Manufacturing

CTS utilizes more than 120,000 square feet (11,150 square meters) of manufacturing space, dedicated to providing high quality EMI/RFI products.

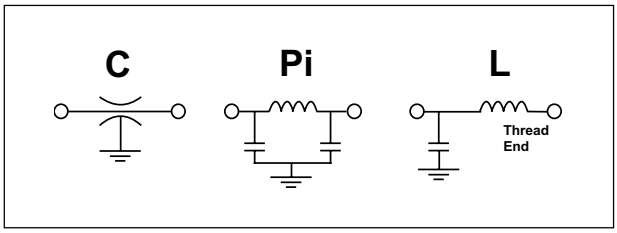
In addition to the standard catalog items, CTS has numerous variations of these designs and can custom design a part to meet your particular specifications. CTS maintains a staff of highly skilled Customer Engineers to assist our customers in the design of custom products.

Meeting Customer Requirements

CTS is devoted to bringing the company's broad product line to an ever expanding world market.

CTS has more than five decades of efficient manufacturing expertise in its corporate heritage, and utilizes sophisticated equipment to provide customers with attractive pricing and full value for the products they purchase.

Circuits Available in this Catalog





Quality Objective

The timely delivery of quality products which exceed our customers' expectations through the use of effective teamwork and the process of continuous improvement.

Quality

Quality is the key ingredient in all our products with approval to MIL-PRF-15733, MIL-PRF-81 and MIL-C-11015. CTS maintains a fully approved Quality Assurance laboratory and relies heavily on Statistical Process Control to monitor critical operations.

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

Providing Excellence in EMI/RFI Filtering Components...

CTS manufactures thousands of EMC Products featuring an extensive line of EMI/RFI Filters and Capacitors.

We combine Technology, Expertise, Versatility and Innovation to produce the industry's most complete line of ceramic EMI/RFI Filters.



CTS draws upon its 50+ years of manufacturing expertise and an accumulated base of ceramic dielectric technology to provide an ever expanding line of EMI/RFI Filters and Capacitors.

CTS products not only set the industry standard but lead the way in the development of tomorrow's EMI Technology.

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How to use this Catalog

This Catalog identifies standard parts produced by CTS. Part numbers are listed in sections by mounting style (Solder Mount or Bushing Mount). Bushing parts are listed by circuit configuration and arranged in ascending order with respect to voltage rating at 125°C and then capacitance value.

FILTERS

Filters are assigned a four digit style number followed by a three digit variation number. (Example: 4100-003)

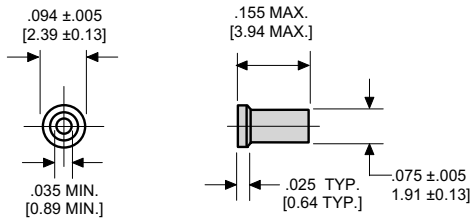
FEED-THRU CAPACITORS

Feed-thru capacitors are assigned a three or four digit style number followed by a three digit variation number, then the EIA Code for temperature characteristic, capacitance and tolerance. (Example: 2482-012-X5U0-272M)

For additional EIA Codes and Tolerances, please see page 25.

Solder Mount Feed-Thru Capacitors

inches
[mm]



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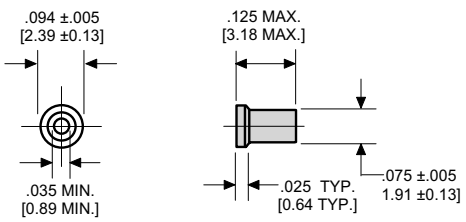

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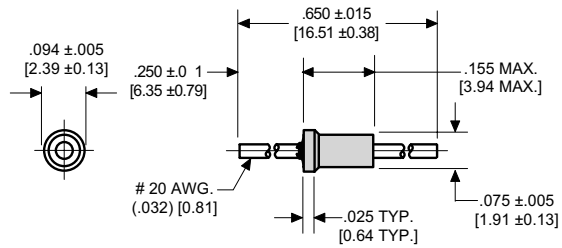

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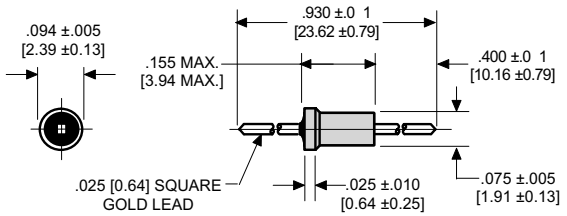

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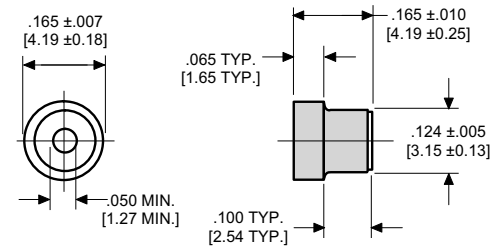

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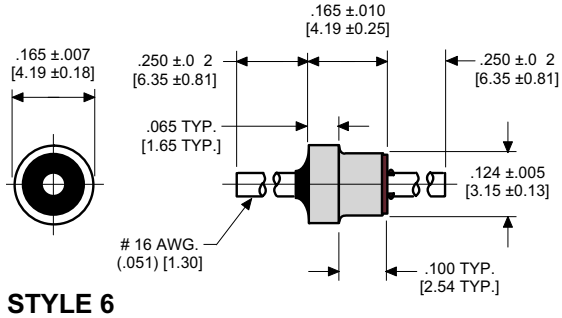

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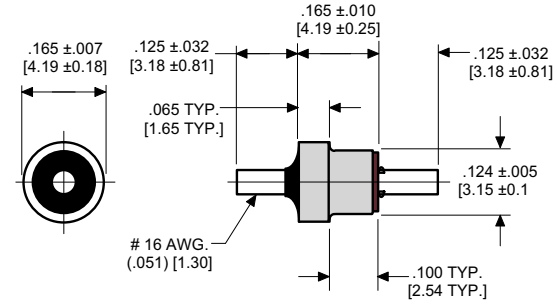

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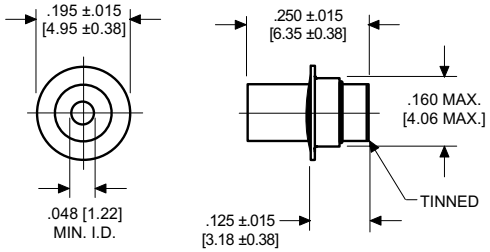

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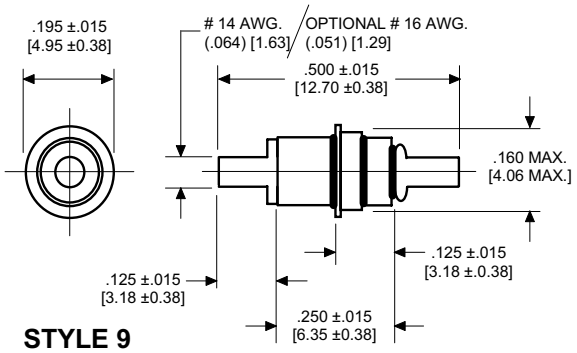

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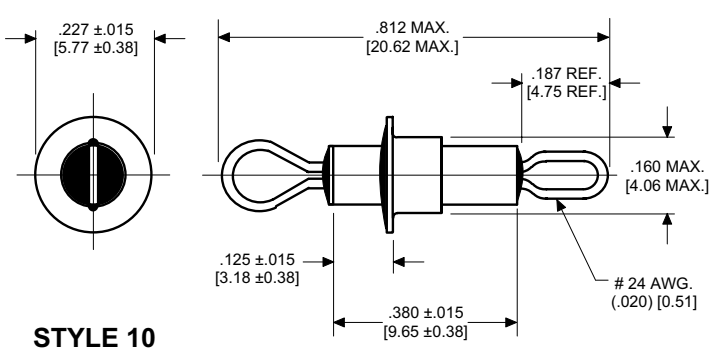

STYLE 10

Drawings not to scale.

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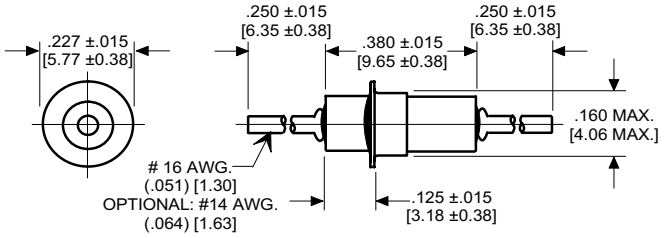
component design, please contact the factory direct.

Solder Mount Feed-Thru Capacitors



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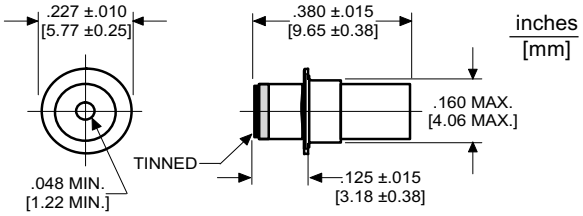

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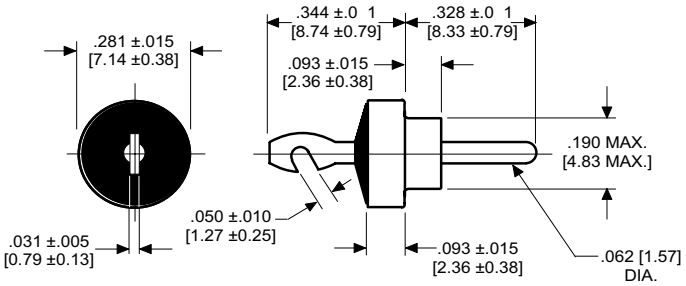

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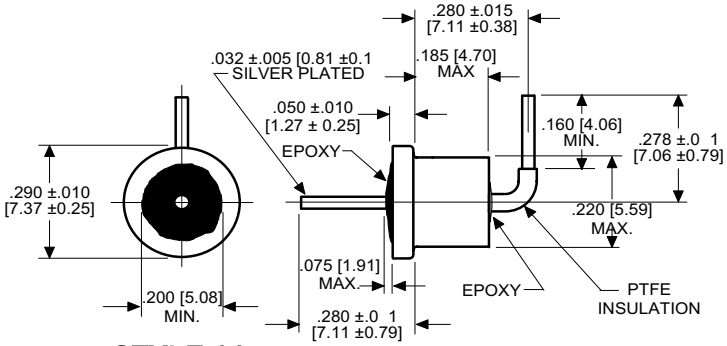
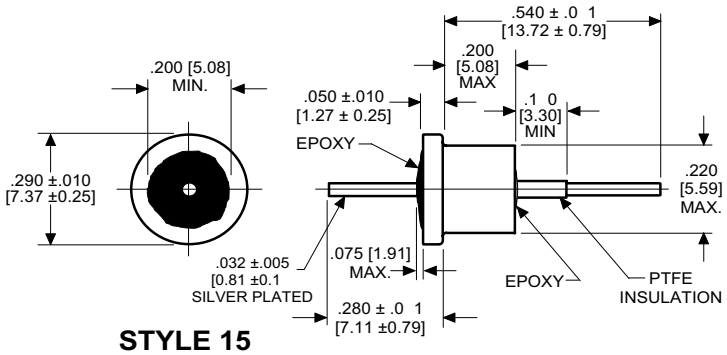


STYLE 14

Series Number	Temperature Range	WVDC	MAX. CAP. Nominal (pF)
2404	Z5, Y5, X5	500	7000
	X7	250	7000
2482	Z5, Y5, X5	300	4000
	X7	150	4000
2450	Z5, Y5, X5	500	1800
	X7	250	1800
2461	Z5, Y5, X5	200	1000
	X7	100	1000
2463	Z5, Y5, X5	200	2000
	X7	100	2000
2470	Z5, Y5, X5	250AC	2000
	--	--	--

Drawings not to scale.



STYLE 15

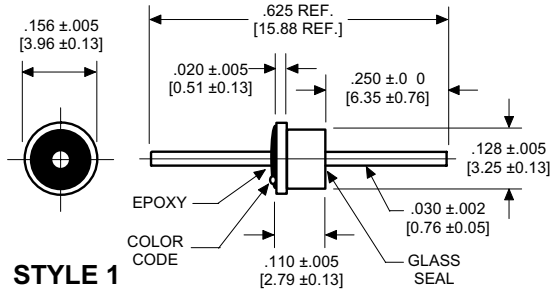
Please see temperature Characteristics and EIA Codes on page 25.

●UL Recognized to UL standard 1283; UL File No. E201344

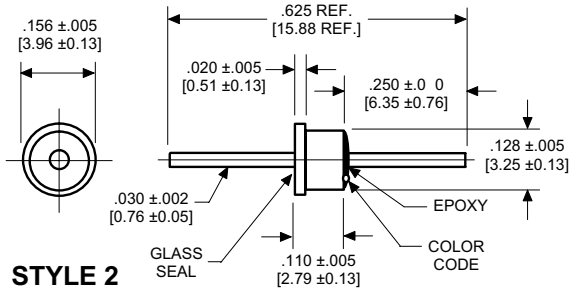
TUSONIX Part Number	Style	Notes	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Typical No-Load Insertion Loss (dB) at 25°C per MIL-Std-220				
				85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz
C Configuration													
2463-001-X5S0-471M	2	--	C	200	--	470	±20%	--	--	--	12	27	27
2463-002-X5S0-471M	3	--	C	200	--	470	±20%	10	--	--	12	27	27
2463-003-X5U0-471P	4	--	C	200	--	470	+100-0%	10	--	--	12	27	27
2461-000-X7V0-102P	5	--	C	--	100	1000	+100-0%	--	--	3	20	35	40
2461-001-X7V0-102AA	6	--	C	--	100	1000	GMV	20	--	3	20	35	40
2461-002-X7V0-102M	7	--	C	--	100	1000	±20%	20	--	3	20	35	40
2463-000-X7U0-152P	1	--	C	--	100	1500	+100-0%	--	--	5	22	35	40
2463-002-X5U0-152P	3	--	C	200	--	1500	+100-0%	10	--	5	22	35	40
2463-003-X5U0-152P	4	--	C	200	--	1500	+100-0%	10	--	5	22	35	40
2482-001-X5U0-471M	9	--	C	300	--	470	±20%	20	--	--	12	27	27
2482-012-X5U0-102M	8	--	C	300	--	1000	±20%	--	--	3	20	35	40
2482-001-X5U0-102M	9	--	C	300	--	1000	±20%	20	--	3	20	35	40
2450-001-X5R0-101K	13	--	C	500	--	100	±10%	20	--	--	3	20	28
2450-001-X5R0-471M	13	--	C	500	--	470	±20%	20	--	--	12	27	27
2404-000-X7R0-471M	11	--	C	--	250	470	±20%	20	--	--	12	27	27
2450-001-X5U0-102P	13	--	C	500	--	1000	+100-0%	20	--	3	20	35	40
2404-000-X5U0-102P	11	--	C	500	--	1000	+100-0%	20	--	3	20	35	40
2404-014-X5U0-102P	12	--	C	500	--	1000	+100-0%	--	--	3	20	35	40
2404-014-X5W0-502M	12	--	C	500	--	5000	±20%	--	--	15	30	45	50
2404-000-X5W0-502Z	11	--	C	500	--	5000	+80-20%	20	--	15	30	45	50
2404-007-X5W0-502Z	10	--	C	500	--	5000	+80-20%	15	--	15	30	45	50
2470-500●	14	--	C	250AC	--	1000	+100-0%	10	--	3	20	35	40
2470-501●	15	--	C	250AC	--	1000	+100-0%	10	--	3	20	35	40

Solder Mount C Filters

4300 Series Miniature EMI Filter
MICROWAVE APPLICATIONS:



STYLE 1



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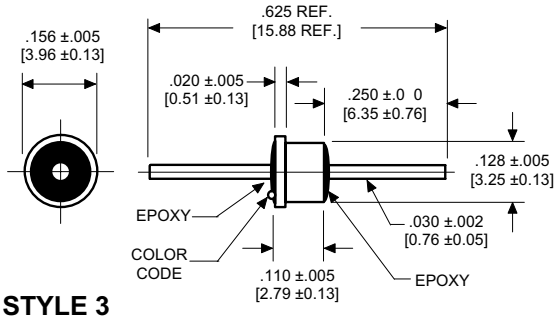

STYLE 3

- Oscillators
- Attenuators
- Low Noise Amplifiers
- Microwave Filters

inches
[mm]

TUSONIX Part Number	Style	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 1MHz	10MHz	100MHz	1GHz	10GHz	Color Code
Epoxy Sealed Top (flange)/ Glass Sealed Bottom													
4300-005	1	C	70	50	10,000	GMV	5	4	21	35	50	60	BLACK
4300-055	1	C	70	50	10,000	±20%	5	4	21	35	50	60	BLK-GOLD
4300-006	1	C	70	50	15,000	GMV	5	7	20	35	55	60	ORANGE
4300-013	1	C	70	50	27,000	GMV	5	10	28	42	65	65	RED-RED
4300-014	1	C	50	50	50,000	GMV	5	15	35	45	70	--	BLU-BLU
4300-003	1	C	150	100	2700	GMV	5	--	10	25	40	50	RED
4300-053	1	C	150	100	2700	±20%	5	--	10	25	40	50	RED-GOLD
4300-004	1	C	150	100	5000	GMV	5	--	15	30	45	55	YELLOW
4300-054	1	C	150	100	5000	±20%	5	--	15	30	45	55	YEL-GOLD
4300-680	1	C	300	200	5	MAX	5	--	--	--	--	--	BLK-BLK
4300-008	1	C	300	200	10	GMV	5	--	--	--	5	20	VIOLET
4300-009	1	C	300	200	25	GMV	5	--	--	--	10	25	BLUE
4300-000	1	C	300	200	100	GMV	5	--	--	3	20	28	GREEN
4300-050	1	C	300	200	100	±20%	5	--	--	3	20	28	GRN-GOLD
4300-001	1	C	300	200	500	GMV	5	--	--	15	35	40	BROWN
4300-051	1	C	300	200	500	±20%	5	--	--	15	35	40	BRWN-GOLD
4300-007	1	C	300	200	1000	GMV	5	--	5	20	35	45	GRAY
4300-002	1	C	300	200	1200	GMV	5	--	5	20	35	45	WHITE
4300-052	1	C	300	200	1200	±20%	5	--	5	20	35	45	WHT-GOLD

Drawings not to scale.

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component design, please contact the factory direct.

Solder Mount C Filters

TUSONIX 4300 Series Miniature EMI Filters



These filters are ideal for applications where small size and high performance are critical. These C configured filters can be glass sealed on either one of the ends for optimal sealing between system compartments or components.

The gold plating on the leads offers excellent conductivity and connective ability using common gold bonding methods. The small package and large range of electrical characteristics of the 4300 Series make it an effective solution for a variety of microwave applications.

TUSONIX Part Number	Style	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220					Color Code
			85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz	
Glass Sealed Top (flange)/ Epoxy Sealed Bottom													
4300-025	2	C	70	50	10,000	GMV	5	4	21	35	50	60	BLACK
4300-065	2	C	70	50	10,000	±20%	5	4	21	35	50	60	BLK-GOLD
4300-026	2	C	70	50	15,000	GMV	5	7	20	35	55	60	ORANGE
4300-031	2	C	70	50	27,000	GMV	5	10	28	42	65	65	RED-RED
4300-034	2	C	50	50	50,000	GMV	5	15	35	45	70	--	BLU-BLU
4300-023	2	C	150	100	2700	GMV	5	--	10	25	40	50	RED
4300-063	2	C	150	100	2700	±20%	5	--	10	25	40	50	RED-GOLD
4300-024	2	C	150	100	5000	GMV	5	--	15	30	45	55	YELLOW
4300-064	2	C	150	100	5000	±20%	5	--	15	30	45	55	YEL-GOLD
4300-681	2	C	300	200	5	MAX	5	--	--	--	--	--	BLK-BLK
4300-028	2	C	300	200	10	GMV	5	--	--	--	5	20	VIOLET
4300-029	2	C	300	200	25	GMV	5	--	--	--	10	25	BLUE
4300-020	2	C	300	200	100	GMV	5	--	--	3	20	28	GREEN
4300-060	2	C	300	200	100	±20%	5	--	--	3	20	28	GRN-GOLD
4300-021	2	C	300	200	500	GMV	5	--	--	15	35	40	BROWN
4300-061	2	C	300	200	500	±20%	5	--	--	15	35	40	BRWN-GOLD
4300-027	2	C	300	200	1000	GMV	5	--	5	20	35	45	GRAY
4300-022	2	C	300	200	1200	GMV	5	--	5	20	35	45	WHITE
4300-062	2	C	300	200	1200	±20%	5	--	5	20	35	45	WHT-GOLD
Epoxy Sealed Top (flange)/ Epoxy Sealed Bottom													
4302-005	3	C	70	50	10,000	GMV	10	4	21	35	50	60	BLACK
4302-006	3	C	70	50	15,000	GMV	10	7	20	35	55	60	ORANGE
4302-013	3	C	70	50	27,000	GMV	10	10	28	42	65	65	RED-RED
4302-014	3	C	50	50	50,000	GMV	10	15	35	45	70	--	BLU-BLU
4302-003	3	C	150	100	2700	GMV	10	--	10	25	40	50	RED
4302-004	3	C	150	100	5000	GMV	10	--	15	30	45	55	YELLOW
4302-680	3	C	300	200	5	MAX	10	--	--	--	--	--	BLK-BLK
4302-008	3	C	300	200	10	GMV	10	--	--	--	5	20	VIOLET
4302-009	3	C	300	200	25	GMV	10	--	--	--	10	25	BLUE
4302-000	3	C	300	200	100	GMV	10	--	--	3	20	28	GREEN
4302-001	3	C	300	200	500	GMV	10	--	--	15	35	40	BROWN
4302-007	3	C	300	200	1000	GMV	10	--	5	20	35	45	GRAY
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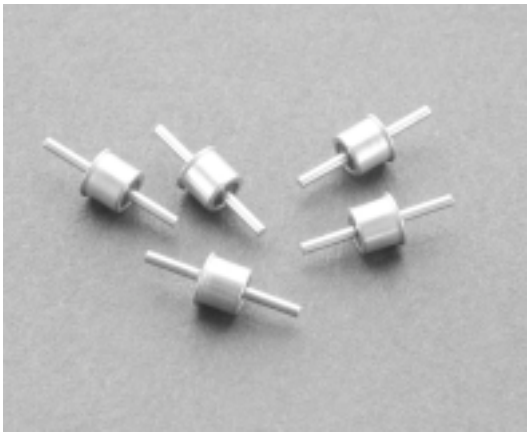

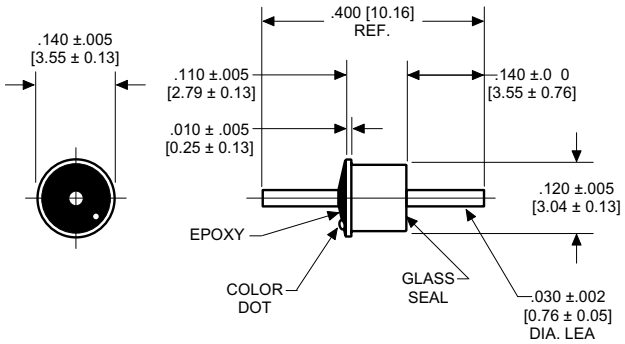



TUSONIX Part Number	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220					Color Code
		85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz	
Epoxy Sealed Top (flange)/ Glass Sealed Bottom												
4305-000	C	300	200	50	+100-0%	5	--	--	--	10	25	BRWN-BROWN
4305-001	C	300	200	100	+100-0%	5	--	--	3	20	28	GREEN
4305-002	C	300	200	500	+100-0%	5	--	--	--	35	40	BROWN
4305-003	C	150	100	2700	+100-0%	5	--	10	25	40	50	RED
4305-004	C	150	100	5000	+100-0%	5	--	15	25	45	55	YELLOW
4305-005	C	300	200	10	+100-0%	5	--	--	--	5	20	VIOLET
4305-006	C	300	200	25	+100-0%	5	--	--	--	10	25	BLUE
4305-007	C	300	200	250	+100-0%	5	--	--	5	22	30	YEL-YELLOW
4305-008	C	300	200	1000	+100-0%	5	--	5	20	35	45	GRAY
4305-009	C	300	200	1500	+100-0%	5	--	5	22	35	45	GREEN-GREEN
4305-010	C	70	50	10,000	+100-0%	5	4	21	35	50	60	BLACK
4305-011	C	70	50	27,000	+100-0%	5	10	28	45	65	70	RED-RED
4305-012	C	300	200	5	+100-0%	5	--	--	--	--	5	BLUE-BLUE
4305-680	C	300	200	5	MAX	5	--	--	--	--	--	BLACK-BLACK

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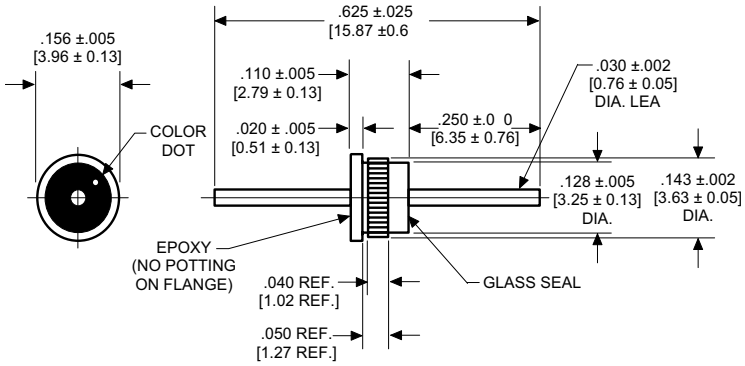
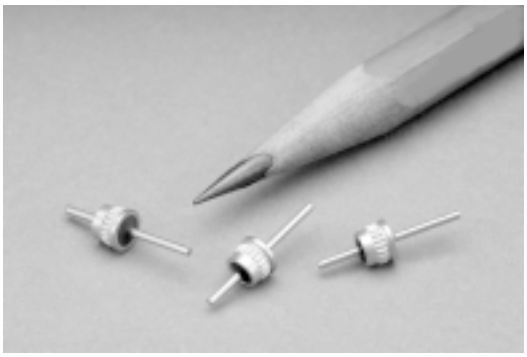
component design, please contact the factory direct.

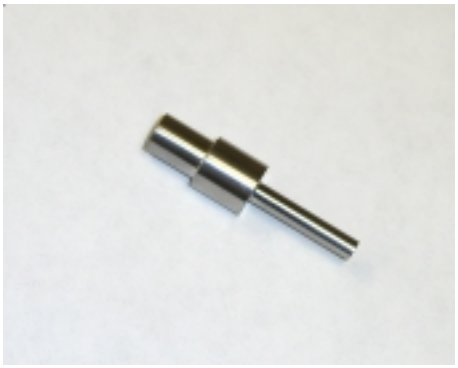




Tusonix Press-In Ceramic EMI filters suppress unwanted EMI and allow a fast, mechanical bonding that is free from soldering. And, by offering an excellent alternative to the traditional soldering installation, these finely designed, knurled filters significantly reduce assembly costs.

These EMI filters cover a variety of voltage, attenuation and capacitance ranges in a press-in mounting style.

Product installation recommendations (X-2656/9) are provided with parts to prevent damage to the component during installation.



Installation Tool: Ordering Information to right.

Installation tool

Tool Part No.	Item No.	Filter Type
4300-314	1	4304

(Ordering Example for 4304 filter tool: 4300-314-1)

TUSONIX Part Number	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220					Color Code
		85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz	
Epoxy Sealed Top (flange)/ Glass Sealed Bottom												
4304-000	C	300	200	10	+100-0%	5	--	--	--	5	20	VIOLET
4304-001	C	300	200	25	+100-0%	5	--	--	--	10	25	BLUE
4304-002	C	300	200	500	+100-0%	5	--	--	15	35	40	BROWN
4304-003	C	300	200	100	+100-0%	5	--	--	3	20	28	GREEN
4304-004	C	300	200	1000	+100-0%	5	--	5	20	35	45	GRAY
4304-005	C	300	200	1200	+100-0%	5	--	5	20	35	45	WHITE
4304-006	C	150	100	2700	+100-0%	5	--	10	25	40	50	RED
4304-007	C	150	100	5000	+100-0%	5	--	15	25	45	55	YELLOW
4304-008	C	70	50	10000	+100-0%	5	4	21	35	50	60	BLACK
4304-009	C	70	50	15000	+100-0%	5	7	20	35	55	60	ORANGE
4304-010	C	70	50	27000	+100-0%	5	10	28	45	65	65	RED-RED
4304-011	C	50	50	50000	+100-0%	5	15	35	45	70	--	BLUE-BLUE
4304-680	C	300	200	5	MAX	5	--	--	--	--	--	BLACK-BLACK

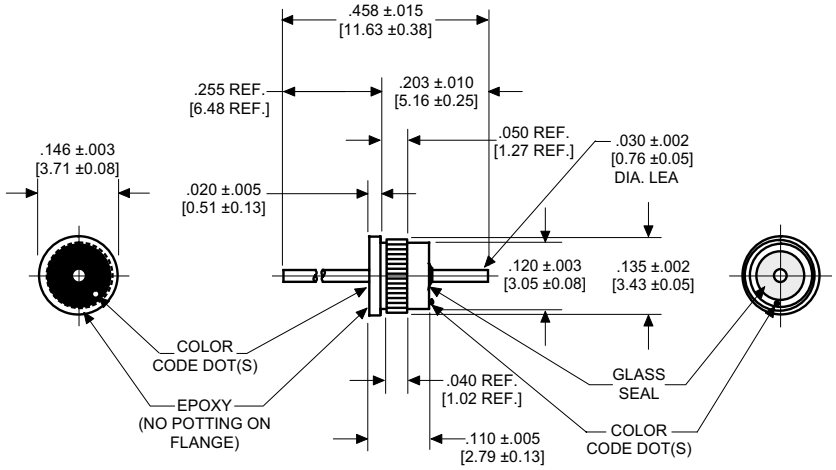


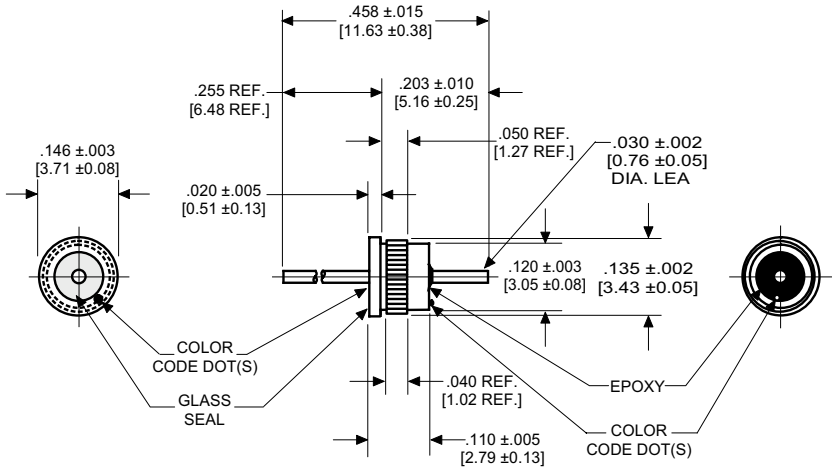
Installation tool

Installation tool

Tool Part No.	Item No.	Filter Type
4300-314	2	4306

(Ordering Example for 4306 filter tool: 4300-314-2)

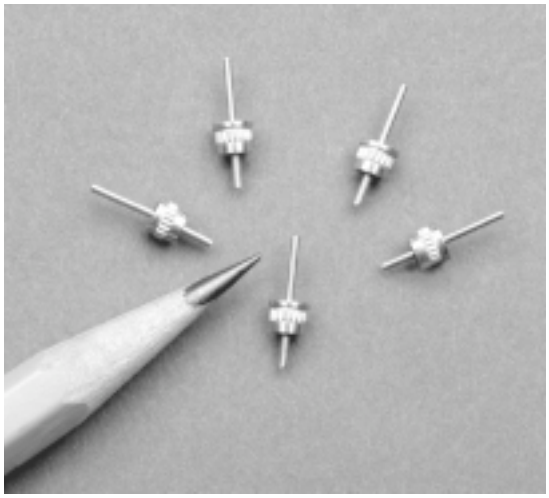




The products listed in this catalog are only a few of the thousands of variations that CTS produces. For custom component design, please contact the factory direct.
component design, please contact the factory direct.

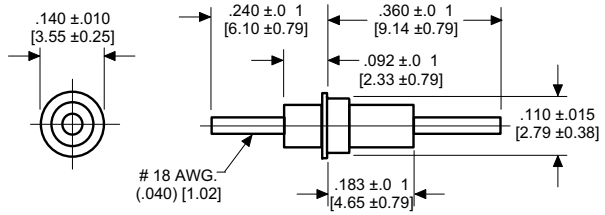
TUSONIX's Press-In EMI filters are excellent for a variety of microwave and RF applications that include:

- attenuators
- oscillators
- synthesizers
- combiners

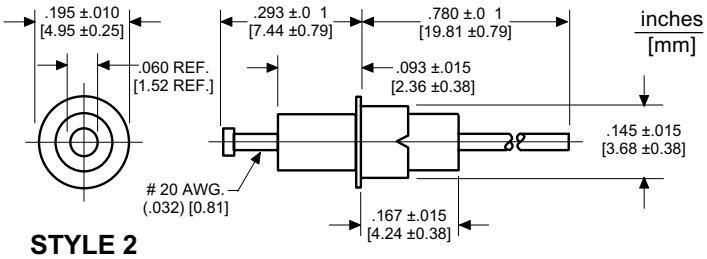


TUSONIX Part Number	Style	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220					Color Code
			85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz	
Epoxy Sealed Top (flange)/ Glass Sealed Bottom													
4306-010	1	C	70	50	10000	+100-0%	5	10	21	35	50	60	BLACK
4306-011	1	C	70	50	27000	+100-0%	5	--	28	45	65	70	RED-RED
4306-030	1	C	150	100	2700	+100-0%	5	--	10	25	40	50	RED
4306-004	1	C	150	100	5000	+100-0%	5	--	15	25	45	55	YELLOW
4306-012	1	C	300	200	5	+100-0%	5	--	--	--	--	5	BLUE-BLUE
4306-680	1	C	300	200	5	MAX	5	--	--	--	--	--	BLACK-BLACK
4306-028	1	C	300	200	10	+100-0%	5	--	--	--	5	20	VIOLET
4306-006	1	C	300	200	25	+100-0%	5	--	--	--	10	25	BLUE
4306-005	1	C	300	200	50	+100-0%	5	--	--	--	10	25	BROWN-BROWN
4306-029	1	C	300	200	100	+100-0%	5	--	--	3	20	28	GREEN
4306-007	1	C	300	200	250	+100-0%	5	--	--	5	22	30	YELLOW-YELLOW
4306-003	1	C	300	200	500	+100-0%	5	--	--	--	35	40	BROWN
4306-008	1	C	300	200	1000	+100-0%	5	--	5	20	35	45	GRAY
4306-009	1	C	300	200	1500	+100-0%	5	4	5	22	35	45	GREEN-GREEN
Glass Sealed Top (flange)/ Epoxy Sealed Bottom													
4306-023	2	C	70	50	10000	+100-0%	5	4	21	35	50	60	BLACK
4306-024	2	C	70	50	27000	+100-0%	5	10	28	45	65	70	RED-RED
4306-015	2	C	150	100	2700	+100-0%	5	--	10	25	40	50	RED
4306-017	2	C	150	100	5000	+100-0%	5	--	15	25	45	55	YELLOW
4306-025	2	C	300	200	5	+100-0%	5	--	--	--	--	5	BLUE-BLUE
4306-681	2	C	300	200	5	MAX	5	--	--	--	--	--	BLACK-BLACK
4306-013	2	C	300	200	10	+100-0%	5	--	--	--	5	20	VIOLET
4306-019	2	C	300	200	25	+100-0%	5	--	--	--	10	25	BLUE
4306-018	2	C	300	200	50	+100-0%	5	--	--	--	10	25	BROWN-BROWN
4306-014	2	C	300	200	100	+100-0%	5	--	--	3	20	28	GREEN
4306-020	2	C	300	200	250	+100-0%	5	--	--	5	22	30	YELLOW-YELLOW
4306-016	2	C	300	200	500	+100-0%	5	--	--	--	35	40	BROWN
4306-021	2	C	300	200	1000	+100-0%	5	--	5	20	35	45	GRAY
4306-022	2	C	300	200	1500	+100-0%	5	--	6	22	35	45	GREEN-GREEN

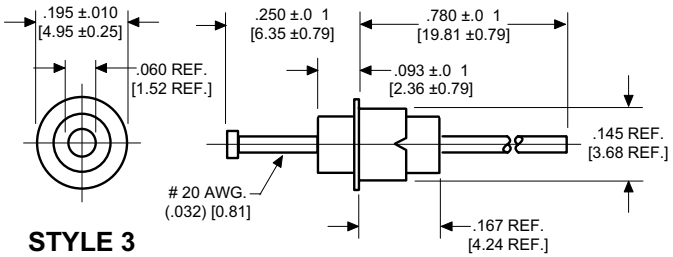
Solder Mount Pi Filters



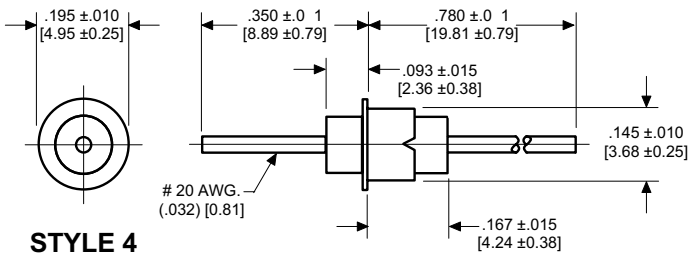
STYLE 1



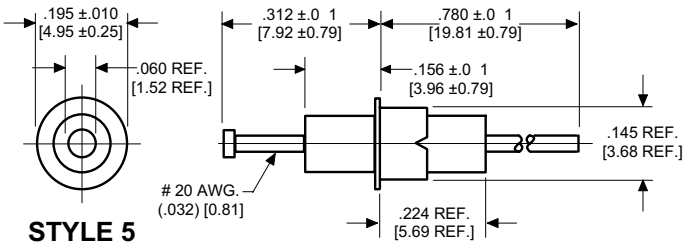
STYLE 2



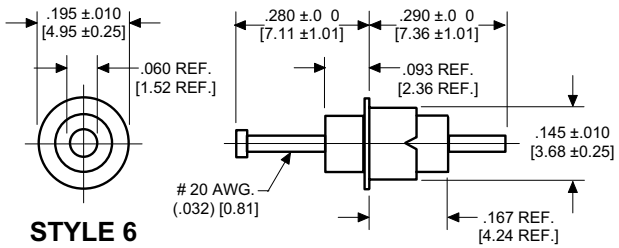
STYLE 3



STYLE 4



STYLE 5



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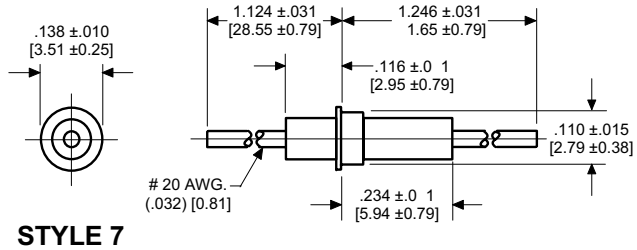
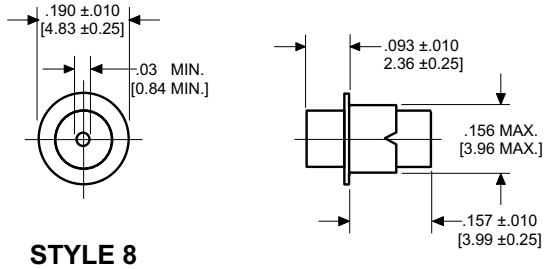
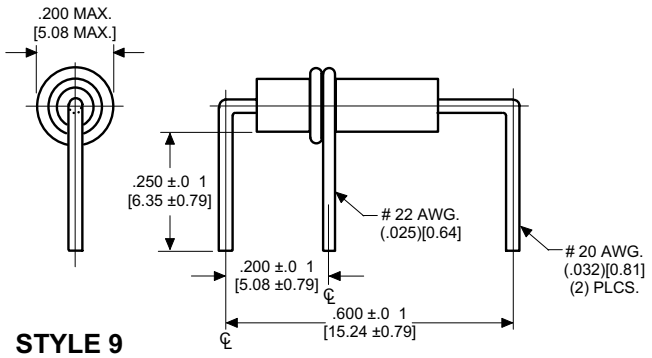


STYLE 7



STYLE 8



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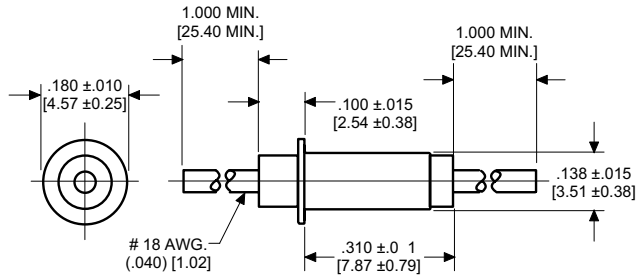
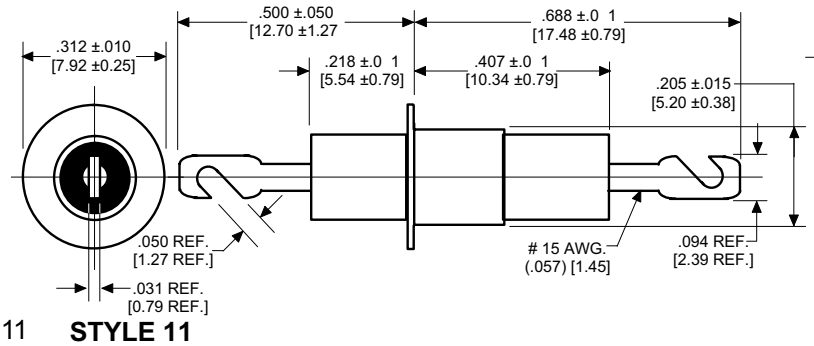
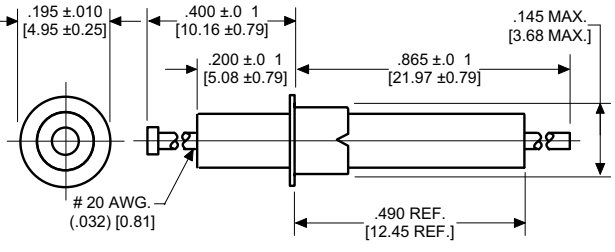


STYLE 10



STYLE 11



STYLE 12

Drawings not to scale.

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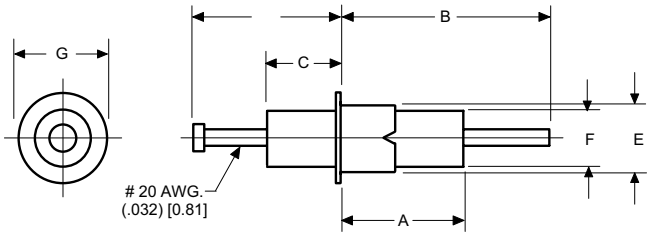
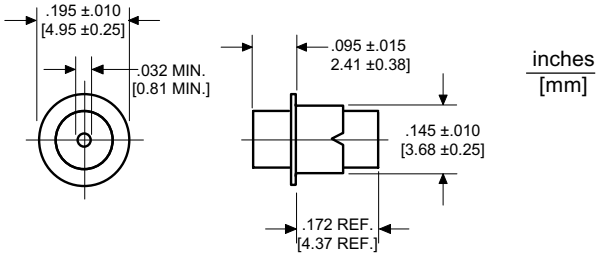
component design, please contact the factory direct.

Solder Mount Pi Filters



STYLE 13 THROUGH 19



STYLE 20

DIMENSIONS FOR STYLES 13 THROUGH 19

Style Number	MIL-PRF-15733	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F	DIM. G
13	/62-0003	.272 ± .025 [6.91 ± 0.64]	.438 ± .062 [11.13 ± 1.57]	.156 ± .015 [3.96 ± 0.38]	.312 ± .031 [7.92 ± 0.79]	.145 ± .015 [3.68 ± 0.38]	----	.190 ± .015 [4.83 ± 0.38]
14	/62-0004	.151 ± .031 [3.84 ± 0.79]	.780 ± .031 [19.81 ± 0.79]	.093 ± .031 [2.36 ± 0.79]	.273 ± .031 [6.93 ± 0.79]	.145 ± .015 [3.68 ± 0.38]	----	.196 ± .007 [4.98 ± 0.18]
15	/51-0002	.226 ± .022 [5.74 ± 0.56]	.780 ± .031 [19.81 ± 0.79]	.164 ± .022 [4.16 ± 0.56]	.312 ± .031 [7.92 ± 0.79]	.145 ± .015 [3.68 ± 0.38]	----	.203 ± .015 [5.16 ± 0.38]
16	/33-0001 /33-0002♦	.170 ± .027 [4.32 ± 0.69]	.780 ± .031 [19.81 ± 0.79]	.093 ± .015 [2.36 ± 0.38]	.288 ± .015 [7.32 ± 0.38]	----	.125 MAX [3.18 MAX]	.190 ± .015 [4.83 ± 0.38]
17	/62-0001	.250 ± .031 [6.35 ± 0.79]	.406 ± .031 [10.31 ± 0.79]	.156 ± .031 [3.96 ± 0.79]	.312 ± .031 [7.92 ± 0.79]	.145 ± .015 [3.68 ± 0.38]	.125 ± .015 [3.18 ± 0.38]	.190 ± .015 [4.83 ± 0.38]
18	/62-0002♦	.231± .046 [5.87 ± 1.17]	1.231± .077 [31.27 ± 1.96]	.109± .031 [2.77 ± 0.79]	1.109 ± .062 [28.17 ± 1.57]	.110 ± .015 [2.79 ± 0.38]	----	.143 ± .010 [3.63 ± 0.25]
19	/51-0001	.250 ± .031 [6.35 ± 0.79]	.406 ± .031 [10.31 ± 0.79]	.156 ± .031 [3.96 ± 0.79]	.312 ± .031 [7.92 ± 0.79]	.142 ± .007 [3.61 ± 0.18]	.122 ± .017 [3.10 ± 0.43]	.195 ± .010 [4.95 ± 0.25]

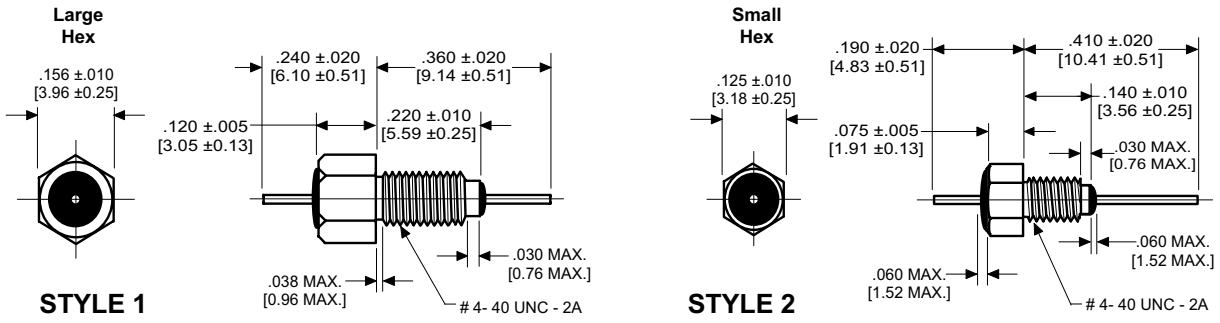
Notes:

♦ Straight Lead

TUSONIX Part Number	MIL-PRF-15733 Number	Style	Notes	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220				
					85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz
Pi Configuration														
4100-003	--	1	--	Pi	125	50	3000	GMV	15	--	7	50	65	60
4101-505	/62-0003	13	--	Pi	--	70	1500	GMV	10	--	--	50	65	65
4151-000	--	3	--	Pi	100	70	12,000	GMV	10	--	25	70	65	65
4151-500	/62-0004	14	--	Pi	--	70	12,000	GMV	10	--	22	70	--	65
4151-001	--	5	--	Pi	100	70	22,000	GMV	10	--	35	70	70	70
4151-501	/51-0002	15	--	Pi	--	70	22,000	GMV	10	--	25	70	70	70
4151-003	--	12	--	Pi	100	70	60,000	GMV	10	--	60	75	75	75
4100-000	--	7	--	Pi	250	125	1500	GMV	10	--	6	45	60	60
4101-000	--	20	--	Pi	250	125	1750	GMV	10	--	5	35	50	50
4101-002	--	2	--	Pi	250	125	1750	GMV	10	--	5	50	60	60
4101-003	--	4	--	Pi	250	125	1750	GMV	10	--	5	50	60	60
4101-004	--	6	--	Pi	250	125	1750	GMV	10	--	5	50	60	60
4101-502	/33-0001	16	--	Pi	--	125	1750	GMV	10	--	--	50	60	60
4101-503	/33-0002	16	♦	Pi	--	125	1750	GMV	10	--	--	50	60	60
4101-500	/66-0001	8	--	Pi	--	125	1750	GMV	10	--	5	35	50	50
4100-056	--	9	--	Pi	250ac	200dc	1000	±20%	10	--	3	20	55	--
4100-002	--	1	--	Pi	350	200	1500	GMV	15	--	5	25	60	60
4101-001	--	17	--	Pi	350	200	1500	GMV	10	--	3	45	70	70
4101-501	/62-0001	17	--	Pi	--	200	1500	GMV	10	--	3	45	70	70
4100-500	/62-0002	18	♦	Pi	--	200	1500	GMV	10	--	5	45	70	--
4100-057	--	9	--	Pi	250ac	200dc	1500	GMV	10	--	5	45	70	--
4102-000	--	10	--	Pi	350	200	3000	GMV	10	--	8	55	65	65
4100-053	--	9	--	Pi	250ac	200dc	5000	GMV	10	--	18	60	70	--
4101-504	/51-0001	19	--	Pi	200	--	5500	GMV	10	--	15	55	70	70
4106-000	--	11	--	Pi	500dc 350ac	500dc 350ac	3000	GMV	25	--	--	50	50	50
4106-001	--	11	--	Pi	1000	500	4500	GMV	25	--	8	50	70	70

Drawings not to scale.

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



inches
[mm]

TUSONIX Part Number	Style	Lead Dia.	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 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 microwave applications.

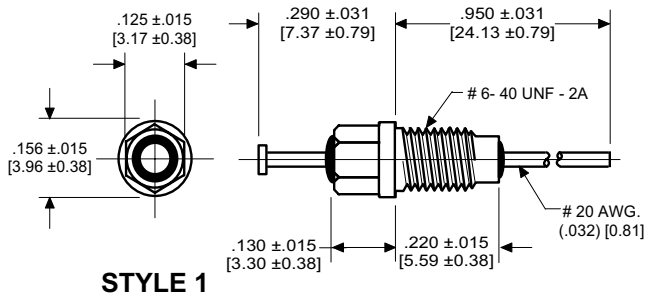
TUSONIX Part Number	Style	Lead Dia.	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220				
				85°C	125°C				1MHz	10MHz	100MHz	1GHz	10GHz
C Configuration **(Continued from page 13)**													
4400-009	1	.020 [.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.

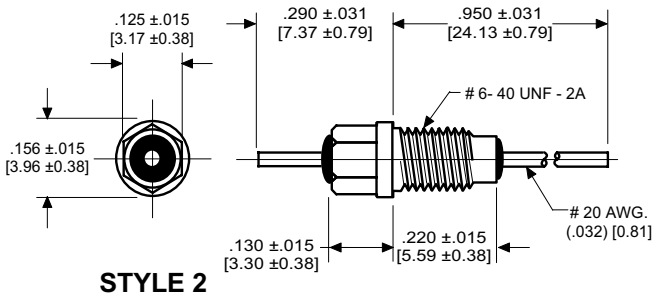
Please Note: All bushing style filters include hex nut and lock washer unless otherwise noted.

#6-40 UNF-2A EMI Pi Filters

inches
[mm]



STYLE 1



STYLE 2

TUSONIX Part Number	Style	Circuit	Working Voltage (dc)		Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (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

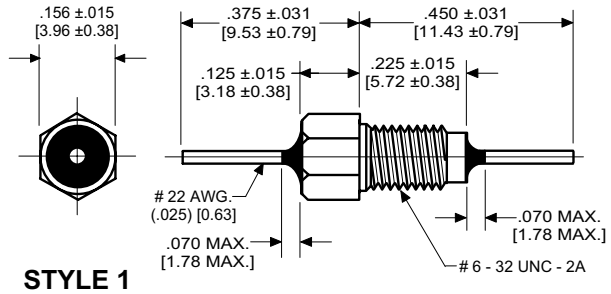
MIL-PRF-15733	TUSONIX No.	Page No. ❖	MIL-PRF-15733	TUSONIX No.	Page No. ❖
/28-0001	4201-501	18	/61-0001	4204-500	19
/28-0002	4201-503	18	/61-0002	4202-501	20
/28-0003	4251-503	NS	/61-0003	4206-502	21
/33-0001	4101-502	12	/61-0004	4206-501	21
/33-0002	4101-503	12	/61-0005	4203-502	NS
/38-0004	4601-503	NS	/61-0006	4203-501	20
/38-0005	4601-504	NS	/61-0007	4203-552	20
/43-0001	4204-501	19	/61-0008	4201-502	18
/43-0002	4201-506	NS	/61-0009	4253-500	NS
/44-0001	4251-500	NS	/61-0010	4203-553	20
/44-0002	4205-500	NS	/61-0011	4203-551	20
/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	12
/49-0007	4601-500	NS	/62-0002	4100-500	12
/51-0001	4101-504	12	/62-0003	4101-505	12
/51-0002	4151-501	12	/62-0004	4151-500	12
			/66-0001	4101-500	12

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

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

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

inches
[mm]



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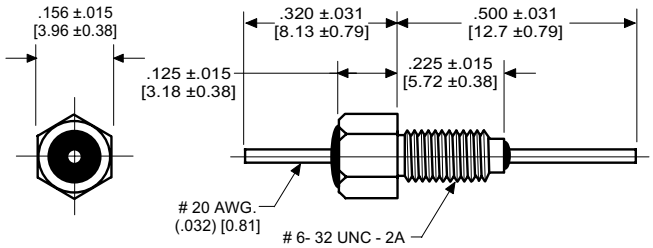
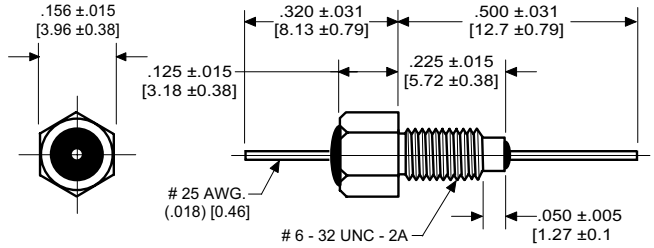


STYLE 2



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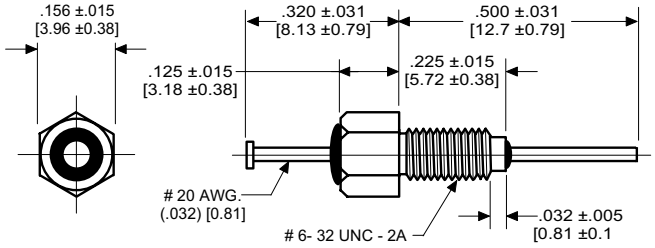

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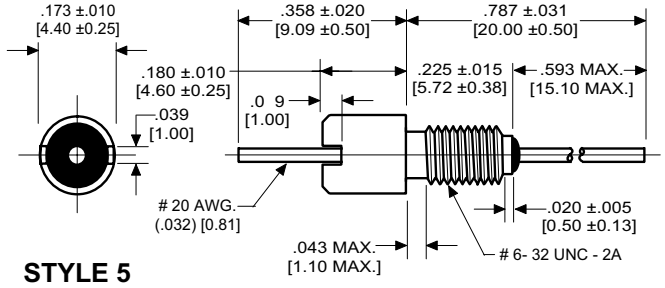


STYLE 5

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 25.

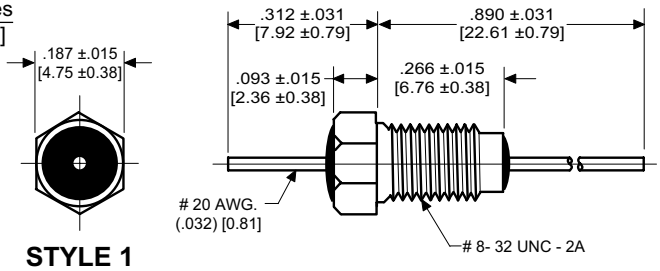
TUSONIX Part Number	Style	Notes	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 1MHz	10MHz	100MHz	1GHz	10GHz
Pi Configuration													
4260-001	3	--	Pi	--	50	5500	GMV	3	--	14	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	100	±20%	5	--	--	3	20	28
2430-003-X5F0-102Z	1	••	C	200	100	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.

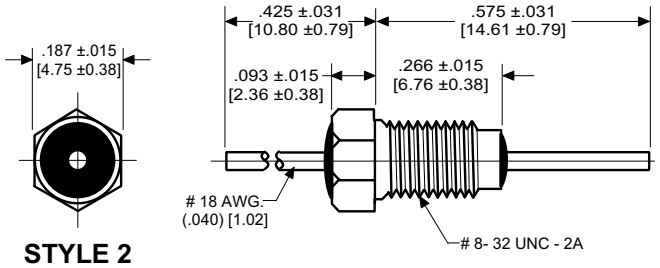
Please Note: All bushing style filters include hex nut and lock washer unless otherwise noted.

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

inches
[mm]



STYLE 1



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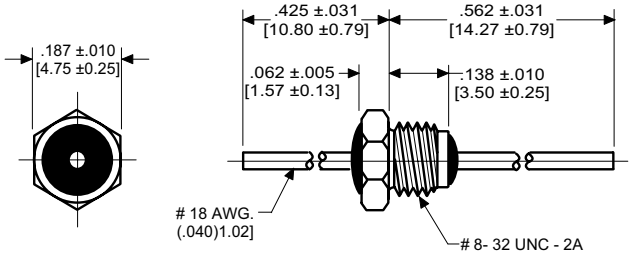

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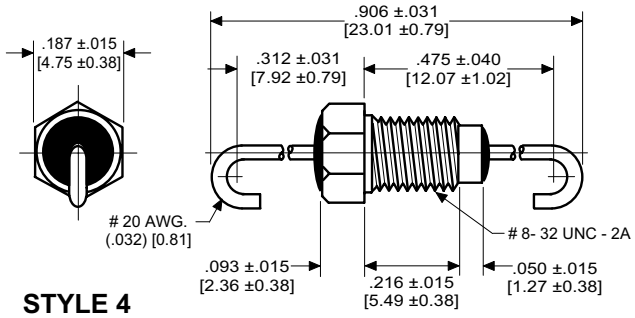

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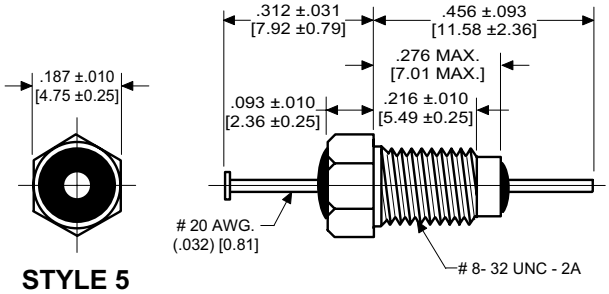
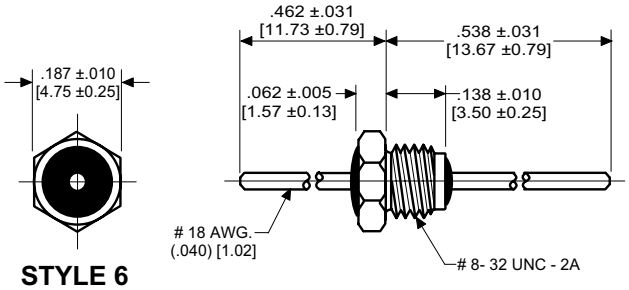


STYLE 5



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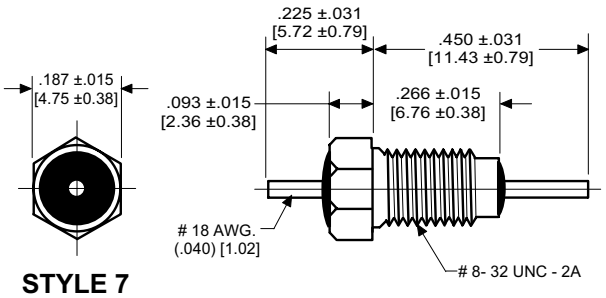
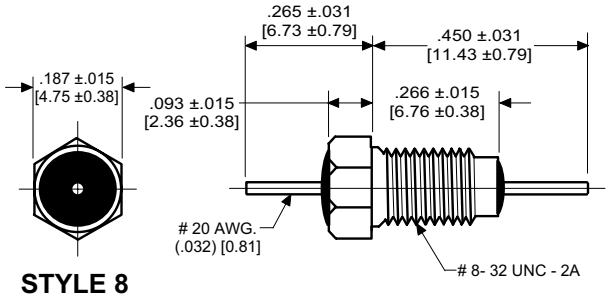
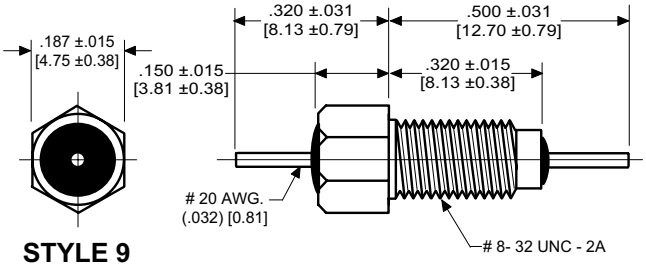


STYLE 7



STYLE 8



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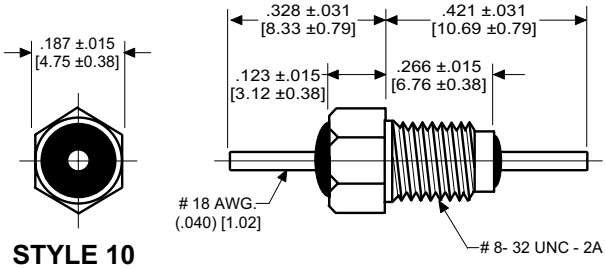

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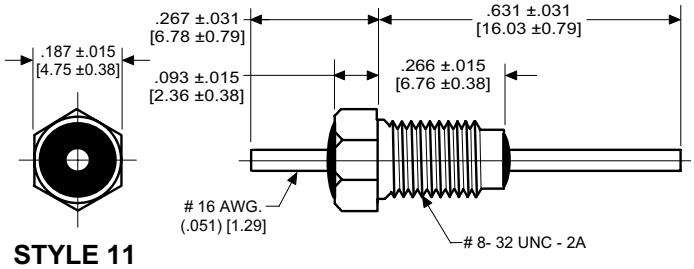

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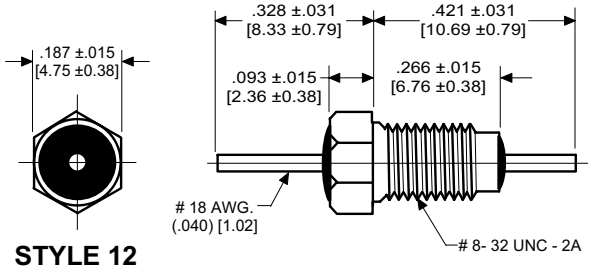


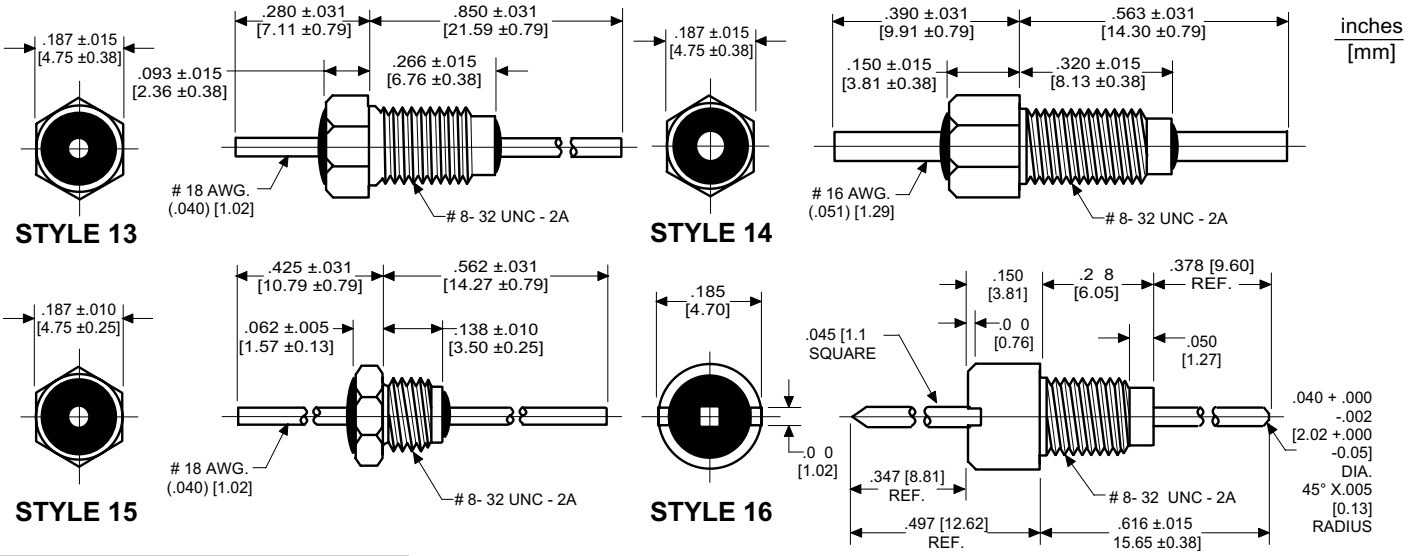
STYLE 12

Drawings not to scale.

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

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

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



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

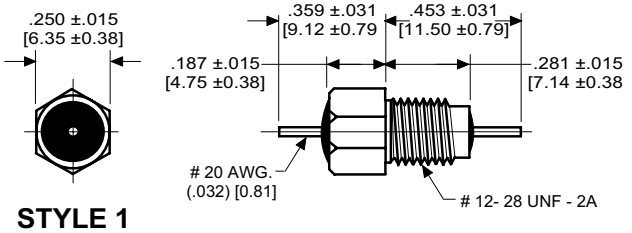
Please see Temperature Characteristics and EIA Codes on page 25.

TUSONIX Part Number	MIL-PRF-15733 Number	Style	Notes	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 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	28,000	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	100	±20%	20	--	--	3	20	28
2425-544-X7R0-101M	--	11	••	C	200	100	100	±20%	20	--	--	3	20	28
2425-018-X5U0-102M	--	11	••♦	C	200	100	1000	±20%	20	--	3	20	35	40
2425-544-X7R0-102P	--	11	••	C	200	100	1000	+100 -0%	20	--	3	20	35	40
2425-018-X5W0-502M	--	11	••♦	C	200	100	5000	±20%	20	--	15	30	45	50
2425-601-X5W0-103Z	--	14	••	C	200	100	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	--

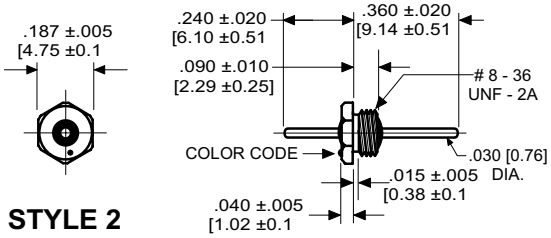
Drawings not to scale.

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

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

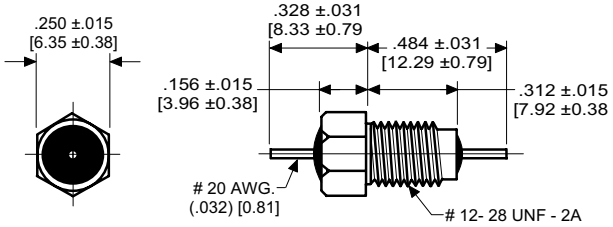


STYLE 1

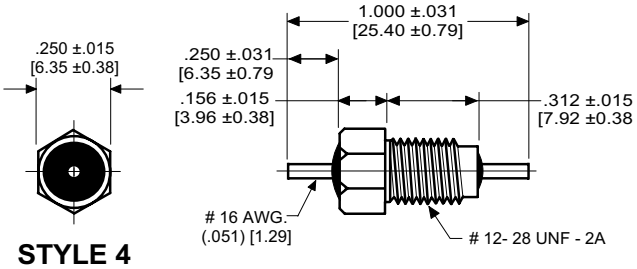


STYLE 2

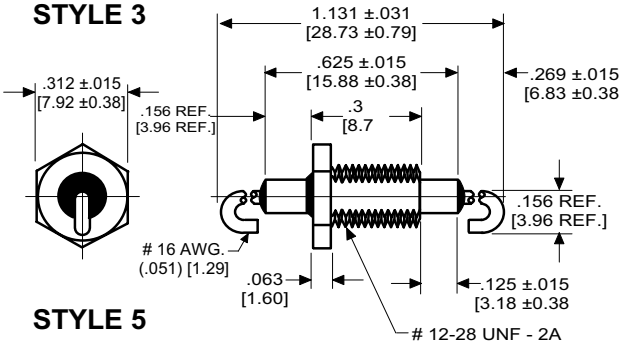
inches
[mm]



STYLE 3



STYLE 4



STYLE 5

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

Notes:

- ♦ Turret Lead
- •• Typical Insertion Loss
- ∇ No Hex Nut Included

Please see Temperature Characteristics and EIA Codes on Page 25.

TUSONIX Part Number	MIL-PRF-15733 Number	Style	Notes	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 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 140ac	1500	GMV	10ac	--	--	45	70	70
4204-501	/43-0001	1	♦	Pi	--	200dc 140ac	1500	GMV	10ac	--	--	--	45	45
C Configuration														
2499-003-X5U0-102P	--	4	••	C	500	250	1000	+100-0%	20	--	3	20	35	40
2499-003-X5W0-502P	--	4	••	C	500	250	5000	+100-0%	20	--	15	30	45	50
2499-003-X5W0-103Z	--	4	••	C	500	250	10,000	+80-20%	20	--	20	35	50	55
357-001-X5W0-103Z	--	5	••	C	500	250	10,000	+80-20%	20	--	20	35	50	55

Drawings not to scale.

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

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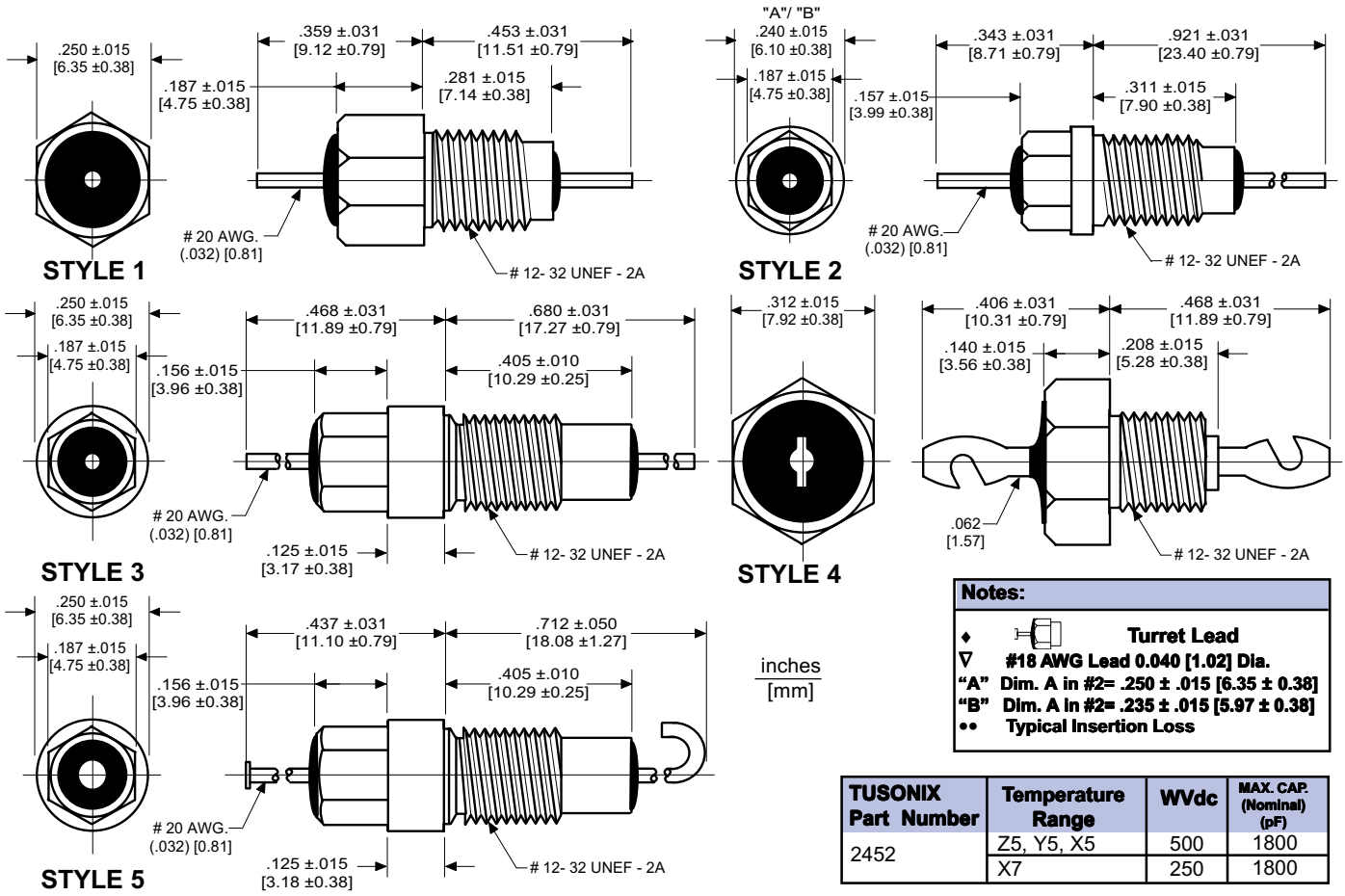
component design, please contact the factory direct.

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



inches
[mm]

Notes:

- ♦ Turret Lead
- ∇ #18 AWG Lead 0.040 [1.02] 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 25.

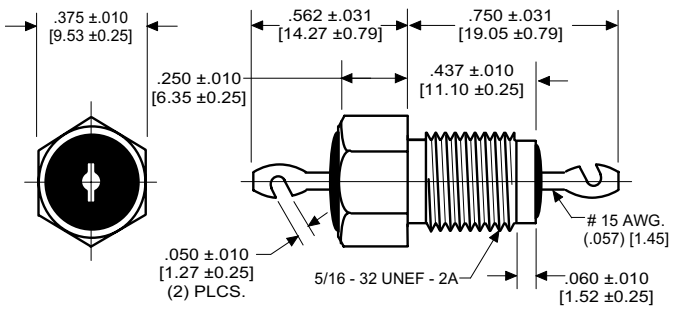
TUSONIX Part Number	MIL-PRF-15733 Number	Style	Notes	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 10MHz	100MHz	1GHz	10GHz
Pi Configuration													
4207-003	--	3	--	Pi	100	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 70ac	5000	GMV	10ac	--	65	70	70
4203-553	/61-0010	2	♦A	Pi	--	100dc 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 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 140ac	1500	GMV	10ac	--	45	70	70
4203-552	/61-0007	2	♦A	Pi	--	100dc 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	500	250	100	±20%	20	--	3	20	28
2452-000-X7R0-471M	--	4	••	C	500	250	470	±20%	20	--	12	27	27
2452-000-X5U0-102P	--	4	••	C	500	250	1000	+100-0%	20	3	20	35	40

Drawings not to scale.

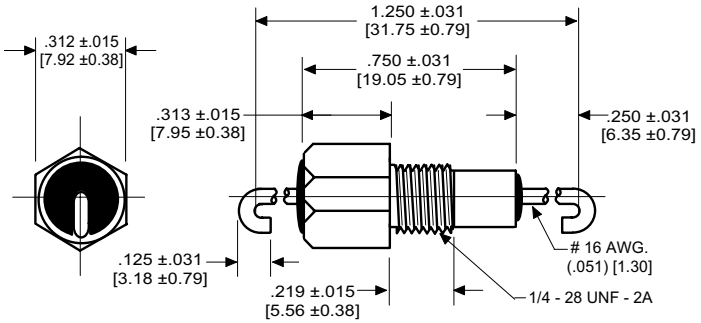
Please note: All bushing style filters include hex nut and lock washer unless otherwise specified.

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

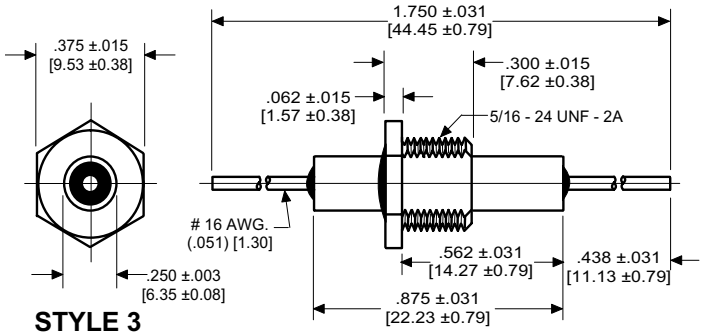
inches
[mm]



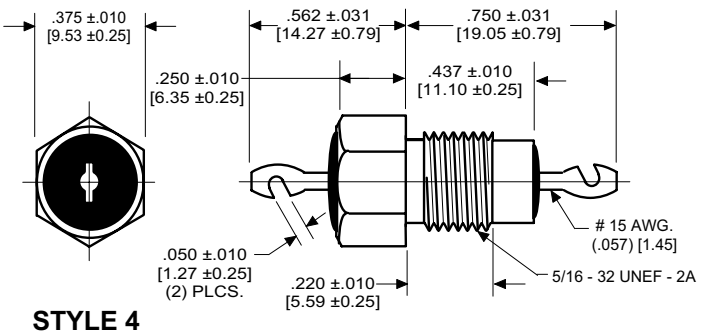
STYLE 1



STYLE 2



STYLE 3



STYLE 4

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 25.

Notes:
- ∇ 5/16-24 UNF-2A Thread
- •• Typical Insertion Loss

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

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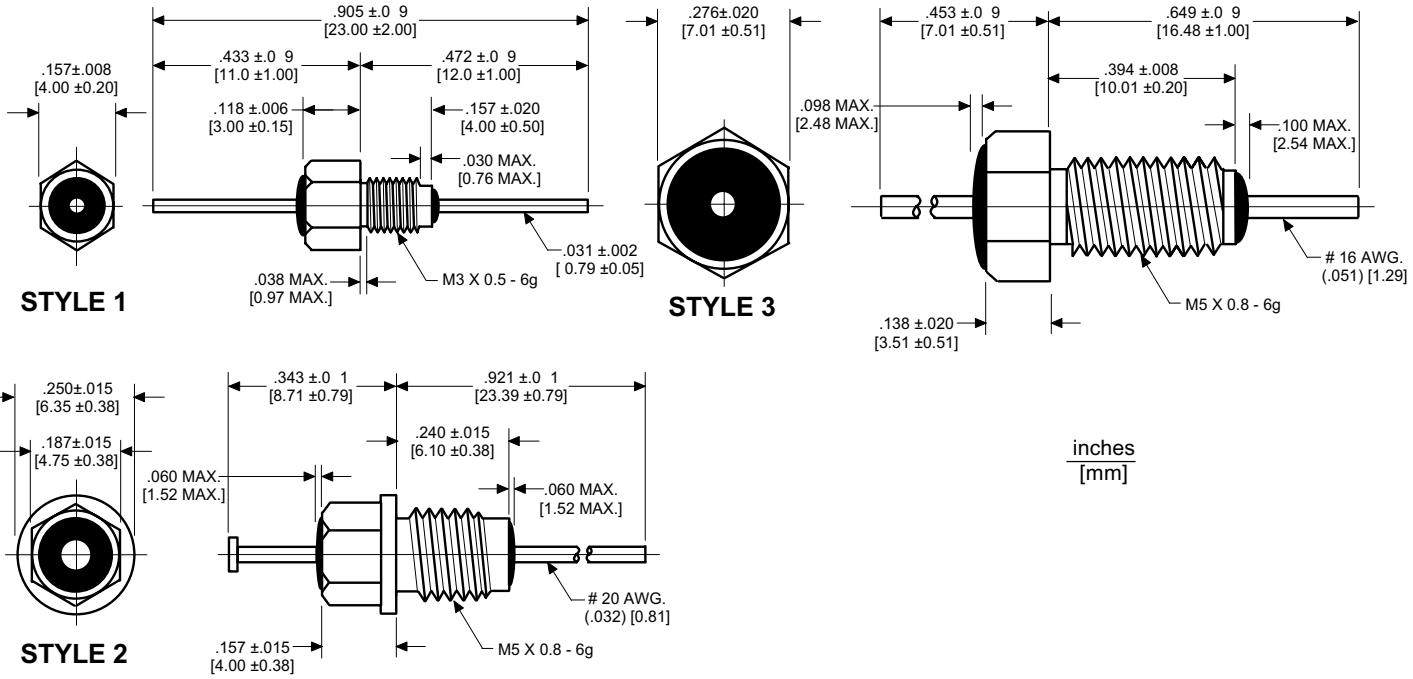
component design, please contact the factory direct.

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 25.

Notes:
•• Typical Insertion Loss

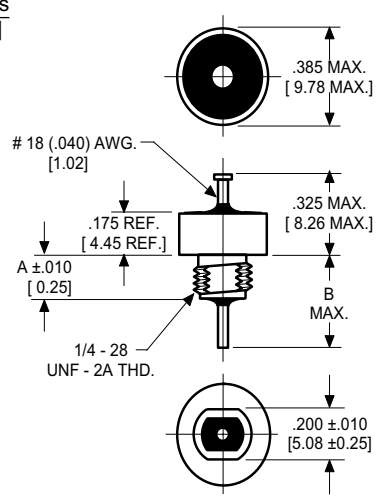
TUSONIX Part Number	Style	Notes	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Capacitance Tolerance	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 1MHz	10MHz	100MHz	1GHz	10GHz
M3 Thread													
4400-093	1	--	C	70	50	10,000	+80-20%	10	4	20	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	250	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.

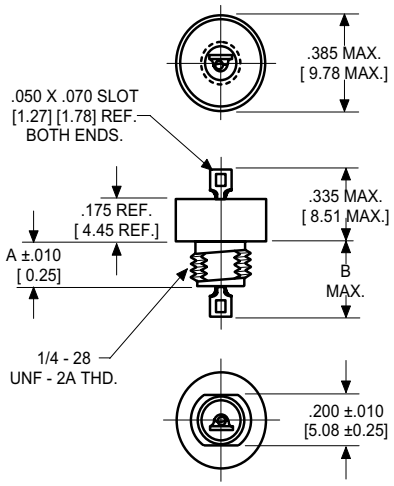
Coaxial Broadband Filter 1/4-28 UNF-2A

inches
[mm]

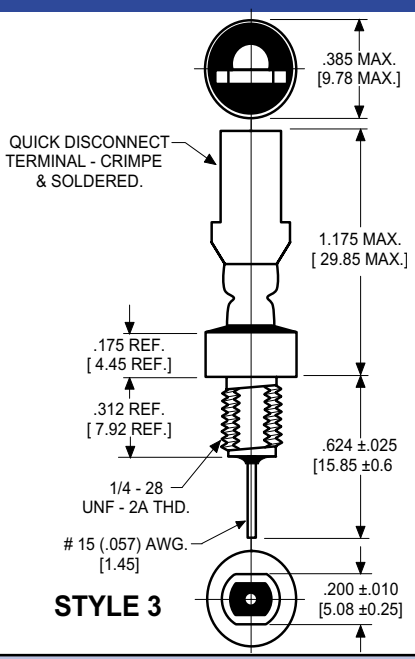


STYLE 1

Hermetic Seal



STYLE 2



STYLE 3

TUSONIX Part Number	Style	Dim. A inch [mm]	Dim. B inch [mm]	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 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	50	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	50	1.4 µF	15	15	25	34	44	60	70
4601-004	2	.312 [7.93]	.475 [12.07]	C	100	50	1.4 µF	15	15	25	34	44	60	70
4600-009	1	.187 [4.75]	.367 [9.32]	C	280	200dc 125ac	.15 µF	15	--	7	15	25	40	60
4601-010	2	.187 [4.75]	.350 [8.89]	C	280	200dc 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	50	1.4 µF	15	15	25	34	44	60	70
4600-054	1	.312 [7.93]	.492 [12.50]	L	100	50	1.4 µF	15	15	25	34	44	60	70
4601-053	2	.187 [4.75]	.350 [8.89]	L	100	50	1.4 µF	15	15	25	34	44	60	70
4601-054	2	.312 [7.93]	.475 [12.07]	L	100	50	1.4 µF	15	15	25	34	44	60	70
4600-059	1	.187 [4.75]	.367 [9.32]	L	280	200dc 125ac	.15 µF	15	--	7	15	25	40	60
4601-059	2	.187 [4.75]	.350 [8.89]	L	280	200dc 125ac	.15 µF	15	--	7	15	25	40	60

Drawings not to scale.

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

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component design, please contact the factory direct.

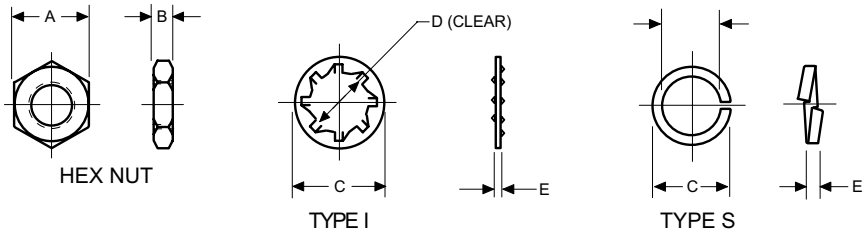
Coaxial Broadband Filter 1/4-28 UNF-2A and Standard Hardware Dimensions

Notes:

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

TUSONIX Part Number	Style	Notes	Dim. A inch [mm]	Dim. B inch [mm]	Circuit	Working Voltage (dc) 85°C	Working Voltage (dc) 125°C	Capacitance (pF)	Current (A)	Minimum No-Load Insertion Loss (dB) at 25°C per MIL-Std-220 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	50	1.4 µF	20	15	25	34	44	60	70
4600-016	3	--	--	--	C	280	200dc 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	50	1.4 µF	20	15	25	34	44	60	70
4600-072	3	--	--	--	L	280	200dc 125ac	.15 µF	20	--	7	15	25	60	60

STANDARD HARDWARE DIMENSIONS



NUT THREAD SIZE	MOUNTING TORQUE LIMITS	HEX NUT A	HEX NUT B	TYPE	LOCK WASHER C	LOCK WASHER D	LOCK WASHER E
4-40 UNC	2 lb.in. [.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. [.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. [.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. [.565 N-m]	.250 [6.35]	.075 [1.91]	I	.283 [7.19]	.167 [4.24]	.018 [0.46]
8-36 UNF	1lb.in. [.113 N-m]	--	--	I	.283 [7.19]	.167 [4.24]	.015 [0.38]
12-28 UNF	8 lb.in. [.904 N-m]	.250 [6.35] .250 [6.35]	.075 [1.91] .100 [2.54]	I	.387 [9.83]	.220 [5.59]	.022 [0.56]
12-32 UNEF	8 lb.in. [.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. [.904 N-m]	.313 ± .015 [7.95 ± 0.38]	.125 ± .015 [3.18 ± 0.38]	I	.387 [9.83]	.220 [5.59]	.022 [0.56]
5/16-24 UNF	9 lb.in. [1.02 N-m]	.375 ± .010 [9.53 ± 0.25]	.090 [2.29]	I	.420 [10.6]	.262 [6.65]	.025 [0.63]
5/16-32 UNEF	9 lb.in. [1.02 N-m]	.375 ± .010 [9.53 ± 0.25]	.090 [2.29]	I	.430[10.92]	.318 [8.08]	.022 [0.56]
3/8-32 UNEF	9 lb.in. [1.02 N-m]	.500 ± .010 [12.7 ± 0.25]	.090 [2.29]	I	.430 [10.92]	.318 [8.08]	.022 [0.56]
M3 X 0.5	2 lb.in. [.226 N-m]	.187 ± .010 [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. [.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

1. Dimensions: Inches [metric]
   Dimensional Tolerance:
   ± .005 [0.13], thread tolerance class 2.
2. Standard finish: Silver
3. Nut material: Brass
   Washer material: Phosphor Bronze
4. 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.

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, contact us.

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.

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 24.

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

CAPACITANCE TOLERANCE (Cont.)		
Nominal Capacitnce 10 pF or Less	Code	Nominal Capacitnce 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: Guarantied Minimum Value

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

component design, please contact the factory direct.

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 contact CTS.

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 & Marking		
Seal (4601 Style Only)	Method 112, condition A	No leaks
Capacitance	Method 305, 1KHz, 1±0.2 VRMS max. +25°C	Within specified tolerance
Dissipation Factor (1/Q)	Method 306, 1KHz, 1±0.2 VRMS max. +25°C	4.0% max
Dielectric Withstanding Voltage	Method 301, 2 seconds, 50 mA max. surge 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 application requirements.
DC Resistance (4601 Style Only)	MIL-PRF-15733	0.01 Ohms max.
Solderability (5pcs)	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.

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Tusonix / CTS:

4306-003LF 4306-006LF 4306-007LF 4306-008LF 4306-009LF 4306-010LF 4306-012LF 4306-013LF 4306-014LF 4306-015LF 4306-016LF 4306-017LF 4306-018LF 4306-019LF 4306-020LF 4306-021LF 4306-022LF 4306-024LF 4306-025LF 4306-028LF 4306-029LF 4306-680LF 4306-681LF