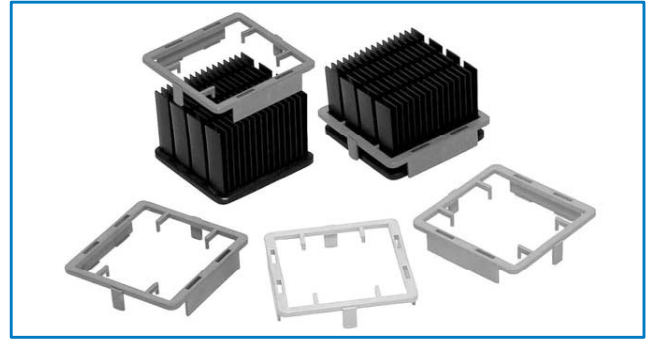
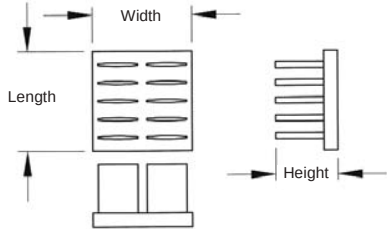


## FORGED HEAT SINKS WITH PLATE FINS

### DESIGN FEATURES

- Precision forging technology for high power applications
- Designed for BGA and other surface mount packages
- Various mounting methods available
- Select from multiple fin heights



### PRODUCT BENEFITS

- No special tools needed for assembly
- No additional holes required on the PCB
- Special clip easily snaps on and self-aligns

### SERIES APF LOW-PROFILE FORGED HEAT SINKS (ADHESIVE ATTACH ONLY)

| Part Number   | Fin Matrix<br>(Rows x Columns) | Length x Width x Height<br>(mm) | Thermal Resistance<br>(°C/Watt) |                                 | Pressure Drop<br>(inches of water) |
|---------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|
|               |                                |                                 | NATURAL CONVECTION              | FORCED<br>CONVECTION @ 200 LFPM |                                    |
| APF19-19-06CB | 12 x 2                         | 19 x 19 x 6.3                   | 17.0                            | 7.1                             | 0.033                              |
| APF19-19-10CB | 12 x 2                         | 19 x 19 x 9.5                   | 16.0                            | 5.5                             | 0.033                              |
| APF19-19-13CB | 12 x 2                         | 19 x 19 x 12.7                  | 15.6                            | 4.4                             | 0.033                              |
| APF30-30-06CB | 19 x 3                         | 30 x 30 x 6.3                   | 13.9                            | 4.4                             | 0.039                              |
| APF30-30-10CB | 19 x 3                         | 30 x 30 x 9.5                   | 12.9                            | 3.3                             | 0.039                              |
| APF30-30-13CB | 19 x 3                         | 30 x 30 x 12.7                  | 12.5                            | 2.7                             | 0.039                              |
| APF40-40-06CB | 26 x 4                         | 40 x 40 x 6.3                   | 11.1                            | 3.2                             | 0.043                              |
| APF40-40-10CB | 26 x 4                         | 40 x 40 x 9.5                   | 10.1                            | 2.5                             | 0.043                              |
| APF40-40-13CB | 26 x 4                         | 40 x 40 x 12.7                  | 9.6                             | 2.0                             | 0.043                              |

### SERIES AER FORGED HEAT SINKS

| Part Number   | Fin Matrix<br>(Rows x Columns) | Length x Width x Height<br>(mm) | Thermal Resistance<br>(°C/Watt) |                                 | Pressure Drop<br>(inches of water) |
|---------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|
|               |                                |                                 | NATURAL CONVECTION              | FORCED<br>CONVECTION @ 200 LFPM |                                    |
| AER19-19-12CB | 2 x 6                          | 18.6 x 18.6 x 11.6              | 14.5                            | 6.4                             | 0.017                              |
| AER19-19-15CB | 2 x 6                          | 18.6 x 18.6 x 14.6              | 14.1                            | 5.9                             | 0.017                              |
| AER19-19-18CB | 2 x 6                          | 18.6 x 18.6 x 17.6              | 13.6                            | 5.5                             | 0.017                              |
| AER19-19-21CB | 2 x 6                          | 18.6 x 18.6 x 20.6              | 13.4                            | 5.1                             | 0.017                              |
| AER19-19-23CB | 2 x 6                          | 18.6 x 18.6 x 22.6              | 13.2                            | 4.7                             | 0.017                              |
| AER19-19-28CB | 2 x 6                          | 18.6 x 18.6 x 27.6              | 12.8                            | 4.2                             | 0.017                              |
| AER19-19-33CB | 2 x 6                          | 18.6 x 18.6 x 32.6              | 11.4                            | 3.9                             | 0.017                              |
| AER21-21-12CB | 2 x 7                          | 20.6 x 20.6 x 11.6              | 14.0                            | 5.6                             | 0.017                              |
| AER21-21-15CB | 2 x 7                          | 20.6 x 20.6 x 14.6              | 13.6                            | 5.1                             | 0.017                              |
| AER21-21-18CB | 2 x 7                          | 20.6 x 20.6 x 17.6              | 13.2                            | 4.8                             | 0.017                              |
| AER21-21-21CB | 2 x 7                          | 20.6 x 20.6 x 20.6              | 13.0                            | 4.4                             | 0.017                              |
| AER21-21-23CB | 2 x 7                          | 20.6 x 20.6 x 22.6              | 12.8                            | 4.2                             | 0.017                              |
| AER21-21-28CB | 2 x 7                          | 20.6 x 20.6 x 27.6              | 12.4                            | 3.7                             | 0.017                              |
| AER21-21-33CB | 2 x 7                          | 20.6 x 20.6 x 32.6              | 11.1                            | 3.4                             | 0.017                              |
| AER23-23-12CB | 2 x 8                          | 22.6 x 22.6 x 11.6              | 13.2                            | 4.6                             | 0.018                              |
| AER23-23-15CB | 2 x 8                          | 22.6 x 22.6 x 14.6              | 12.8                            | 4.2                             | 0.018                              |
| AER23-23-18CB | 2 x 8                          | 22.6 x 22.6 x 17.6              | 12.5                            | 3.9                             | 0.018                              |
| AER23-23-21CB | 2 x 8                          | 22.6 x 22.6 x 20.6              | 12.0                            | 3.7                             | 0.018                              |
| AER23-23-23CB | 2 x 8                          | 22.6 x 22.6 x 22.6              | 11.6                            | 3.5                             | 0.018                              |
| AER23-23-28CB | 2 x 8                          | 22.6 x 22.6 x 27.6              | 10.7                            | 3.1                             | 0.018                              |
| AER23-23-33CB | 2 x 8                          | 22.6 x 22.6 x 32.6              | 9.9                             | 2.8                             | 0.018                              |
| AER25-25-12CB | 3 x 9                          | 24.6 x 24.6 x 11.6              | 12.6                            | 4.4                             | 0.020                              |
| AER25-25-15CB | 3 x 9                          | 24.6 x 24.6 x 14.6              | 11.9                            | 4.0                             | 0.020                              |
| AER25-25-18CB | 3 x 9                          | 24.6 x 24.6 x 17.6              | 11.3                            | 3.7                             | 0.020                              |
| AER25-25-21CB | 3 x 9                          | 24.6 x 24.6 x 20.6              | 10.9                            | 3.4                             | 0.020                              |
| AER25-25-23CB | 3 x 9                          | 24.6 x 24.6 x 22.6              | 10.5                            | 3.2                             | 0.020                              |
| AER25-25-28CB | 3 x 9                          | 24.6 x 24.6 x 27.6              | 9.8                             | 2.9                             | 0.020                              |
| AER25-25-33CB | 3 x 9                          | 24.6 x 24.6 x 32.6              | 8.9                             | 2.6                             | 0.020                              |

**MATERIAL:** 6063 Aluminum Alloy, Black Anodized

**SERIES AER FORGED HEAT SINKS**

| Part Number   | Fin Matrix<br>(Rows x Columns) | Length x Width x Height<br>(mm) | Thermal Resistance<br>(°C/Watt) |                                 | Pressure Drop<br>(inches of water) |
|---------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|
|               |                                |                                 | NATURAL CONVECTION              | FORCED<br>CONVECTION @ 200 LFPM |                                    |
| AER27-27-12CB | 3 x 9                          | 26.6 x 26.6 x 11.6              | 12.3                            | 4.2                             | 0.020                              |
| AER27-27-15CB | 3 x 9                          | 26.6 x 26.6 x 14.6              | 11.6                            | 3.9                             | 0.020                              |
| AER27-27-18CB | 3 x 9                          | 26.6 x 26.6 x 17.6              | 11.1                            | 3.6                             | 0.020                              |
| AER27-27-21CB | 3 x 9                          | 26.6 x 26.6 x 20.6              | 10.7                            | 3.3                             | 0.020                              |
| AER27-27-23CB | 3 x 9                          | 26.6 x 26.6 x 22.6              | 10.3                            | 3.1                             | 0.020                              |
| AER27-27-28CB | 3 x 9                          | 26.6 x 26.6 x 27.6              | 9.5                             | 2.8                             | 0.020                              |
| AER27-27-33CB | 3 x 9                          | 26.6 x 26.6 x 32.6              | 8.7                             | 2.5                             | 0.020                              |
| AER29-29-12CB | 3 x 9                          | 28.6 x 28.6 x 11.6              | 12.1                            | 4.4                             | 0.020                              |
| AER29-29-15CB | 3 x 9                          | 28.6 x 28.6 x 14.6              | 11.5                            | 3.8                             | 0.020                              |
| AER29-29-18CB | 3 x 9                          | 28.6 x 28.6 x 17.6              | 10.9                            | 3.6                             | 0.020                              |
| AER29-29-21CB | 3 x 9                          | 28.6 x 28.6 x 20.6              | 10.5                            | 3.3                             | 0.020                              |
| AER29-29-23CB | 3 x 9                          | 28.6 x 28.6 x 22.6              | 10.2                            | 3.1                             | 0.020                              |
| AER29-29-28CB | 3 x 9                          | 28.6 x 28.6 x 27.6              | 9.4                             | 2.7                             | 0.020                              |
| AER29-29-33CB | 3 x 9                          | 28.6 x 28.6 x 32.6              | 8.6                             | 2.5                             | 0.020                              |
| AER31-31-12CB | 3 x 11                         | 30.6 x 30.6 x 11.6              | 11.8                            | 3.4                             | 0.014                              |
| AER31-31-15CB | 3 x 11                         | 30.6 x 30.6 x 14.6              | 11.2                            | 3.1                             | 0.014                              |
| AER31-31-18CB | 3 x 11                         | 30.6 x 30.6 x 17.6              | 10.6                            | 2.9                             | 0.014                              |
| AER31-31-21CB | 3 x 11                         | 30.6 x 30.6 x 20.6              | 10.2                            | 2.6                             | 0.014                              |
| AER31-31-23CB | 3 x 11                         | 30.6 x 30.6 x 22.6              | 9.9                             | 2.4                             | 0.014                              |
| AER31-31-28CB | 3 x 11                         | 30.6 x 30.6 x 27.6              | 9.2                             | 2.1                             | 0.014                              |
| AER31-31-33CB | 3 x 11                         | 30.6 x 30.6 x 32.6              | 8.4                             | 1.9                             | 0.014                              |
| AER33-33-12CB | 3 x 11                         | 32.6 x 32.6 x 11.6              | 11.3                            | 3.2                             | 0.012                              |
| AER33-33-15CB | 3 x 11                         | 32.6 x 32.6 x 14.6              | 10.7                            | 3.0                             | 0.012                              |
| AER33-33-18CB | 3 x 11                         | 32.6 x 32.6 x 17.6              | 10.2                            | 2.7                             | 0.012                              |
| AER33-33-21CB | 3 x 11                         | 32.6 x 32.6 x 20.6              | 9.8                             | 2.5                             | 0.012                              |
| AER33-33-23CB | 3 x 11                         | 32.6 x 32.6 x 22.6              | 9.5                             | 2.4                             | 0.012                              |
| AER33-33-28CB | 3 x 11                         | 32.6 x 32.6 x 27.6              | 8.8                             | 2.1                             | 0.012                              |
| AER33-33-33CB | 3 x 11                         | 32.6 x 32.6 x 32.6              | 8.0                             | 1.9                             | 0.012                              |
| AER35-35-12CB | 4 x 12                         | 34.6 x 34.6 x 11.6              | 10.6                            | 3.3                             | 0.018                              |
| AER35-35-15CB | 4 x 12                         | 34.6 x 34.6 x 14.6              | 10.1                            | 3.0                             | 0.018                              |
| AER35-35-18CB | 4 x 12                         | 34.6 x 34.6 x 17.6              | 9.6                             | 2.8                             | 0.018                              |
| AER35-35-21CB | 4 x 12                         | 34.6 x 34.6 x 20.6              | 9.2                             | 2.6                             | 0.018                              |
| AER35-35-23CB | 4 x 12                         | 34.6 x 34.6 x 22.6              | 8.9                             | 2.4                             | 0.018                              |
| AER35-35-28CB | 4 x 12                         | 34.6 x 34.6 x 27.6              | 8.3                             | 2.0                             | 0.018                              |
| AER35-35-33CB | 4 x 12                         | 34.6 x 34.6 x 32.6              | 7.6                             | 1.8                             | 0.018                              |
| AER38-38-12CB | 4 x 13                         | 37.1 x 37.1 x 11.6              | 10.1                            | 3.0                             | 0.025                              |
| AER38-38-15CB | 4 x 13                         | 37.1 x 37.1 x 14.6              | 9.6                             | 2.8                             | 0.025                              |
| AER38-38-18CB | 4 x 13                         | 37.1 x 37.1 x 17.6              | 9.1                             | 2.5                             | 0.025                              |
| AER38-38-21CB | 4 x 13                         | 37.1 x 37.1 x 20.6              | 8.8                             | 2.3                             | 0.025                              |
| AER38-38-23CB | 4 x 13                         | 37.1 x 37.1 x 22.6              | 8.5                             | 2.1                             | 0.025                              |
| AER38-38-28CB | 4 x 13                         | 37.1 x 37.1 x 27.6              | 7.9                             | 1.9                             | 0.025                              |
| AER38-38-33CB | 4 x 13                         | 37.1 x 37.1 x 32.6              | 7.2                             | 1.7                             | 0.025                              |
| AER40-40-12CB | 4 x 14                         | 39.6 x 39.6 x 11.6              | 9.7                             | 3.0                             | 0.026                              |
| AER40-40-15CB | 4 x 14                         | 39.6 x 39.6 x 14.6              | 9.2                             | 2.7                             | 0.026                              |
| AER40-40-18CB | 4 x 14                         | 39.6 x 39.6 x 17.6              | 8.7                             | 2.4                             | 0.026                              |
| AER40-40-21CB | 4 x 14                         | 39.6 x 39.6 x 20.6              | 8.4                             | 2.1                             | 0.026                              |
| AER40-40-23CB | 4 x 14                         | 39.6 x 39.6 x 22.6              | 8.1                             | 2.0                             | 0.026                              |
| AER40-40-28CB | 4 x 14                         | 39.6 x 39.6 x 27.6              | 7.5                             | 1.7                             | 0.026                              |
| AER40-40-33CB | 4 x 14                         | 39.6 x 39.6 x 32.6              | 6.9                             | 1.6                             | 0.026                              |
| AER43-43-12CB | 4 x 15                         | 42.1 x 42.1 x 11.6              | 9.3                             | 2.8                             | 0.027                              |
| AER43-43-15CB | 4 x 15                         | 42.1 x 42.1 x 14.6              | 8.8                             | 2.5                             | 0.027                              |
| AER43-43-18CB | 4 x 15                         | 42.1 x 42.1 x 17.6              | 8.3                             | 2.3                             | 0.027                              |
| AER43-43-21CB | 4 x 15                         | 42.1 x 42.1 x 20.6              | 8.0                             | 2.0                             | 0.027                              |
| AER43-43-23CB | 4 x 15                         | 42.1 x 42.1 x 22.6              | 7.8                             | 1.9                             | 0.027                              |
| AER43-43-28CB | 4 x 15                         | 42.1 x 42.1 x 27.6              | 7.2                             | 1.6                             | 0.027                              |
| AER43-43-33CB | 4 x 15                         | 42.1 x 42.1 x 32.6              | 6.6                             | 1.4                             | 0.027                              |
| AER45-45-12CB | 4 x 16                         | 44.6 x 44.6 x 11.6              | 8.7                             | 2.7                             | 0.020                              |
| AER45-45-15CB | 4 x 16                         | 44.6 x 44.6 x 14.6              | 8.2                             | 2.4                             | 0.020                              |
| AER45-45-18CB | 4 x 16                         | 44.6 x 44.6 x 17.6              | 7.8                             | 2.2                             | 0.020                              |
| AER45-45-21CB | 4 x 16                         | 44.6 x 44.6 x 20.6              | 7.5                             | 2.0                             | 0.020                              |
| AER45-45-23CB | 4 x 16                         | 44.6 x 44.6 x 22.6              | 7.3                             | 1.9                             | 0.020                              |
| AER45-45-28CB | 4 x 16                         | 44.6 x 44.6 x 27.6              | 6.7                             | 1.6                             | 0.020                              |
| AER45-45-33CB | 4 x 16                         | 44.6 x 44.6 x 32.6              | 6.1                             | 1.4                             | 0.020                              |

**MATERIAL:** 6063 Aluminum Alloy, Black Anodized