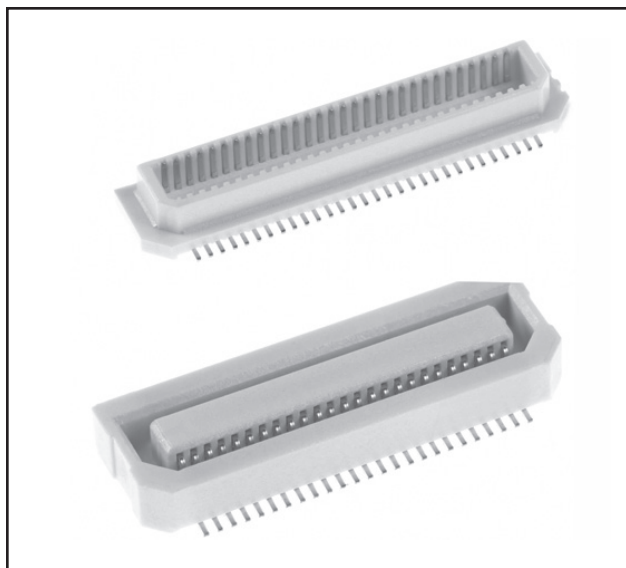


# 3M™ Board Stacking Connector System

0.5 mm, Vertical, Surface Mount, 3 mm Stack Height

P05N Series



- 0.5 mm pitch connector system ideal for applications with limited space
- Mated height of 3 mm
- Bellows type contact reduces mating stress and insures reliability
- “Tactile click” action assures complete mating and assures high resistance to vibration and shock
- Standard tape & reel packaging
- See Regulatory Information Appendix (RIA) for chemical compliance information

Date Modified: February 9, 2009

TS-1093-C  
Sheet 1 of 4

## Physical

### Insulator:

Material: High temperature thermoplastic

Flammability: UL 94V-0

### Contact:

Material: Copper Alloy

### Plating:

Underplating: 50  $\mu$ ” [ 1.27  $\mu$ m ] Nickel

Wiping Area: 8  $\mu$ ” [ 0.2  $\mu$ m ] Gold

Solder Tails: Flash Gold

### Mechanical:

Durability: 50 insertion/withdrawl cycles

Mating Forces: Maximum Insertion Force = 0.785N x no. of contacts  
Minimum Withdrawl Force = 0.0588N x no. of contacts

## Electrical

**Current Rating:** 0.5 A per contact (Maximum 10A total all contacts)

**Voltage Rating:** 60 V<sub>AC/DC</sub>

**Insulation Resistance:** 10<sup>3</sup> M $\Omega$  min. at 500 V<sub>DC</sub>

**Withstanding Voltage:** 150 V<sub>AC</sub> for 1 minute

## Environmental

**Temperature Rating:** -55°C to +85°C

**Processing:** 260°C maximum



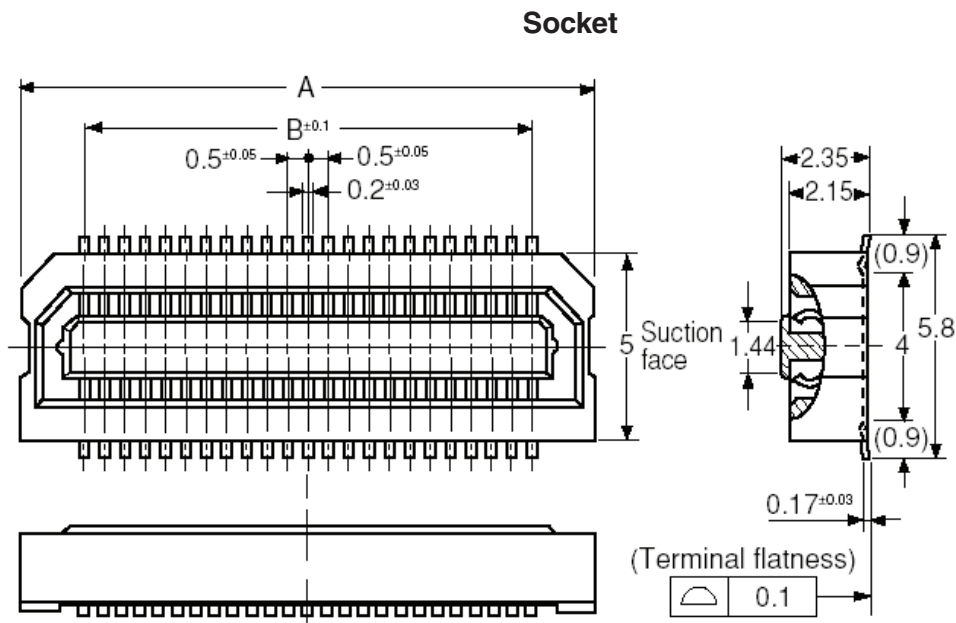
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# 3M™ Board Stacking Connector System

0.5 mm, Vertical, Surface Mount, 3 mm Stack Height

P05N Series

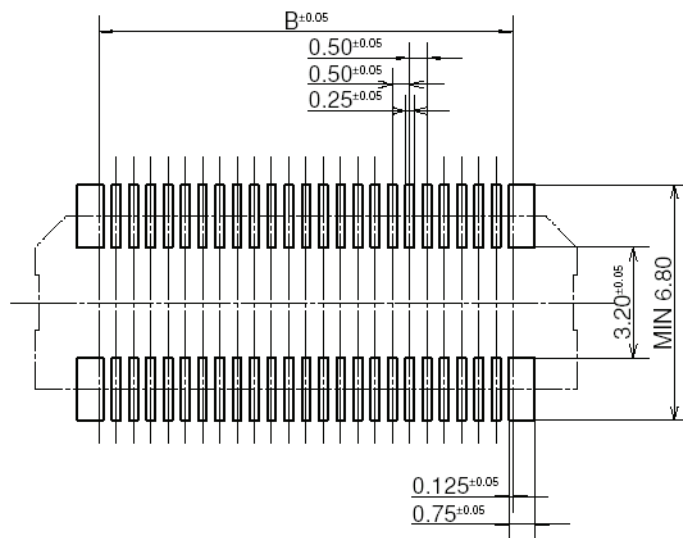


| # of Contacts | A     | B     |
|---------------|-------|-------|
| 020           | 8.20  | 4.50  |
| 030           | 10.70 | 7.00  |
| 040           | 13.20 | 9.50  |
| 050           | 15.70 | 12.00 |
| 060           | 18.20 | 14.50 |
| 080           | 23.20 | 19.50 |
| 100           | 28.20 | 24.50 |

| mm<br>(Inch)           |     |       |      |
|------------------------|-----|-------|------|
| Tolerance Unless Noted |     |       |      |
|                        | .0  | .00   | .000 |
| mm                     | ± 3 | ± .13 |      |

[ ] Dimensions for Reference only

## Recommended PC board pattern (TOP VIEW)



## Ordering Information

**P05N - XXXST - A - G** (RIA E1 & C1 apply)

Contact Quantity  
See Table

TS-1093-C  
Sheet 2 of 4



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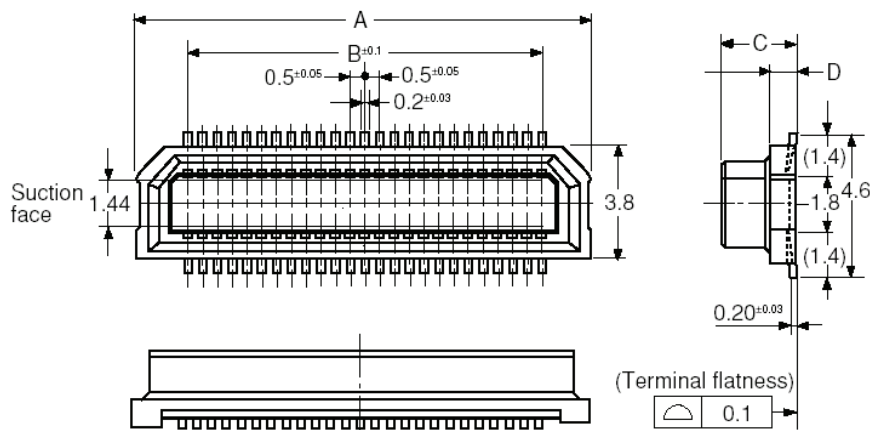
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# 3M™ Board Stacking Connector System

0.5 mm, Vertical, Surface Mount, 3 mm Stack Height

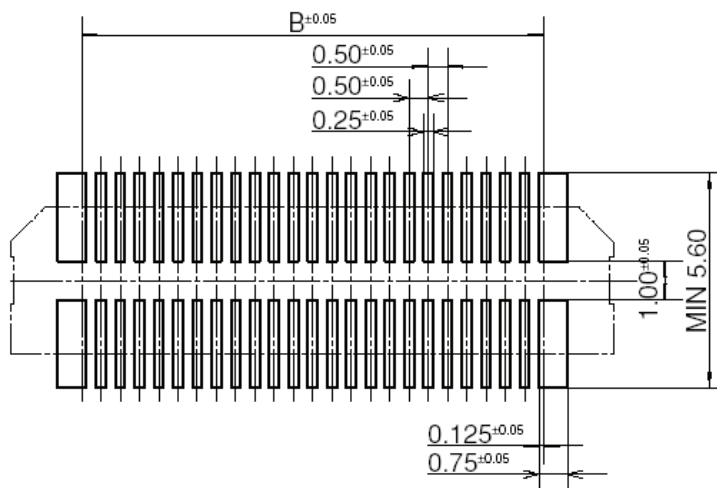
P05N Series

## Plug



| # of Contacts | A     | B     |
|---------------|-------|-------|
| 020           | 8.20  | 4.50  |
| 030           | 10.70 | 7.00  |
| 040           | 13.20 | 9.50  |
| 050           | 15.70 | 12.00 |
| 060           | 18.20 | 14.50 |
| 080           | 23.20 | 19.50 |
| 100           | 28.20 | 24.50 |
| Dim C         | 2.4   |       |
| Dim D         | 0.85  |       |

## Recommended PC board pattern (TOP VIEW)



## Ordering Information

**P05N - XXXPT - A - G** (RIA E1 & C1 Apply)

Contact Quantity  
See Table

TS-1093-C  
Sheet 3 of 4



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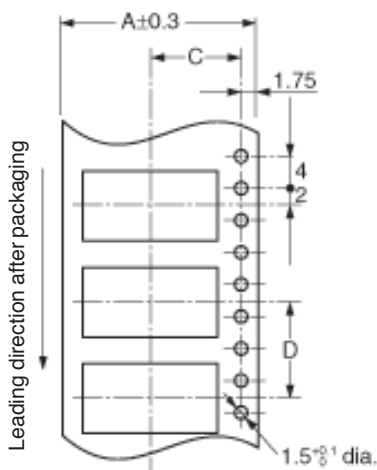
# 3M™ Board Stacking Connector System

0.5 mm, Vertical, Surface Mount, 3 mm Stack Height

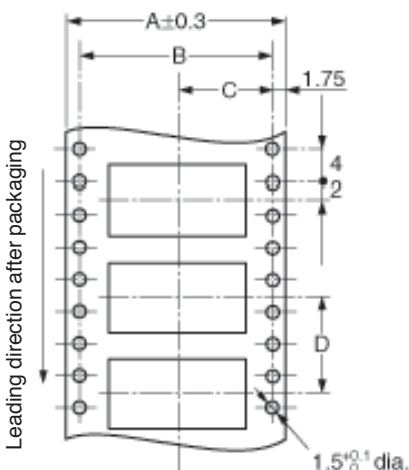
P05N Series

## Tape and Reel Information

Tape I



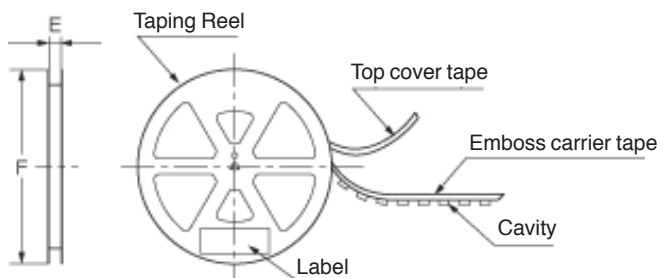
Tape II



Notes:

- 1) Conforms to EIAJ ET-7200B and IEC 60286-3.
- 2) Chamfered end of connector will face supply direction as shown.

## Plastic Reel



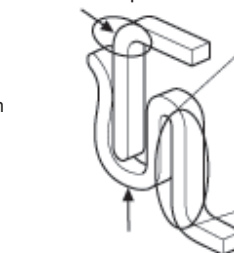
| Number of Contacts | Type    | A    | B    | C    | D    | E        | F   |
|--------------------|---------|------|------|------|------|----------|-----|
| 20-50              | Tape I  | 24.0 | -    | 11.5 | 12.0 | 25.4 ± 1 | 380 |
| 60                 | Tape II | 32.0 | 28.4 | 14.2 | 12.0 | 33.4 ± 1 | 380 |
| 80-100             | Tape II | 44.0 | 40.4 | 20.2 | 12.0 | 45.4 ± 1 | 380 |

Socket and Header = 1,500 parts/reel Maximum

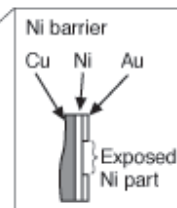
## Application Information

- 1) Bellows type contact with Ni Barrier and V-Notch
  - Ni Barriers prevents solder wicking into critical wiping area of low profile connectors
  - V-Notch on plug increases contact force and is more effective at breaking through foreign material and flux than flat contacts.
- 2) Suction pick up area for suction-type automatic mounting machines on top of plug and in socket cavity.
- 3) Mated Height = 3.0 mm
- 4) Effective Mated Length of Contact 0.65 mm
- 5) Secure boards from vibration and shock.
- 6) Not compatible with B, C and D type P05N Series connectors.

Header side post



Socket side contact



Cross section of contact and post

TS-1093-C  
Sheet 4 of 4



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# Regulatory Information Appendix

## 3M Electronic Solutions Division/Interconnect

### EUROPE

#### Appendix E1: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product is RoHS Compliant 2005/95/EC.**

“RoHS Compliant 2005/95/EC” means that the product or part (“Product”) does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the Warranty stated below.

#### Appendix E2: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product contains lead in the compliant pin area in excess of the maximum concentration value allowed but is compliant by exemption under EU Commission Decision 2005/747/EC.**

“RoHS Compliant 2005/95/EC” means that the product or part (“Product”) does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the Warranty stated below.

#### Appendix E3: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment as amended by Commission Decision 2005/618/EC.

**This product contains lead in the solder tail area in excess of the maximum concentration value allowed.**

Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the Warranty stated below.

#### Appendix E4: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC, as amended by EU Commission Decision 2005/717/EC, as amended by EU Court of Justice Decision 2008/C 116/04

**This product contains decaBDE in the insulating material in excess of the maximum concentration allowed for finished products subject to EU RoHS that are placed on the EU market after June 30, 2008.**

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In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the Warranty stated below.

## Appendix E5: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product contains lead in excess of the maximum concentration value allowed but is compliant by exemption under Item 6 of the Annex to the Directive.**

“RoHS Compliant 2005/95/EC” means that the product or part (“Product”) does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the Warranty stated below.

## CHINA

### Appendix C1: China RoHS



Electronic Industry Standard of the People’s Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does not** contain any of the following substances in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the Warranty stated below.

### Appendix C2: China RoHS



Electronic Industry Standard of the People’s Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

The numerical reference in the symbol above should not be construed as a representation regarding the product’s life or an extension of a product warranty. The product warranty is stated below. In the event any product is proven not to conform with 3M’s Regulatory Information Appendix, then 3M’s entire liability and Buyer’s exclusive remedy will be in accordance with the product Warranty stated below.

产品中有毒有害物质或元素的名称及含量      Name and Content of Hazardous Substances or Elements

| 部件名称<br>(Part or Component Name)                                                                                                                                                                                             | 有毒有害物质或元素 (Hazardous Substances or Elements) |        |        |               |            |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------|--------|---------------|------------|--------------|
|                                                                                                                                                                                                                              | 铅 (Pb)                                       | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr (VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 端子镀层(contact plating)                                                                                                                                                                                                        | ×                                            | ○      | ○      | ○             | ○          | ○            |
| ○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)                |                                              |        |        |               |            |              |
| ×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.) |                                              |        |        |               |            |              |

## Appendix C3: China RoHS



Electronic Industry Standard of the People's Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

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产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

| 部件名称<br>(Part or Component Name)                                                                                                                                                                                                                                                                                                                                                                                                                         | 有毒有害物质或元素 (Hazardous Substances or Elements) |        |        |              |            |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------|--------|--------------|------------|--------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 铅 (Pb)                                       | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 合金 (Metal alloy)                                                                                                                                                                                                                                                                                                                                                                                                                                         | ×                                            | ○      | ○      | ○            | ○          | ○            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |        |        |              |            |              |
| <p>○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)</p> <p>×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)</p> |                                              |        |        |              |            |              |

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