

# 3M™ 4-Wall, Tripolarized Header

.050" × .100" Latch/Ejector, PTH & SMT Straight, PTH Right Angle

810 Series



- Tripolarized for robust alignment when mating to 820 series socket
- 50 mil × 100 mil halves the connector length vs. traditional 100 mil x 100 mil products
- Latching Ejector for rugged high performance applications
- Available for through hole or surfacemount attachment
- High temperature plastic for lead free surfacemount or Paste-in-Hole soldering methods
- Four-wall shroud provides contact protection
- Contacts: 20, 26, 36, 40, 50, 60, 68, 80 and 100
- See the Regulatory Information Appendix (RIA) in the "RoHS compliance" section of [www.3Mconnectors.com](http://www.3Mconnectors.com) for compliance information

Date Modified: April 2, 2013

TS-0253-K  
Sheet 1 of 7

## Physical

### Insulation:

Material: High Temperature Plastic (LCP)

Flammability: UL 94V-0

Color: Black

### Contact:

Material: Copper Alloy

### Plating:

Underplating: 100 μ" [2.54 mm] Nickel

Wiping Area: 30 μ" [0.76 mm] Gold

Solder Tails: Matte Tin or Tin Lead (See Ordering Information)

**Marking:** 3M Logo, Part Number and Orientation Triangle

Mating Compatibility: 820 Series (TS-0254)

## Electrical

**Current Rating:** 3.00 A, 1 Contact Powered  
2.00 A, 4 Contacts Powered  
0.75 A, All Contacts powered

Rating Conditions: EIA-364-070 Method 2, 30 degrees C maximum temperature rise, 20% derated. Reference appropriate 3M Product Specification for detailed current derating curves.

**Insulation Resistance:**  $> 1 \times 10^9 \Omega$  at 500 V<sub>DC</sub>

**Withstanding Voltage:** 500 V<sub>RMS</sub> at Sea Level

## Environmental

**Temperature Rating:** -55°C to +105°C

**Process Rating:** Maximum 260°C (Profile per J-STD-020C)

**Moisture Sensitivity Level:** 1 (per J-STD-020C)

UL File No.: E68080



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# 3M™ 4-Wall, Tripolarized Header

.050" × .100" Latch/Ejector, PTH & SMT Straight, PTH Right Angle

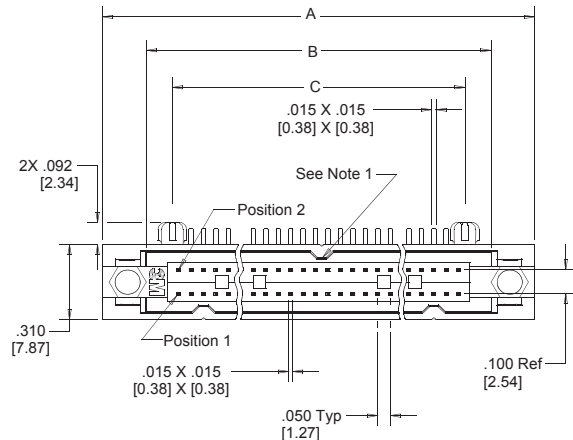
810 Series



Inch  
[mm]

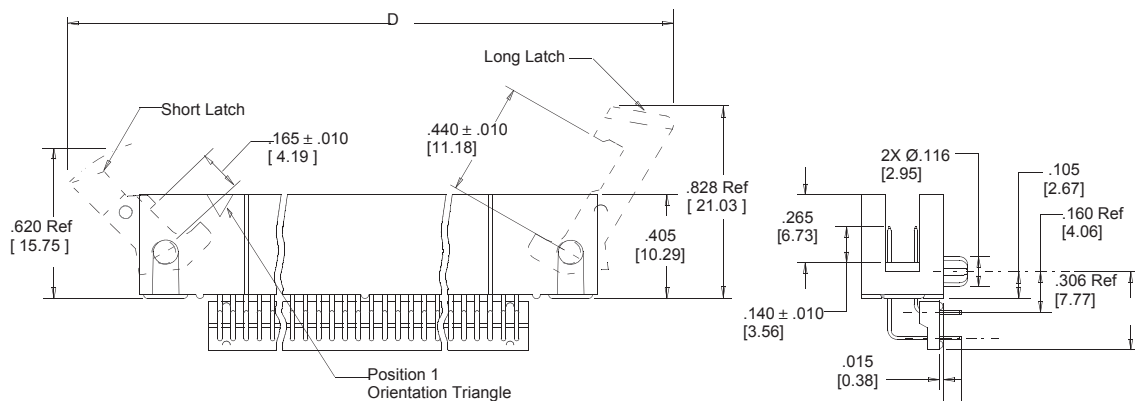
| Tolerance Unless Noted |     |      |       |
|------------------------|-----|------|-------|
|                        | .0  | .00  | .000  |
| Inch                   | ±.1 | ±.01 | ±.005 |

[ ] Dimensions for Reference Only



| Table 1          |               |               |               |                |               |
|------------------|---------------|---------------|---------------|----------------|---------------|
| Contact Quantity | Dimensions    |               |               |                |               |
|                  | A             | B             | C             | D Short (Ref.) | D Long (Ref.) |
| 020              | 1.060 [26.92] | 0.722 [18.34] | 0.500 [12.70] | 1.671 [42.44]  | 1.842 [46.79] |
| 026              | 1.210 [30.73] | 0.872 [22.15] | 0.650 [16.51] | 1.821 [46.25]  | 1.992 [50.60] |
| 036              | 1.460 [37.08] | 1.122 [28.50] | 0.900 [22.86] | 2.071 [52.60]  | 2.242 [56.95] |
| 040              | 1.560 [39.62] | 1.222 [31.04] | 1.000 [25.40] | 2.171 [55.14]  | 2.342 [59.49] |
| 050              | 1.810 [45.97] | 1.472 [37.39] | 1.250 [31.75] | 2.421 [61.49]  | 2.592 [65.84] |
| 060              | 2.060 [52.32] | 1.722 [43.74] | 1.500 [38.10] | 2.671 [67.84]  | 2.842 [72.19] |
| 068              | 2.260 [57.40] | 1.922 [48.82] | 1.700 [43.18] | 2.871 [72.92]  | 3.042 [77.27] |
| 080              | 2.560 [65.02] | 2.222 [56.44] | 2.000 [50.80] | 3.171 [80.54]  | 3.342 [84.89] |
| 100              | 3.060 [77.72] | 2.722 [69.14] | 2.500 [63.50] | 3.671 [93.24]  | 3.842 [97.59] |

| Table 2       |                               |
|---------------|-------------------------------|
| PCB Thickness | "F" Solder Tail Length ± .010 |
| .062 [1.57]   | .090 [2.29]                   |
| .094 [2.39]   | .112 [2.84]                   |
| .125 [3.18]   | .143 [3.63]                   |



## Notes:

1. This polarization bump does not exist on the 20 position header.
2. Recommended to be mated to the .050" X .100" Wiremount Socket 820 Series.

## Ordering Information

## PTH Right Angle Header

81XXX - 5X0X03 - XX

### Ejector Latches (If Ordered Separately)

Long Latches  
3505-28B (black)

Short Latches  
3505-29B (black)

Contact Quantity  
(See Table 1)

Ejector/Latch System:

- 0 = None (Special Order)
- 5 = With Short Ejectors Installed (Special Order)
- 6 = With Long Ejector Latches Installed (Standard)

Contact Tail:

- 2 = Solder Tail for .062 [1.57] PC Board (Standard)
- 3 = Solder Tail for .094 [2.39] PC Board (Special Order)
- 4 = Solder Tail for .125 [3.18] PC Board (Special Order)

Plating suffix:

- blank = 125 μ" tin lead tails (RIA E3 & C2 apply)
- RB = 250 μ" matte tin tails (RIA E1 & C1 apply)

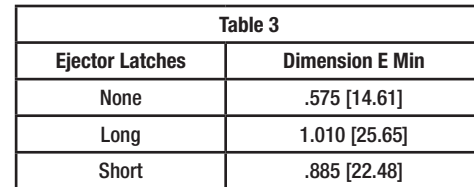
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## 810 Series



The diagram illustrates the recommended mounting hole pattern for a component. Key dimensions and tolerances include:

- Overall Width:**  $E$
- Overall Length:**  $C \pm .002$
- Top Edge Tolerances:**
  - $.025 \pm .002$  [0.64]
  - $.050 \pm .002$  Typ [1.27] (Tolerance Noncumulative)
- Right Edge Tolerances:**
  - $.355$  Max [9.02]
  - $.305$  Min [7.75]
- Mounting Holes:**
  - 2X  $\varnothing .109 \pm .002$  [2.77]** (Two large mounting holes on the left)
  - $\varnothing .024 \pm .003$  Typ [0.64]** (Two rows of small mounting holes)
  - $.100 \pm .002$  [2.54]** (Small mounting hole on the right)
- Other Dimensions:**
  - Position 1** and **Position 2** (Indicated by arrows pointing to specific features)
  - Flow Solder Direction** (Indicated by a double-headed arrow)
  - View A** (Indicated by an arrow pointing to a specific feature)
  - $.160 \pm .002$  [4.06]** (Dimension at the bottom right)

**Recommended Mounting Hole Pattern**

(shown for mounting side of PC Board)

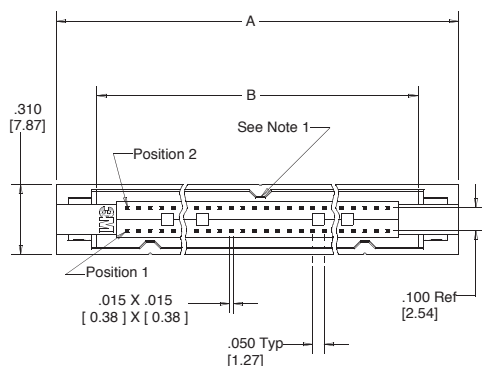
1. Recommended to process PC Boards through the solder bath such that the connector enters end first (two solder tails at a time). This will help prevent solder bridging.
2. A Dummy or Solder Thief Solder Pad at the end of each row is recommended on the bottom or solder side of the PC Board in order to help prevent solder bridging on the end solder tails. The solder thieves are only required on the end of the rows which leave the solder bath last.
3. In order to facilitate soldering it is recommended that ejector latches be installed after the soldering process.

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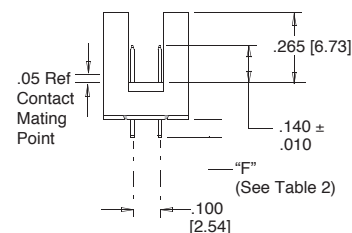
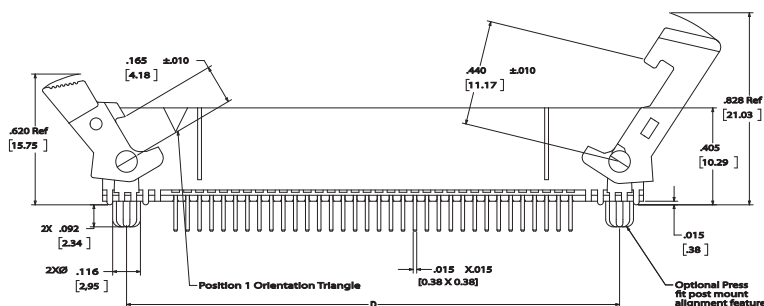
.050" x .100" Latch/Ejector, PTH & SMT Straight, PTH Right Angle

## 810 Series

| Table 4          |               |               |                |               |               |
|------------------|---------------|---------------|----------------|---------------|---------------|
| Contact Quantity | Dimensions    |               |                |               |               |
|                  | A             | B             | C Short (Ref.) | C Long (Ref.) | D             |
| 020              | 1.060 [26.92] | 0.722 [18.34] | 1.671 [42.44]  | 1.842 [46.79] | 0.860 [21.84] |
| 026              | 1.210 [30.73] | 0.872 [22.15] | 1.821 [46.25]  | 1.992 [50.60] | 1.010 [25.65] |
| 036              | 1.460 [37.08] | 1.122 [28.50] | 2.071 [2.60]   | 2.242 [56.95] | 1.260 [32.00] |
| 040              | 1.560 [39.62] | 1.222 [31.04] | 2.171 [55.14]  | 2.342 [59.49] | 1.360 [34.54] |
| 050              | 1.810 [45.97] | 1.472 [37.39] | 2.421 [61.49]  | 2.592 [65.84] | 1.610 [40.89] |
| 060              | 2.060 [52.32] | 1.722 [43.74] | 2.671 [67.84]  | 2.842 [72.19] | 1.860 [47.24] |
| 068              | 2.260 [57.40] | 1.922 [48.82] | 2.871 [72.92]  | 3.042 [77.27] | 2.060 [52.32] |
| 080              | 2.560 [65.02] | 2.222 [56.44] | 3.171 [80.54]  | 3.342 [84.89] | 2.360 [59.94] |
| 100              | 3.060 [77.72] | 2.722 [69.14] | 3.671 [93.24]  | 3.842 [97.59] | 2.860 [72.64] |



| Table 5       |                                   |
|---------------|-----------------------------------|
| PCB Thickness | "F" Solder Tail Length $\pm$ .010 |
| .062 [1.57]   | .092 [2.34]                       |
| .094 [2.39]   | .110 [2.79]                       |



Notes:

1. This polarization bump does not exist on the 20 position header.
2. Recommended to be mated to the 050" x 100" 820 Series Socket.

## Ordering Information

## PTH Straight Header

**81XXX - 6X0X0X - XX**

## Ejector Latches

(If Ordered Separately)

## Long Latches

3505-28B (black)

## Short Latches

3505-29B (black)

Contact Quantity  
(See Table 4)

Ejector/Latch System:

0 = None (Special Order)

5 = With Short Ejectors Installed (Special Order)

6 = With Long Ejector Latches Installed (Standard)

Plating suffix:

- blank = 125  $\mu$ " tin lead tails (RIA E3 & C2 apply)

RB = 250  $\mu$ " matte tin tails (RIA E1 & C1 apply)

### Board Mounting Options:

1 = None (Special Order)

3 = Press fit posts both ends (Standard)

Contact Tail:

2 = Solder Tail for .062 [ 1.57 ] PC Board (Standard)

3 = Solder Tail for .094 [ 2.39 ] PC Board (Special Order)

4 = Solder Tail for .125 [ .318 ] PC Board (Special Order)

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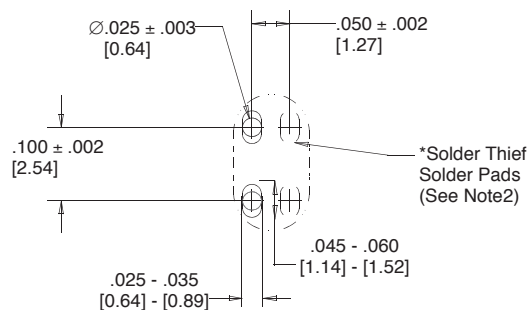
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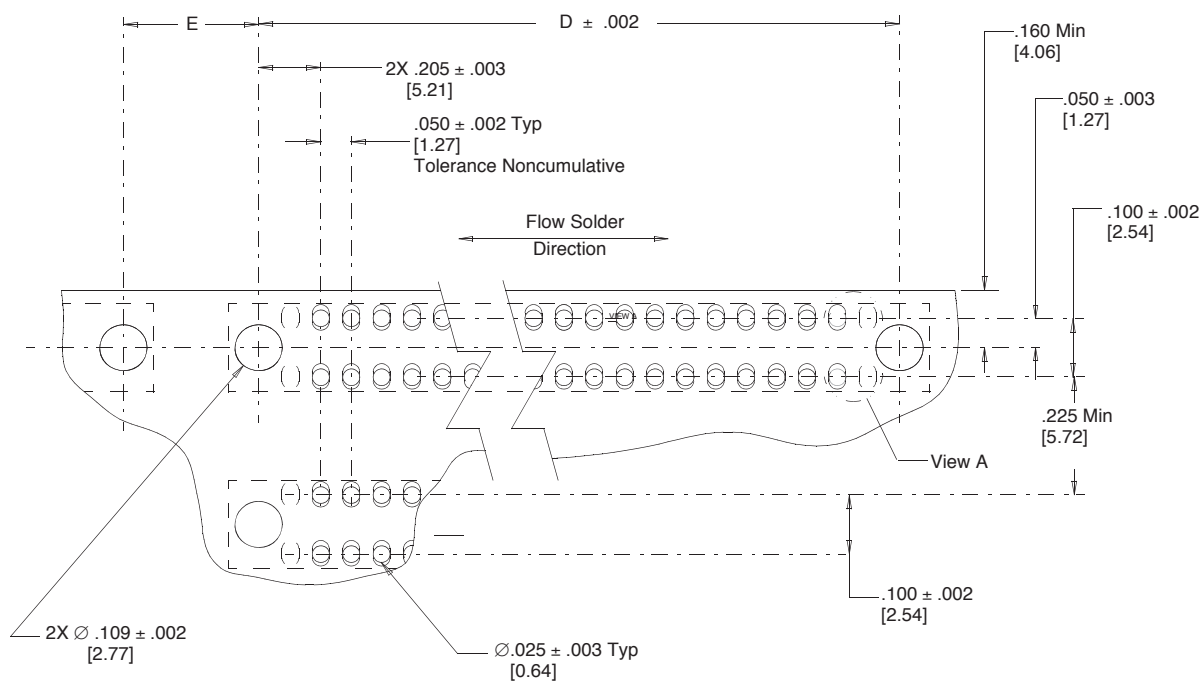
810 Series



\*Solder Thief Solder Pads required only on Solder side of PC Board.

**View A**

| Table 6         |                   |
|-----------------|-------------------|
| Ejector/Latches | Dimension E (Min) |
| None            | .215 [5.46]       |
| Long            | .650 [16.51]      |
| Short           | .525 [13.34]      |



**Recommended Mounting Hole Pattern**  
**PTH Vertical Header**  
(shown for mounting side of PC Board)

| Inch<br>[Imm]          |     |      |       |
|------------------------|-----|------|-------|
| Tolerance Unless Noted |     |      |       |
|                        | .0  | .00  | .000  |
| Inch                   | ±.1 | ±.01 | ±.005 |

[ ] Dimensions for Reference Only

**Note:**

1. Recommended to process PC Boards through the solder bath such that the connector enters end first (two solder tails at a time). This will help prevent solder bridging.
2. A Solder Thief Solder Pad (Dummy Pad) at the end of each row is recommended on the bottom or solder side of the PC Board in order to help prevent solder bridging on the end solder tails. The Solder Thiefs are only required on the end of the rows which leave the solder bath last.

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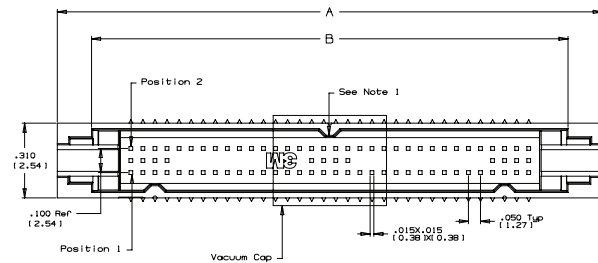
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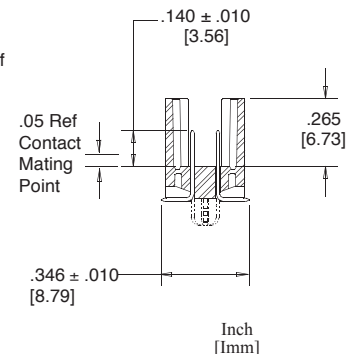
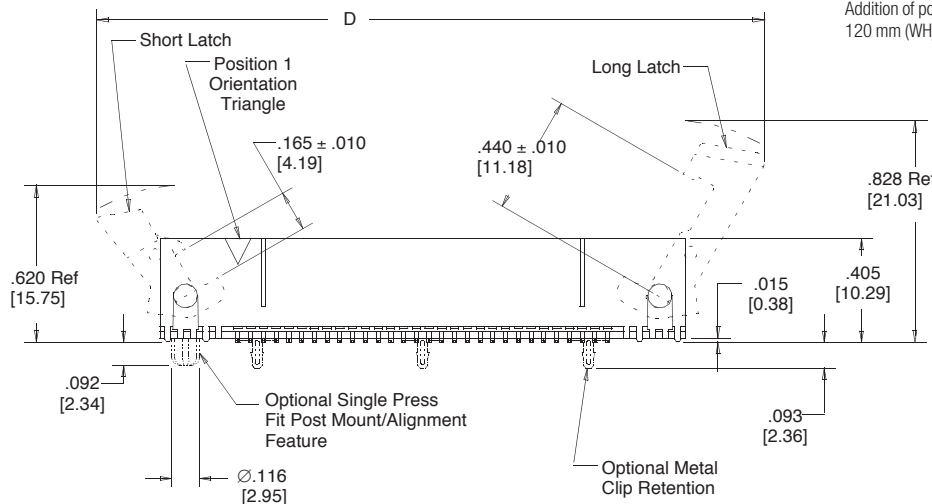
.050" × .100" Latch/Ejector, PTH & SMT Straight, PTH Right Angle

810 Series



| Table 7          |                  |                  |                  |                  |                    |
|------------------|------------------|------------------|------------------|------------------|--------------------|
| Contact Quantity | Dimensions       |                  |                  |                  |                    |
|                  | A                | B                | D Short (Ref.)   | D Long (Ref.)    | Tape & Reel Suffix |
| 020              | 1.060<br>[26.92] | 0.722<br>[18.34] | 1.671<br>[42.44] | 1.842<br>[46.79] | WF                 |
| 026              | 1.210<br>[30.73] | 0.872<br>[22.15] | 1.821<br>[46.25] | 1.992<br>[50.60] | WF                 |
| 036              | 1.460<br>[37.08] | 1.122<br>[28.50] | 2.071<br>[52.60] | 2.242<br>[56.95] | WG                 |
| 040              | 1.560<br>[39.62] | 1.222<br>[31.04] | 2.171<br>[55.14] | 2.342<br>[59.49] | WG                 |
| 050              | 1.810<br>[45.97] | 1.472<br>[37.39] | 2.421<br>[61.49] | 2.592<br>[65.84] | WG                 |
| 060              | 2.060<br>[52.32] | 1.722<br>[43.74] | 2.671<br>[67.84] | 2.842<br>[72.19] | WG                 |
| 068              | 2.260<br>[57.40] | 1.922<br>[48.82] | 2.871<br>[72.92] | 3.042<br>[77.27] | WH                 |
| 080              | 2.560<br>[65.02] | 2.222<br>[56.44] | 3.171<br>[80.54] | 3.342<br>[84.89] | WH                 |
| 100              | 3.060<br>[77.72] | 2.722<br>[69.14] | 3.671<br>[93.24] | 3.842<br>[97.59] | WH                 |

Notes: Latches supplied in the "open" position unless specified otherwise  
 Suffix determined with no posts or clips.  
 Addition of posts or clips may increase suffix.  
 120 mm (WH) is the maximum width of pocket tape.



| Tolerance Unless Noted |     |      |       |
|------------------------|-----|------|-------|
|                        | .0  | .00  | .000  |
| Inch                   | ±.1 | ±.01 | ±.005 |

[ ] Dimensions for Reference Only

## Notes:

- This polarization bump does not exist on the 20 position header.
- Recommended to be mated to the .050" X .100" 820 Series Wiremount Socket.

## Ordering Information

## SMT Straight Header

**81XXX - 6X0C0X - XX - XX**

Contact Quantity  
(See Table 7)

Ejector/Latch System:

- 0 = None (Special Order)
- 5 = With Short Ejectors Installed (Special Order)
- 6 = With Long Ejector Latches Installed (Standard)

Board Mounting Options:

- 1 = None
- 4 = Press Fit Post Mount at Position 1 end
- 7 = Metal retention clips
- 8 = #1 end press fit post & metal retention clips (Special Order)

Packaging Options:

- Blank = Trays
- WX = Tape & Reel Package (see table)

Plating suffix:

- blank = 125 μ" tin lead tails (RIA E3 & C2 apply)
- RB = 250 μ" matte tin tails (RIA E1 & C1 apply)

## Ejector Latches

(If Ordered Separately)

Long Latches  
3505-28B (black)

Short Latches  
3505-29B (black)

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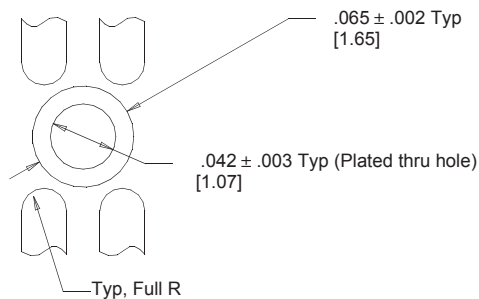
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810 Series

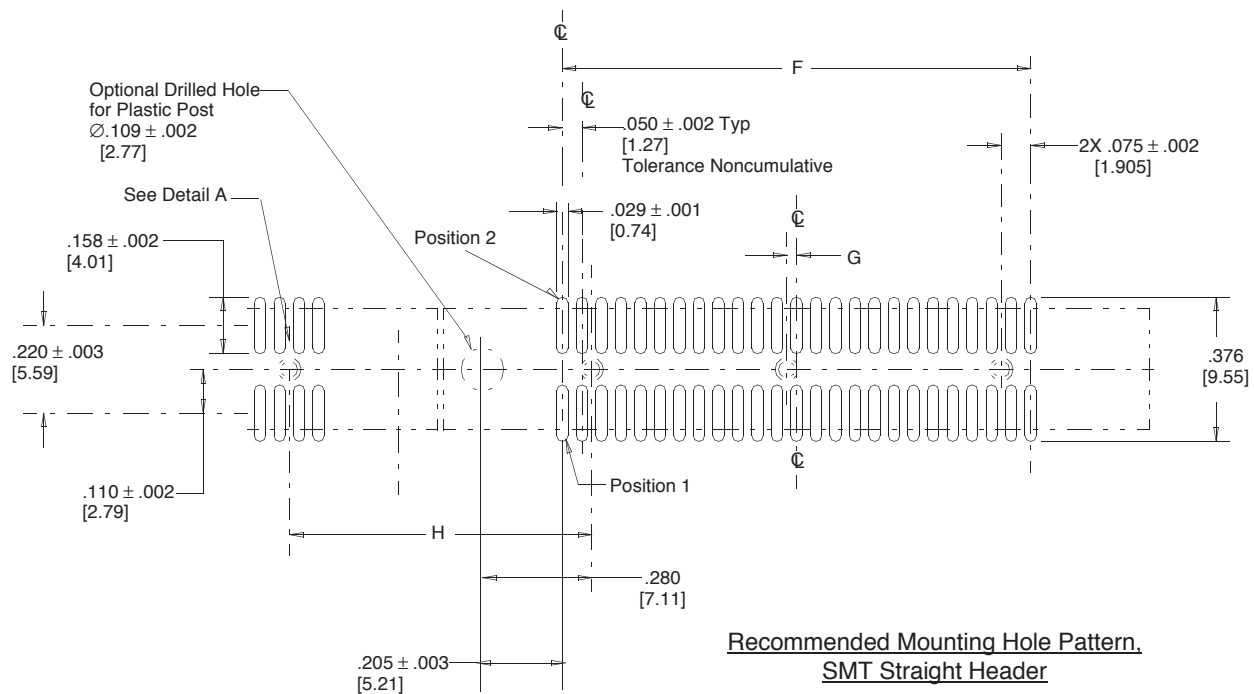


## Detail A

Optional plated thru hole  
for metal clip retention

| Ejector Latches | Dimensions    |
|-----------------|---------------|
|                 | H Min         |
| None            | .775 [19.69]  |
| Long            | 1.085 [27.56] |
| Short           | 1.21 [30.73]  |

| No. of Positions | Dimensions    |             |
|------------------|---------------|-------------|
|                  | F             | G           |
| 20               | .450 [11.43]  | N/A         |
| 26               | .600 [15.24]  | .025 [0.64] |
| 36               | .850 [21.59]  | N/A         |
| 40               | .950 [24.13]  | N/A         |
| 50               | 1.200 [30.48] | .025 [.64]  |
| 60               | 1.450 [36.83] | 0.000       |
| 68               | 1.650 [41.91] | 0.000       |
| 80               | 1.950 [49.53] | 0.000       |
| 100              | 2.450 [62.23] | 0.000       |



## Recommended Mounting Hole Pattern, SMT Straight Header

(Shown for mounting side of PC Board)

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Sheet 7 of 7



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