

# Texas Spectrum Electronics, Inc



For over three decades, Texas Spectrum Electronics has been providing the military, aerospace and industrial communities with Electromagnetic Interference (EMI) products. TSE has become recognized as a manufacturer of quality EMI/RFI filters, feed-thru capacitors and other related components helping to solve Electromagnetic Compatibility (EMC) problems.

## MINIATURE/SUBMINIATURE EMI FILTERS

### APPLICATIONS

Manufactured to the general requirements of MIL-PRF-15733

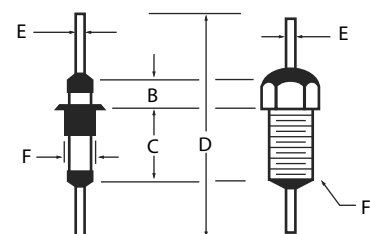
### SUB MINIATURE

### EPOXY SEALED

Types FO



Types FR



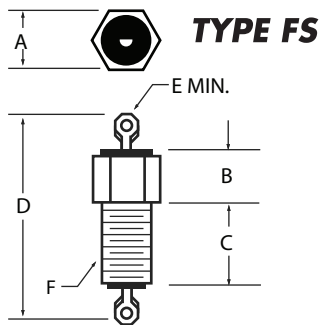
- $\pi$  CIRCUIT
- SMALLEST SIZES AVAILABLE
- FULL LOAD INSERTION LOSS
- TEMPERATURE RANGE -55°C TO +125°C
- RATED CURRENT 10 AMPS
- VOLTAGE RATINGS TO 1000VDC

PART NO.	VOLTAGE	INSERTION LOSS (at 25C)			A	B	C	D	E	F
		50 MC	100 MC	500MC						
F02-10	100	30	50	70	.200	.187	.281	.75	.025	.112
F02-30	300	28	48	66	.200	.187	.281	.75	.025	.112
F03-30	300	35	54	70	.260	.218	.293	1.0	.032	.155
F03-50	500	30	50	70	.260	.218	.293	1.0	.032	.155
F04-50	500	38	56	70	.312	.281	.326	1.2	.040	.245
F04-X1	1000	30	49	68	.312	.281	.326	1.2	.040	.245
FR2-10	100	30	50	70	.187	.187	.266	.75	.025	8-32
FR2-30	300	28	48	66	.187	.187	.266	.75	.025	8-32
FR3-30	300	35	54	70	.250	.218	.343	1.0	.032	12-32
FR3-50	500	30	50	70	.250	.218	.343	1.0	.032	12-32
FR4-50	500	38	56	70	.375	.281	.406	1.2	.040	5/16-24
FR4-X1	1000	30	49	68	.375	.281	.406	1.2	.040	5/16-24



# HERMETICALLY SEALED

# SUBMINIATURE

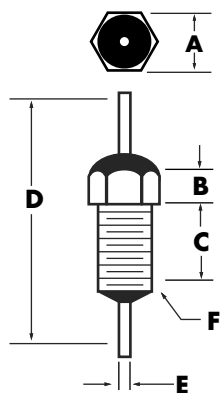
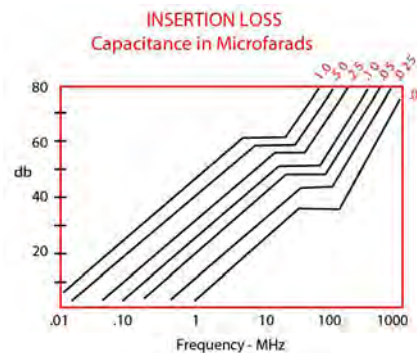


- THESE SUB-MINIATURE EMI FILTERS ARE THE SMALLEST AVAILABLE.
- TEMPERATURE RANGE: -55°C TO +125°C
- CURRENT RATINGS TO 15 AMPS
- VOLTAGE RATINGS TO 500 VOLTS

PART NO.	VOLTAGE	INSERTION LOSS (25C)			A	B	C	D	E	F
		50 MC	100 MC	500MC						
FS2-10	100	30	50	70	.187	.247	.372	.92	.050	8-32
FS2-30	300	28	48	66	.187	.247	.372	.92	.050	8-32
FS3-30	300	35	54	70	.250	.278	.403	.98	.060	12-32
FS3-50	500	30	50	70	.250	.278	.403	.98	.060	12-32
FS4-50	500	38	56	70	.375	.341	.466	1.10	.060	5/16-24

## FEEDTHRU CAPACITORS

- VOLTAGES TO 300 VDC
  - EPOXY SEALED
  - INSULATION RESISTANCE: 1000MΩUF MIN.
  - DISSIPATION FACTOR: 2.5% MAX.
  - TEMPERATURE RANGE -55°C TO +125°C
- Also available**
- Hermetically sealed
  - Higher capacitance values
  - Higher voltages



TYPE	A	B	C	D	E	F	DC VOLTAGE	MAXIMUM CAPACITANCE
CR4	.156	.125	.218	.62	.032	4-40	50	.013μf
							100	6800pf
							200	1600pf
CR8	.187	.187	.266	.75	.040	8-32	50	.13μf
							100	.07μf
							200	.01μf
CR12	.250	.218	.343	1.0	.050	12-32	50	.56μf
							100	.30μf
							200	.07μf
							300	.03μf

### Specify desired part as follows:

1. Type: CR4, CR8, CR12
2. Voltage: 50VDC=A, 100VDC=B, 200VDC=C, 300VDC=D
3. Capacitance: specify capacitance in picofarads. The first two digits are significant figures, the third digit is the number of zeroes.
4. Tolerance: K=±10%, M=±20%, Z=minimum

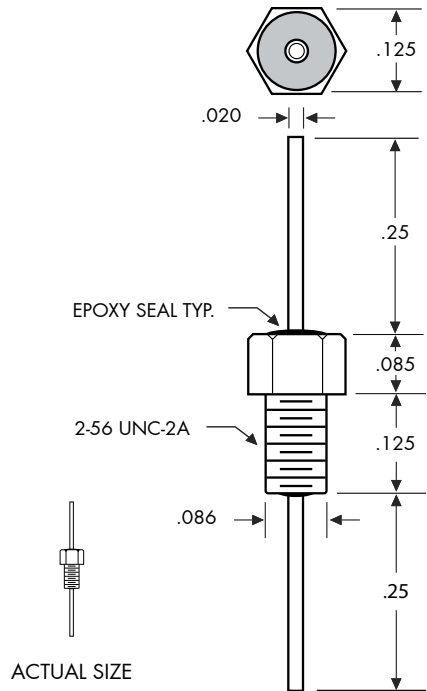
### EXAMPLE

C R8 B 134 Z

MINIMUM  
130000pf (.13μf)  
100VDC  
TYPE

# WORLD'S SMALLEST THREADED EMI FILTER

TSE introduced the 2-56 thread EMI filter in 1991, the smallest available in the industry at that time.



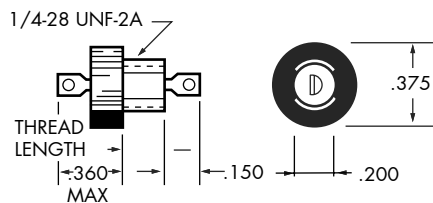
These filters are manufactured to the general requirements of MIL-PRF-15733. Specifications are:

- **CASE MATERIAL:** Brass per QQ-B-626
- **FINISH:** Gold per MIL-G-45204
- **CURRENT RATING:** 5A DC
- **TEMPERATURE RANGE:** -55°C to +125°C
- **INSULATION RESISTANCE:** 10,000 MOhms Minimum

PART NUMBER	CAPACITANCE	VOLTAGE
FRO5L-05-1	5000 pf	50 VDC
FRO5L-05-2	10000 pf	50 VDC
FRO5L-10-1	1500 pf	100 VDC
FRO5L-10-2	5000 pf	100 VDC
FRO5L-10-3	8000 pf	100 VDC

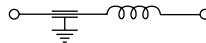
## MINIATURE

## BUTTON TYPE



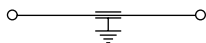
- **HERMETICALLY SEALED**
- **-55°C TO +125°C OPERATING**
- **FINISH PER MIL-T-10727**
- **MEETS APPLICABLE PORTIONS OF MIL-PRF-15733**
- **OTHER SIZES AND CONFIGURATIONS AVAILABLE**

**CURRENT RATING: 10ADC**



THREAD LENGTH		VOLTAGE	INSERTION LOSS (TYPICAL)				
.187 PART NO.	.312 PART NO.		30KHz	100KHz	1MHz	10MHz	1GHz
FB3AOL-1	FB3AOL-2	50	15	24	44	60	70
FB3COL-1	FB3COL-2	100	-	18	40	56	70
FB3DOL-1	FB3DOL-2	200	-	10	30	46	70

**CURRENT RATING: 15ADC**

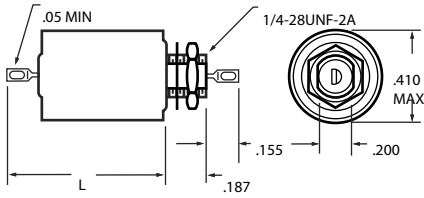


THREAD LENGTH		VOLTAGE	INSERTION LOSS (TYPICAL)				
.187 PART NO.	.312 PART NO.		30KHz	100KHz	1MHz	10MHz	1GHz
FB3AXC-1	FB3AXC-2	50	15	24	44	48	70
FB3CXC-1	FB3CXC-2	100	-	18	40	44	70
FB3DXC-1	FB3DXC-2	200	-	10	30	34	65



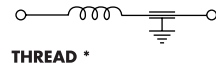
# MINIATURE

# 50WVDC (28V, 400HZ)

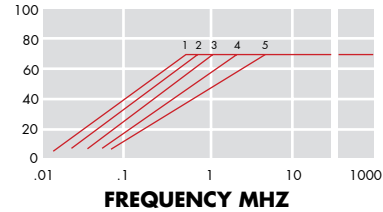


- EQUIVALENT TO MIL-PRF-15733
- SMALL SIZE
- LIGHT WEIGHT
- MANY DIFFERENT CASE MATERIALS, FINISHES, SIZES AND CIRCUIT CONFIGURATIONS AVAILABLE
- OPERATING TEMP. -55°C TO + 125°C

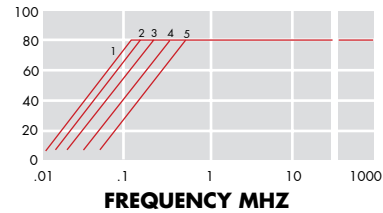
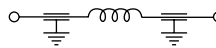
PART NO.	CURRENT AMPS	L MAX	VOLT DROP	I.L. CURVE
F4A1L	.1	.625	.16	1
F4A2L	.25	.625	.20	2
F4A3L	.50	.625	.17	3
F4A4L	1.0	.625	.13	4
F4A5L	2.0	.625	.13	5



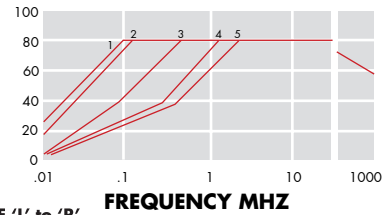
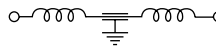
THREAD \*



PART NO.	CURRENT AMPS	L MAX	VOLT DROP	I.L. CURVE
F4A1P	.1	.715	.16	1
F4A2P	.25	.715	.20	2
F4A3P	.50	.715	.17	3
F4A4P	1.0	.715	.13	4
F4A5P	2.0	.715	.13	5



PART NO.	CURRENT AMPS	L MAX	VOLT DROP	I.L. CURVE
F4A1T	.1	.910	.32	1
F4A2T	.25	.910	.40	2
F4A3T	.50	.910	.34	3
F4A4T	1.0	.910	.26	4
F4A5T	2.0	.910	.26	5

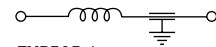


\* FOR REVERSE THREAD, CHANGE 'L' to 'R'

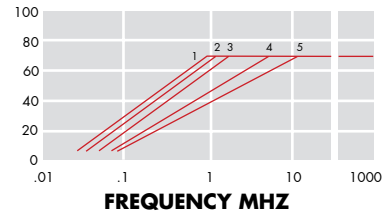
# MINIATURE

# 150WVDC (125V, 400HZ)

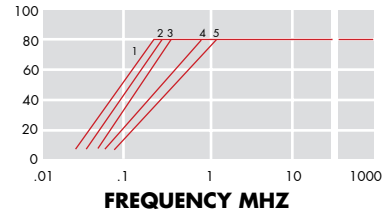
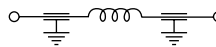
PART NO.	CURRENT AMPS	L MAX	VOLT DROP	I.L. CURVE
F4B1L	.1	.625	.16	1
F4B2L	.25	.625	.20	2
F4B3L	.50	.625	.17	3
F4B4L	1.0	.625	.13	4
F4B5L	2.0	.625	.13	5



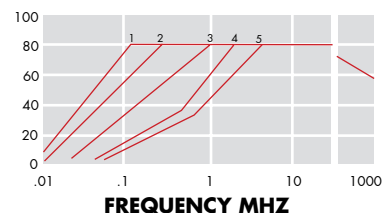
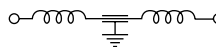
THREAD \*



PART NO.	CURRENT AMPS	L MAX	VOLT DROP	I.L. CURVE
F4B1P	.1	.715	.16	1
F4B2P	.25	.715	.20	2
F4B3P	.50	.715	.17	3
F4B4P	1.0	.715	.13	4
F4B5P	2.0	.715	.13	5



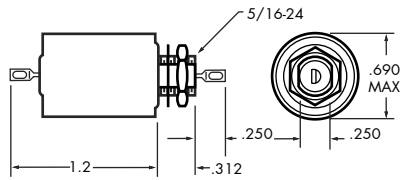
PART NO.	CURRENT AMPS	L MAX	VOLT DROP	I.L. CURVE
F4B1T	.1	.910	.32	1
F4B2T	.25	.910	.40	2
F4B3T	.50	.910	.34	3
F4B4T	1.0	.910	.26	4
F4B5T	2.0	.910	.26	5



\* FOR REVERSE THREAD, CHANGE 'L' to 'R'



# Miniature Improved Performance



- MEETS APPLICABLE PORTIONS OF MIL-PRF-15733
- TEMPERATURE RANGE: -55°C TO +125°C
- HERMETICALLY SEALED

150 VDC - 115VAC							
PART NO.	CURRENT AMPS	RESISTANCE OHMS DC	INSERTION LOSS db (TYPICAL)				
			100KHz	150KHz	300KHz	1MHz	1GHz
F6B4P	1	.70	40	50	65	80	80
F6B5P	2	.20	28	40	55	80	80
F686P	3	.10	22	32	52	70	80
F687P	5	.05	-	15	40	70	80
F680P	10	.01	-	-	16	58	70

100 VDC							
PART NO.	CURRENT AMPS	RESISTANCE OHMS DC	INSERTION LOSS db (TYPICAL)				
			100KHz	150KHz	300KHz	1MHz	1GHz
F6C4P	1	.70	60	69	80	80	80
F6C5P	2	.20	50	60	70	80	80
F6C6P	3	.10	36	48	66	80	80
F6C7P	5	.05	20	38	58	80	80
F6C0P	10	.01	18	22	28	40	80

## SPECIAL NOTES

**INSTALLATION NOTES:** Thermal or mechanical shock may damage filters. The use of heat sinks and controlled temperature soldering irons are recommended. Do not use tools to hold parts for gripping. Insure that mounting surfaces are properly grounded.

**Texas Spectrum Electronics, INC**

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