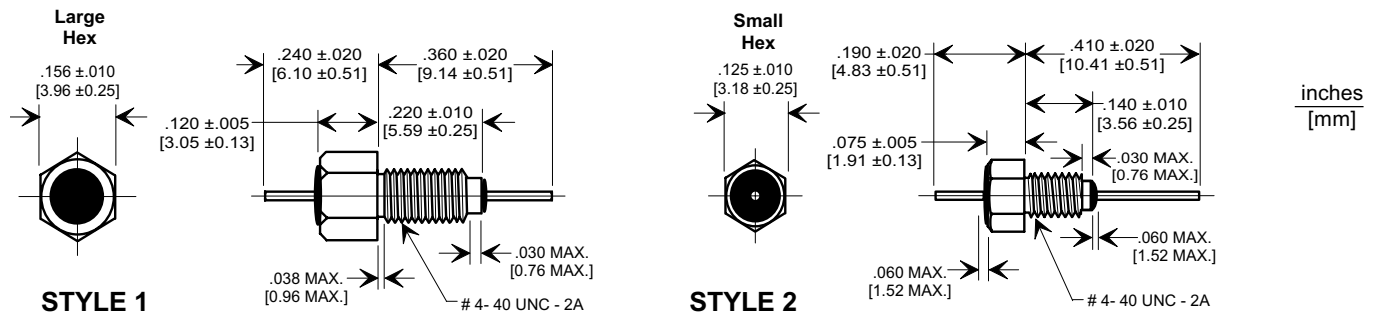


The products listed in this catalog are only a few of the thousands of variations that TUSONIX produces. For custom component design, please contact the factory direct.

**TUSONIX**

## #4-40 UNC-2A Pi & C Filters



| TUSONIX<br>Part<br>Number | Style | Lead<br>Dia. | Circuit | Working<br>Voltage<br>(dc) |       | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |       |        |      |       |
|---------------------------|-------|--------------|---------|----------------------------|-------|---------------------|--------------------------|----------------|----------------------------------------------------------------|-------|--------|------|-------|
|                           |       |              |         | 85°C                       | 125°C |                     |                          |                | 1MHz                                                           | 10MHz | 100MHz | 1GHz | 10GHz |
|                           |       |              |         | Pi Configuration           |       |                     |                          |                |                                                                |       |        |      |       |
| 4261-001                  | 1     | .018 [.46]   | Pi      | --                         | 50    | 5500                | GMV                      | 3              | --                                                             | 14    | 55     | 70   | --    |
| 4200-012                  | 1     | .018 [.46]   | Pi      | --                         | 200   | 1500                | -0,+100%                 | 3              | --                                                             | 5     | 42     | 70   | --    |
| C Configuration           |       |              |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4403-035                  | 2     | .030 [.76]   | C       | 70                         | 50    | 10,000              | GMV                      | 10             | 4                                                              | 20    | 35     | 50   | 50    |
| 4400-005                  | 1     | .020 [.51]   | C       | 70                         | 50    | 10,000              | GMV                      | 10             | 4                                                              | 20    | 35     | 50   | 50    |
| 4400-035                  | 1     | .030 [.76]   | C       | 70                         | 50    | 10,000              | GMV                      | 10             | 4                                                              | 20    | 35     | 50   | 50    |
| 4403-005                  | 2     | .020 [.51]   | C       | 70                         | 50    | 10,000              | GMV                      | 10             | 4                                                              | 20    | 35     | 50   | 50    |
| 4400-006                  | 1     | .020 [.51]   | C       | 70                         | 50    | 15,000              | GMV                      | 10             | 7                                                              | 20    | 35     | 50   | 60    |
| 4400-036                  | 1     | .030 [.76]   | C       | 70                         | 50    | 15,000              | GMV                      | 10             | 7                                                              | 20    | 35     | 50   | 60    |
| 4403-006                  | 2     | .020 [.51]   | C       | 70                         | 50    | 15,000              | GMV                      | 10             | 7                                                              | 20    | 35     | 50   | 60    |
| 4403-036                  | 2     | .030 [.76]   | C       | 70                         | 50    | 15,000              | GMV                      | 10             | 7                                                              | 20    | 35     | 50   | 60    |
| 4400-010                  | 1     | .020 [.51]   | C       | 70                         | 50    | 27,000              | GMV                      | 10             | 10                                                             | 28    | 42     | 65   | 65    |
| 4400-040                  | 1     | .030 [.76]   | C       | 70                         | 50    | 27,000              | GMV                      | 10             | 10                                                             | 28    | 42     | 65   | 65    |
| 4403-010                  | 2     | .020 [.51]   | C       | 70                         | 50    | 27,000              | GMV                      | 10             | 10                                                             | 28    | 42     | 65   | 65    |
| 4403-040                  | 2     | .030 [.76]   | C       | 70                         | 50    | 27,000              | GMV                      | 10             | 10                                                             | 28    | 42     | 65   | 65    |
| 4400-016                  | 1     | .020 [.51]   | C       | 50                         | 50    | 50,000              | GMV                      | 10             | 15                                                             | 35    | 45     | 70   | --    |
| 4400-041                  | 1     | .030 [.76]   | C       | 50                         | 50    | 50,000              | GMV                      | 10             | 15                                                             | 35    | 45     | 70   | --    |
| 4400-003                  | 1     | .020 [.51]   | C       | 150                        | 100   | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 50    |
| 4400-033                  | 1     | .030 [.76]   | C       | 150                        | 100   | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 50    |
| 4403-003                  | 2     | .020 [.51]   | C       | 150                        | 100   | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 50    |
| 4403-033                  | 2     | .030 [.76]   | C       | 150                        | 100   | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 50    |
| 4400-004                  | 1     | .020 [.51]   | C       | 150                        | 100   | 5000                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4400-034                  | 1     | .030 [.76]   | C       | 150                        | 100   | 5000                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4403-004                  | 2     | .020 [.51]   | C       | 150                        | 100   | 5000                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4403-034                  | 2     | .030 [.76]   | C       | 150                        | 100   | 5000                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4400-680                  | 1     | .030 [.76]   | C       | 300                        | 200   | 5                   | MAX                      | 10             | --                                                             | --    | --     | --   | --    |
| 4403-680                  | 2     | .030 [.76]   | C       | 300                        | 200   | 5                   | MAX                      | 10             | --                                                             | --    | --     | --   | --    |
| 4400-008                  | 1     | .020 [.51]   | C       | 300                        | 200   | 10                  | GMV                      | 10             | --                                                             | --    | --     | 5    | 20    |
| 4400-038                  | 1     | .030 [.76]   | C       | 300                        | 200   | 10                  | GMV                      | 10             | --                                                             | --    | --     | 5    | 20    |
| 4403-008                  | 2     | .020 [.51]   | C       | 300                        | 200   | 10                  | GMV                      | 10             | --                                                             | --    | --     | 5    | 20    |
| 4403-038                  | 2     | .030 [.76]   | C       | 300                        | 200   | 10                  | GMV                      | 10             | --                                                             | --    | --     | 5    | 20    |

Drawings not to scale.

All bushing style filters include hex nut and lock washer unless otherwise noted.

### TUSONIX 4400 Series Miniature EMI Filters

These filters are ideal for applications where small size and high performance are critical and a threaded mounting technique is desired.

These C and L configured filters are available in two physical configurations and can be supplied with either unified or metric thread (see page 18 for metric). The small package and large range of electrical characteristics of the 4400 Series make it an effective solution for a variety of micro-wave applications.



| TUSONIX<br>Part<br>Number               | Style | Lead<br>Dia. | Circuit | Working<br>Voltage<br>(dc) |       | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |       |        |      |       |
|-----------------------------------------|-------|--------------|---------|----------------------------|-------|---------------------|--------------------------|----------------|----------------------------------------------------------------|-------|--------|------|-------|
|                                         |       |              |         | 85°C                       | 125°C |                     |                          |                | 1MHz                                                           | 10MHz | 100MHz | 1GHz | 10GHz |
|                                         |       |              |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| C Configuration (Continued from page 9) |       |              |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4400-009                                | 1     | .020 [.51]   | C       | 300                        | 200   | 25                  | GMV                      | 10             | --                                                             | --    | --     | 10   | 25    |
| 4400-039                                | 1     | .030 [.76]   | C       | 300                        | 200   | 25                  | GMV                      | 10             | --                                                             | --    | --     | 10   | 25    |
| 4403-009                                | 2     | .020 [.51]   | C       | 300                        | 200   | 25                  | GMV                      | 10             | --                                                             | --    | --     | 10   | 25    |
| 4403-039                                | 2     | .030 [.76]   | C       | 300                        | 200   | 25                  | GMV                      | 10             | --                                                             | --    | --     | 10   | 25    |
| 4400-000                                | 1     | .020 [.51]   | C       | 300                        | 200   | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 28    |
| 4400-030                                | 1     | .030 [.76]   | C       | 300                        | 200   | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 28    |
| 4403-000                                | 2     | .020 [.51]   | C       | 300                        | 200   | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 28    |
| 4403-030                                | 2     | .030 [.76]   | C       | 300                        | 200   | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 28    |
| 4400-001                                | 1     | .020 [.51]   | C       | 300                        | 200   | 500                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 40    |
| 4400-031                                | 1     | .030 [.76]   | C       | 300                        | 200   | 500                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 40    |
| 4403-001                                | 2     | .020 [.51]   | C       | 300                        | 200   | 500                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 40    |
| 4403-031                                | 2     | .030 [.76]   | C       | 300                        | 200   | 500                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 40    |
| 4400-007                                | 1     | .020 [.51]   | C       | 300                        | 200   | 1000                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4400-037                                | 1     | .030 [.76]   | C       | 300                        | 200   | 1000                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4403-007                                | 2     | .020 [.51]   | C       | 300                        | 200   | 1000                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4403-037                                | 2     | .030 [.76]   | C       | 300                        | 200   | 1000                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4400-002                                | 1     | .020 [.51]   | C       | 300                        | 200   | 1200                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4400-032                                | 1     | .030 [.76]   | C       | 300                        | 200   | 1200                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4403-002                                | 2     | .020 [.51]   | C       | 300                        | 200   | 1200                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4403-032                                | 2     | .030 [.76]   | C       | 300                        | 200   | 1200                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| L Configuration                         |       |              |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4400-055                                | 1     | .020 [.51]   | L       | 70                         | 50    | 10,000              | GMV                      | 10             | 4                                                              | 21    | 35     | 55   | 70    |
| 4400-056                                | 1     | .020 [.51]   | L       | 70                         | 50    | 15,000              | GMV                      | 10             | 7                                                              | 25    | 40     | 60   | 60    |
| 4400-060                                | 1     | .020 [.51]   | L       | 70                         | 50    | 27,000              | GMV                      | 10             | 10                                                             | 28    | 45     | 65   | 70    |
| 4400-057                                | 1     | .020 [.51]   | L       | 50                         | 50    | 50,000              | GMV                      | 10             | 15                                                             | 35    | 52     | 70   | --    |
| 4400-053                                | 1     | .020 [.51]   | L       | 150                        | 100   | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 55    |
| 4400-054                                | 1     | .020 [.51]   | L       | 150                        | 100   | 5000                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 60    |
| 4400-050                                | 1     | .020 [.51]   | L       | 300                        | 200   | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 33    |
| 4400-051                                | 1     | .020 [.51]   | L       | 300                        | 200   | 500                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 45    |
| 4400-052                                | 1     | .020 [.51]   | L       | 300                        | 200   | 1200                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 50    |

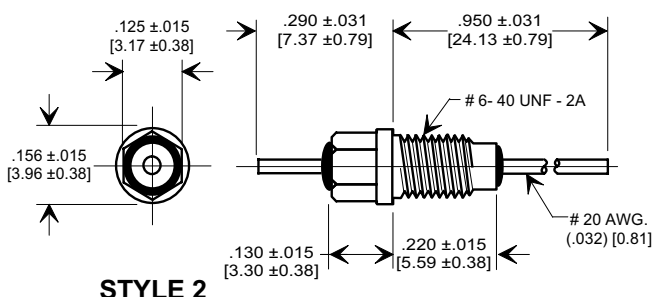
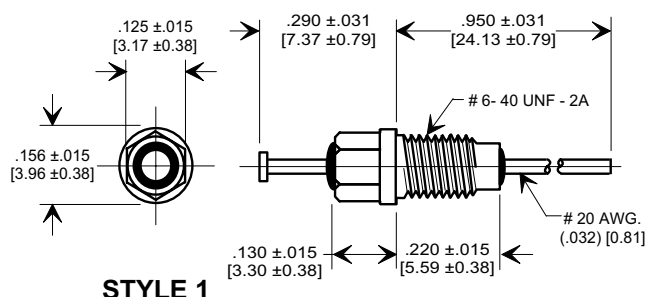
Drawings not to scale.

**Please Note:** All bushing style filters include hex nut and lock washer unless otherwise noted.

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**TUSONIX**

## #6-40 UNF-2A EMI Pi Filters



inches  
[mm]

| TUSONIX<br>Part<br>Number | Style | Circuit | Working<br>Voltage<br>(dc) |       | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |        |      |       |
|---------------------------|-------|---------|----------------------------|-------|---------------------|--------------------------|----------------|----------------------------------------------------------------|--------|------|-------|
|                           |       |         | 85°C                       | 125°C |                     |                          |                | 10MHz                                                          | 100MHz | 1GHz | 10GHz |
| PI Configuration          |       |         |                            |       |                     |                          |                |                                                                |        |      |       |
| 4200-000                  | 1     | Pi      | 300                        | 200   | 1500                | GMV                      | 10             | 5                                                              | 40     | 60   | 60    |
| 4200-002                  | 2     | Pi      | 300                        | 200   | 1500                | GMV                      | 10             | 5                                                              | 40     | 60   | 60    |
| 4200-005                  | 1     | Pi      | 300                        | 200   | 3000                | GMV                      | 10             | 8                                                              | 50     | 70   | 70    |

Drawings not to scale.

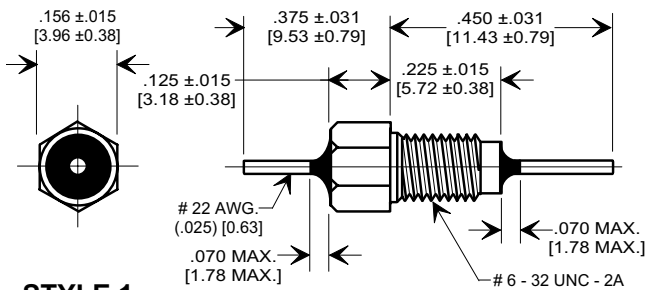
**Please Note:** All bushing style filters include hex nut and lock washer unless otherwise noted.

## MIL PARTS CROSS REFERENCE

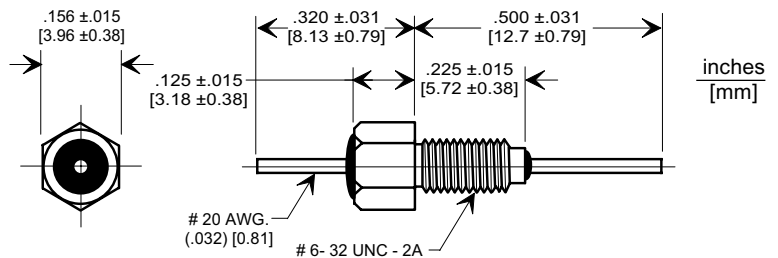
| MIL-PRF-15733 | TUSONIX No. | Page No. ❖ | MIL-PRF-15733 | TUSONIX No. | Page No. ❖ |
|---------------|-------------|------------|---------------|-------------|------------|
| /28-0001      | 4201-501    | 14         | /61-0001      | 4204-500    | 15         |
| /28-0002      | 4201-503    | 14         | /61-0002      | 4202-501    | 16         |
| /28-0003      | 4251-503    | NS         | /61-0003      | 4206-502    | 17         |
| /33-0001      | 4101-502    | 8          | /61-0004      | 4206-501    | 17         |
| /33-0002      | 4101-503    | 8          | /61-0005      | 4203-502    | NS         |
| /38-0004      | 4601-503    | NS         | /61-0006      | 4203-501    | 16         |
| /38-0005      | 4601-504    | NS         | /61-0007      | 4203-552    | 16         |
| /43-0001      | 4204-501    | 15         | /61-0008      | 4201-502    | 14         |
| /43-0002      | 4201-506    | NS         | /61-0009      | 4253-500    | NS         |
| /44-0001      | 4251-500    | NS         | /61-0010      | 4203-553    | 16         |
| /44-0002      | 4205-500    | NS         | /61-0011      | 4203-551    | 16         |
| /44-0003      | 4205-501    | NS         | /61-0012      | 4253-501    | NS         |
| /46-0001      | 4207-500    | NS         | /61-0013      | 4251-502    | NS         |
| /49-0001      | 4601-502    | NS         | /61-0014      | 4251-501    | NS         |
| /49-0006      | 4601-501    | NS         | /62-0001      | 4101-501    | 8          |
| /49-0007      | 4601-500    | NS         | /62-0002      | 4100-500    | 8          |
| /51-0001      | 4101-504    | 8          | /62-0003      | 4101-505    | 8          |
| /51-0002      | 4151-501    | 8          | /62-0004      | 4151-500    | 8          |
|               |             |            | /66-0001      | 4101-500    | 8          |

❖ NS indicates a part that is not shown in this catalog.

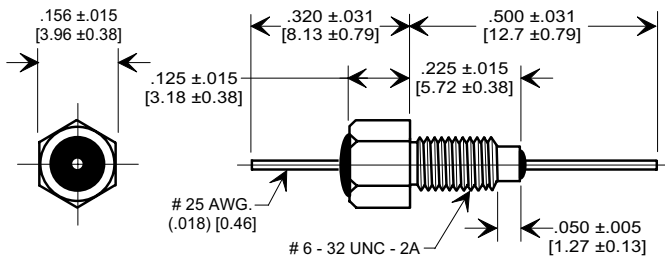
## #6-32 UNC-2A Pi, C & L Filters and Feed-thru Capacitors



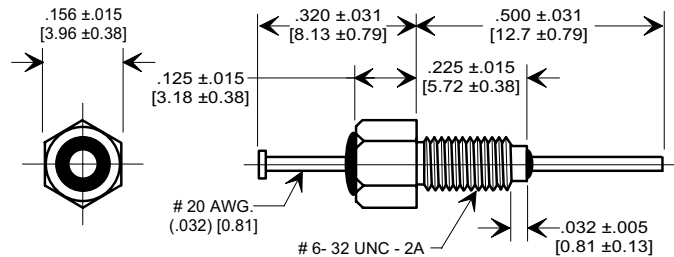
STYLE 1



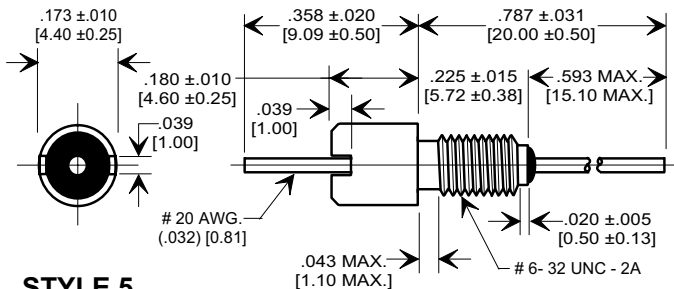
STYLE 2



STYLE 3



STYLE 4



STYLE 5

| TUSONIX Part Number | Temperature Range | WVDC | MAX. CAP. (Nominal) (pF) |
|---------------------|-------------------|------|--------------------------|
| 2430                | Z5, Y5, X5        | 200  | 1500                     |
|                     | X7                | 100  | 1500                     |

### Notes:

- Typical Insertion Loss
- ▽ No Hex Nut or Lock Washer

Please see Temperature Characteristics and EIA Codes on page 21.

| TUSONIX<br>Part<br>Number | Style | Notes | Circuit | Working<br>Voltage<br>(dc) |       | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |       |        |      |       |
|---------------------------|-------|-------|---------|----------------------------|-------|---------------------|--------------------------|----------------|----------------------------------------------------------------|-------|--------|------|-------|
|                           |       |       |         | 85°C                       | 125°C |                     |                          |                | 1MHz                                                           | 10MHz | 100MHz | 1GHz | 10GHz |
|                           |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| PI Configuration          |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4260-001                  | 3     | --    | Pi      | --                         | 50    | 5500                | GMV                      | 3              | --                                                             | 14    | 55     | 70   | --    |
| 4260-002                  | 3     | --    | Pi      | --                         | 50    | 7500                | GMV                      | 3              | --                                                             | 18    | 65     | 70   | --    |
| 4260-000                  | 3     | --    | Pi      | 400                        | 200   | 2000                | GMV                      | 3              | --                                                             | 5     | 42     | 70   | --    |
| C Configuration           |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4402-016                  | 2     | --    | C       | 50                         | 50    | 50,000              | GMV                      | 10             | 15                                                             | 35    | 45     | 70   | --    |
| 4402-005                  | 2     | --    | C       | 100                        | 100   | 10,000              | GMV                      | 10             | 4                                                              | 21    | 35     | 50   | --    |
| 4402-018                  | 2     | --    | C       | 50                         | 50    | 100,000             | GMV                      | 10             | 22                                                             | 40    | 47     | 65   | 65    |
| 4402-680                  | 5     | ▽     | C       | 300                        | 200   | 5                   | MAX                      | 10             | --                                                             | --    | --     | --   | --    |
| 2430-003-X5F0-101M        | 1     | ●●    | C       | 200                        | --    | 100                 | ±20%                     | 5              | --                                                             | --    | 3      | 20   | 28    |
| 2430-003-X5F0-102Z        | 1     | ●●    | C       | 200                        | --    | 1000                | +80-20%                  | 5              | --                                                             | 3     | 20     | 35   | 40    |
| L Configuration           |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4402-063                  | 5     | ▽     | L       | 200                        | 100   | 4700                | +80-20                   | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4402-060                  | 4     | --    | L       | 100                        | 100   | 27,000              | GMV                      | 10             | 10                                                             | 28    | 45     | 65   | --    |

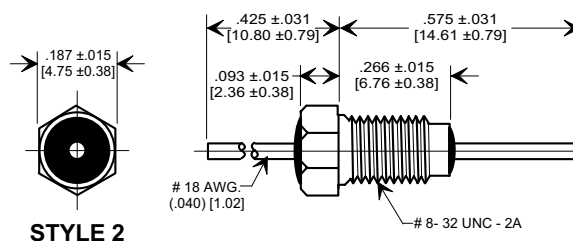
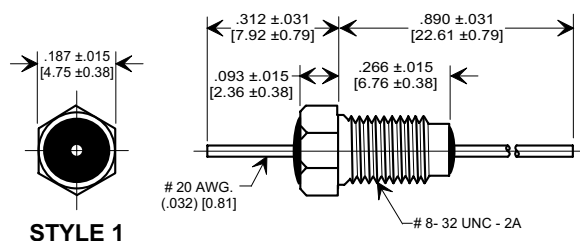
Drawings not to scale.

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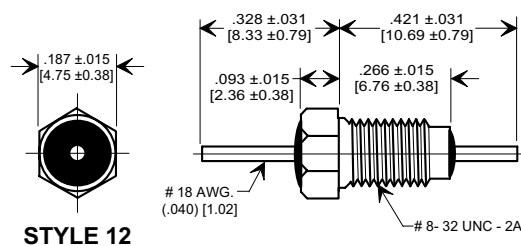
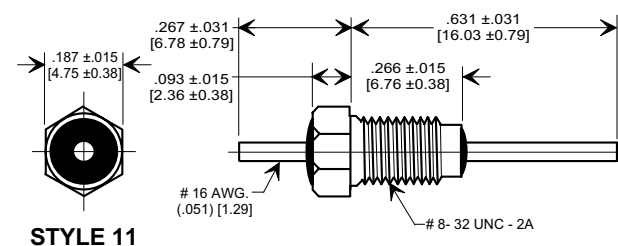
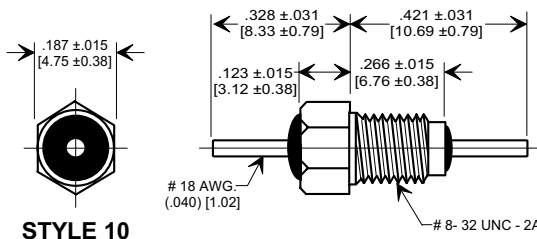
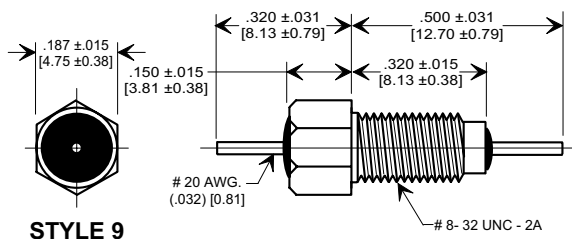
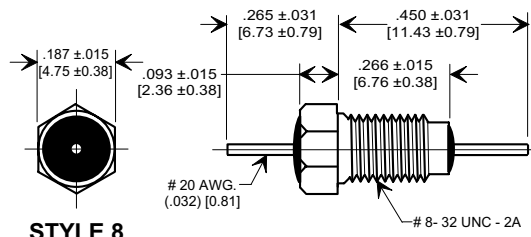
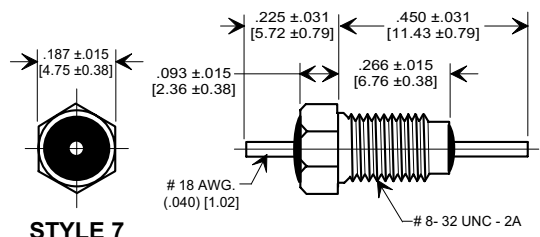
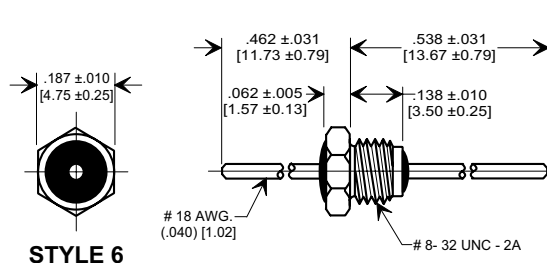
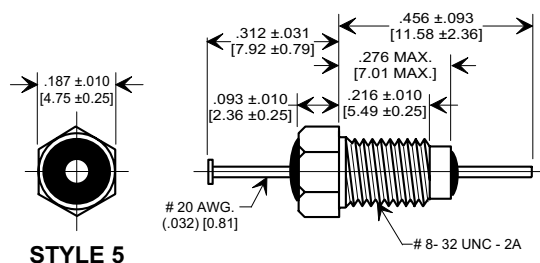
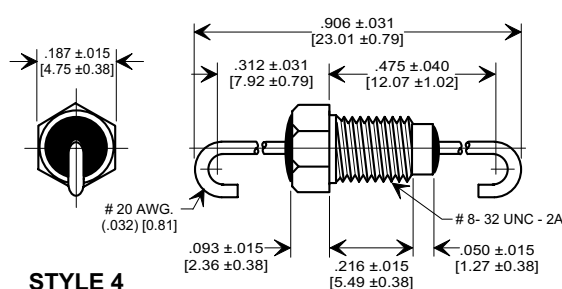
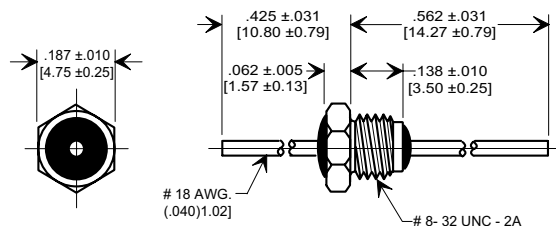
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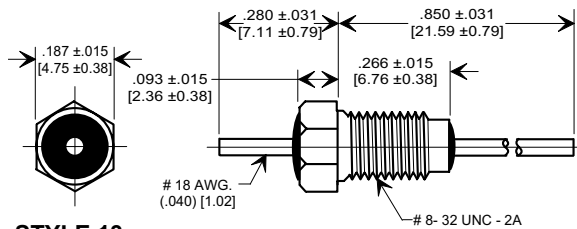
## #8-32 UNC-2A Pi, C & L Filters and Feed-Thru Capacitors



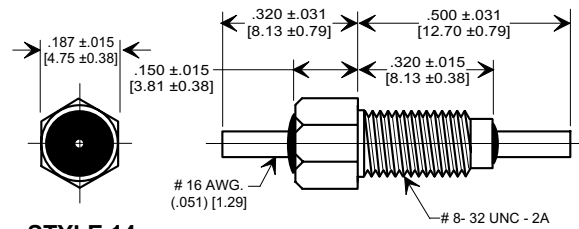
inches  
[mm]



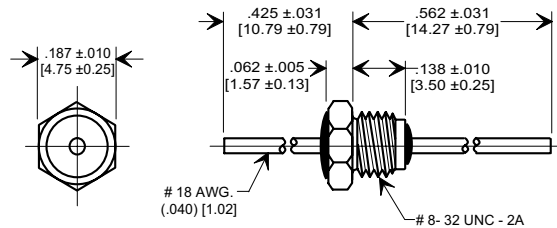
## #8-32 UNC-2A Pi, C & L Filters and Feed-Thru Capacitors



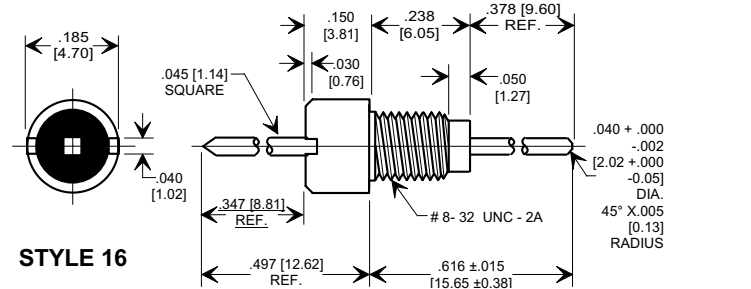
STYLE 13



STYLE 14



STYLE 15



STYLE 16

| Series Number | Temperature Range | WVdc | MAX. Cap. (Nominal) (pF) |
|---------------|-------------------|------|--------------------------|
| 2425          | Z5, Y5, X5        | 200  | 10,000                   |
|               | X7                | 100  | 10,000                   |

### Notes:

- ◆ Turret Lead
- ▽ #18 AWG Lead 0.040 Dia.
- Typical Insertion Loss

Please see Temperature Characteristics and EIA Codes on page 21.

| TUSONIX<br>Part<br>Number | MIL-PRF-<br>15733<br>Number | Style | Notes | Circuit | Working<br>Voltage<br>(dc) |       | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |       |        |      |       |  |
|---------------------------|-----------------------------|-------|-------|---------|----------------------------|-------|---------------------|--------------------------|----------------|----------------------------------------------------------------|-------|--------|------|-------|--|
|                           |                             |       |       |         | 85°C                       | 125°C |                     |                          |                | 1MHz                                                           | 10MHz | 100MHz | 1GHz | 10GHz |  |
|                           |                             |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |  |
| Pi Configuration          |                             |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |  |
| 4251-001                  | --                          | 8     | --    | Pi      | --                         | 50    | 15,000              | GMV                      | 10             | 5                                                              | 18    | 65     | 70   | --    |  |
| 4201-048                  | --                          | 16    | --    | Pi      | 200                        | 100   | 100                 | GMV                      | 15             | --                                                             | --    | 5      | 32   | --    |  |
| 4201-047                  | --                          | 16    | --    | Pi      | 200                        | 100   | 1000                | GMV                      | 15             | --                                                             | 4     | 37     | 60   | --    |  |
| 4201-502                  | /61-0008                    | 5     | --    | Pi      | --                         | 100   | 1000                | GMV                      | 10             | --                                                             | --    | 65     | 70   | 70    |  |
| 4201-000                  | --                          | 1     | --    | Pi      | 200                        | 100   | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 65   | 70    |  |
| 4201-001                  | --                          | 1     | ◆     | Pi      | 200                        | 100   | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 65   | 70    |  |
| 4201-004                  | --                          | 1     | ▽     | Pi      | 200                        | 100   | 1500                | GMV                      | 15             | --                                                             | 5     | 38     | 63   | 70    |  |
| 4201-006                  | --                          | 1     | ◆▽    | Pi      | 200                        | 100   | 1500                | GMV                      | 15             | --                                                             | 5     | 38     | 63   | 70    |  |
| 4201-501                  | /28-0001                    | 1     | ◆     | Pi      | --                         | 100   | 1500                | GMV                      | 10             | --                                                             | --    | 45     | 60   | 60    |  |
| 4201-503                  | /28-0002                    | 4     | --    | Pi      | --                         | 100   | 1500                | GMV                      | 10             | --                                                             | --    | 45     | 60   | 60    |  |
| 4201-003                  | --                          | 2     | --    | Pi      | 200                        | 100   | 2000                | GMV                      | 15             | --                                                             | 5     | 38     | 63   | 70    |  |
| 4201-050                  | --                          | 1     | --    | Pi      | 200                        | 100   | 5500                | GMV                      | 10             | --                                                             | 14    | 55     | 70   | 70    |  |
| 4201-051                  | --                          | 1     | ◆     | Pi      | 200                        | 100   | 5500                | GMV                      | 10             | --                                                             | 14    | 55     | 70   | 70    |  |
| 4201-053                  | --                          | 1     | ◆▽    | Pi      | 200                        | 100   | 5500                | GMV                      | 15             | --                                                             | 14    | 55     | 65   | 65    |  |
| 4201-083                  | --                          | 9     | --    | Pi      | 200                        | 100   | 10,000              | +80-20%                  | 10             | --                                                             | 18    | 65     | 70   | 70    |  |
| 4251-004                  | --                          | 9     | --    | Pi      | 100                        | 100   | 30,000              | GMV                      | 10             | 10                                                             | 38    | 75     | 75   | 75    |  |
| 4205-002                  | --                          | 3     | --    | Pi      | 250                        | 125   | 65                  | +100 -0%                 | 15             | --                                                             | --    | 3      | 16   | 45    |  |
| 4205-018                  | --                          | 6     | --    | Pi      | 250                        | 125   | 65                  | +100 -0%                 | 15             | --                                                             | --    | 3      | 16   | 45    |  |
| 4205-017                  | --                          | 6     | --    | Pi      | 250                        | 125   | 1500                | GMV                      | 15             | --                                                             | 5     | 35     | 60   | 60    |  |
| 4205-001                  | --                          | 15    | --    | Pi      | 250                        | 125   | 1500                | GMV                      | 15             | --                                                             | 5     | 35     | 60   | 60    |  |
| 4251-000                  | --                          | 7     | --    | Pi      | 185                        | 125   | 3000                | +100 -0%                 | 15             | --                                                             | 10    | 30     | 65   | 65    |  |
| 4251-002                  | --                          | 9     | --    | Pi      | 200                        | 125   | 12,000              | GMV                      | 10             | 5                                                              | 28    | 65     | 70   | 70    |  |
| C Configuration           |                             |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |  |
| 2425-018-X5U0-101M        | --                          | 11    | ◆◆◆   | C       | 200                        | --    | 100                 | ±20%                     | 20             | --                                                             | --    | 3      | 20   | 28    |  |
| 2425-544-X7R0-101M        | --                          | 11    | ◆◆    | C       | --                         | 100   | 100                 | ±20%                     | 20             | --                                                             | --    | 3      | 20   | 28    |  |
| 2425-018-X5U0-102M        | --                          | 11    | ◆◆◆   | C       | 200                        | --    | 1000                | ±20%                     | 20             | --                                                             | 3     | 20     | 35   | 40    |  |
| 2425-544-X7R0-102P        | --                          | 11    | ◆◆    | C       | --                         | 100   | 1000                | +100 -0%                 | 20             | --                                                             | 3     | 20     | 35   | 40    |  |
| 2425-018-X5W0-502M        | --                          | 11    | ◆◆◆   | C       | 200                        | --    | 5000                | ±20%                     | 20             | --                                                             | 15    | 30     | 45   | 50    |  |
| 2425-601-X5W0-103Z        | --                          | 14    | ◆◆    | C       | 200                        | --    | 10,000              | +80-20%                  | 20             | --                                                             | 20    | 35     | 50   | 55    |  |
| 4404-001                  | --                          | 1     | ◆     | C       | 100                        | 100   | 27,000              | GMV                      | 10             | 10                                                             | 30    | 45     | 55   | --    |  |
| 4404-002                  | --                          | 12    | --    | C       | 140                        | 100   | 50,000              | GMV                      | 10             | 15                                                             | 34    | 45     | 60   | --    |  |
| 4404-003                  | --                          | 10    | --    | C       | --                         | 100   | 100,000             | GMV                      | 10             | 20                                                             | 38    | 47     | 65   | --    |  |
| L Configuration           |                             |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |  |
| 4404-050                  | --                          | 13    | --    | L       | --                         | 100   | 22,000              | GMV                      | 10             | 7                                                              | 27    | 43     | 60   | --    |  |

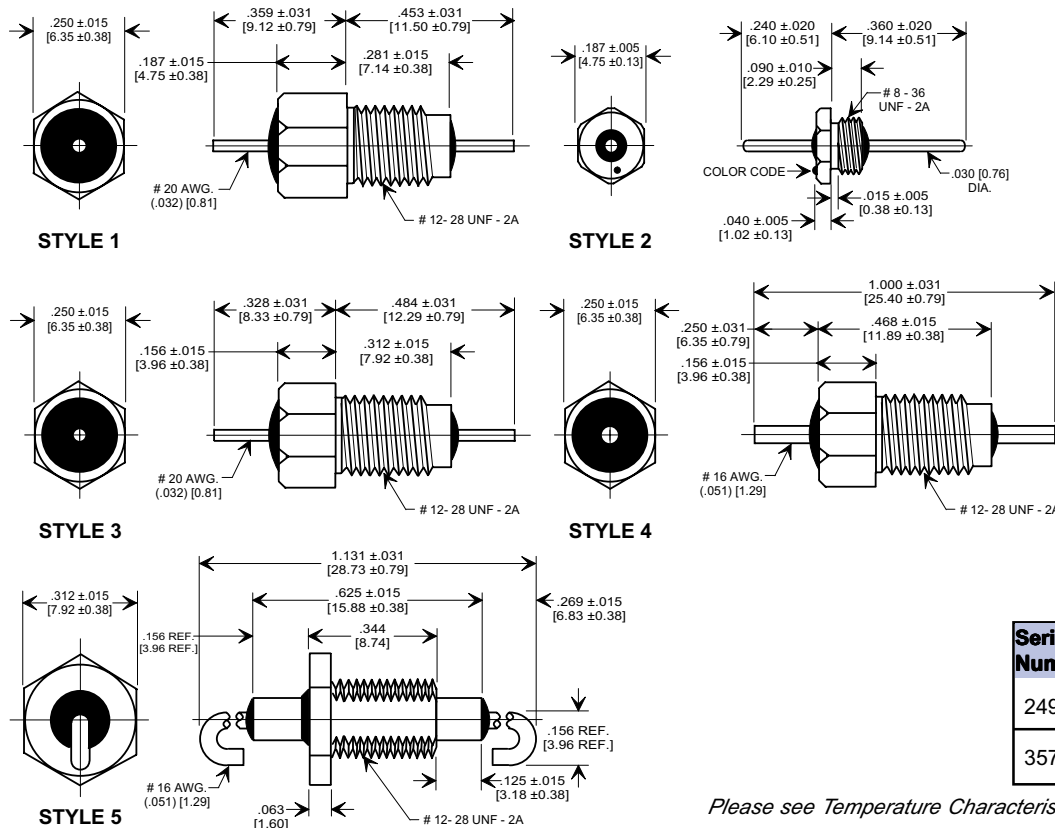
Drawings not to scale.

Please Note: All bushing style filters include hex nut and lock washer unless otherwise noted.

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## #8-36 UNF-2A and #12-28 UNF-2A Pi & C Filters and Feed-Thru Capacitors



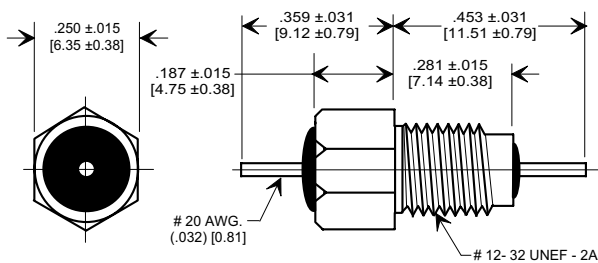
| Notes: |                        |
|--------|------------------------|
| ◆      | Turret Lead            |
| ●●     | Typical Insertion Loss |
| ▽      | No Hex Nut Included    |

| Series Number | Temperature Range | WVDC | MAX. CAP. Nominal (pF) |
|---------------|-------------------|------|------------------------|
| 2499          | Z5, Y5, X5        | 500  | 10,000                 |
|               | X7                | 250  | 10,000                 |
| 357           | Z5, Y5, X5        | 500  | 10,000                 |
|               | X7                | 250  | 10,000                 |

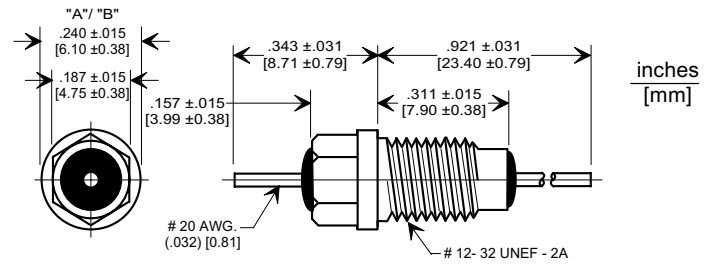
Please see Temperature Characteristics and EIA Codes on Page 21.

| TUSONIX<br>Part<br>Number | MIL-PRF-<br>15733<br>Number | Style | Notes | Circuit | Working<br>Voltage<br>(dc) |                | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |       |        |      |       |
|---------------------------|-----------------------------|-------|-------|---------|----------------------------|----------------|---------------------|--------------------------|----------------|----------------------------------------------------------------|-------|--------|------|-------|
|                           |                             |       |       |         | 85°C                       | 125°C          |                     |                          |                | 1MHz                                                           | 10MHz | 100MHz | 1GHz | 10GHz |
| C Configuration           |                             |       |       |         |                            |                |                     |                          |                |                                                                |       |        |      |       |
| 4401-005                  | --                          | 2     | ▽     | C       | 70                         | 50             | 10,000              | GMV                      | 10             | 4                                                              | 21    | 35     | 50   | 60    |
| 4401-006                  | --                          | 2     | ▽     | C       | 70                         | 50             | 15,000              | GMV                      | 10             | 7                                                              | 20    | 35     | 55   | 60    |
| 4401-010                  | --                          | 2     | ▽     | C       | 70                         | 50             | 27,000              | GMV                      | 10             | 10                                                             | 28    | 42     | 65   | 65    |
| 4401-011                  | --                          | 2     | ▽     | C       | 50                         | 50             | 50,000              | GMV                      | 10             | 15                                                             | 35    | 45     | 70   | --    |
| 4401-003                  | --                          | 2     | ▽     | C       | 150                        | 100            | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 50    |
| 4401-004                  | --                          | 2     | ▽     | C       | 150                        | 100            | 5000                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4401-680                  | --                          | 2     | ▽     | C       | 300                        | 200            | 5                   | MAX                      | 10             | --                                                             | --    | --     | --   | --    |
| 4401-008                  | --                          | 2     | ▽     | C       | 300                        | 200            | 10                  | GMV                      | 10             | --                                                             | --    | --     | 5    | 20    |
| 4401-009                  | --                          | 2     | ▽     | C       | 300                        | 200            | 25                  | GMV                      | 10             | --                                                             | --    | --     | 10   | 25    |
| 4401-000                  | --                          | 2     | ▽     | C       | 300                        | 200            | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 28    |
| 4401-001                  | --                          | 2     | ▽     | C       | 300                        | 200            | 500                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 40    |
| 4401-007                  | --                          | 2     | ▽     | C       | 300                        | 200            | 1000                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4401-002                  | --                          | 2     | ▽     | C       | 300                        | 200            | 1200                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| Pi Configuration          |                             |       |       |         |                            |                |                     |                          |                |                                                                |       |        |      |       |
| 4202-053                  | --                          | 3     | --    | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | --                                                             | 20    | 65     | 70   | 70    |
| 4202-054                  | --                          | 3     | ◆     | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | --                                                             | 20    | 65     | 70   | 70    |
| 4204-050                  | --                          | 1     | --    | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | --                                                             | 20    | 65     | 70   | 70    |
| 4204-051                  | --                          | 1     | ◆     | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | --                                                             | 20    | 65     | 70   | 70    |
| 4202-020                  | --                          | 3     | --    | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 70   | 70    |
| 4202-021                  | --                          | 3     | ◆     | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 70   | 70    |
| 4204-000                  | --                          | 1     | --    | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 70   | 70    |
| 4204-001                  | --                          | 1     | ◆     | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 70   | 70    |
| 4204-500                  | /61-0001                    | 1     | --    | Pi      | --                         | 200dc<br>140ac | 1500                | GMV                      | 10ac           | --                                                             | --    | 45     | 70   | 70    |
| 4204-501                  | /43-0001                    | 1     | ◆     | Pi      | --                         | 200dc<br>140ac | 1500                | GMV                      | 10ac           | --                                                             | --    | --     | 45   | 45    |
| C Configuration           |                             |       |       |         |                            |                |                     |                          |                |                                                                |       |        |      |       |
| 2499-003-X5U0-102P        | --                          | 4     | ●●    | C       | 500                        | --             | 1000                | +100-0%                  | 20             | --                                                             | 3     | 20     | 35   | 40    |
| 2499-003-X5W0-502P        | --                          | 4     | ●●    | C       | 500                        | --             | 5000                | +100-0%                  | 20             | --                                                             | 15    | 30     | 45   | 50    |
| 2499-003-X5W0-103Z        | --                          | 4     | ●●    | C       | 500                        | --             | 10,000              | +80-20%                  | 20             | --                                                             | 20    | 35     | 50   | 55    |
| 357-001-X5W0-103Z         | --                          | 5     | ●●    | C       | 500                        | --             | 10,000              | +80-20%                  | 20             | --                                                             | 20    | 35     | 50   | 55    |

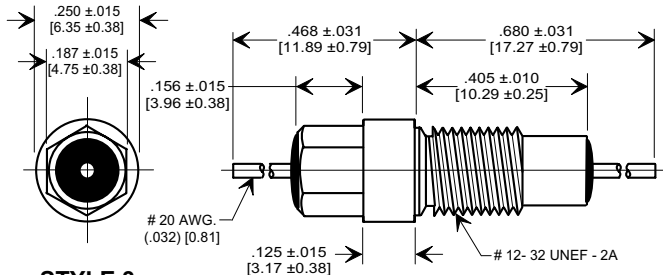
## #12-32 UNEF-2A Pi, & C Filters



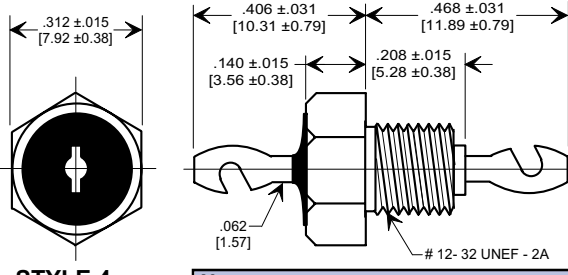
STYLE 1



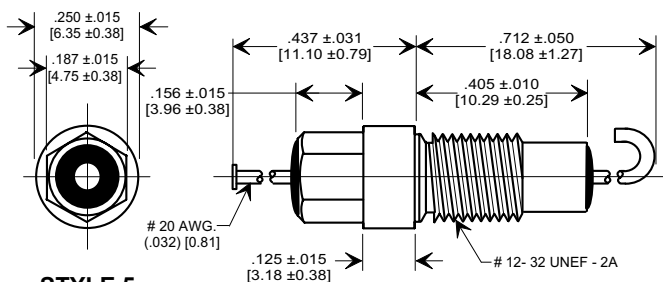
STYLE 2



STYLE 3



STYLE 4



STYLE 5

### Notes:

- ◆ Turret Lead
- ▽ #18 AWG Lead 0.040 Dia.
- "A" Dim. A in #2= .250 ± .015 [6.35 ± 0.38]
- "B" Dim. A in #2= .235 ± .015 [5.97 ± 0.38]
- Typical Insertion Loss

| TUSONIX Part Number | Temperature Range | WVdc | MAX. CAP. (Nominal) (pF) |
|---------------------|-------------------|------|--------------------------|
| 2452                | Z5, Y5, X5        | 500  | 1800                     |
|                     | X7                | 250  | 1800                     |

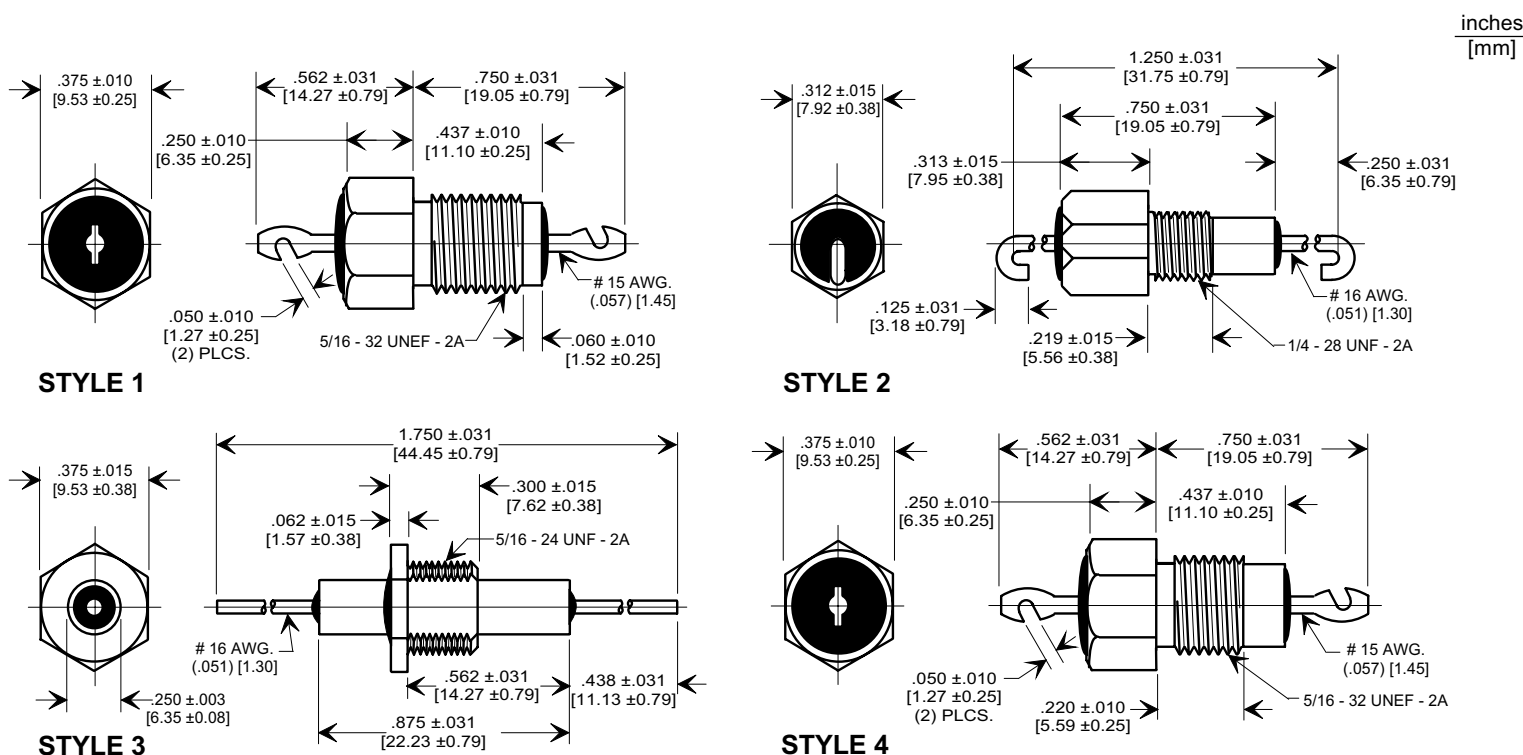
Please see Temperature Characteristics and EIA Codes on page 21.

| TUSONIX<br>Part<br>Number | MIL-PRF-<br>15733<br>Number | Style | Notes | Circuit | Working<br>Voltage<br>(dc) |                | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |        |      |       |
|---------------------------|-----------------------------|-------|-------|---------|----------------------------|----------------|---------------------|--------------------------|----------------|----------------------------------------------------------------|--------|------|-------|
|                           |                             |       |       |         | 85°C                       | 125°C          |                     |                          |                | 10MHz                                                          | 100MHz | 1GHz | 10GHz |
|                           |                             |       |       |         | PI Configuration           |                |                     |                          |                |                                                                |        |      |       |
| 4207-003                  | --                          | 3     | --    | Pi      | 100                        | 70             | 12,000              | GMV                      | 10             | 45                                                             | 70     | 70   | 70    |
| 4253-002                  | --                          | 3     | --    | Pi      | 100                        | 70             | 50,000              | GMV                      | 10             | 60                                                             | 75     | 75   | 75    |
| 4202-050                  | --                          | 1     | --    | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | 20                                                             | 65     | 70   | 70    |
| 4202-051                  | --                          | 1     | ◆     | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | 20                                                             | 65     | 70   | 70    |
| 4203-050                  | --                          | 2     | --    | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | 20                                                             | 65     | 70   | 70    |
| 4203-051                  | --                          | 2     | ◆     | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | 20                                                             | 65     | 70   | 70    |
| 4203-053                  | --                          | 2     | ◆A    | Pi      | 200                        | 100            | 5000                | GMV                      | 10             | 20                                                             | 65     | 70   | 70    |
| 4203-551                  | /61-0011                    | 2     | ◆B    | Pi      | --                         | 100dc<br>70ac  | 5000                | GMV                      | 10ac           | --                                                             | 65     | 70   | 70    |
| 4203-553                  | /61-0010                    | 2     | ◆A    | Pi      | --                         | 100dc<br>70ac  | 5000                | GMV                      | 10ac           | --                                                             | 65     | 70   | 70    |
| 4253-001                  | --                          | 2     | ◆     | Pi      | --                         | 100            | 25,000              | GMV                      | 10             | 30                                                             | 65     | 70   | 70    |
| 4253-000                  | --                          | 3     | --    | Pi      | --                         | 140            | 22,000              | GMV                      | 10             | 45                                                             | 75     | 75   | 75    |
| 4202-000                  | --                          | 1     | --    | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | 5                                                              | 45     | 70   | 70    |
| 4203-000                  | --                          | 2     | --    | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | 5                                                              | 45     | 70   | 70    |
| 4202-001                  | --                          | 1     | ◆     | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | 5                                                              | 45     | 70   | 70    |
| 4202-501                  | /61-0002                    | 1     | ◆     | Pi      | --                         | 200dc<br>140ac | 1500                | GMV                      | 10ac           | --                                                             | 45     | 70   | 70    |
| 4203-003                  | --                          | 2     | ◆A    | Pi      | 350                        | 200            | 1500                | GMV                      | 10             | 5                                                              | 45     | 70   | 70    |
| 4203-501                  | /61-0006                    | 2     | ◆B    | Pi      | --                         | 200dc<br>140ac | 1500                | GMV                      | 10ac           | --                                                             | 45     | 70   | 70    |
| 4203-552                  | /61-0007                    | 2     | ◆A    | Pi      | --                         | 100dc<br>70ac  | 5000                | GMV                      | 10ac           | --                                                             | 65     | 70   | 70    |
| 4207-000                  | --                          | 5     | --    | Pi      | 500                        | 300            | 1200                | GMV                      | 10             | 5                                                              | 43     | 55   | 55    |
| 4207-001                  | --                          | 5     | --    | Pi      | 500                        | 300            | 4000                | GMV                      | 10             | 15                                                             | 55     | 60   | 60    |
| 4202-004                  | --                          | 1     | ▽     | Pi      | 500                        | 350            | 2500                | GMV                      | 15             | 5                                                              | 50     | 70   | 70    |
| C Configuration           |                             |       |       |         |                            |                |                     |                          |                |                                                                |        |      |       |
| 2452-000-X7R0-101M        | --                          | 4     | ●●    | C       | --                         | 250            | 100                 | ±20%                     | 20             | --                                                             | 3      | 20   | 28    |
| 2452-000-X7R0-471M        | --                          | 4     | ●●    | C       | --                         | 250            | 470                 | ±20%                     | 20             | --                                                             | 12     | 27   | 27    |
| 2452-000-X5U0-102P        | --                          | 4     | ●●    | C       | 500                        | --             | 1000                | +100-0%                  | 20             | 3                                                              | 20     | 35   | 40    |

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## 1/4-28 and 5/16-24 UNF-2A and 5/16-32 UNEF-2A Pi Filters and Feed-Thru Capacitors



| TUSONIX Part Number | Temperature Range | WVDC | MAX. CAP. (Nominal) (pF) |
|---------------------|-------------------|------|--------------------------|
| 327                 | Z5, Y5, X5        | 500  | 10,000                   |
|                     | X7                | 250  | 10,000                   |
| 2432                | Z5, Y5, X5        | 2000 | 7,000                    |
|                     | X7                | 1000 | 7,000                    |

Please see Temperature Characteristics and EIA Codes on page 21.

### Notes:

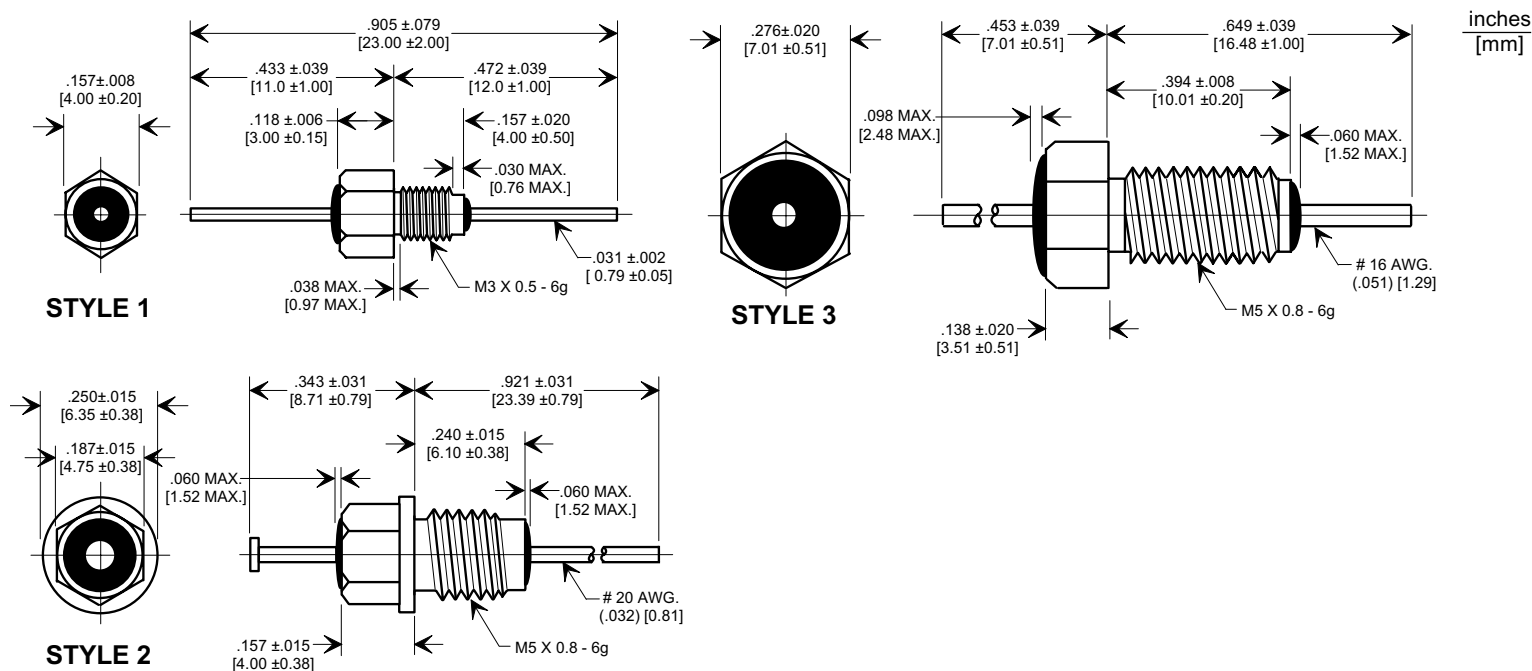
- ▽ 5/16-24 UNF-2A Thread
- Typical Insertion Loss

| TUSONIX<br>Part<br>Number | MIL-PRF-<br>15733<br>Number | Style | Notes | Circuit | Working<br>Voltage<br>(dc) |                | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |        |      |       |
|---------------------------|-----------------------------|-------|-------|---------|----------------------------|----------------|---------------------|--------------------------|----------------|----------------------------------------------------------------|--------|------|-------|
|                           |                             |       |       |         | 85°C                       | 125°C          |                     |                          |                | 10MHz                                                          | 100MHz | 1GHz | 10GHz |
| C Configuration           |                             |       |       |         |                            |                |                     |                          |                |                                                                |        |      |       |
| 327-010-X5U0-102M         | --                          | 2     | ••    | C       | 500                        | --             | 1000                | ±20%                     | 20             | 3                                                              | 20     | 35   | 40    |
| 327-010-X5U0-152M         | --                          | 2     | ••    | C       | 500                        | --             | 1500                | ±20%                     | 20             | 5                                                              | 22     | 35   | 40    |
| 327-010-X5U0-502P         | --                          | 2     | ••    | C       | 500                        | --             | 5000                | +100-0%                  | 20             | 15                                                             | 30     | 45   | 50    |
| 327-010-X7W0-103Z         | --                          | 2     | ••    | C       | --                         | 250            | 10,000              | +80-20%                  | 20             | 20                                                             | 35     | 50   | 55    |
| C Configuration           |                             |       |       |         |                            |                |                     |                          |                |                                                                |        |      |       |
| 2432-002-X5R0-101M        | --                          | 3     | ••    | C       | 2000                       | --             | 100                 | ±20%                     | 20             | --                                                             | 3      | 20   | 27    |
| 2432-002-X5S0-471M        | --                          | 3     | ••    | C       | 2000                       | --             | 470                 | ±20%                     | 20             | --                                                             | 12     | 27   | 27    |
| 2432-002-X5U0-502M        | --                          | 3     | ••    | C       | 2000                       | --             | 5000                | ±20%                     | 20             | 15                                                             | 30     | 45   | 50    |
| 2432-002-X5W0-752Z        | --                          | 3     | ••    | C       | 2000                       | --             | 7500                | +80-20%                  | 20             | 15                                                             | 30     | 45   | 50    |
| 2432-002-X7R0-102M        | --                          | 3     | ••    | C       | --                         | 1000           | 1000                | ±20%                     | 20             | 3                                                              | 20     | 35   | 40    |
| PI Configuration          |                             |       |       |         |                            |                |                     |                          |                |                                                                |        |      |       |
| 4206-016                  | --                          | 1     | --    | Pi      | 1000                       | --             | 1000                | GMV                      | 25             | 3                                                              | 35     | 65   | 65    |
| 4206-501                  | /61-0004                    | 4     | --    | Pi      | --                         | 500dc<br>350ac | 2000                | GMV                      | 25ac           | --                                                             | 55     | 70   | 70    |
| 4206-502                  | /61-0003                    | 4     | ▽     | Pi      | --                         | 500dc<br>350ac | 2000                | GMV                      | 25ac           | --                                                             | 55     | 70   | 70    |
| 4206-006                  | --                          | 1     | --    | Pi      | 1000                       | 500            | 3000                | GMV                      | 25             | 10                                                             | 55     | 70   | 70    |

Drawings not to scale.

**Please note:** All bushing style filters include hex nut and lock washer unless otherwise specified.

## Metric Bushing Filters



| Series Number | Temperature Range | WVdc | MAX. CAP. Nominal (pF) |
|---------------|-------------------|------|------------------------|
| 2499          | Z5, Y5, X5        | 500  | 5000                   |
|               | X7                | 250  | 5000                   |

Please see Temperature Characteristics and EIA Codes on page 21.

| Notes:                    |
|---------------------------|
| •• Typical Insertion Loss |

| TUSONIX<br>Part<br>Number | Style | Notes | Circuit | Working<br>Voltage<br>(dc) |       | Capacitance<br>(pF) | Capacitance<br>Tolerance | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |       |        |      |       |
|---------------------------|-------|-------|---------|----------------------------|-------|---------------------|--------------------------|----------------|----------------------------------------------------------------|-------|--------|------|-------|
|                           |       |       |         | 85°C                       | 125°C |                     |                          |                | 1MHz                                                           | 10MHz | 100MHz | 1GHz | 10GHz |
|                           |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| M3 Thread                 |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4400-093                  | 1     | --    | C       | 70                         | 50    | 10,000              | +80-20%                  | 10             | 4                                                              | 20    | 35     | 50   | 50    |
| 4400-098                  | 1     | --    | C       | 70                         | 50    | 27,000              | GMV                      | 10             | 10                                                             | 28    | 42     | 55   | 60    |
| 4400-099                  | 1     | --    | C       | 50                         | 50    | 50,000              | GMV                      | 10             | 15                                                             | 35    | 45     | 70   | --    |
| 4400-094                  | 1     | --    | C       | 150                        | 100   | 4700                | GMV                      | 10             | --                                                             | 15    | 30     | 45   | 55    |
| 4400-095                  | 1     | --    | C       | 300                        | 200   | 1000                | GMV                      | 10             | --                                                             | 5     | 20     | 35   | 45    |
| 4400-683                  | 1     | --    | C       | 300                        | 200   | 5                   | MAX                      | 10             | --                                                             | --    | --     | --   | --    |
| 4400-076                  | 1     | --    | C       | 300                        | 200   | 100                 | GMV                      | 10             | --                                                             | --    | 3      | 20   | 28    |
| 4400-096                  | 1     | --    | C       | 300                        | 200   | 470                 | GMV                      | 10             | --                                                             | --    | 15     | 35   | 40    |
| 4400-097                  | 1     | --    | C       | 150                        | 100   | 2700                | GMV                      | 10             | --                                                             | 10    | 25     | 40   | 50    |
| M5 Thread                 |       |       |         |                            |       |                     |                          |                |                                                                |       |        |      |       |
| 4209-053                  | 2     | --    | Pi      | 350                        | 100   | 5500                | GMV                      | 10             | --                                                             | 20    | 65     | 70   | 70    |
| 4209-003                  | 2     | --    | Pi      | 350                        | 200   | 1500                | GMV                      | 10             | --                                                             | 5     | 45     | 70   | 70    |
| 2499-523-Y5R0-102P        | 3     | ••    | C       | 500                        | --    | 1000                | +100-0%                  | 20             | --                                                             | 3     | 20     | 35   | 40    |

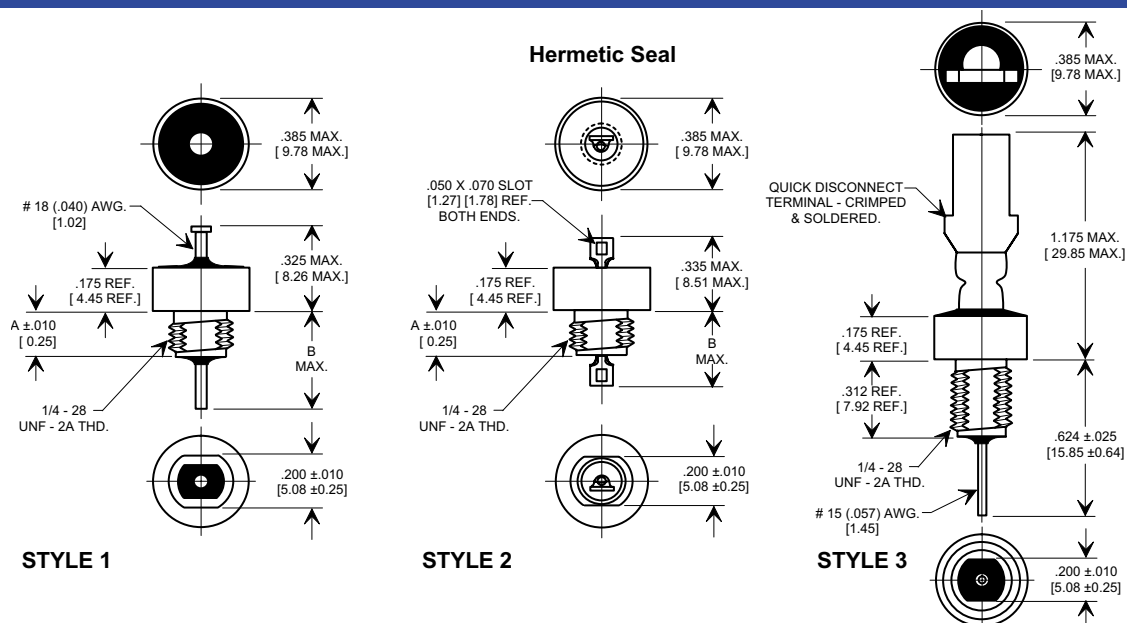
Drawings not to scale.

**Please note:** All bushing style filters include hex nut and lock washer unless otherwise specified.

The products listed in this catalog are only a few of the thousands of variations that TUSONIX produces. For custom component design, please contact the factory direct.

**TUSONIX**

## Coaxial Broadband Filter 1/4-28 UNF-2A



inches  
[mm]

| TUSONIX<br>Part<br>Number      | Style | Dim.<br>A<br>inch<br>[mm] | Dim.<br>B<br>inch<br>[mm] | Circuit | Working<br>Voltage<br>(dc) |                | Capacitance<br>(pF) | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |        |        |      |       |      |
|--------------------------------|-------|---------------------------|---------------------------|---------|----------------------------|----------------|---------------------|----------------|----------------------------------------------------------------|--------|--------|------|-------|------|
|                                |       |                           |                           |         | 85°C                       | 125°C          |                     |                | 30KHz                                                          | 100KHz | 300KHz | 1MHz | 10MHz | 1GHz |
|                                |       |                           |                           |         |                            |                |                     |                |                                                                |        |        |      |       |      |
| X7W Temperature Characteristic |       |                           |                           |         |                            |                |                     |                |                                                                |        |        |      |       |      |
| 4601-009                       | 2     | .187 [4.75]               | .350 [8.89]               | C       | 100                        | 70             | 10pF Max            | 15             | --                                                             | --     | --     | --   | --    | --   |
| 4600-005                       | 1     | .187 [4.75]               | .367 [9.32]               | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-006                       | 1     | .312 [7.93]               | .492 [12.50]              | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-005                       | 2     | .187 [4.75]               | .350 [8.89]               | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-006                       | 2     | .312 [7.93]               | .475 [12.07]              | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-000                       | 1     | .187 [4.75]               | .367 [9.32]               | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-002                       | 1     | .312 [7.93]               | .492 [12.50]              | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-000                       | 2     | .187 [4.75]               | .350 [8.89]               | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-002                       | 2     | .312 [7.93]               | .475 [12.07]              | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-055                       | 1     | .187 [4.75]               | .367 [9.32]               | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-056                       | 1     | .312 [7.93]               | .492 [12.50]              | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-055                       | 2     | .187 [4.75]               | .350 [8.89]               | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-056                       | 2     | .312 [7.93]               | .475 [12.07]              | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-050                       | 1     | .187 [4.75]               | .367 [9.32]               | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-052                       | 1     | .312 [7.93]               | .492 [12.50]              | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-050                       | 2     | .187 [4.75]               | .350 [8.89]               | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-052                       | 2     | .312 [7.93]               | .475 [12.07]              | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
|                                |       |                           |                           |         |                            |                |                     |                |                                                                |        |        |      |       |      |
| X7R Temperature Characteristic |       |                           |                           |         |                            |                |                     |                |                                                                |        |        |      |       |      |
| 4600-007                       | 1     | .187 [4.75]               | .367 [9.32]               | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-008                       | 1     | .312 [7.93]               | .492 [12.50]              | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-007                       | 2     | .187 [4.75]               | .350 [8.89]               | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-008                       | 2     | .312 [7.93]               | .475 [12.07]              | C       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-003                       | 1     | .187 [4.75]               | .367 [9.32]               | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-004                       | 1     | .312 [7.93]               | .492 [12.50]              | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-003                       | 2     | .187 [4.75]               | .350 [8.89]               | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-004                       | 2     | .312 [7.93]               | .475 [12.07]              | C       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-009                       | 1     | .187 [4.75]               | .367 [9.32]               | C       | 280                        | 200dc<br>125ac | .15 µF              | 15             | --                                                             | 7      | 15     | 25   | 40    | 60   |
| 4601-010                       | 2     | .187 [4.75]               | .350 [8.89]               | C       | 280                        | 200dc<br>125ac | .15 µF              | 15             | --                                                             | 7      | 15     | 25   | 40    | 60   |
| 4600-057                       | 1     | .187 [4.75]               | .367 [9.32]               | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-058                       | 1     | .312 [7.93]               | .492 [12.50]              | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-057                       | 2     | .187 [4.75]               | .350 [8.89]               | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4601-058                       | 2     | .312 [7.93]               | .475 [12.07]              | L       | 100                        | 70             | 0.7 µF              | 15             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-053                       | 1     | .187 [4.75]               | .367 [9.32]               | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-054                       | 1     | .312 [7.93]               | .492 [12.50]              | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-053                       | 2     | .187 [4.75]               | .350 [8.89]               | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4601-054                       | 2     | .312 [7.93]               | .475 [12.07]              | L       | 100                        | 70             | 1.4 µF              | 15             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-059                       | 1     | .187 [4.75]               | .367 [9.32]               | L       | 280                        | 200dc<br>125ac | .15 µF              | 15             | --                                                             | 7      | 15     | 25   | 40    | 60   |
| 4601-059                       | 2     | .187 [4.75]               | .350 [8.89]               | L       | 280                        | 200dc<br>125ac | .15 µF              | 15             | --                                                             | 7      | 15     | 25   | 40    | 60   |

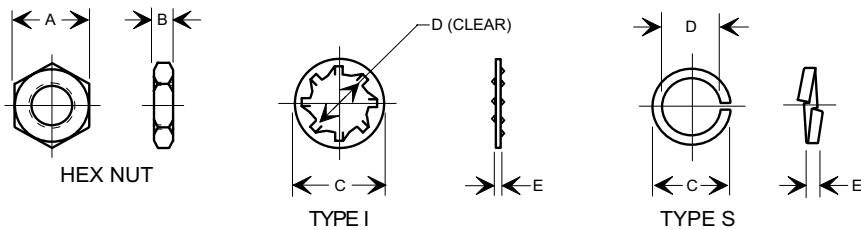
## Coaxial Broadband Filter 1/4-28 UNF-2A and Standard Hardware Dimensions

### Notes:

▲ 12 AWG .081[2.06] Lead and X7W Temp. Characteristic

| TUSONIX<br>Part<br>Number      | Style | Notes | Dim.<br>A<br>inch<br>[mm] | Dim.<br>B<br>inch<br>[mm] | Circuit | Working<br>Voltage<br>(dc) |                | Capacitance<br>(pF) | Current<br>(A) | Minimum No-Load Insertion Loss<br>(dB) at 25°C per MIL-Std-220 |        |        |      |       |      |
|--------------------------------|-------|-------|---------------------------|---------------------------|---------|----------------------------|----------------|---------------------|----------------|----------------------------------------------------------------|--------|--------|------|-------|------|
|                                |       |       |                           |                           |         | 85°C                       | 125°C          |                     |                | 30KHz                                                          | 100KHz | 300KHz | 1MHz | 10MHz | 1GHz |
| X7R Temperature Characteristic |       |       |                           |                           |         |                            |                |                     |                |                                                                |        |        |      |       |      |
| 4600-014                       | 3     | --    | --                        | --                        | C       | 100                        | 70             | 0.7 µF              | 20             | 9                                                              | 20     | 29     | 39   | 52    | 70   |
| 4600-015                       | 3     | --    | --                        | --                        | C       | 100                        | 70             | 1.4 µF              | 20             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-016                       | 3     | --    | --                        | --                        | C       | 280                        | 200dc<br>125ac | .15 µF              | 20             | --                                                             | 7      | 15     | 25   | 40    | 60   |
| 4600-070                       | 3     | --    | --                        | --                        | L       | 100                        | 70             | 0.7 µF              | 20             | 9                                                              | 20     | 29     | 39   | 40    | 70   |
| 4600-067                       | 3     | ▲     | --                        | --                        | L       | 100                        | 70             | 1.2 µF              | 30             | 15                                                             | 25     | 34     | 44   | 52    | 70   |
| 4600-071                       | 3     | --    | --                        | --                        | L       | 100                        | 70             | 1.4 µF              | 20             | 15                                                             | 25     | 34     | 44   | 60    | 70   |
| 4600-072                       | 3     | --    | --                        | --                        | L       | 280                        | 200dc<br>125ac | .15 µF              | 20             | --                                                             | 7      | 15     | 25   | 60    | 60   |

## STANDARD HARDWARE DIMENSIONS



| NUT THREAD SIZE | MOUNTING TORQUE LIMITS  | HEX NUT                      |                              | TYPE | LOCK WASHER  |             |             |
|-----------------|-------------------------|------------------------------|------------------------------|------|--------------|-------------|-------------|
|                 |                         | A                            | B                            |      | C            | D           | E           |
| 4-40 UNC        | 2 lb.in.<br>[.226 N-m]  | .187 [4.75]                  | .062 [1.57]                  | I    | .220 [5.59]  | .120 [3.05] | .015 [0.38] |
| 6-32 UNC        | 2 lb.in.<br>[.226 N-m]  | .187 [4.75]                  | .062 [1.57]                  | I    | .283 [7.19]  | .146 [3.71] | .017 [0.43] |
| 6-40 UNF        | 3 lb.in.<br>[.339 N-m]  | .187 [4.75]                  | .062 [1.57]                  | I    | .283 [7.19]  | .146 [3.71] | .017 [0.43] |
| 8-32 UNC        | 5 lb.in.<br>[.565 N-m]  | .250 [6.35]                  | .075 [1.91]                  | I    | .283 [7.19]  | .167 [4.24] | .018 [0.46] |
| 8-36 UNF        | 1 lb.in.<br>[.113 N-m]  | --                           | --                           | I    | .283 [7.19]  | .167 [4.24] | .015 [0.38] |
| 12-28 UNF       | 8 lb.in.<br>[.904 N-m]  | .250 [6.35]                  | .075 [1.91]                  | I    | .387 [9.83]  | .220 [5.59] | .022 [0.56] |
| 12-32 UNEF      | 8 lb.in.<br>[.904 N-m]  | .250 [6.35]                  | .075 [1.91]                  | I    | .387 [9.83]  | .220 [5.59] | .022 [0.56] |
| 1/4-28 UNF      | 8 lb.in.<br>[.904 N-m]  | .313 ± .015<br>[7.95 ± 0.38] | .125 ± .015<br>[3.18 ± 0.38] | I    | .387 [9.83]  | .220 [5.59] | .022 [0.56] |
| 5/16-24 UNF     | 9 lb.in.<br>[1.02 N-m]  | .375 ± .010<br>[9.53 ± 0.25] | .090 [2.29]                  | I    | .420 [10.6]  | .262 [6.65] | .025 [0.63] |
| 5/16-32 UNEF    | 9 lb.in.<br>[1.02 N-m]  | .375 ± .010<br>[9.53 ± 0.25] | .090 [2.29]                  | I    | .430 [10.92] | .318 [8.08] | .022 [0.56] |
| 3/8-32 UNEF     | 9 lb.in.<br>[1.02 N-m]  | .500 ± .010<br>[12.7 ± 0.25] | .090 [2.29]                  | I    | .430 [10.92] | .318 [8.08] | .022 [0.56] |
| M3 X 0.5        | 2 lb.in.<br>[.226 N-m]  | .187 ± .010<br>[4.75 ± 0.25] | .062 [1.57]                  | I    | .500 [12.70] | .384 [9.75] | .022 [0.56] |
| M5 X 0.8 6g     | .7 lb.in.<br>[.790 N-m] | .250 [6.35]                  | .075 [1.91]                  | S    | .192 [4.88]  | .118 [2.99] | .025 [0.63] |
|                 |                         |                              |                              | S    | .277 [7.04]  | .172 [4.37] | .034 [0.86] |
|                 |                         |                              |                              | S    | .361 [9.17]  | .225 [5.72] | .050 [1.27] |

### Characteristics

- Dimensions: Inches [metric]  
Dimensional Tolerance:  
± .005 [0.13], thread tolerance class 2.
- Standard finish: Silver
- Nut material: Brass  
Washer material: Phosphor Bronze
- When mounting filter without hardware, into tapped hole, the mounting torque applied to the filter body must be no more than 1/2 the torque limits listed on the chart to the left.

The products listed in this catalog are only a few of the thousands of variations that TUSONIX produces. For custom component design, please contact the factory direct.



## Product Installation Recommendations and EIA codes

### PRODUCT INSTALLATION RECOMMENDATIONS

The components in this catalog are manufactured with ceramic dielectrics. To minimize possible damage to the components during installation, the recommendations below should be followed. For information concerning other installation requirements and/or component modifications, consult TUSONIX Customer Engineering at (520) 744-0400.

#### General Recommendations

- Handling:** Excessive force or direct impact to the component may result in breakage. Lead bending or cutting, if necessary, should be done with a support for the lead to prevent mechanical stress to the component. Components with required lead modifications are available from TUSONIX.
- Lead Soldering:** Use a temperature controlled soldering iron with SN60 or SN63 RMA Flux core wire. Maximum soldering temperature to be 500°F (260°C) with a dwell time of 3 seconds maximum. The use of a heat sink between the component body and the solder joint is highly recommended.
- Flux Removal:** Optimum flux removal can be achieved by vapor degreasing the components immediately after the soldering operation. Total immersion of the components is not recommended.

#### Solder Mount Recommendations

- Mounting:** Use a convection or infrared oven and SN60 or SN63 solder paste, or solder preforms, with RMA Flux. The oven profile should slowly heat the entire assembly to a reflow temperature of 430°F (221°C), with a rate of change not to exceed 5°F, 3°C/Sec. and a dwell time as short as possible.
- Internal Electrode Soldering:** Use a temperature controlled soldering iron with SN62 silver bearing (2%) RMA Flux core solder wire. The components should be preheated to 300°F (150°C), then soldered with a maximum temperature of 500°F (260°C) and a dwell of 3 seconds maximum.

#### Bushing Mount Recommendations

For Mounting Torque, please see standard hardware dimensions table on page 20.

### EIA/Tusonix Tolerance Codes

| TEMPERATURE CHARACTERISTICS |                     |
|-----------------------------|---------------------|
| EIA Code                    | Temperature Range   |
| Z5                          | +10°C to +85°C      |
| Y5                          | -30°C to +85°C      |
| X5                          | -55°C to +85°C      |
| X7                          | -55°C to +125°C     |
| EIA Code                    | Maximum Cap. Change |
| D                           | ± 3.3%              |
| E                           | ± 4.7%              |
| F                           | ± 7.5%              |
| P                           | ± 10%               |
| R                           | ± 15%               |
| S                           | ± 22%               |
| T                           | + 22% -33%          |
| U                           | + 22% -56%          |
| V                           | + 22% -82%          |
| W                           | + 22% -90%          |

| CAPACITANCE TOLERANCE                |      |                                   |
|--------------------------------------|------|-----------------------------------|
| Nominal Capacitance<br>10 pF or Less | Code | Nominal Capacitance<br>over 10 pF |
| GMV◆                                 | AA   | GMV◆                              |
| ± 0.1 pF                             | A    | +50% -20%                         |
| ± 0.25 pF                            | B    | ± 0.10%                           |
| ± 0.5 pF                             | C    | ± 0.25%                           |
| ± 0.3 pF                             | D    | ± 0.50%                           |
| ± 1 pF                               | E    | +70% -30%                         |
| ± 2 pF                               | F    | ± 1%                              |
| ± 3%                                 | G    | ± 2%                              |
|                                      | H    | ± 3%                              |
|                                      | I    | +60% -40%                         |
| ± 5%                                 | J    | ± 5%                              |
| ± 10%                                | K    | ± 10%                             |
| ± 2%                                 | L    | +100% -40%                        |

| CAPACITANCE TOLERANCE (Cont.)        |      |                                   |
|--------------------------------------|------|-----------------------------------|
| Nominal Capacitance<br>10 pF or Less | Code | Nominal Capacitance<br>over 10 pF |
| ± 20%                                | M    | ± 20%                             |
| ± 0.4 pF                             | N    | ± 30%                             |
|                                      | P    | +100% -0%                         |
| ± 0.2 pF                             | Q    | ± 15%                             |
|                                      | R    | ± 2.5%                            |
|                                      | S    | +50% -15%                         |
|                                      | T    | +30% -20%                         |
|                                      | U    | +80% -0%                          |
|                                      | V    | ± 7%                              |
|                                      | W    | +50% -30%                         |
| MAX.                                 | X    | +40% -10%                         |
|                                      | Y    | +50% -0%                          |
|                                      | Z    | +80% -20%                         |

◆GMV: TUSONIX Code: Guaranteed Minimum Value

**Please note:** Maximum Capacitance for each part number is determined by the required operating temperature range and maximum capacitance change.

## General Test Specifications

The Components shown in this catalog have been designed and subjected to the following test plan, as is applicable for the individual components. The information shown can be used as a basis for component specifications. For additional information, please consult Customer Engineering at (520) 744-0400.

Filters governed by MIL-PRF-15733 shall be inspected and tested to the requirements of the specification and the applicable specification (slash) sheet.

| LOT ACCEPTANCE INSPECTION:                      |                                                                                                     |                                                                   |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| INSPECTION OR TEST                              | TEST METHOD PER MIL-STD-202 EXCEPT AS NOTED                                                         | POST TEST REQUIREMENTS                                            |
| Visual and Mechanical                           |                                                                                                     | In accordance with applicable requirements                        |
| Materials, Design, Construction and Workmanship |                                                                                                     |                                                                   |
| Physical Dimensions and Marking                 |                                                                                                     |                                                                   |
| Seal (4601 Style Only)                          | Method 112, conditon A                                                                              | No Leaks                                                          |
| Capacitance                                     | Method 305, 1 KHz, 1±0.2 VRMS max. +25°C                                                            | Within specified tolerance.                                       |
| Dissipation Factor                              | Method 305, 1 KHz, 1±0.2 VRMS max. +25°C                                                            | 4.0% max.                                                         |
| Dielectric Withstanding Voltage                 | Method 301, 2 seconds, 50 mA max. charging current, 2 times WVDC.                                   | No evidence of damage or break down.                              |
| Insulation Resistance                           | Method 302, 50 mA max. charging current, 100VDC, 2 minutes or as specified by individual variation. | Greater than 10,000 Megohms or 100 Ohm-Farads, whichever is less. |
| Insertion Loss                                  | MIL-STD-220, 50 Ohms, + 25°C, no load                                                               | Per applicable requirements.                                      |
| DC Resistance (4601 Style Only)                 | MIL-PRF-15733                                                                                       | 0.01 Ohms max.                                                    |
| Solderability (5 pcs)                           | Method 208                                                                                          | Per applicable requirements                                       |

### PERIODIC QUALITY CONFORMANCE INSPECTION:

A periodic quality conformance inspection program consisting of environmental and reliability testing is in place to ensure that product integrity is consistently maintained.

**TUSONIX on-line** [www.tusonix.com](http://www.tusonix.com)

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