

Each part is described by one or more lines in an ASCII format with the first item being the value in scientific notation. At the 16th horizontal position (second tab stop) is the part type identification letter code. Two spaces further to the right is the connection code number.

Like this:

```
....Value.....
#.#e+## # ## <-- 18th. column (connection code)
      ^16th. column. (ID)
```

The "end of file" flag is the final x "ID".

Below are all the predefined network models as they would be drawn by the circuit editor and as they would appear in a corresponding ".DZN" file. Note that the order of the parts must be the same in the file as on the schematic drawing. The order is dictated by the procedures used by the network analysis module. The numbers to the far left are branch numbers and will vary according the position of each network in the filter. The positions of R, L and C shown below were chosen to help you identify each element in the example. An R or L or C may be at any branch in most networks in any order.

Branch	Generic Symbols	Extended Symbols	Network connection code <--,"ID" type R,L,C,Z etc. <-- ,--> Part value
0	Termination -	Termination	#####e+## R 1
1	C	C	#####e+## C 2
2	C	C	#####e+## C 3
3	L C	L C	#####e+## L 4 #####e+## C 4
5	L C	L C	#####e+## L 5 #####e+## C 5
7	C	C	#####e+## C 6
8	L R	L R	#####e+## L 6 #####e+## R 6
10	L R	L R	#####e+## L 7 #####e+## C 7
11	C R	C R	#####e+## R 7

13.		13.		to Common A → #.#####e+## R 8
14.		14.		← Common A 0.0000000e+00 _ 9
15.		15.		#.#####e-## L 10 #.#####e-## C 10 #.#####e-## C 10 #.#####e-## L 10 #.#####e-## C 10
20.		20.		#.#####e-## L 11 #.#####e-## C 11
22.		22.		#.#####e-## C 12 #.#####e-## L 12 #.#####e-## L 12 #.#####e-## C 12
** NOTE: code 13 is also used for "Triplets". See the end of this section **				
26.		26.		#.#####e-## C 13 #.#####e-## L 13 #.#####e+## R 13 #.#####e+## R 13 #.#####e+## R 13 #.#####e-## C 13 #.#####e-## L 13 #.#####e+## R 13
34.		34.		#.#####e-## L 14 #.#####e-## C 14 #.#####e+## R 14
37.		37.		#.#####e-## L 15 #.#####e-## C 15 #.#####e+## R 15
40.		40.		#.#####e+## Z 16 #.#####e+## D 16
42.		42.		#.#####e+## Z 17 #.#####e+## D 17
44.		44.		#.#####e+## Z 18 #.#####e+## D 18
46.		46.		#.#####e+## Z 19 #.#####e+## D 19
48.		48.		#.#####e+## Z 20 #.#####e+## D 20 #.#####e-## C 20
51.	Report --> -'	51.	Report → -'	0.0000000e+00 _ 21
52.		52.		Ref. Freq = #.#####e+## F 22
53.	T + + + + + T	53.	+ + + + +	#.#####e+## Z 23 #.#####e+## D 23
55.	====[ N:1 ]====	55.	====[ N:1 ]====	#.#####e+## N 24
56.		56.		#.#####e-## C 25 #.#####e+## Z 25 #.#####e+## D 25

59.	====*-C-*====	59.	====*-C-*====	#.#####e-## C 26 #.#####e+## Z 26 #.#####e+## D 26
62.		62.		#.#####e-## L 27 #.#####e-## C 27 #.#####e-## L 27 #.#####e+## R 27
66.	- L - ,	66.	- L - ,	#.#####e-## L 28 #.#####e-## C 28 #.#####e-## L 28 #.#####e+## R 28
67.	- C -' - L - R -	67.	- C -' - L - R -	
70.		70.		#.#####e-## L 29 #.#####e-## C 29 #.#####e-## L 29 #.#####e+## R 29
72.		72.		
74.	- L - C - ,	74.	- L - C - ,	#.#####e-## L 30 #.#####e-## C 30 #.#####e-## L 30 #.#####e+## R 30
76.	--- L ---' - R -	76.	--- L ---' - R -	
78.		78.		#.#####e+## L 31 #.#####e+## C 31 #.#####e+## R 31 #.#####e+## L 31 #.#####e+## C 31 #.#####e+## R 31
80.		80.		
83.		83.		
84.	- C L - ,	84.	- C L - ,	#.#####e+## C 32 #.#####e+## L 32 #.#####e+## R 32 #.#####e+## C 32 #.#####e+## L 32 #.#####e+## R 32
86.	-- R --' - C L -	86.	-- R --' - C L -	
89.	-- R --	89.	-- R --	
90.		90.		#.#####e-## Z 33 #.#####e+## D 33 #.#####e+## C 33
91.		91.		
93.	===: :==*-L-	93.	===: :==*-L-	#.#####e+## Z 34 #.#####e+## D 34 #.#####e-## L 34
96.	:===='- ,	96.	:===='- ,	#.#####e-## Z 35 #.#####e+## D 35 #.#####e+## L 35
97.	:====, -L	97.	:====, -L	
99.	==: :=, ':-:==	99.	==: :=, ':-:==	#.#####e+## Z 36 #.#####e+## D 36 #.#####e+## Z 36 #.#####e+## D 36
101.		101.		
103.	,:==	103.	,:==	#.#####e+## Z 37 #.#####e+## D 37 #.#####e+## Z 37 #.#####e+## D 37
105.	:==':==, ' :=====' ,	105.	:==':==, ' :=====' ,	
107.	====: z :====	107.	====: z :====	#.#####e+## Z 38 #.#####e+## D 38
109.	z, :====' ' :====, ' :====	109.	z, :====' ' :====, ' :====	#.#####e+## Z 39 #.#####e+## D 39
111.	,=: :=, ' :==	111.	,=: :=, ' :==	#.#####e+## Z 40 #.#####e+## D 40 #.#####e+## Z 40
113.	==:' ' :==	113.	==:' ' :==	

			#.#####e+## D 40
114. 115.----- C ----- 116.----- L ----- 117.--- L --- C --- 118.	114. 115.----- C ----- 116.----- L ----- 117.--- L --- C --- 118.	114. 115.----- C ----- 116.----- L ----- 117.--- L --- C --- 118.	#.#####e+## L 41 #.#####e+## C 41 #.#####e+## L 41 #.#####e+## C 41 #.#####e+## L 41 #.#####e+## C 41 #.#####e+## C 41
127.=====:-r-:=====	127.=====:-r-:=====	127.=====:-r-:=====	#.#####e+## Z 42 #.#####e+## D 42
128.----- r, :===== ' ----- ':===== ,	128.----- r, :===== ' ----- ':===== ,	128.----- r, :===== ' ----- ':===== ,	#.#####e+## Z 43 #.#####e+## D 43
119   Q branch #	119   Q branch #	119   Q branch #	#.#####e+## # 44
120. 121.----- L ----- 122.----- C ----- 123.----- R ----- 124.--- R --- R --- 125.----- R ----- 126.--- C ---	120. 121.----- L ----- 122.----- C ----- 123.----- R ----- 124.--- R --- R --- 125.----- R ----- 126.--- C ---	120. 121.----- L ----- 122.----- C ----- 123.----- R ----- 124.--- R --- R --- 125.----- R ----- 126.--- C ---	#.#####e+## L 45 #.#####e+## C 45 #.#####e+## R 45 #.#####e+## R 45 #.#####e+## R 45 #.#####e+## R 45 #.#####e+## L 45 #.#####e+## C 45
127. 129.	127. 129.	127. 129.	#.#####e+## Z 47 #.#####e+## D 47 #.#####e+## C 47 #.#####e+## C 47
131.==:-:-:==, 133.--- C --- C ---	131.==:-:-:==, 133.--- C --- C ---	131.==:-:-:==, 133.--- C --- C ---	#.#####e+## Z 46 #.#####e+## D 46 #.#####e+## C 46 #.#####e+## C 46
3. - L - , 4 - C - ' - C , 6 ----- C ----- L -	3. - L - , 4 - C - ' - C , 6 ----- C ----- L -	3. - L - , 4 - C - ' - C , 6 ----- C ----- L -	#.#####e+## L 48 #.#####e+## C 48 #.#####e+## C 48 #.#####e+## C 48 #.#####e+## C 48 #.#####e+## L 48
3. 4. 6.	3. 4. 6.	3. 4. 6.	#.#####e+## C 49 #.#####e+## L 49 #.#####e+## L 49 #.#####e+## L 49 #.#####e+## C 49
1   EQ data	1   EQ data	1   EQ data	0.0000000e-00 A 50
1. 3. 5. 7. 9. 11.	1. 3. 5. 7. 9. 11.	1. 3. 5. 7. 9. 11.	#.#####e-## C 51 #.#####e-## L 51 #.#####e-## C 51 #.#####e-## L 51 #.#####e+## R 51 #.#####e+## R 51 #.#####e-## C 51 #.#####e-## L 51 #.#####e-## C 51 #.#####e-## L 51 #.#####e-## R 51
12. 14. 16.	12. 14. 16.	12. 14. 16.	#.#####e-## C 52 #.#####e-## L 52 #.#####e-## C 52 #.#####e-## L 52 #.#####e+## R 52 #.#####e+## R 52

18		-----'		18		┌───┐		#####e-## C 52
20		- C - L -		20		C - L		#####e-## L 52
22		- C - L -		22		C - L		#####e-## C 52
		----- R -----				└───┘		#####e-## L 52
								#####e+## R 52

  

118	Fc = ###.####	90	Fc = ###.####	#####e+## x _
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Options for ID type codes:

C = Capacitor	Z = Transmission line Zo.
L = Inductor	D = Transmission line length
R = Resistor	x = End of file marker (In Fc branch only)
	N = Transformer turns ratio
	F = Reference freq. for transmission line lengths

Below is the schematic drawing of a comb filter and its corresponding ".DZN" file. Notice the direct correlation (keep in mind that resonator length is recorded as radian length in the file).

0	Termination	50 Ohms	5.00000000e+01 R 1
1		Ref. freq. = 1000.03 MHz.	1.00003471e+09 F 22
2	[ N:1 ]	11.97 :1 turns	1.19668322e+01 N 24
3.	+ + + + + + +	7160.3 Ohms 45 Deg.	7.16025366e+03 Z 23
.	:==:	69.854 Ohms 45 Deg.	7.85398163e-01 D 23
7	C	2.2981 pFd.	6.98535406e+01 Z 16
8.	[:]	8062.8 Ohms 45 Deg.	7.85398163e-01 D 16
10.	:==:	70.587 Ohms 45 Deg.	2.29806873e-12 C 2
12	C	2.2941 pFd.	8.06281263e+03 Z 17
13.	[:]	8062.8 Ohms 45 Deg.	7.85398163e-01 D 17
15.	:==:	69.854 Ohms 45 Deg.	7.05874435e+01 Z 16
17	C	2.2981 pFd.	7.85398163e-01 D 16
18.	+ + + + + + +	7160.3 Ohms 45 Deg.	6.98535406e+01 Z 16
20	[ N:1 ]	0.08356 :1 turns	7.85398163e-01 D 17
21	Source	50 Ohms	7.85398163e-01 D 17
22	Fc = 1000 MHz.		8.35643036e-02 N 24
			5.00000000e+01 R 1
			1.00003471e+09 x 0

## Coupled "Triplet" networks

The various coupled triplet networks are covered by the same network connection code number as the constant impedance amplitude equalizer, code number 13. In this case, the 2nd and 6th element will have code numbers other than 13 to identify the network.

<pre> #.#####e-## C 13 &gt;#.#####e-## L 13 &gt;#.#####e+## C 13 #.#####e+## C 13 #.#####e+## L 13 #.#####e-## L 13 #.#####e-## C 13 #.#####e+## R 13 </pre>	<p>Network identification code:</p> <p>13 - Amplitude equalizer.</p> <p>17 - All L.</p> <p>18 or 19 - L,C or C,L bridged by L.</p> <p>21 - All C.</p> <p>22 or 23 - L,C or C,L bridged by C.</p> <p>"Resonator" type code:</p> <p>13 - L-C "tank" resonator</p> <p>42 - Shorted stub resonator.</p> <p>(In this case, "ID" type will be Z and D.)</p> <p>These two values are the storage for the L-C equivalent of the stub when the "Resonator" is a shorted stub. It is used to allow the stub to be changed back to an L-C resonator.</p>
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Here is an example:		
0	Termination	50.000 Ohms
1		Ref. freq. = 998.749 MHz.
2	C	2.1273 pFd.
3.		Fx = 1726.3 MHz.
6		0.056786 pFd.
8	L	1.2883 pFd.
9	C	10 nHy.
7		1.7506 pFd.
11	L	91.973 nHy. L-C Resonator
12	C	7.7076 nHy.
13.		7.7076 nHy.
16		3.5577 pFd.
18		0.30579 pFd.
17		70.981 nHy.
21	C	52.718 Ohms 82.101 Deg.
22.		1.2524 pFd. Stub resonator
25		0.14643 pFd.
27	L	Fx = 864.08 MHz.
28	C	0.67968 pFd.
26		0.29165 pFd.
30	C	10 nHy.
31	Source	1.5031 pFd.
32	Fc = 998.75 MHz.	1.1181 pFd.

  

	5.00007966e+01 R 1
	9.98749218e+08 F 22
	2.12725059e-12 C 2
	>5.67856004e-14 C 13
	0.00000000e+00 R 23
	1.00000000e+22 R 13
	1.28826684e-12 C 13
	9.19729577e-08 L 13
	>9.99999060e-09 L 13
	>1.75060343e-12 C 13
	0.00000000e+00 R 13
	7.70759355e-09 L 2
	3.55770081e-12 C 2
	3.05786294e-13 C 13
	9.99999060e-09 L 23
	1.75060343e-12 C 13
	7.09812330e-08 L 13
	1.25237350e-12 C 13
	>5.27183675e+01 Z 42
	1.43293420e+00 D 42
	0.00000000e+00 R 13
	1.46431956e-13 C 2
	6.79682547e-13 C 13
	>0.00000000e+00 R 21
	1.00000000e+22 R 13
	2.91652004e-13 C 13
	1.11809579e-12 C 13
	9.99999400e-09 L 13
	1.50308063e-12 C 13
	0.00000000e+00 R 13
	1.84721870e-12 C 2
	5.00000000e+01 R 1
	9.98749218e+08 x 0

Here is the necessary routine, in both BASIC and "C", to input a ".DZN" design file. Both versions are provided on the distribution disk:

```

----- BASIC -----
DEFINT I,N
DIM V(150),ID(150),ICON(150)
INPUT "Input what file (Cr = default)";FILE1$
IF FILE1$="" THEN FILE1$="DEFAULT"
OPEN "I",#1,FILE1$+".DZN"
I=0
70 LINE INPUT #1,N$
  V(I)=VAL(LEFT$(N$,16))      ' part value
  ID(I)=ASC(MID$(N$,17,1))    ' part type L,C,R etc.
  ICON(I)=VAL(MID$(N$,19,2))  ' connection code
  IF ID(I)<>ASC("x") THEN I=I+1:GOTO 70
CLOSE:N=I
FOR I=0 TO N
  PRINT V(I);CHR$(ID(I));ICON(I)
NEXT I
PRINT "Fo ="; V(N)

----- "C" -----

#include <stdio.h>

main()
{
FILE *file;
char buf[30],name1[80],name[80];
int i,n;
double fo,atof();

struct branch { /* storage of design, part-by-part */
double val; /* part value */
char id; /* part type R,L,C etc */
int con; /* Connection code */
} part[151];

printf("Input what file (Cr = default) "); gets(name1);
if (*name1 == '\0') strcpy (name1,"DEFAULT");
strcpy (name , name1); strcat(name, ".dzn");

file = fopen(name,"r");
if (file == NULL) {
printf("\aCan't open file %s", name); exit(1);
}
i = 0;
do {
part[i].val = atof(fgets(buf,30,file));
part[i].id = *(buf+16);
part[i].con = atoi(buf+18);
} while (part[i++].id != 'x');
fclose(file);
n = i - 2; fo = part[i-1].val;

for (i=1; i<=n; i++)
printf("%e %c %d\n", part[i].val, part[i].id, part[i].con);
printf("Fo = %g", fo);
}

```