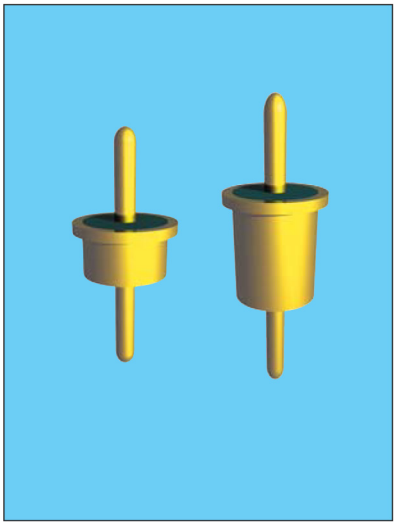
Solder-In Style High Temp EMI Filters

YS/YR Series – .165 Dia. – Circuits Available – C & L



APPLICATIONS

The YS series provides increased filtering in the MICROWAVE frequency spectrum from 1 MHz through 10 GHz. Previously unavailable in the industry as a solder-in device, this unique design offers higher values of capacitance than were previously available. Designed to be soldered into a package, bracket or bulkhead (and maintain hermeticity), it is ideal for high impedance circuits where large capacitance values are not practical. In the "L" section version an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves insertion loss and provides superior transient performance.

Alternate lead lengths or special capacitance values may be ordered.

Custom packages or bracket assemblies utilizing this feedthru can be furnished to your specifications.

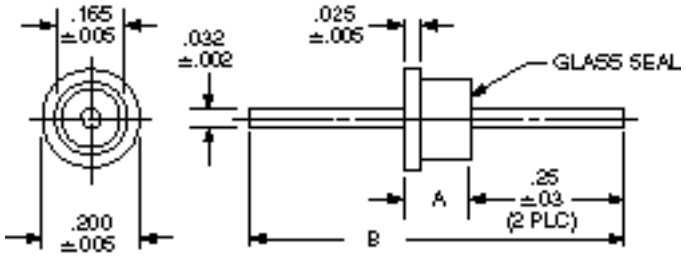
CHARACTERISTICS

- Meets or exceeds the applicable portions of MIL-F-28861/15. See QPL listings.
- High temperature construction withstands 300°C installation temperatures.
- Features rugged monolithic discoidal capacitor construction.
- Glass hermetic seal on one end with epoxy seal on the opposite end.
- High purity gold plating provides excellent solderability or compatibility with thermal and ultrasonic wire bonding.

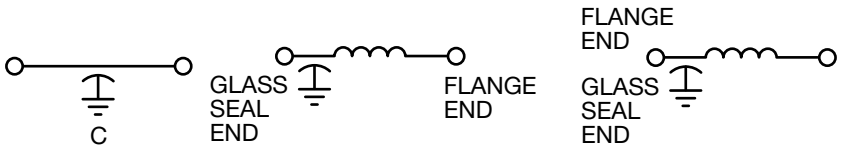
SPECIFICATIONS

1. Plating: Gold standard – Silver available
2. Material:
   Case: Cold rolled steel
   Leads: Alloy 52 steel
3. Operating Temperature Range:
   -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .01 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 5 Amps, maximum
9. Maximum Installation Temperature: 300°C
10. Supplied with 60/40 solder preform for easy installation
11. Insertion Loss for the "C" and "L" circuits are equivalent due to the saturation characteristic of the ferrite bead element at full rated current. At lower currents the "L" becomes much more effective.

STANDARD CONFIGURATION



CIRCUIT DIAGRAMS



millimeters (inches)

0.05 (.002)	4.19 (.165)
0.13 (.005)	5.08 (.200)
0.64 (.025)	6.35 (.250)
0.8 (.03)	16.51 (.650)
0.81 (.032)	19.05 (.750)
3.81 (.150)	— —

(See Note 4)

Circuit Diagram	Dimensions A ±.005	Dimensions B Ref.
L	.250	.750
C	.150	.650

Notes:

1. Outline drawing shows standard YS configuration. Also available with glass seal at the opposite end, YR reverse configuration.
2. MIL-F-28861/15 style A equivalent to standard YS configuration. Style B is reverse YR configuration.
3. For YS2 or YR2 L-Section Filters inductor always positioned at epoxy-filled end.
4. Metric equivalent dimensions given for information only.

MIL-F-28861/15 (See Note 2)

Dash No.	Config.
001 through 004	A
005 through 008	B

Solder-In Style High Temp EMI Filters

YS/YR Series – .165 Dia. – Circuits Available – C & L

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	Current (A)	CKT	DC Voltage	CAP Min.	500 KHz	1 MHz	10 MHz	100 MHz	1000 MHz	10 GHz
YS1C2-152H	5	C	50	1500 pF	–	–	5	21	42	55
YS1C2-502H	5	C	50	5000 pF	–	–	15	34	50	60
YS1C2-103H	5	C	50	0.010 µF	–	4	20	35	53	60
YS1C2-153H	5	C	50	0.015 µF	–	7	25	40	55	60
YS1C2-203H	5	C	50	0.020 µF	–	8	27	41	60	65
YS1C2-273H	5	C	50	0.027 µF	4	10	30	42	65	70
YS1C2-503H	5	C	50	0.050 µF	9	15	35	44	70	70
YS1C2-753H	5	C	50	0.075 µF	12	18	37	46	70	70
YS1C2-104H	5	C	50	0.100 µF	14	20	38	48	70	70
YS2C2-152H	5	L	50	1500 pF	–	–	6	22	48	55
YS2C2-502H	5	L	50	5000 pF	–	–	15	35	55	60
YS2C2-103H	5	L	50	0.010 µF	–	4	20	36	57	60
YS2C2-153H	5	L	50	0.015 µF	–	7	25	45	60	60
YS2C2-203H	5	L	50	0.020 µF	–	8	27	46	62	65
YS2C2-273H	5	L	50	0.027 µF	4	10	30	48	65	70
YS2C2-503H	5	L	50	0.050 µF	9	15	36	50	70	70
YS2C2-753H	5	L	50	0.075 µF	12	18	37	51	70	70
YS2C2-104H	5	L	50	0.100 µF	14	20	39	52	70	70
YS1A2-152H	5	C	100	1500 pF	–	–	5	21	42	55
YS1A2-502H	5	C	100	5000 pF	–	–	15	34	50	60
YS1A2-103H	5	C	100	0.010 µF	–	4	20	35	53	60
YS1A2-153H	5	C	100	0.015 µF	–	7	25	40	55	60
YS1A2-203H	5	C	100	0.020 µF	–	8	27	41	60	65
YS1A2-273H	5	C	100	0.027 µF	–	10	30	42	65	70
YS1A2-503H	5	C	100	0.050 µF	9	15	35	44	70	70
YS1A2-753H	5	C	100	0.075 µF	12	18	37	46	70	70
YS2A2-152H	5	L	100	1500 pF	–	–	6	22	48	55
YS2A2-502H	5	L	100	5000 pF	–	–	15	35	55	60
YS2A2-103H	5	L	100	0.010 µF	–	4	20	36	57	60
YS2A2-153H	5	L	100	0.015 µF	–	7	25	45	60	60
YS2A2-203H	5	L	100	0.020 µF	–	8	27	46	62	65
YS2A2-273H	5	L	100	0.027 µF	–	10	30	48	65	70
YS2A2-503H	5	L	100	0.050 µF	9	15	36	50	70	70
YS2A2-753H	5	L	100	0.075 µF	12	18	37	51	70	70

continued

[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

NOTE: Filters' Standard configurations (e.g. ZS, YS, XS, WS) have the hermetic glass seal opposite the flange end. All parts are capable of the reverse configuration with the glass seal at the flange end. All parameters are otherwise identical. The part number changes from "S" to "R" (e.g., standard = ZS1C2-153H; reverse = ZR1C2-153H).

For special multi-unit assemblies see Multi-Component Filter Brackets section.

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	Current (A)	CKT	DC Voltage	CAP Min.	500 KHz	1 MHz	10 MHz	100 MHz	1000 MHz	10 GHz
YS1B2-152H	5	C	200	1500 pF	–	–	5	21	42	55
YS1B2-502H	5	C	200	5000 pF	–	–	15	34	50	60
YS1B2-103H	5	C	200	0.010 µF	–	4	20	35	53	60
YS1B2-153H	5	C	200	0.015 µF	–	7	25	40	55	60
YS1B2-203H	5	C	200	0.020 µF	–	8	27	41	60	65
YS1B2-273H	5	C	200	0.027 µF	4	10	30	42	65	70
YS2B2-152H	5	L	200	1500 pF	–	–	6	22	48	55
YS2B2-502H	5	L	200	5000 pF	–	–	15	35	55	60
YS2B2-103H	5	L	200	0.010 µF	–	4	20	36	57	60
YS2B2-153H	5	L	200	0.015 µF	–	7	25	45	60	60
YS2B2-203H	5	L	200	0.020 µF	–	8	27	46	62	65
YS2B2-273H	5	L	200	0.027 µF	4	10	30	48	65	70

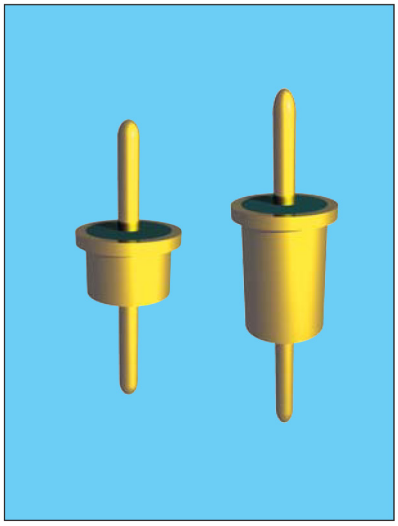
[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

NOTE: Filters' Standard configurations (e.g. ZS, YS, XS, WS) have the hermetic glass seal opposite the flange end. All parts are capable of the reverse configuration with the glass seal at the flange end. All parameters are otherwise identical. The part number changes from "S" to "R" (e.g., standard = ZS1C2-153H; reverse = ZR1C2-153H).

For special multi-unit assemblies see Multi-Component Filter Brackets section.

Solder-In Style High Temp EMI Filters

XS/XR Series – .250 Dia. – Circuits Available – C & L



APPLICATIONS

The YS series provides increased filtering in the MICROWAVE frequency spectrum from 1 MHz through 10 GHz. Previously unavailable in the industry as a solder-in device, this unique design offers higher values of capacitance than were previously available. Designed to be soldered into a package, bracket or bulkhead (and maintain hermeticity), it is ideal for high impedance circuits where large capacitance values are not practical. In the "L" section version an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves insertion loss and provides superior transient performance.

Alternate lead lengths or special capacitance values may be ordered.

Custom packages or bracket assemblies utilizing this feedthru can be furnished to your specifications.

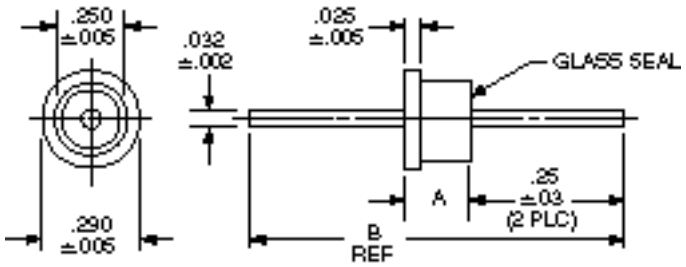
CHARACTERISTICS

- Meets or exceeds the applicable portions of MIL-F-28861/15. See QPL listings.
- High temperature construction withstands 300°C installation temperatures.
- Features rugged monolithic discoidal capacitor construction.
- Glass hermetic seal on one end with epoxy seal on the opposite end.
- High purity gold plating provides excellent solderability or compatibility with thermal and ultrasonic wire bonding.

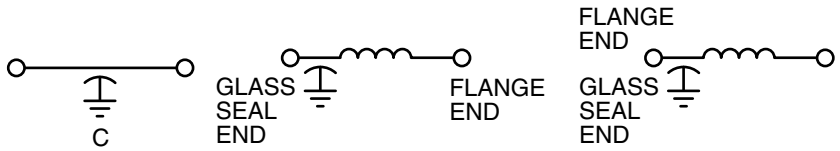
SPECIFICATIONS

1. Plating: Gold standard – Silver available
2. Material:
   Case: Cold rolled steel
   Leads: Alloy 52 steel
3. Operating Temperature Range:
   -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .01 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 5 Amps, maximum
9. Maximum Installation Temperature: 300°C
10. Supplied with 60/40 solder preform for easy installation
11. Insertion Loss for the "C" and "L" circuits are equivalent due to the saturation characteristic of the ferrite bead element at full rated current. At lower currents the "L" becomes much more effective.

STANDARD CONFIGURATION



CIRCUIT DIAGRAMS



XS1, XR1 XS2 (See Note 3) XR2

millimeters (inches)

0.05 (.002)	3.81 (.150)
0.13 (.005)	6.35 (.250)
0.64 (.025)	7.37 (.290)
0.8 (.03)	16.51 (.650)
0.81 (.032)	19.05 (.750)

(See Note 4)

Circuit Diagram	Dimensions A ±.005	Dimensions B Ref.
L	.250	.750
C	.150	.650

Notes:

1. Outline drawing shows standard XS configuration. Also available with glass seal at the opposite end, XR reverse configuration.
2. MIL-F-28861/14 configuration A is equivalent to standard XS configuration. B is reverse XR configuration.
3. For XS2 or XR2 L-Section Filters inductor always positioned at epoxy-filled end.
4. Metric equivalent dimensions given for information only.

MIL-F-28861/14 (See Note 2)

Dash No.	Config.
001 through 006	A STD
007 through 012	B REV

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	Current (A)	CKT	DC Voltage	CAP Min.	500 KHz	1 MHz	10 MHz	100 MHz	1000 MHz	10 GHz
XS1C2-503H	5	C	50	0.050 µF	9	15	35	44	70	70
XS1C2-753H	5	C	50	0.075 µF	12	18	37	46	70	70
XS1C2-104H	5	C	50	0.100 µF	14	20	38	48	70	70
XS1C2-154H	5	C	50	0.150 µF	17	24	38	50	70	70
XS1C2-254H	5	C	50	0.250 µF	21	31	40	55	70	70
XS2C2-503H	5	L	50	0.050 µF	9	15	36	50	70	70
XS2C2-753H	5	L	50	0.075 µF	12	18	37	51	70	70
XS2C2-104H	5	L	50	0.100 µF	14	20	39	52	70	70
XS2C2-154H	5	L	50	0.150 µF	17	26	40	53	70	70
XS2C2-254H	5	L	50	0.250 µF	21	31	40	56	70	70
XS1A2-503H	5	C	100	0.050 µF	9	15	35	44	70	70
XS1A2-753H	5	C	100	0.075 µF	12	18	37	46	70	70
XS1A2-104H	5	C	100	0.100 µF	14	20	38	48	70	70
XS2A2-503H	5	L	100	0.050 µF	9	15	36	50	70	70
XS2A2-753H	5	L	100	0.075 µF	12	18	37	51	70	70
XS2A2-104H	5	L	100	0.100 µF	14	20	39	52	70	70
XS1B2-153H	5	C	200	0.015 µF	–	5	25	40	55	60
XS1B2-223H	5	C	200	0.022 µF	2	8	26	40	58	70
XS2B2-153H	5	L	200	0.015 µF	–	5	25	45	60	60
XS2B2-223H	5	L	200	0.022 µF	2	8	27	45	65	70
XS1L2-103H	5	C	300	0.010 µF	–	3	20	35	52	60
XS2L2-103H	5	L	300	0.010 µF	–	3	20	38	55	60

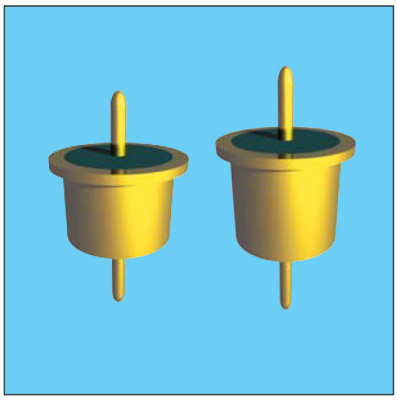
[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

NOTE: Filters' Standard configurations (e.g. ZS, YS, XS, WS) have the hermetic glass seal opposite the flange end. All parts are capable of the reverse configuration with the glass seal at the flange end. All parameters are otherwise identical. The part number changes from "S" to "R" (e.g., standard = ZS1C2-153H; reverse = ZR1C2-153H).

For special multi-unit assemblies see Multi-Component Filter Brackets section.

Solder-In Style High Temp EMI Filters

WS/WR Series – .400 Dia. – Circuits Available – C & L



APPLICATIONS

The WS series expands greatly upon the XS and YS offerings by providing increased filtering in the HF through MICROWAVE frequency spectrum from 500 KHz up to 10 GHz. The larger diameter of the WS series means even higher values of capacitance, a rated DC current of 15 Amps, plus 125 VAC/400 Hz ratings are available. Designed to be soldered into a package, bracket or bulkhead (and maintain hermeticity), it is ideal for low to medium impedance circuits where large amounts of capacitance to ground can be tolerated. In the "L" section version an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves insertion loss and provides superior transient performance.

Alternate lead lengths or special capacitance values may be ordered.

Custom packages or bracket assemblies utilizing this feedthru can be furnished to your specifications.

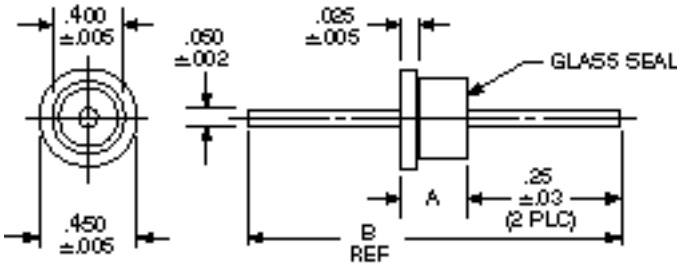
CHARACTERISTICS

- Meets or exceeds the applicable portions of MIL-F-28861/13. See QPL listings.
- High temperature construction withstands 300°C installation temperatures.
- Features rugged monolithic discoidal capacitor construction.
- Glass hermetic seal on one end with epoxy seal on the opposite end.
- High purity gold plating provides excellent solderability or compatibility with thermal and ultrasonic wire bonding.

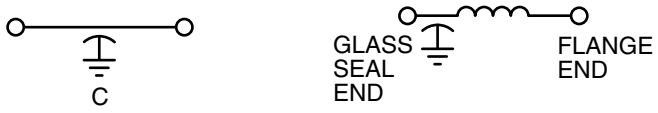
SPECIFICATIONS

1. Plating: Gold standard – Silver available
2. Material:
   Case: Cold rolled steel
   Leads: Alloy 52 steel
3. Operating Temperature Range:
   -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .01 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 15 Amps, maximum
9. Maximum Installation Temperature: 300°C
10. Supplied with 60/40 solder preform for easy installation
11. Insertion Loss for the "C" and "L" circuits are equivalent due to the saturation characteristic of the ferrite bead element at full rated current. At lower currents the "L" becomes much more effective.

STANDARD CONFIGURATION



CIRCUIT DIAGRAMS



WS1, WR1 WS2, WR2 (See Note 3)

millimeters (inches)

0.05 (.002)	6.35 (.250)
0.13 (.005)	7.62 (.300)
0.64 (.025)	10.16 (.400)
0.8 (.03)	11.43 (.450)
1.27 (.050)	17.78 (.700)
5.08 (.200)	20.32 (.800)

(See Note 4)

Circuit Diagram	Dimensions A ±.005	Dimensions B Ref.
L	.300	.800
C	.200	.700

Notes:

1. Outline drawing shows standard WS configuration. Also available with glass seal at the opposite end, WR reverse configuration.
2. MIL-F-28861/13 configuration "A" is equivalent to standard WS configuration. "B" is reverse WR configuration.
3. For WS2 or WR2 L-Section Filters inductor always positioned at epoxy-filled end.
4. Metric equivalent dimensions given for information only.

MIL-F-28861/14 (See Note 2)

Dash No.	Config.
001 through 008	A
009 through 016	B

Solder-In Style High Temp EMI Filters

WS/WR Series – .400 Dia. – Circuits Available – C & L

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	Current (A)	CKT	DC Voltage	CAP Min.	500 KHz	1 MHz	10 MHz	100 MHz	1000 MHz	10 GHz
WS1C2-154H	15	C	50	0.150 µF	17	24	38	50	70	70
WS1C2-504H	15	C	50	0.500 µF	26	34	42	58	70	70
WS1C2-754H	15	C	50	0.750 µF	31	37	43	62	70	70
WS1C2-125H	15	C	50	1.200 µF	33	37	52	70	70	70
WS2C2-154H	15	L	50	0.150 µF	17	26	40	53	70	70
WS2C2-504H	15	L	50	0.500 µF	26	36	44	60	70	70
WS2C2-754H	15	L	50	0.750 µF	31	40	44	64	70	70
WS2C2-125H	15	L	50	1.200 µF	33	38	53	70	70	70
WS1N2-704H	15	C	70	0.700 µF	30	36	41	60	70	70
WS2N2-704H	15	L	70	0.700 µF	30	38	42	62	70	70
WS1A2-154H	15	C	100	0.150 µF	17	24	38	50	70	70
WS1A2-504H	15	C	100	0.500 µF	26	34	42	58	70	70
WS1A2-754H	15	C	100	0.750 µF	31	37	43	62	70	70
WS1A2-105H	15	C	100	1.000 µF	31	40	48	64	70	70
WS2A2-154H	15	L	100	0.150 µF	17	26	40	53	70	70
WS2A2-504H	15	L	100	0.500 µF	26	34	44	60	70	70
WS2A2-754H	15	L	100	0.750 µF	31	40	44	64	70	70
WS2A2-105H	15	L	100	1.000 µF	31	41	50	65	70	70
WS1L2-503H	15	C	200*	0.050 µF	7	15	34	42	70	70
WS1L2-154H	15	C	200*	0.150 µF	17	24	38	50	70	70
WS2L2-503H	15	L	200*	0.050 µF	7	15	34	44	70	70
WS2L2-154H	15	L	200*	0.150 µF	17	26	40	53	70	70
WS1E2-103H	15	C	400	0.010 µF	–	4	20	34	50	60
WS1E2-503H	15	C	400	0.050 µF	7	15	34	44	70	70
WS2E2-103H	15	L	400	0.010 µF	–	4	20	35	55	60
WS2E2-503H	15	L	400	0.050 µF	7	15	34	44	70	70

* Rated 200 VDC or 125 VAC/400 Hz.

[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

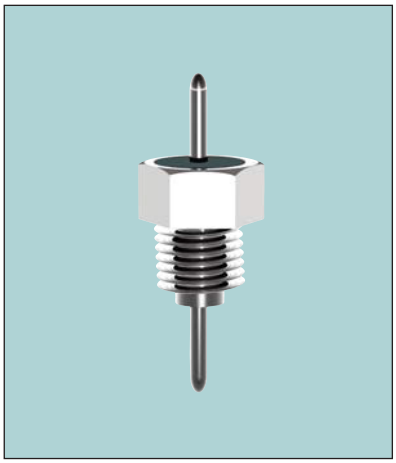
NOTE: Filters' Standard configurations (e.g. ZS, YS, XS, WS) have the hermetic glass seal opposite the flange end. All parts are capable of the reverse configuration with the glass seal at the flange end. All parameters are otherwise identical. The part number changes from "S" to "R" (e.g., standard = ZS1C2-153H; reverse = ZR1C2-153H).

For special multi-unit assemblies see Multi-Component Filter Brackets section.

Bolt Style EMI Filters

SA Series – 4-40 Thread - Epoxy Sealed – Circuits Available – C & L

Bolt Style EMI Filters
SA Series – 4-40 Thread - Epoxy Sealed – Circuits Available – C & L



APPLICATIONS

The SA series provides effective filtering in the RF and MICROWAVE frequency spectrums from 10 MHz through 26 GHz. Designed for mounting in a tapped bulkhead or with the standard nut and lockwasher provided, it is ideal for high impedance circuits where large capacitance values are not practical. In the "L" section version an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves insertion loss and provides superior transient performance.

The SA series comes with a standard .020 diameter beryllium copper lead.

Alternate lead lengths, diameters of .016 or .026 and alternate materials in steel or half-hard copper are available.

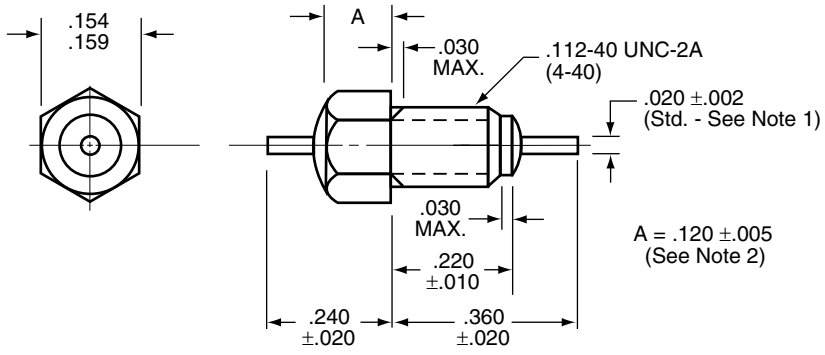
CHARACTERISTICS

- Meets or exceeds the applicable portions of MIL-F-28861/6. See QPL listings.
- Smallest screwbody filter available.
- Features rugged monolithic discoidal capacitor construction.
- Epoxy seal on both ends.

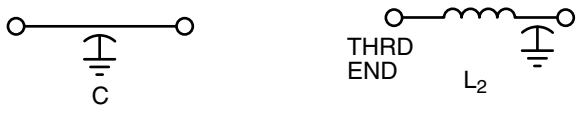
SPECIFICATIONS

1. Plating: Silver standard – Electro-tin or gold available
2. Material:
   Case: Cold rolled steel
   Leads: Beryllium copper (steel or half/hard copper leads available)
3. Operating Temperature Range: -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .02 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 5 Amps, maximum
9. Recommended Mounting Torque: 32 oz-in. ± 4 oz-in.
10. Supplied with mounting nut and lockwasher - See Filter Design Guide Screw and Locking Washer Table
11. Insertion Loss for the "C" and "L" sections are equivalent due to the saturation characteristic of the ferrite bead element at rated current. At lower currents the "L" becomes much more effective.

STANDARD CONFIGURATION



CIRCUIT DIAGRAMS



SA1 SA2 (See Note 3)

millimeters (inches)

0.05 (.002)	3.05 (.120)
0.13 (.005)	3.68 (.145)
0.25 (.010)	3.91 (.154)
0.41 (.016)	4.04 (.159)
0.51 (.020)	5.59 (.220)
0.66 (.026)	6.10 (.240)
0.76 (.030)	9.14 (.360)
2.84 (.112)	— —

(See Note 4)

Notes:

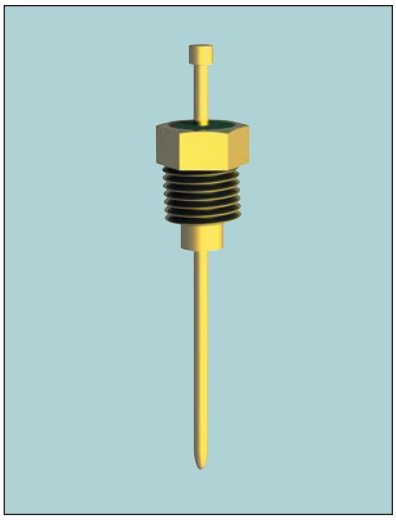
1. Standard catalog designs have .020" dia. lead. MIL-F-28861/6 calls for .026" dia. .026" dia. will not be supplied unless specified.
2. "A" dimension of .120 ± .005 will satisfy M28861/6-003 require ment for .145 ± .030. All "SA" series are supplied A = .120 ± .005.
3. All SA2 L-Section Filters have inductor (bead) at threaded end.
4. Metric equivalent dimensions given for information only.

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	CKT	CAP	DC Voltage	DCR (Ω)	1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
SA1C1-102	C	1000 pF	50	0.020	–	4	20	25	25	55
SA1C1-502	C	5000 pF	50	0.020	–	15	34	41	42	55
SA1C1-103	C	0.010 µF	50	0.020	4	21	35	42	50	70
SA1C1-273	C	0.027 µF	50	0.020	10	30	39	43	65	70
SA1C1-503	C	0.050 µF	50	0.020	15	35	42	45	70	70
SA2C1-102	L2	1000 pF	50	0.020	–	4	20	27	30	60
SA2C1-502	L2	5000 pF	50	0.020	–	15	35	41	45	60
SA2C1-103	L2	0.010 µF	50	0.020	4	21	35	44	50	70
SA2C1-273	L2	0.027 µF	50	0.020	10	30	50	45	65	70
SA2C1-503	L2	0.050 µF	50	0.020	15	37	45	45	70	70
SA1A1-102	C	1000 pF	100	0.020	–	4	20	25	25	55
SA1A1-502	C	5000 pF	100	0.020	–	15	35	41	42	55
SA1A1-103	C	0.010 µF	100	0.020	4	21	35	42	50	70
SA1A1-273	C	0.027 µF	100	0.020	10	30	39	43	65	70
SA1A1-453	C	0.045 µF	100	0.020	14	35	42	45	70	70
SA2A1-102	L2	1000 pF	100	0.020	–	4	20	27	30	60
SA2A1-502	L2	5000 pF	100	0.020	–	15	35	41	45	60
SA2A1-103	L2	0.010 µF	100	0.020	4	21	35	44	50	70
SA2A1-273	L2	0.027 µF	100	0.020	10	30	50	45	70	70
SA2A1-453	L2	0.045 µF	100	0.020	14	37	45	45	70	70
SA1B1-102	C	1000 pF	200	0.020	–	4	20	25	25	55
SA1B1-502	C	5000 pF	200	0.020	–	15	34	41	42	55
SA1B1-103	C	0.010 µF	200	0.020	4	21	35	42	50	70
SA2B1-102	L2	1000 pF	200	0.020	–	4	20	27	30	60
SA2B1-502	L2	5000 pF	200	0.020	–	15	35	41	45	60
SA2B1-103	L2	0.010 µF	200	0.020	4	21	35	44	50	70

[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

Bolt Style EMI Filters
SB Series – 8-32 Thread - Epoxy Sealed – Circuits Available – C, L, π



APPLICATIONS

The SB series provides improved filtering in the HF through MICROWAVE frequency spectrums from 1 MHz through 10 GHz. Also designed for mounting in a tapped bulkhead or with the standard nut and lockwasher provided, it is ideal for medium to high impedance circuits where large capacitance values are not practical. In the "L" and "π" section versions an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves the insertion loss rolloff to 40 dB and 60 dB per decade respectively.

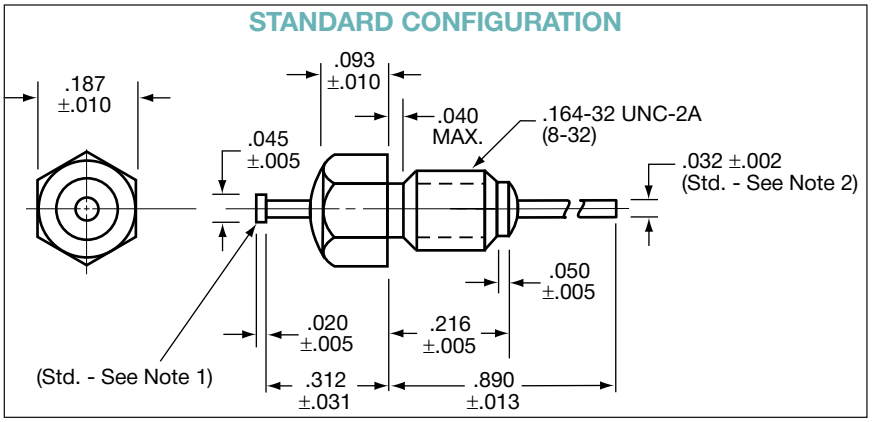
CHARACTERISTICS

- Designed to meet or exceed the applicable portions of MIL-F-28861/7. See QPL listings.
- π design offers steeper insertion loss rolloff.
- Features rugged monolithic discoidal capacitor construction.
- Epoxy seal on both ends.

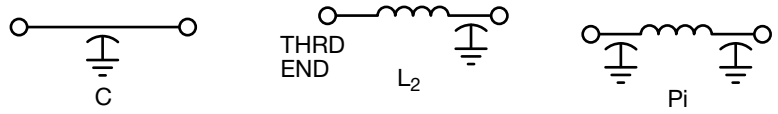
SPECIFICATIONS

1. Plating: Silver standard – Electro-tin or gold available
2. Material:
   Case: Cold rolled steel
   Leads: Half/hard copper
3. Operating Temperature Range:
   -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .01 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 10 Amps, maximum
9. Recommended Mounting Torque:
   64 oz-in. ± 4 oz-in.
10. Supplied with mounting nut and lockwasher - See Filter Design Guide Screw and Locking Washer Table
11. Insertion Loss for the "C", "L" and "π" circuits are equivalent due to the saturation characteristic of the ferrite bead element at full rated current. At lower currents the "L" and "π" become much more effective.

STANDARD CONFIGURATION



CIRCUIT DIAGRAMS



SB1 SB2 (See Note 3) SB3

millimeters (inches)

0.05 (.002)	1.14 (.045)
0.13 (.005)	1.27 (.050)
0.18 (.007)	1.85 (.073)
0.25 (.010)	2.36 (.093)
0.33 (.013)	4.17 (.164)
0.38 (.015)	4.75 (.187)
0.51 (.020)	5.49 (.216)
0.64 (.025)	6.35 (.250)
0.76 (.030)	7.11 (.280)
0.79 (.031)	7.92 (.312)
0.81 (.032)	22.61 (.890)
1.02 (.040)	– –

(See Note 4)

Notes:

1. Nailhead standard, straight lead available.
2. Lead diameters other than .032" available.
3. All SB2 L-Section Filters have inductor (bead) at threaded end.
4. Metric equivalent dimensions given for information only.

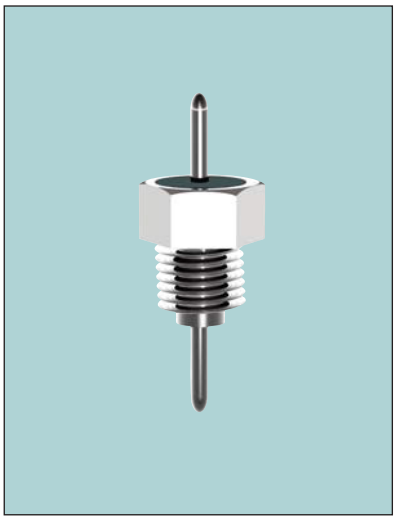
Bolt Style EMI Filters
SB Series – 8-32 Thread - Epoxy Sealed –
Circuits Available – C, L, π

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	CKT	CAP	DC Voltage	DCR (Ω)	1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
SB1C1-102	C	1000 pF	50	0.010	–	4	20	25	40	50
SB1C1-502	C	5000 pF	50	0.010	–	15	34	41	50	55
SB1C1-103	C	0.010 µF	50	0.010	4	21	35	40	55	60
SB1C1-273	C	0.027 µF	50	0.010	10	30	39	45	65	70
SB1C1-503	C	0.050 µF	50	0.010	15	35	42	50	70	70
SB2C1-273	L2	0.027 µF	50	0.010	10	30	50	54	65	70
SB2C1-503	L2	0.050 µF	50	0.010	15	36	54	60	70	70
SB3C1-323	π	0.032 µF	50	0.010	12	30	60	70	70	70
SB1A1-102	C	1000 pF	100	0.010	–	4	20	25	40	50
SB1A1-502	C	5000 pF	100	0.010	–	15	34	41	50	55
SB1A1-103	C	0.010 µF	100	0.010	4	21	35	40	55	60
SB1A1-273	C	0.027 µF	100	0.010	10	30	39	45	65	70
SB1A1-503	C	0.050 µF	100	0.010	15	35	42	50	70	70
SB2A1-103	L2	0.010 µF	100	0.010	4	21	35	38	65	70
SB2A1-273	L2	0.027 µF	100	0.010	10	30	50	54	70	70
SB3A1-152	π	1500 pF	100	0.010	–	8	20	45	70	70
SB3A1-123	π	0.012 µF	100	0.010	–	12	60	70	70	70
SB3A1-153	π	0.015 µF	100	0.010	–	17	37	43	70	70
SB1B1-102	C	1000 pF	200	0.010	–	4	20	25	40	50
SB1B1-502	C	5000 pF	200	0.010	–	15	34	41	50	55
SB2B1-102	L2	1000 pF	200	0.010	–	4	20	27	45	70
SB2B1-502	L2	5000 pF	200	0.010	–	15	35	41	55	70
SB3B1-202	π	2000 pF	200	0.010	–	8	42	58	70	70

[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

Bolt Style EMI Filters
SH Series – 10-32 Thread - Epoxy Sealed – Circuits Available – C, L, π



APPLICATIONS

The SH series provides intermediate filtering in the RF through MICROWAVE frequency spectrums from 100 KHz through 10 GHz. The larger hex size means that much higher values of capacitance are available in the feedthru style circuits and that a 125 VAC/400 Hz rating is available in certain values. Also designed for mounting in a tapped bulkhead or with the standard nut and lockwasher provided, it is optimum in medium to low impedance circuits where significant amounts of capacitance to ground can be tolerated. In the "L" and "π" section versions an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves the insertion loss rolloff to 40 dB and 60 dB per decade respectively.

Alternate lead diameters or lengths are available, both with and without a nailhead.

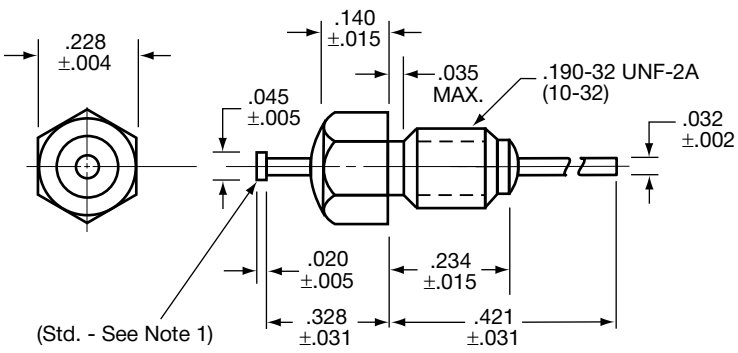
CHARACTERISTICS

- Equivalent to SB series π circuits and to SP series feedthru or "L" circuits.
- Conservatively rated for 125 VAC/400 Hz in certain values.
- π design offers steeper insertion loss rolloff.
- Features rugged monolithic discoidal capacitor construction.
- Epoxy seal on both ends.

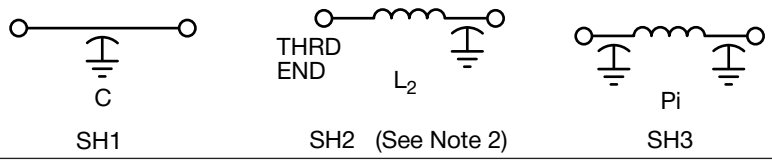
SPECIFICATIONS

1. Plating: Silver standard – Electro-tin or gold available
2. Material:
   Case: Cold rolled steel standard, brass available
   Leads: Half/hard copper
3. Operating Temperature Range: -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .01 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 10 Amps, maximum
9. Recommended Mounting Torque: 64 oz-in. ± 4 oz-in.
10. Supplied with mounting nut and lockwasher - See Filter Design Guide Screw and Locking Washer Table
11. Insertion Loss for the "C", "L" and "π" circuits are equivalent due to the saturation characteristic of the ferrite bead element at full rated current. At lower currents the "L" and "π" become much more effective.

STANDARD CONFIGURATION



CIRCUIT DIAGRAMS



millimeters (inches)

0.05 (.002)	3.56 (.140)
0.10 (.004)	4.83 (.190)
0.13 (.005)	5.79 (.228)
0.38 (.015)	5.94 (.234)
0.51 (.020)	8.33 (.328)
0.79 (.031)	10.69 (.421)
0.81 (.032)	– –

(See Note 3)

Notes:

1. Nailhead standard, straight lead available.
2. All SH2 L-Section Filters have inductor (bead) at threaded end.
3. Metric equivalent dimensions given for information only.

Bolt Style EMI Filters
SH Series – 10-32 Thread - Epoxy Sealed –
Circuits Available – C, L, π

SPECIFICATIONS

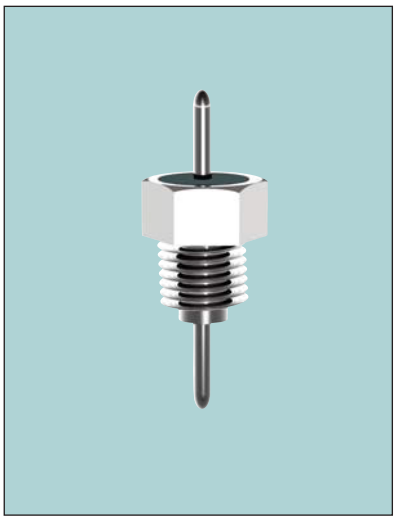
					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	CKT	CAP	DC Voltage	DCR (Ω)	1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
SH1C1-124	C	0.120 µF	50	0.010	21	38	49	60	70	70
SH1C1-204	C	0.200 µF	50	0.010	28	39	52	60	70	70
SH2C1-124	L2	0.120 µF	50	0.010	21	38	52	70	70	70
SH2C1-204	L2	0.200 µF	50	0.010	28	39	54	70	70	70
SH3C1-303	π	0.030 µF	50	0.010	10	28	58	70	70	70
SH1A1-503	C	0.050 µF	100	0.010	15	35	42	50	70	70
SH1A1-104	C	0.100 µF	100	0.010	20	38	48	53	70	70
SH2A1-503	L2	0.050 µF	100	0.010	15	36	50	60	70	70
SH2A1-104	L2	0.100 µF	100	0.010	20	39	52	65	70	70
SH3A1-123	π	0.012 µF	100	0.010	–	12	60	70	70	70
SH1L1-102	C	1000 pF	200*	0.010	–	4	20	25	40	50
SH1L1-502	C	5000 pF	200*	0.010	–	15	34	41	45	55
SH1L1-103	C	0.010 µF	200*	0.010	4	21	35	38	60	65
SH1L1-253	C	0.025 µF	200*	0.010	8	28	36	44	64	70
SH2L1-102	L2	1000 pF	200*	0.010	–	4	20	27	45	55
SH2L1-502	L2	5000 pF	200*	0.010	–	15	35	41	55	65
SH2L1-103	L2	0.010 µF	200*	0.010	4	21	36	40	60	65
SH3B1-202	π	2000 pF	200	0.010	–	8	42	58	70	70

* Rated 200 VDC or 125 VAC/400 Hz

[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

Bolt Style EMI Filters

SP Series – 12-32 Thread - Epoxy Sealed – Circuits Available – C, L, π



APPLICATIONS

The SP series provides increased filtering in the HF through MICROWAVE frequency spectrums from 100 KHz through 10 GHz. The larger hex size means that much higher values of capacitance are available and that a 125 VAC/400 Hz rating is available in certain values. Also designed for mounting in a tapped bulkhead or with the standard nut and lockwasher provided, it is optimum in medium to low impedance circuits where significant amounts of capacitance to ground can be tolerated. In the "L" and "π" section versions an internal ferrite bead element provides both inductance and series resistance (lossy characteristic) which improves the insertion loss rolloff to 40 dB and 60 dB per decade respectively.

Alternate lead diameters or lengths are available both with and without a nailhead.

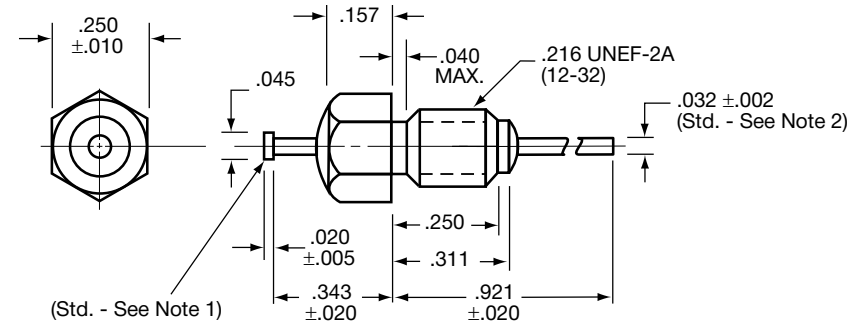
CHARACTERISTICS

- Designed to meet or exceed the applicable portions of MIL-F-28861/9. See QPL listing.
- Conservatively rated for 125 VAC/400 Hz in certain values.
- π design offers steeper insertion loss rolloff.
- Features rugged monolithic discoidal capacitor construction.
- Epoxy seal on both ends.

SPECIFICATIONS

1. Plating: Silver standard – Electro-tin or gold available
2. Material:
   Case: Cold rolled steel standard, brass available
   Leads: Half/hard copper
3. Operating Temperature Range: -55°C to +125°C
4. Insulation Resistance:
   At 25°C: 1,000 megohm-microfarad min., or 100,000 megohms min., whichever is less
   At 125°C: 100 megohm-microfarad min., or 10,000 megohms min., whichever is less
5. Dielectric Withstanding Voltage (DWV):
   R-level designs:
   2.0 times rated DC voltage
   Class B, Class S designs:
   2.5 times rated DC voltage
6. DC Resistance (DCR): .01 ohm, maximum
7. Dissipation Factor (DF): 3% maximum
8. Rated DC Current: 10 Amps, maximum
9. Recommended Mounting Torque: 64 oz-in. ± 4 oz-in.
10. Supplied with mounting nut and lockwasher - See Filter Design Guide Screw and Locking Washer Table
11. Insertion Loss for the "C", "L" and "π" circuits are equivalent due to the saturation characteristic of the ferrite bead element at full rated current. At lower currents the "L" and "π" become much more effective.

STANDARD CONFIGURATION

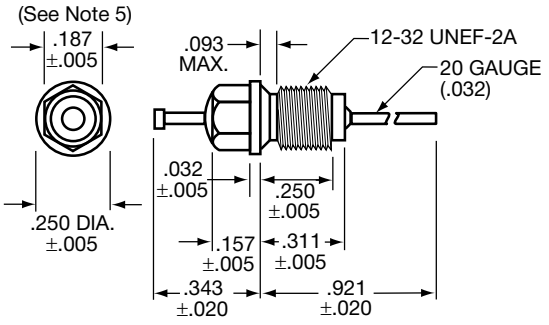


millimeters (inches)

0.05 (.002)	2.36 (.093)
0.13 (.005)	3.99 (.157)
0.18 (.007)	4.75 (.187)
0.25 (.010)	5.49 (.216)
0.51 (.020)	6.12 (.241)
0.58 (.023)	6.35 (.250)
0.79 (.031)	7.90 (.311)
0.81 (.032)	8.71 (.343)
1.02 (.040)	9.45 (.372)
1.14 (.045)	9.73 (.383)
1.60 (.063)	23.39 (.921)
1.85 (.073)	— —

(See Note 4)

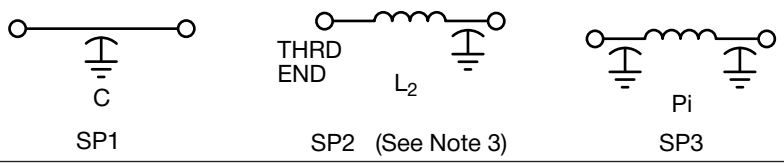
ALTERNATE CONFIGURATION (SC SERIES)



Notes:

1. Nailhead standard, straight lead available.
2. Lead diameters other than .032" available.
3. SP2 L-Section Filters have inductor (bead) at threaded end.
4. Metric equivalent dimensions given for information only.
5. Small-hex version may be specified for selected capacitance/voltage ratings. Contact KYOCERA AVX Filters Engineering for availability.

CIRCUIT DIAGRAMS



Bolt Style EMI Filters
SP Series – 12-32 Thread - Epoxy Sealed –
Circuits Available – C, L, π

SPECIFICATIONS

					Insertion Loss[1] Per MIL-STD-220, +25°C					
P/N	CKT	CAP	DC Voltage	DCR (Ω)	1 MHz	10 MHz	100 MHz	200 MHz	1 GHz	10 GHz
SP1C1-204	C	0.200 µF	50	0.010	26	39	52	60	70	70
SP2C1-204	L2	0.200 µF	50	0.010	26	38	65	70	70	70
SP3C1-124	π	0.120 µF	50	0.010	20	38	70	70	70	70
SP1A1-503	C	0.050 µF	100	0.010	15	35	38	50	70	70
SP1A1-104	C	0.100 µF	100	0.010	20	38	48	53	70	70
SP2A1-503	L2	0.050 µF	100	0.010	15	36	54	60	70	70
SP3A1-753	π	0.075 µF	100	0.010	18	38	70	70	70	70
SP1L1-102	C	1000 pF	200*	0.010	–	4	20	25	40	50
SP1L1-502	C	5000 pF	200*	0.010	–	15	34	41	50	55
SP1L1-103	C	0.010 µF	200*	0.010	4	21	35	40	55	60
SP1L1-253	C	0.025 µF	200*	0.010	8	28	36	44	64	70
SP2L1-102	L2	1000 pF	200*	0.010	–	4	20	27	45	70
SP2L1-502	L2	5000 pF	200*	0.010	–	15	35	41	55	70
SP2L1-103	L2	0.010 µF	200*	0.010	4	21	35	38	65	70
SP3B1-152	π	1500 pF	200	0.010	–	8	20	45	70	70
SP3B1-123	π	0.012 µF	200	0.010	–	12	60	70	70	70

* Rated 200 VDC or 125 VAC/400 Hz

[1] Insertion loss limits are based on theoretical values. Actual measurements may vary due to internal capacitor resonances and other design constraints.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

KYOCERA AVX:

SA1C1502 SH1L1-253 SA1B1102CS SH1L1-103 SB3C1-323C SA1B1-103 SA1B1-103D SA1A1273