



## Approval Specification for Cofan Part # 30-1596 HIT04601 Rev 01

Revision: Date: June 26, 2007

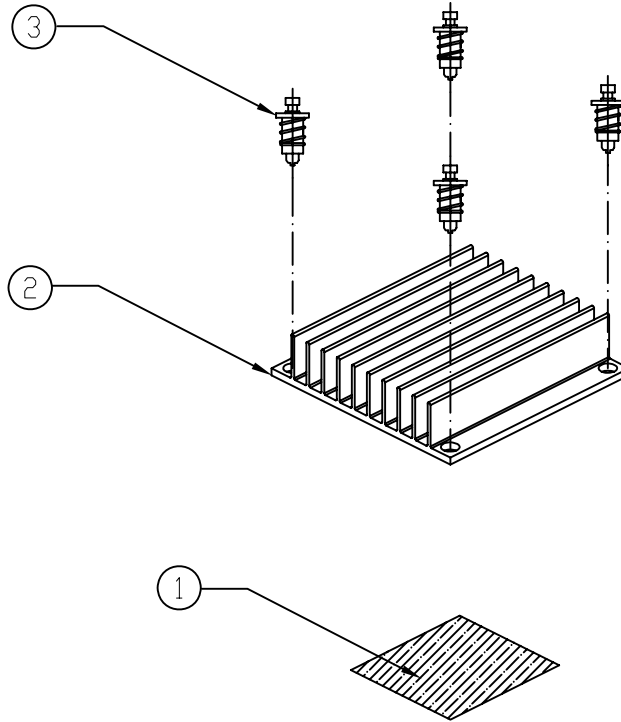
Cofan USA, 46177 Warm Springs Blvd, Fremont, CA 94539 [www.cofan-usa.com](http://www.cofan-usa.com) (800) 766-6097

NOTICE - PROPRIETARY INFORMATION  
 THE DESIGN AND RELATED INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF COFAN INC. THE DISCLOSURE OF THIS INFORMATION DOES NOT CONSTITUTE THE RELEASE OF ANY PROPRIETARY RIGHTS THEREIN. PERMISSION TO REPRODUCE THIS INFORMATION OR THE PRODUCTS DISCLOSED HEREIN MUST BE OBTAINED IN WRITING FROM COFAN INC.

| REVISION HISTORY |                                   |      |       |       |      |
|------------------|-----------------------------------|------|-------|-------|------|
| REV              | DESCRIPTION                       | DRWN | CHK'D | APPVD | DATE |
| 01               | INITIAL RELEASE WITH PLASTIC PINS | -    | -     | -     | -    |

NOTES:

- 1. MATERIAL: ----
- 2. FINISH: ----
- 3. DEBURR AND BREAK ALL SHARP EDGES..
- 4.  $\triangle$  IS CRITICAL INSPECTION POINT. NUMBERING IN TRIANGLE IS TO BE USED FOR CROSS REFERENCE OF INSPECTION REPORT TO DRAWING DIMENSION OR FEATURE.
- 5. ALL DIMENSIONS TO INCLUDE APPLICABLE FINISH.
- 6. PART GROSS WEIGHT: 20 g/Pcs.



RoHS  
 COMPLIANT  
 2002/95/EC

THIS DOCUMENT IS CONFIDENTIAL AND  
 PROPRIETARY TO COFAN USA, FREMONT, CA

| BOM  |   |             |                        |     |
|------|---|-------------|------------------------|-----|
| ITEM | DESCRIPTION                                 | PART NUMBER | MATERIAL/FINISH        | QTY |
| ①    | THERMAL PAD, CHROMERICS T725, 25.4 X 25.4MM | 20-1526     | ----                   | 4   |
| ②    | HEAT SINK, HIT04601 REV X03                 | 20-1527     | AL6063 / BLACK ANODIZE | 1   |
| ③    | FASTEX, AB033-00-9909 OR EQUIV              | 20-1528     | ----                   | 1   |

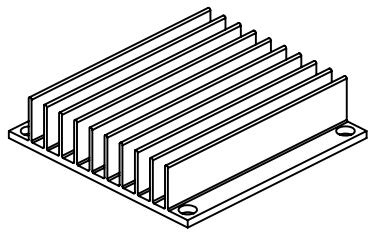
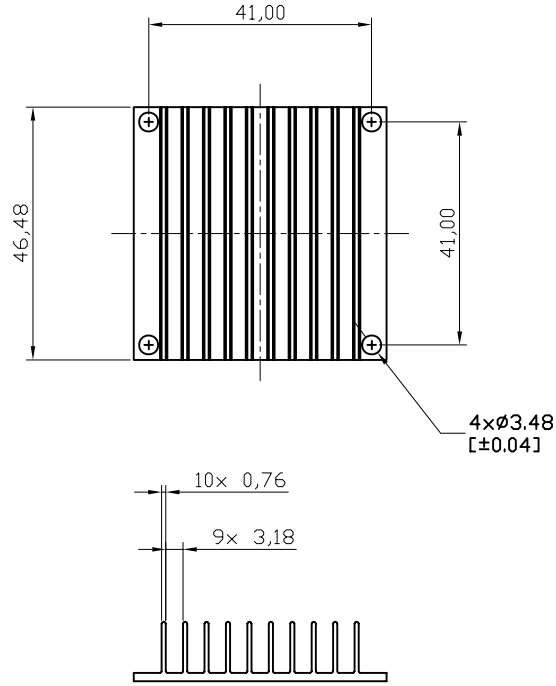
|   |                 |             |        |                          |                       |                                |
|---|-----------------|-------------|--------|--------------------------|-----------------------|--------------------------------|
| DO NOT SCALE DRAWING  |                 | NAME:       | DATE:  | CUSTOMER DRAWING NUMBER: |                       |                                |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRE TOLERANCES ARE: |                 | DRAWN BY:   | Mark.S | 6/26/07                  | [-----]               |                                |
| 1 PLACE .X  | $\pm 0.25$      | CHECKED BY: | ----   | ----                     | CUSTOMER PART NUMBER: |                                |
| 2 PLACE .XX   | $\pm 0.13$      | CHECKED BY: | ----   | ----                     | [-----]               |                                |
| 3 PLACE .XXX  | $\pm 0.08$      | APPR BY:    | Ivan.C | 6/26/07                  | COFAN DRAWING NUMBER: | NAME:                          |
| ANGLES EXCEPT 90°   | $\pm 0.5^\circ$ |             |        |                          | 30-1596               | HEAT SINK ASSY, MOBILE CELERON |
| MAXIMUM SURFACE ROUGHNESS   | 64              |             |        |                          | COFAN PART NUMBER:    | SCALE:                         |
|   |                 |             |        |                          | 30-1596               | NONE                           |
|   |                 |             |        |                          |                       | CUS REV:                       |
|   |                 |             |        |                          |                       | 01                             |
|   |                 |             |        |                          |                       | COF REV:                       |
|   |                 |             |        |                          |                       | 01                             |
|   |                 |             |        |                          |                       | SHEET:                         |
|   |                 |             |        |                          |                       | 1 OF 1                         |
|   |                 |             |        |                          |                       | DATE DRAWN:                    |
|   |                 |             |        |                          |                       | 6/26/07                        |



NOTICE - PROPRIETARY INFORMATION  
 THE DESIGN AND RELATED INFORMATION CONTAINED HEREIN  
 IS THE SOLE PROPERTY OF COFAN INC. THE DISCLOSURE  
 OF THIS INFORMATION DOES NOT CONSTITUTE THE RELEASE OF  
 ANY PROPRIETARY RIGHTS THEREIN. PERMISSION TO REPRODUCE  
 THIS INFORMATION OR THE PRODUCTS DISCLOSED HEREIN  
 MUST BE OBTAINED IN WRITING FROM COFAN INC.

| REVISION HISTORY |                                    |      |       |       |         |
|------------------|------------------------------------|------|-------|-------|---------|
| REV              | DESCRIPTION                        | DRWN | CHK'D | APPVD | DATE    |
| X01              | INITIAL RELEASE                    | -    | -     | -     | -       |
| X02              | CHANGED HOLE DIAMETER TO 3.26 ±.05 | JAG  | -     | -     | 7/7/03  |
| X03              | CHANGED HOLE DIAMETER TO 3.48 ±.04 | MJS  | -     | -     | 6/26/07 |

- NOTES:
1. MATERIAL: AL6063
  2. FINISH: BLACK ANODIZE
  3. DEBURR AND BREAK ALL SHARP EDGES..
  4.  $\triangle$  IS CRITICAL INSPECTION POINT. NUMBERING IN TRIANGLE IS TO BE USED FOR CROSS REFERENCE OF INSPECTION REPORT TO DRAWING DIMENSION OR FEATURE.
  5. ALL DIMENSIONS TO INCLUDE APPLICABLE FINISH.
  6. PART GROSS WEIGHT: 16 g/Pcs.



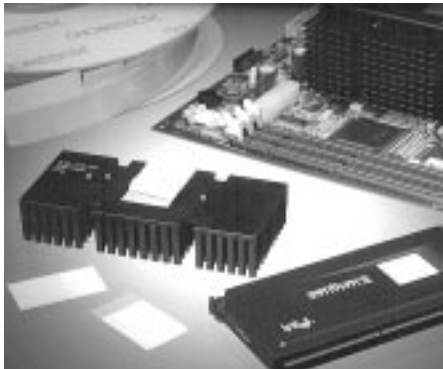
|   |        |             |        |                          |                       |             |
|---|--------|-------------|--------|--------------------------|-----------------------|-------------|
| DO NOT SCALE DRAWING  |        | NAME:       | DATE:  | CUSTOMER DRAWING NUMBER: |                       |             |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRE TOLERANCES ARE: |        | DRAWN BY:   | Mark.S | 6/26/07                  | [-----]               |             |
| 1 PLACE .X  | ± 0.25 | CHECKED BY: | ----   | ----                     | CUSTOMER PART NUMBER: |             |
| 2 PLACE .XX   | ± 0.13 | CHECKED BY: | ----   | ----                     | [-----]               |             |
| 3 PLACE .XXX  | ± 0.08 | APPR BY:    | Ivan.C | 6/26/07                  | COFAN DRAWING NUMBER: | SCALE:      |
| ANGLES EXCEPT 90°   | ± 0.5° |             |        |                          | 20-1601               | NONE        |
| MAXIMUM SURFACE ROUGHNESS   | 6.3    |             |        |                          | COFAN PART NUMBER:    | CUS REV:    |
|   |        |             |        |                          | 20-1601               | 01          |
|   |        |             |        |                          | SHEET:                | DATE DRAWN: |
|   |        |             |        |                          | 1 OF 1                | 6/26/07     |

RoHS  
 COMPLIANT  
 2002/95/EC



NAME:  
 HEATSINK, HIT04601 X03

# THERMFLOW™ Low Thermal Resistance Phase-Change Interface Pads



Chomerics' THERMFLOW phase-change materials are formulated for use with high performance components requiring minimal thermal resistance for maximum heat transfer efficiency. They combine the easy handling advantages of elastomeric pads with the low thermal impedance of thermal grease, making THERMFLOW materials an ideal choice for today's most demanding thermal management applications:

- |                             |                           |                          |
|-----------------------------|---------------------------|--------------------------|
| <b>Microprocessors</b>      | <b>Memory Modules</b>     | <b>Cache Chips</b>       |
| <b>DC/DC Converters</b>     | <b>IGBTs</b>              | <b>Power Modules</b>     |
| <b>Power Semiconductors</b> | <b>Solid State Relays</b> | <b>Bridge Rectifiers</b> |

## DESCRIPTION

THERMFLOW™ materials are thermally enhanced polymers designed to minimize the thermal resistance between power dissipating electronic components and their associated heat sinks. This low thermal resistance path maximizes heat sink performance and improves the reliability of microprocessors, memory modules, DC/DC converters and power modules.

The key feature of THERMFLOW materials is their phase-change characteristic. At room temperature, THERMFLOW materials are solid and easy to handle. This allows them to be consistently and cleanly applied as dry pads to a heat sink or component surface. THERMFLOW material softens as it reaches component operating temperatures. With light clamping pressure it will readily conform to both mating surfaces, similar to thermal grease. This ability to completely fill interfacial air gaps and voids typical of component packages and heat sinks allows THERMFLOW pads to outperform non-flowing elastomeric or graphite-based thermal pads and achieve performance comparable to thermal grease (see Figure 1).

THERMFLOW materials are electrically non-conductive. However, since metal-to-metal contact is possible after the material undergoes phase-change in a typical heat sink assembly, THERMFLOW pads should not be used as electrical insulators.

## KEY FEATURES AND BENEFITS

- **Low thermal impedance**, 0.03°C-in<sup>2</sup>/watt
- Automated **installation equipment** available
- **Proven solution** – years of production use in Personal Computer OEM applications
- **Demonstrated reliability** – no separation or dry-out after 3000 temperature cycles
- Can be **pre-applied** to heat sinks
- **PSA (pressure-sensitive adhesive)** versions allow “peel and stick” installation
- **Non-PSA versions** available for improved thermal performance
- **Protective release liner** prevents contamination of material prior to final component assembly
- **Tabs available** to ease removal of release liner
- Available in **custom die-cut shapes**, kiss-cut on rolls
- **45°C or 58°C** phase-change temperature
- **Thixotropic**, paste-like consistency at application temperatures ensures that material will not run or drip, even in vertically-oriented applications
- **Electrically non-conductive**

## APPLICATION AND PERFORMANCE

THERMFLOW pads can be supplied with pressure-sensitive adhesive (PSA) for easy pre-application to heat sinks. Contact your heat sink supplier or Chomerics for further information. Since PSAs tend to increase thermal impedance, non-PSA versions are also available for improved thermal performance. Most heat sink suppliers have the capability to “heat flux”

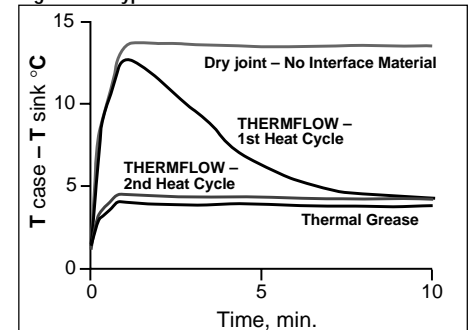
non-PSA THERMFLOW pads in place onto their heat sinks.

Each THERMFLOW material has been designed to perform best within a specified clamping pressure range. See next page for the recommended material for some common applications.

THERMFLOW materials are not structural adhesives and should not be used to mechanically attach heat sinks to processors. Clips or other mechanical fasteners must be used to maintain heat sink to component clamping pressure.

Due to the “grease-like” behavior of the material, actual thermal impedance in a specific application cannot be determined using only the material's bulk thermal conductivity unless the actual operating pressure, temperature, thickness, etc. are known. Therefore, to account for the unique situations associated with specific applications, Chomerics recommends customer testing to validate performance. Contact Chomerics Applications Engineering at 603-579-5764 for assistance or further information.

Figure 1 – Typical Performance vs. Time



Note: The THERMFLOW pad will exhibit high thermal impedance until it flows during the first heat cycle. This is a one time effect and will not be seen during subsequent heat cycles. These curves illustrate typical performance seen in a microprocessor heat sink application in a desktop PC.

**THERMFLOW™ Low Thermal Resistance Phase-Change Interface Pads** *continued*

| TYPICAL PROPERTIES |   | T725                         | T443                         | T310                          | T710  | TEST METHOD            |
|--------------------|---|------------------------------|------------------------------|-------------------------------|---|------------------------|
| CONSTRUCTION       | Carrier   | None                         | Fiberglass                   | Fiberglass                    | Fiberglass                                  | —                      |
|                    | Color   | Pink                         | Light Gray                   | Light Gray                    | Light Gray                                  | Visual                 |
|                    | Thickness, inch (mm)  | 0.005 (0.13)                 | 0.005 (0.13)                 | 0.007 (0.18)                  | 0.005 (0.13)                                | ASTM D374              |
| THERMAL            | PSA Options<br>Dry Pad<br>PSA One Side                            | Std<br>Available             | —                            | Std<br>Available              | Available<br>Std                            | —                      |
|                    | Thermal Impedance,<br>°C-in <sup>2</sup> /W                       | 0.03 @ 50 psi (no PSA)       | 0.10 @ 50 psi (no PSA)       | 0.17 @ 300 psi<br>(no PSA)    | 0.10 @ 5 psi (no PSA)<br>0.18 @ 5 psi (PSA) | Modified<br>ASTM D5470 |
|                    | Apparent Thermal<br>Conductivity, W/m-K                           | 0.7                          | 1.0                          | 0.6                           | 0.7   | Modified<br>ASTM D5470 |
|                    | Phase-Change<br>Temperature, °C                                   | 58                           | 43                           | 46                            | 45  | ASTM D3418             |
| ELEC.              | Operating Temperature<br>Range, °C                                | -60 to +125                  | -60 to +125                  | -60 to +125                   | -60 to +125                                 | —                      |
|                    | Volume Resistivity,<br>ohm-cm                                     | 1 x 10 <sup>15</sup>         | 5 x 10 <sup>15</sup>         | 5 x 10 <sup>14</sup>          | 5 x 10 <sup>16</sup>                        | ASTM D257              |
| MECH.              | Specific Gravity  | 1.11                         | 1.27                         | 1.63                          | 1.15  | ASTM D792              |
|                    | Suggested Heat Sink/<br>Component Clamping<br>Pressure, psi (MPa) | 5 to 100<br>(0.035 to 0.690) | 20 to 60<br>(0.138 to 0.414) | 50 to 300<br>(0.345 to 2.070) | 5 to 20<br>(0.035 to 0.138)                 | —                      |

**TYPICAL APPLICATIONS**

**THERMFLOW T725**

High End Microprocessors (P-III, Workstation Network Server, CPUs, etc.), Power Modules

**THERMFLOW T310**

DC/DC Converters, IGBTs and Other Power Modules

**THERMFLOW T443**

Microprocessors (P-II, P-III, K-7, etc.), Exposed Die BGAs

**THERMFLOW T710**

Microprocessors (P-II, K-6, M-II, etc.), Memory Modules, Power Semi's

Note: P-II, P-III (Intel®), K-6, K-7 (AMD®), M-II (Cyrix National)



**ORDERING INFORMATION**

THERMFLOW materials are supplied in several standard formats (see part number guide blow). Custom die-cut shapes can also be provided on kiss-cut rolls by Chomerics' extensive network of Distributor/

Fabricators. To ease release liner removal an optional tab can be added. Standard tolerances for slitting widths and individually cut pieces are ±0.020 inch (±0.51 mm). T443 rolls include a loose 3-mil polyester interleaf to prevent pad material from sticking to the back side of the liner.

**THERMFLOW Material – Part Numbers**

**WW — XX — YYYY — T725, T443, T310 or T710**

64 = Roll Stock  
66 = Roll Stock with PSA  
68 = Roll Stock with removal tab and PSA  
69 = Custom Shapes

10 = 100 ft. (30.5m) Roll Stock  
30 = 300 ft. (91.4m) Roll Stock  
11 = Custom Die-Cut Shape, No PSA  
12 = Custom Die-Cut Shape, PSA One Side

**Roll Stock, Width.**

0075 = 0.75 in. (1.91 cm)  
0100 = 1.00 in. (2.54 cm)  
0150 = 1.50 in. (3.81 cm)  
0200 = 2.00 in. (5.08 cm)  
0500 = 5.00 in. (12.7 cm)  
1000 = 10.00 in. (25.4 cm)  
2000 = 20.00 in. (50.8 cm)

*For custom roll stock and die-cut parts, this 4 or 5 digit number will be assigned by Chomerics*

|  |   |                   |   |  |   |
|--|---|-------------------|---|--|---|
|  | Chomerics<br>Div. of Parker Hannifin<br>77 Dragon Court<br>Woburn, MA 01888-4014<br>Tel: 781-935-4850<br>FAX: 781-933-4318<br>E-mail: mailbox@chomerics.com |                   | Parker Hannifin PLC<br>Chomerics Europe<br>Parkway, Globe Park<br>Marlow, Bucks., SL7 1YB, United Kingdom<br>Tel: +(44) 1628 404000 FAX: +(44) 1628 404090<br>E-mail: chomerics_europe@parker.com |  | Parker Hannifin Hong Kong Ltd.<br>Chomerics Sales Department<br>8/F King Yip Plaza<br>9 Cheung Yee Street, Cheung Sha Wan<br>Kowloon, Hong Kong<br>Tel: +(852) 2428 8008<br>Fax: +(852) 2480 4256 |
|  |   | www.chomerics.com |   |  |   |

NOTICE: The information contained herein is to the best of our knowledge true and accurate. However, since the varied conditions of potential use are beyond our control, all recommendations or suggestions are presented without guarantee or responsibility on our part and users should make their own tests to determine the suitability of our products in any specific situation. **This product is sold without warranty either expressed or implied, of fitness for a particular purpose or otherwise, except that this product shall be of standard quality, and except to the extent otherwise stated on Chomerics' invoice, quotation, or order acknowledgement.** We disclaim any and all liability incurred in connection with the use of information contained herein, or otherwise. All risks of such are assumed by the user. Furthermore, nothing contained herein shall be construed as a recommendation to use any process or to manufacture or to use any product in conflict with existing or future patents covering any product or material or its use. The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the document entitled "Offer of Sale," available from Chomerics on request.





## Supports-Spacers Heat Sink Retaining Tuflok

[<< to Supports and Spacers list](#)



This fastener attaches a heat sink to a processor chip on a PC board. The spring provides constant pressure to the heat sink, thus enhancing thermal conductivity. The spring comes captive on the Tuflok and the headed pin allows the part to be removed for field serviceability.

[View Specs](#)

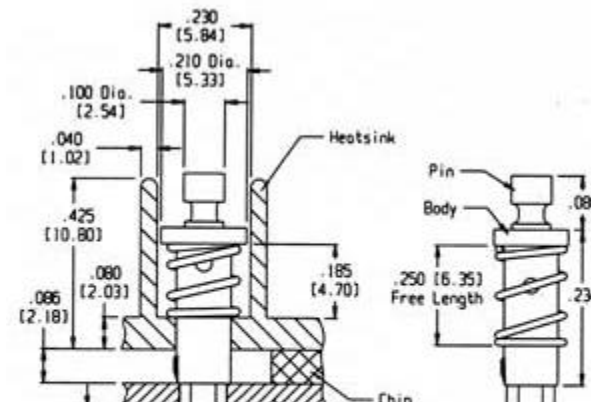
[To Order Sample: Click the Part Number below](#)

### Product Specs

#### FEATURES:

- Attaches a heat sink to a PC board.
- Spring provides constant pressure to heatsink enhancing thermal conductivity.
- Tuflok prong to snap into a PC board with a .116-.120 dia. hole and .060-.064 thickness range.
- Tuflok inserts through a .135-.138 dia. hole in heatsink.
- Tuflok is supplied with spring attached.

#### TECHNICAL DATA:



- Material: Nylon 66 - Heat Stabilized
- Color: Black
- UL Flammability Rating of Material: V2
- Spring Details
  - Spring Rate: 21 lbs.
  - Free Length: .250"
  - Active Coils: 2 1/2
  - Solid Height: .113"



*Order Sample*

|                              |
|------------------------------|
| <b>Part Number</b>           |
| <a href="#">8033-00-9909</a> |



**ITW Fastex**

195 Algonquin Road, Des Plaines, IL 60016  
Phone: 847.299.2222 · Fax: 847.390.6183

[HOME](#)

[CATALOG](#)

[NEW PRODUCTS](#)

[EMAIL](#)

[APPENDIX](#)



[|Home|](#) [|Catalog|](#) [|New Products|](#) [|E-Mail|](#) [|Appendix|](#)

[|Access Panel Fasteners|](#) [|Panel Fasteners & Plastic Clips|](#) [|Rivets|](#) [|Plastic Leveling Feet|](#)  
[|Bumpers - Self Adhesive & Snap-In|](#) [|Electronics Fasteners, Supports, & Spacers|](#)  
[|Wire Management Clips, Purse Locks, & Straps|](#) [|Grommets|](#) [|Furniture Solutions|](#)  
[|Electronics Fastening Solutions & PC Applications|](#) [|Capabilities|](#)

[Privacy Policy/Disclaimer](#)

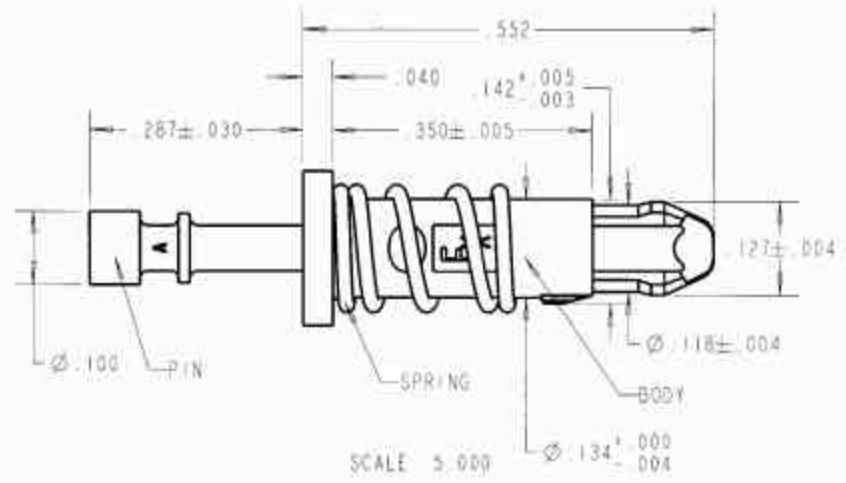
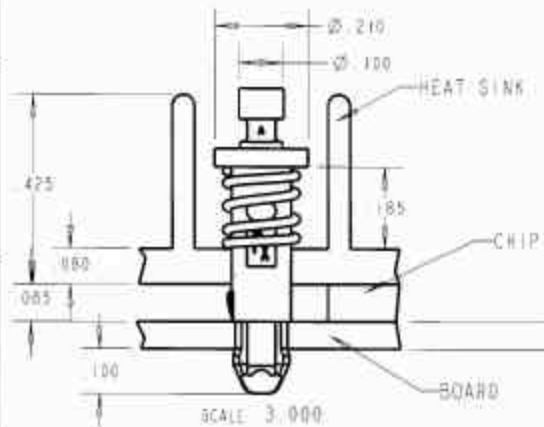
This site hosted and designed by [American Web Page](#)

Copyright © 2002 · ALL RIGHTS RESERVED

PRO/E

**NOTES:**

1. P.C. BOARD HOLE DIAMETER RANGE: .116(.2-.94)
- TO: .120(.3-.04)
2. PIN AND BODY SHOWN IN ASSEMBLED CONDITION
3. HEAT SINK HOLE DIAMETER: .135" +.003/-.000
4. SPRING DETAILS:
  - SPRING RATE: 21 LBS
  - FREE LENGTH: .250"
  - ACTIVE COILS: 2.1/4
  - TOTAL COILS: 4.1/4
  - WIRE DIAMETER: .020"
  - SOLID HEIGHT: .13"
5. HEAT SINK DIMENSIONS ARE FOR REFERENCE PURPOSE AND MAY VARY DEPENDING UPON APPLICATION
6. PIN AND BODY: NYLON 6/6, V-2, COLOR: BLACK



|   |      |                         |       |         |
|---|------|-------------------------|-------|---------|
| 3 | 5618 | REVISED AND RELEASED    | CHONG | 5-2-03  |
| 2 | 5656 | REDRAWN in ProE         | CHONG | 5-14-02 |
| 1 | 3359 | RELEASED FOR PRODUCTION | EDS   | 8-15-00 |

| NO.                 | ECNR | REVISION     | APPROVAL | DATE |
|---------------------|------|--------------|----------|------|
| DRAWN BY CHONG WONG |      | DATE 5-14-02 |          |      |
| CHK BY BOB DAM      |      | DATE 5-14-02 |          |      |
| APP BY CHONG WONG   |      | DATE 5-14-02 |          |      |
| MATERIAL SEE NOTE   |      |              |          |      |
| HARDNESS            |      | FINISH EDM   |          |      |

TOLERANCE UNLESS OTHERWISE INDICATED  
 DECIMAL ±.010 ANGULAR ± .2°  
 ENGINEER CHONG SCALE  
 This print and any design thereon is the property of FASTEX, Division Illinois Tool Works Inc. This print is to be returned upon request or completion of the work for which it was issued. It is to be used only for the purpose for which it was expressly issued and is not to be copied in any manner, nor is information taken therefrom to be transmitted, or passed on to others without written permission of Illinois Tool Works Inc.

**Fastex**  
 195 Algonquin Rd. Des Plaines, IL 60016

NAME Anta Heatsink clip

FTA # PROJ# 99-09-674

PART# 8033-00-9909 ISSUE 3

ALL CHANGES TO OCCUR ON CAD SYSTEM

SALES