm    | 9.60 C/W           | 2.93 C/W                | 1.90 C/W | 1.36 C/W | 10.52 C/W          | 3.11 C/W                | 2.01 C/W | 1.61 C/W |
|     | 15 | 37.5mm    | 9.11 C/W           | 2.71 C/W                | 1.72 C/W | 1.19 C/W | 10.04 C/W          | 2.82 C/W                | 1.79 C/W | 1.41 C/W |
|     | 18 | 37.5mm    | 8.61 C/W           | 2.52 C/W                | 1.53 C/W | 1.05 C/W | 9.56 C/W           | 2.59 C/W                | 1.59 C/W | 1.22 C/W |
| 910 | 21 | 37.5mm    | 8.11 C/W           | 2.25 C/W                | 1.36 C/W | .88 C/W  | 9.08 C/W           | 2.38 C/W                | 1.41 C/W | 1.06 C/W |
|     | 23 | 37.5mm    | 7.98 C/W           | 2.04 C/W                | 1.2 C/W  | .75 C/W  | 8.75 C/W           | 2.15 C/W                | 1.24 C/W | .94 C/W  |
|     | 28 | 37.5mm    | 7.63 C/W           | 1.82 C/W                | 1.01 C/W | .63 C/W  | 7.93 C/W           | 1.88 C/W                | 1.08 C/W | .8 C/W   |
|     | 33 | 37.5mm    | 7.29 C/W           | 1.6 C/W                 | .87 C/W  | .52 C/W  | 7.11 C/W           | 1.64 C/W                | .93 C/W  | .68 C/W  |
|     | 12 | 40mm      | 9.18 C/W           | 2.84 C/W                | 1.86 C/W | 1.36 C/W | 9.95 C/W           | 3.09 C/W                | 1.93 C/W | 1.56 C/W |
|     | 15 | 40mm      | 8.71 C/W           | 2.64 C/W                | 1.65 C/W | 1.18 C/W | 9.51 C/W           | 2.77 C/W                | 1.73 C/W | 1.37 C/W |
| 910 | 18 | 40mm      | 8.24 C/W           | 2.4 C/W                 | 1.44 C/W | .98 C/W  | 9.06 C/W           | 2.74 C/W                | 1.52 C/W | 1.17 C/W |
|     | 21 | 40mm      | 7.77 C/W           | 2.21 C/W                | 1.27 C/W | .86 C/W  | 8.62 C/W           | 2.22 C/W                | 1.35 C/W | .99 C/W  |
|     | 23 | 40mm      | 7.63 C/W           | 2 C/W                   | 1.15 C/W | .73 C/W  | 8.3 C/W            | 2.01 C/W                | 1.19 C/W | .87 C/W  |
|     | 28 | 40mm      | 7.27 C/W           | 1.77 C/W                | .99 C/W  | .62 C/W  | 7.55 C/W           | 1.8 C/W                 | 1.04 C/W | .75 C/W  |
|     | 33 | 40mm      | 6.92 C/W           | 1.58 C/W                | .85 C/W  | .51 C/W  | 6.78 C/W           | 1.61 C/W                | .88 C/W  | .64 C/W  |

Thermal Cooling Solutions from SMART to FINISH



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### SHOCK TEST SPECIFICATION :

Wave Form : Half sine wave

Acceleration : 50 g

Duration Time : 11 ms

No. of Shock : Each axis 3 times

Shock Direction :  $\pm X$ ,  $\pm Y$ ,  $\pm Z$  axis

Reliability & Communication Testing  
Instruments

### Random Vibration test

Frequency : 5 Hz to 500 Hz

Acceleration : 3.13 grms

P.S.D : 0.01 g<sup>2</sup>/HZ (5 Hz)

0.02 g<sup>2</sup>/HZ (20 Hz to 500 Hz)

Test Axis : X, Y, Z axis

Test Time : 10 mins (Each axis)

Total Test Time : 30 mins

wakefield-vette



**STEP 1:** Center heat Sink onto BGA. Tilt and hook one side of the clip under the BGA chip.



**STEP 2:** Press down the other side of clip to snap it onto the BGA chip.



**STEP :3** Make sure the stop pin is not on top of the chip set. Installation Done!



Thermal Cooling Solutions from SMART to FINISH

## 901-910 SERIES CHIPSET HEAT SINKS



## Contact Us / Corporate Location Information

Wakefield-Vette is Global. Global presence means our engineering, design, sales and support are close to our customers, in the Americas, Europe, Middle East and Asia. It means multi-national manufacturing and delivery. And it means a global Wakefield-Vette supply chain that can deliver, and provide support quickly, anywhere, with the highest quality solutions.

Contact sales for a list of Distributors that carry stock.

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**Thermal Cooling Solutions from SMART to FINISH**

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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