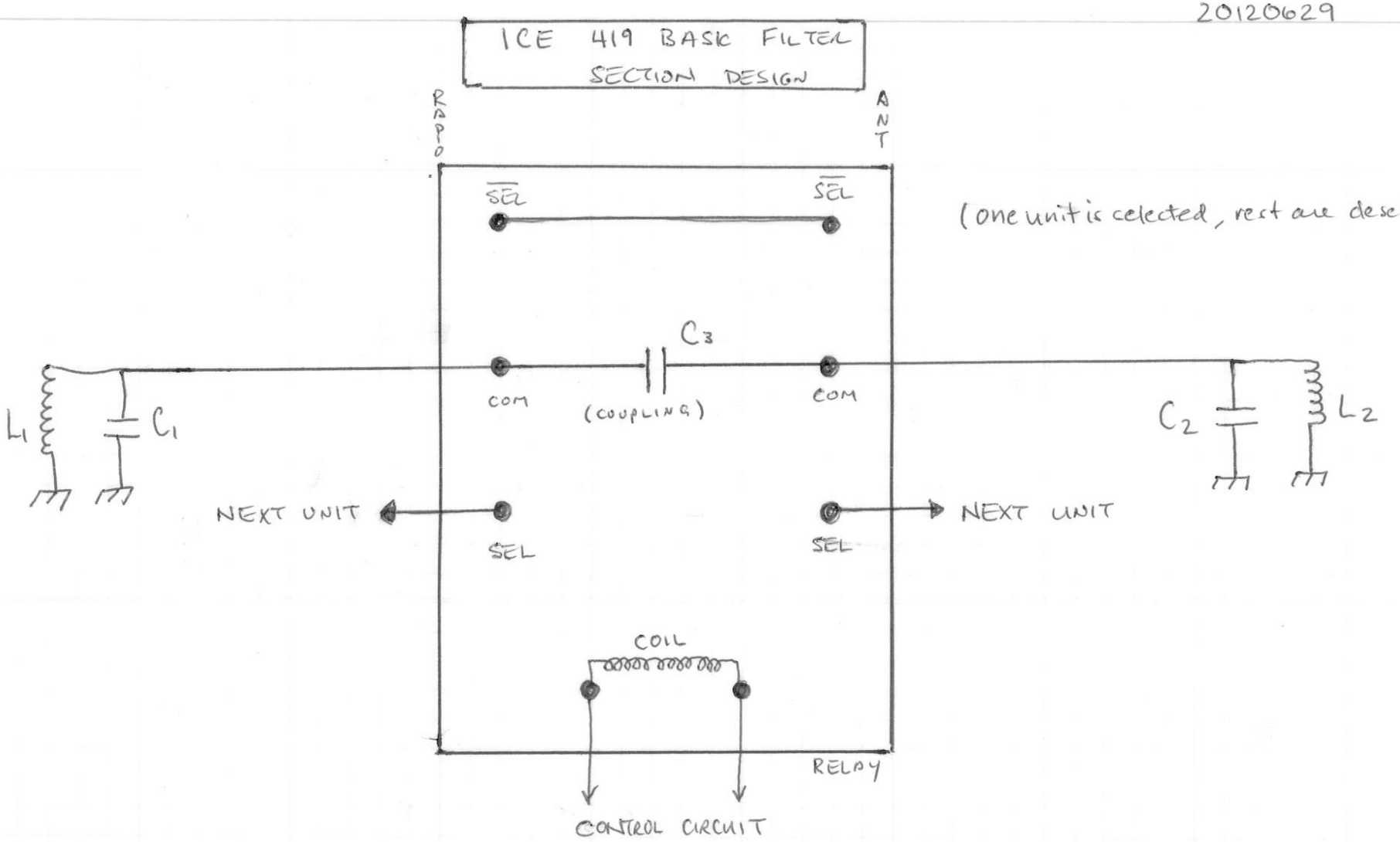
20120629



W6DR's I.C.E. Band Pass Filter Repair Notes

ICE 419 COMPONENT VALUES

(NON-A; NON-B)

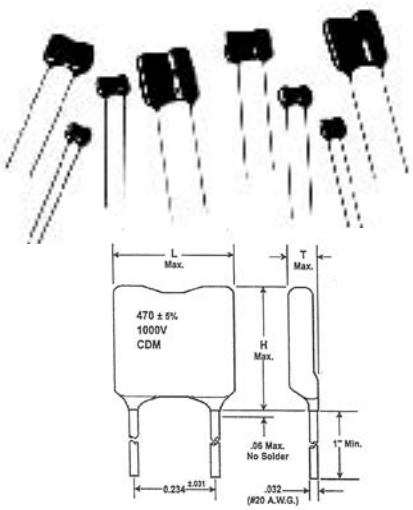
UNIT	***10M***	***15M***	***20M***	***40M***	***80M***	***160M***
HF-1						
L1=L2 (Turns)	2.5	3.5	3.5	6.5	8 (Torroid)	11 (Torroid)
C1=C2 (pF)	360	590	994	2000	2000	4400
C3 (pF)	94	247	245	530	940	1856
HF-2						
L1=L2 (Turns)	2.5	3.5	3.5	6.5	8.5 (Torroid)	12 (Torroid)
C1=C2 (pF)	400	600	1020	2200	2000	4400
C3 (pF)	244	150	255	500	920	1880
NOTES						
1. All caps were originally 500V silver mica snubber type						
2. Failure is due to heating of C1 (wrong band selected on radio side) - the values drift - nothing visual (typically 10/15/20)						
3. Solution is to replace C1 with three equal valued (more or less) caps in parallel and use 1000V caps						
4. Values are approximate at best						
5. Adjust by tuning into a 50-ohm dummy load at low power and tweaking length of L1, L2 for minimum SWR - using a glove						

MOUSER CDV VALUES @ 1000 V

100
110
120
130
150
160
180
200
220
240
270
300
330
360
390
420
430
470
500
510
560
620
680
750
820
910
1000
1200
1300
1500
1800
2000
2200
2400
2700
3000
3300
3600
4700

Type CD16 & CDV16 Snubber and RF Application, Mica Capacitors

Higher dV/dt Capability and Flatter Insertion Loss



Ideal for snubber and RF applications, CDV16 mica capacitors now handle dV/dts up to 275,000 V/µs and they assure controlled, resonance-free performance through 1 GHz. CDV16/CD16 mica capacitors excel in both snubber applications and high-frequency applications like RF and CATV. Type CDV16's high pulse current capability make them ideal for pulse and snubber applications. CDV16 capacitors withstand an unlimited number of pulses with a dV/dt of 275,000 V/µs. This is a 20% increase in dV/dt capability when compared to our CDV19 mica capacitors and CDV16's are smaller too. CDV16 capacitors handle higher peak currents — up to 825 amps. They also handle high continuous RMS current at 5 MHz and up to 30 MHz. For example, a 470 pF CDV16 capacitor handles 6.2 A rms continuously at 13.56 MHz and it is 1/4 the cost of a comparable porcelain ceramic capacitor. In addition to being great for snubbers, CDV16 is a fit for your RF applications. Their compact size and closer lead spacing improves insertion loss performance — insertion loss data is flat within ±0.2 dB, typically to beyond a gigahertz.

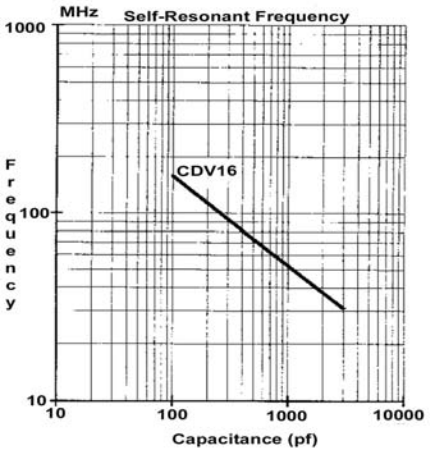
Highlights

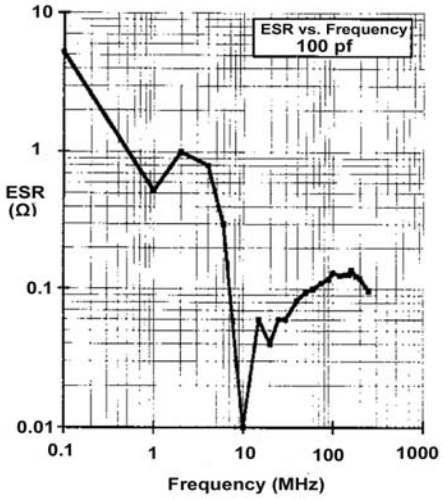
- Handles up to 9.0 amps rms continuous current
- Very low ESR from 10 to 100 MHz
- Low, notch-free impedance to 1GHz
- Stable: no capacitance change with (V), (t), and (f)
- Very high Q at UHF/VHF frequencies
- Tape and reeling available
- dV/dt capability up to 275,000 V/µs
- 1,500 amps peak current capability

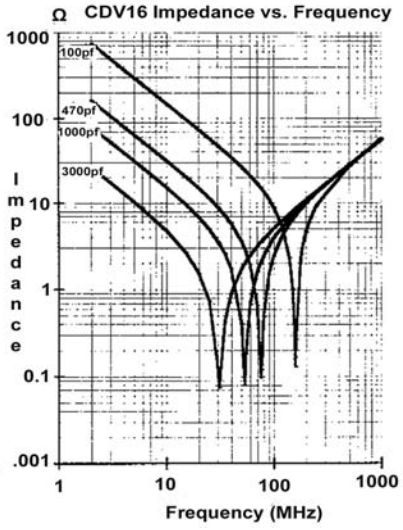
Specifications

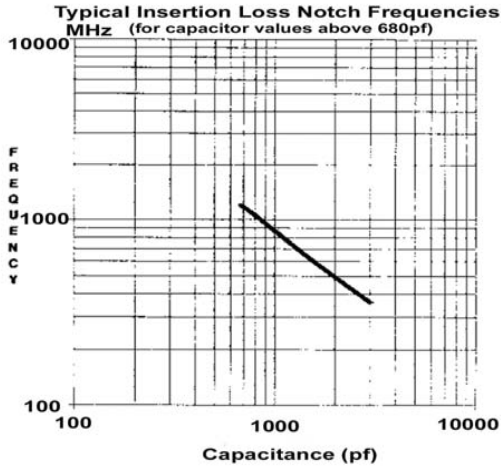
Capacitance Range:	100 pF to 7,500 pF
Capacitance Tolerance:	±5% (J) standard; ±1% (F) and ±2% (G) available
Voltage:	500 Vdc & 1,000 Vdc
Temperature Range:	–55 °C to +150 °C

Typical Performance Curves









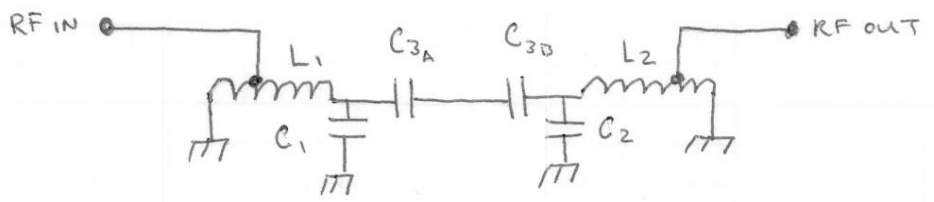
RoHS-5 Compliant
Has more than 1000 ppm lead in some homogenous material but otherwise complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

Type CD16 & CDV16 Snubber and RF Application, Mica Capacitors

Ratings

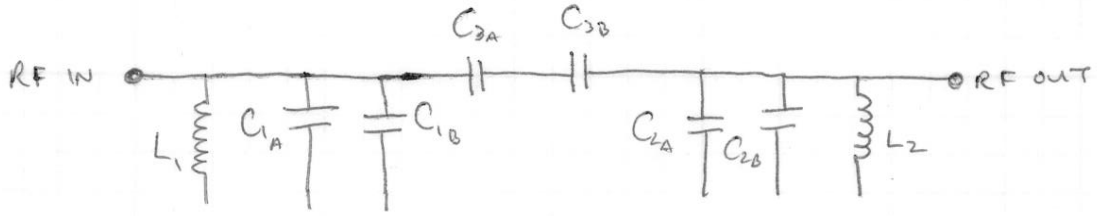
Cap. (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	Ipk Amps	Max Continuous Current @ 85°C, Amps 100kHz	250 kHz	500 kHz	1MHz	2.5MHz	5MHz
500 Vdc (300 Vac)											
100	CD16FD101J03	.43 (10.9)	.46 (11.7)	0.15 (3.8)	20	0.019	0.047	0.09	0.19	0.47	0.78
120	CD16FD121J03	.43 (10.9)	.46 (11.7)	0.15 (3.8)	24	0.023	0.057	0.11	0.23	0.57	0.86
150	CD16FD151J03	.43 (10.9)	.46 (11.7)	0.15 (3.8)	30	0.028	0.071	0.14	0.28	0.71	0.96
180	CD16FD181J03	.43 (10.9)	.46 (11.7)	0.15 (3.8)	36	0.034	0.085	0.17	0.34	0.85	1.1
220	CD16FD221J03	.43 (10.9)	.46 (11.7)	0.15 (3.8)	44	0.041	0.10	0.21	0.41	1.0	1.2
270	CD16FD271J03	.45 (11.4)	.47 (11.9)	0.16 (4.1)	54	0.051	0.13	0.25	0.51	1.3	1.3
330	CD16FD331J03	.45 (11.4)	.47 (11.9)	0.16 (4.1)	66	0.062	0.16	0.31	0.62	1.5	1.5
390	CD16FD391J03	.45 (11.4)	.47 (11.9)	0.16 (4.1)	78	0.074	0.18	0.37	0.74	1.6	1.6
470	CD16FD471J03	.45 (11.4)	.47 (11.9)	0.16 (4.1)	94	0.089	0.22	0.44	0.89	1.8	1.8
560	CD16FD561J03	.46 (11.7)	.50 (12.7)	0.18 (4.6)	110	0.11	0.26	0.53	1.1	2.0	2.0
680	CD16FD681J03	.46 (11.7)	.50 (12.7)	0.18 (4.6)	160	0.15	0.39	0.77	1.5	2.5	2.5
820	CD16FD821J03	.46 (11.7)	.50 (12.7)	0.18 (4.6)	160	0.15	0.39	0.77	1.5	2.5	2.5
1000	CD16FD102J03	.46 (11.7)	.50 (12.7)	0.18 (4.6)	200	0.19	0.47	0.94	1.9	2.7	2.7
1200	CD16FD122J03	.46 (11.7)	.50 (12.7)	0.18 (4.6)	240	0.23	0.57	1.1	2.3	3.0	3.0
1500	CD16FD152J03	.46 (11.7)	.50 (12.7)	0.18 (4.6)	300	0.28	0.71	1.4	2.7	3.3	3.3
1800*	CD16FD182J03	.47 (11.9)	.52 (13.2)	0.25 (6.4)	360	0.34	0.85	1.7	3.4	4.1	4.1
2200	CD16FD222J03	.47 (11.9)	.52 (13.2)	0.25 (6.4)	440	0.41	1.0	2.1	4.1	4.5	4.5
2700	CD16FD272J03	.47 (11.9)	.52 (13.2)	0.25 (6.4)	540	0.51	1.3	2.5	5.0	5.0	5.0
3000	CD16FD302J03	.47 (11.9)	.52 (13.2)	0.25 (6.4)	600	0.57	1.4	2.8	5.2	5.2	5.2
3300	CD16FD332J03	.48 (12.2)	.53 (13.7)	0.28 (7.1)	600	0.57	1.4	2.8	5.7	6.8	6.8
3600	CD16FD362J03	.48 (12.2)	.53 (13.7)	0.28 (7.1)	720	0.68	1.7	3.4	6.8	7.1	7.1
3900	CD16FD392J03	.48 (12.2)	.54 (13.7)	0.28 (7.1)	780	0.74	1.8	3.7	7.4	7.4	7.4
4300	CD16FD432J03	.48 (12.2)	.54 (13.7)	0.28 (7.1)	860	0.81	2.0	4.0	7.0	7.8	7.8
4700	CD16FD472J03	.49 (12.5)	.56 (14.2)	0.31 (7.9)	940	0.89	2.2	4.4	8.5	8.5	8.5
5600	CD16FD562J03	.49 (12.5)	.56 (14.2)	0.33 (8.4)	1100	1.1	2.6	5.3	9.0	9.0	9.0
6800	CD16FD682J03	.50 (12.7)	.57 (14.7)	0.38 (9.7)	1300	1.3	3.2	6.4	9.0	9.0	9.0
7500	CD16FD752J03	.50 (12.7)	.58 (14.7)	.40 (10.2)	1500	1.4	3.5	7.1	9.0	9.0	9.0
1,000 Vdc (350 Vac)											
100	CDV16FF101J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	23	0.022	0.055	0.11	0.22	0.55	0.92
120	CDV16FF121J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	27	0.026	0.066	0.13	0.26	0.66	1
130	CDV16FF131J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	29	0.029	0.071	0.14	0.29	0.71	1.1
150	CDV16FF151J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	34	0.033	0.082	0.16	0.33	0.82	1.1
180	CDV16FF181J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	41	0.04	0.10	0.2	0.4	1.0	1.2
200	CDV16FF201J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	45	0.044	0.11	0.22	0.44	1.1	1.3
220	CDV16FF221J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	50	0.048	0.12	0.24	0.48	1.2	1.4
240	CDV16FF241J03	.43 (10.9)	.46 (11.7)	.15 (3.8)	54	0.053	0.13	0.26	0.53	1.3	1.4
270	CDV16FF271J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	61	0.059	0.15	0.3	0.59	1.5	1.6
300	CDV16FF301J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	68	0.066	0.16	0.33	0.7	1.6	1.7
330	CDV16FF331J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	74	0.073	0.18	0.36	0.73	1.8	1.8
360	CDV16FF361J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	81	0.079	0.2	0.4	0.79	1.8	1.8
390	CDV16FF391J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	88	0.086	0.21	0.43	0.86	1.9	1.9
420	CDV16FF421J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	95	0.092	0.23	0.46	0.92	2	2.0
430	CDV16FF431J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	97	0.095	0.24	0.47	0.95	2.0	2.0
470	CDV16FF471J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	106	0.1	0.26	0.52	1	2.1	2.1
500	CDV16FF501J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	113	0.11	0.27	0.55	1.1	2.2	2.2
510	CDV16FF511J03	.45 (11.4)	.47 (11.9)	.16 (4.1)	115	0.11	0.28	0.56	1.1	2.2	2.2
560	CDV16FF561J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	126	0.12	0.31	0.62	1.2	2.4	2.4
620	CDV16FF621J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	140	0.14	0.34	0.68	1.4	2.5	2.5
680	CDV16FF681J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	153	0.15	0.37	0.75	1.5	2.7	2.7
750	CDV16FF751J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	169	0.16	0.41	0.82	1.6	2.8	2.8
820	CDV16FF821J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	185	0.18	0.45	0.9	1.8	2.9	2.9
910	CDV16FF911J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	205	0.2	0.5	1	2	3.1	3.1
1000	CDV16FF102J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	225	0.22	0.55	1.1	2.2	3.2	3.2
1200	CDV16FF122J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	270	0.26	0.66	1.3	2.6	3.5	3.5
1300	CDV16FF132J03	.46 (11.7)	.50 (12.7)	.17 (4.4)	293	0.29	0.71	1.4	2.9	3.7	3.7
1500	CDV16FF152J03	.46 (11.7)	.50 (12.7)	.18 (4.6)	338	0.33	0.82	1.6	3.3	3.9	3.9
1800*	CDV16FF182J03	.47 (11.9)	.52 (13.2)	.25 (6.4)	495	0.4	0.99	2	4	4.8	4.8
2000	CDV16FF202J03	.47 (11.9)	.52 (13.2)	.25 (6.4)	605	0.48	1.2	2.4	4.8	5.3	5.3
2200	CDV16FF222J03	.47 (11.9)	.52 (13.2)	.25 (6.4)	605	0.48	1.2	2.4	4.8	5.3	5.3
2400	CDV16FF242J03	.47 (11.9)	.52 (13.2)	.25 (6.4)	660	0.53	1.3	2.6	5.3	5.5	5.5
2700	CDV16FF272J03	.47 (11.9)	.52 (13.2)	.25 (6.4)	743	0.59	1.5	3	5.8	5.8	5.8
3000	CDV16FF302J03	.47 (11.9)	.52 (13.2)	.25 (6.4)	825	0.66	1.6	3.3	6.2	6.2	6.2

* Best RF performances is = to or < this cap rating.



10M

$C_1 = C_2 = 180\,pF$ Silver Mica snubber 500+ V
$L_1 = L_2$
$C_{3A} = C_{3B} = 62\,pF$

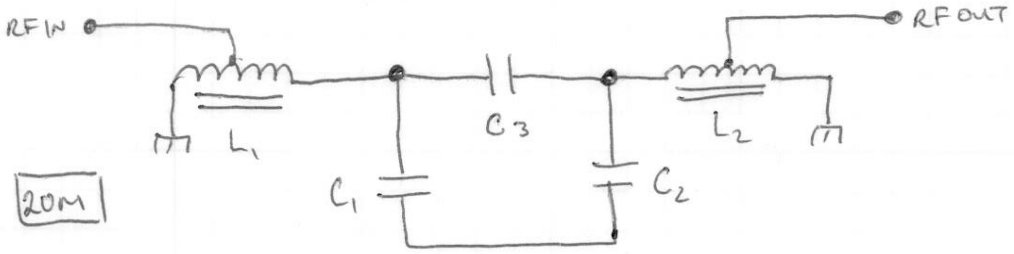


15M

$C_{1A} = C_{1B} = C_{2A} = C_{2B} = 300\,pF$ (600 pF per side)

$C_{3A} = C_{3B} = 300\,pF$

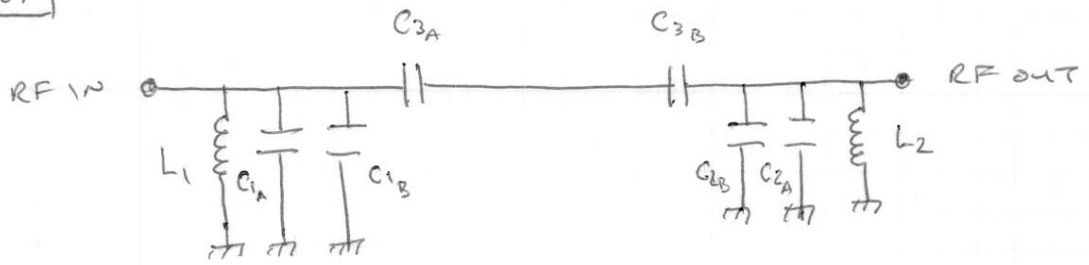
$L_1 = L_2 = 4T$



20M

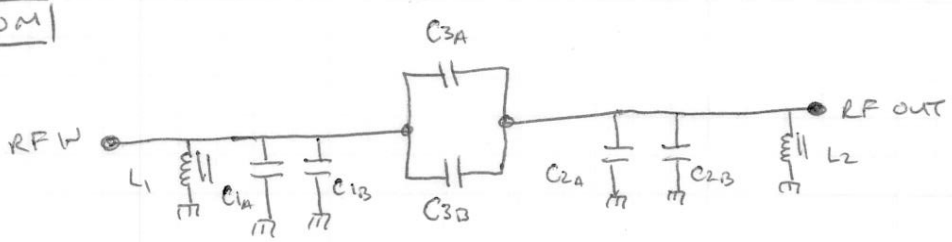
$C_1 = C_2 = 270\,pF$
$C_3 = 62pF$

40M



$C_{1A} = C_{2A} = 1200\,pF$ (2200 pF per side)
$C_{1B} = C_{2B} = 1000\,pF$
$L_1 = L_2 = 5.5\,T$
$C_{3A} = 860\,pF$
$C_{3B} = 1000\,pF$

80M



$C_{3A} = 62\,pF$ $C_{3B} = 300\,pF$
$L_1 = L_2 = 7\,T$
$C_{1A} = C_{2A} = C_{1B} = C_{2B} = 1000\,pF$ (2000 pF per side)
