

**XTRUDED HEAT SINKS FOR POWER SEMICONDUCTORS**

**401 and 403 SERIES**

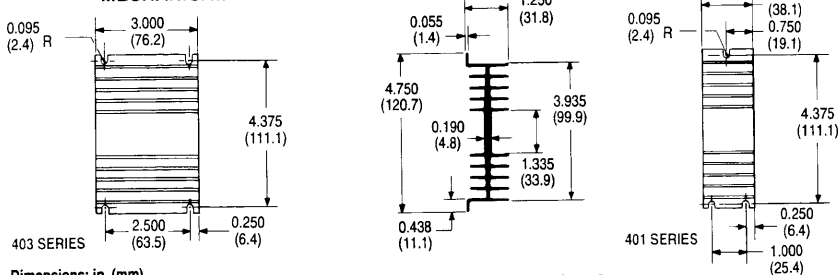
**Double-Surface Heat Sinks for TO-3 Case Styles**

**TO-3; STUD-MOUNT**

| Standard P/N | Width             | Overall Dimensions Length | Height           | Semiconductor Mounting Hole Pattern | Thermal Performance at Typical Load |                   | Weight lbs (grams) |
|--------------|-------------------|---------------------------|------------------|-------------------------------------|-------------------------------------|-------------------|--------------------|
|              |                   |                           |                  |                                     | Natural Convection                  | Forced Convection |                    |
| 401A ▲       | 4.750 in. (120.7) | 1.500 in. (38.1)          | 1.250 in. (31.8) | (1) TO-3                            | 80°C @ 30W                          | 1.5°C/W @ 250 LFM | 0.1500 (68.04)     |
| 401F         | 4.750 in. (120.7) | 1.500 in. (38.1)          | 1.250 in. (31.8) | 0.270 in. (6.9)-Dia Hole            | 80°C @ 30W                          | 1.5°C/W @ 250 LFM | 0.1500 (68.04)     |
| 401K ▲       | 4.750 in. (120.7) | 1.500 in. (38.1)          | 1.250 in. (31.8) | None                                | 80°C @ 30W                          | 1.5°C/W @ 250 LFM | 0.1500 (68.04)     |
| 403A ▲       | 4.750 in. (120.7) | 3.000 in. (76.2)          | 1.250 in. (31.8) | (1) TO-3                            | 55°C @ 30W                          | 0.9°C/W @ 250 LFM | 0.3500 (158.76)    |
| 403F         | 4.750 in. (120.7) | 3.000 in. (76.2)          | 1.250 in. (31.8) | 0.270 in. (6.9)-Dia Hole            | 55°C @ 30W                          | 0.9°C/W @ 250 LFM | 0.3500 (158.76)    |
| 403K ▲       | 4.750 in. (120.7) | 3.000 in. (76.2)          | 1.250 in. (31.8) | None                                | 55°C @ 30W                          | 0.9°C/W @ 250 LFM | 0.3500 (158.76)    |

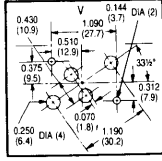
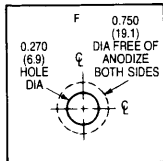
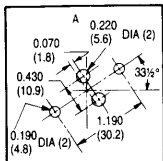
With fins oriented vertically in cabinet sidewall applications, 401 and 403 Series heat sinks are recommended for critical space applications where maximum heat dissipation is required for high-power TO-3 case styles. Forced convection performance is also exemplary with these double surface fin types. Semiconductor mounting hole style "F" offers a single centered 0.270 in. (6.9)-diameter mounting hole (with a 0.750 in. (19.1)-diameter area free of anodize) for mounting stud-type diodes and rectifiers. Hole pattern "V" available upon request. Material: aluminum alloy, black anodized.

**MECHANICAL DIMENSIONS**



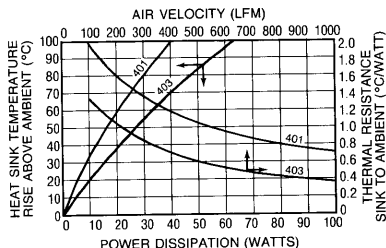
Dimensions: in. (mm)

**SEMICONDUCTOR MOUNTING HOLES**



401 AND 403 SERIES (EXTRUSION PROFILE 1024)

**NATURAL AND FORCED CONVECTION CHARACTERISTICS**



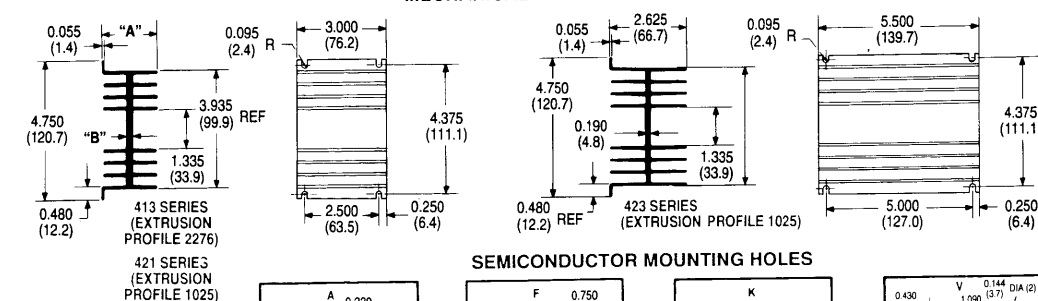
**413/421/423 SERIES Low-Height Double-Surface Heat Sinks for TO-3 Case Styles and Diodes**

**TO-3; DO-5; STUD-MOUNT**

| Standard P/N | Width             | Nominal Dimensions Length | Height "A"       | Semiconductor Mounting Hole Pattern | Thermal Performance at Typical Load |                    | Weight lbs (grams) |
|--------------|-------------------|---------------------------|------------------|-------------------------------------|-------------------------------------|--------------------|--------------------|
|              |                   |                           |                  |                                     | Natural Convection                  | Forced Convection  |                    |
| 413A ▲       | 4.750 in. (120.7) | 3.000 in. (76.2)          | 1.875 in. (47.6) | (1) TO-3                            | 72°C @ 50W                          | 0.85°C/W @ 250 LFM | 0.6300 (285.77)    |
| 413F         | 4.750 in. (120.7) | 3.000 in. (76.2)          | 1.875 in. (47.6) | 0.270 in. (6.9)-Dia Hole            | 72°C @ 50W                          | 0.85°C/W @ 250 LFM | 0.6300 (285.77)    |
| 413K ▲       | 4.750 in. (120.7) | 3.000 in. (76.2)          | 1.875 in. (47.6) | None                                | 72°C @ 50W                          | 0.85°C/W @ 250 LFM | 0.6300 (285.77)    |
| 421A         | 4.750 in. (120.7) | 3.000 in. (76.2)          | 2.625 in. (66.7) | (1) TO-3                            | 58°C @ 50W                          | 0.7°C/W @ 250 LFM  | 0.6300 (285.77)    |
| 421F         | 4.750 in. (120.7) | 3.000 in. (76.2)          | 2.625 in. (66.7) | 0.270 in. (6.9)-Dia Hole            | 58°C @ 50W                          | 0.7°C/W @ 250 LFM  | 0.6300 (285.77)    |
| 421K ▲       | 4.750 in. (120.7) | 3.000 in. (76.2)          | 2.625 in. (66.7) | None                                | 58°C @ 50W                          | 0.7°C/W @ 250 LFM  | 0.6300 (285.77)    |
| 423A         | 4.750 in. (120.7) | 5.500 in. (140.2)         | 2.625 in. (66.7) | (1) TO-3                            | 47°C @ 50W                          | 0.5°C/W @ 250 LFM  | 1.1700 (530.71)    |
| 423K ▲       | 4.750 in. (120.7) | 5.500 in. (140.2)         | 2.625 in. (66.7) | None                                | 47°C @ 50W                          | 0.5°C/W @ 250 LFM  | 1.1700 (530.71)    |

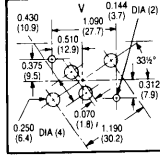
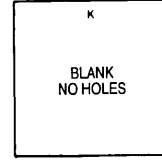
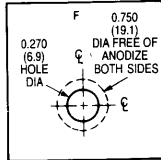
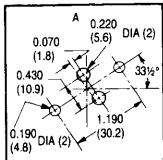
Space-saving double surface 413, 421, and 423 Series utilize finned surface area on both sides of the power semiconductor mounting surface to provide maximum heat dissipation in a compact profile. Ready to install on popular power components in natural and forced convection applications. Apply Wakefield Type 126 silicon-free thermal compound or Wakefield DeltaPad™ interface materials for maximum performance. Material: aluminum alloy, black anodized.

**MECHANICAL DIMENSIONS**



| SERIES | "A"          | "B"         |
|--------|--------------|-------------|
| 413    | 1.875 (47.6) | 0.200 (5.1) |
| 421    | 2.625 (66.7) | 0.190 (4.8) |

Dimensions: in. (mm)



**NATURAL AND FORCED CONVECTION CHARACTERISTICS**

