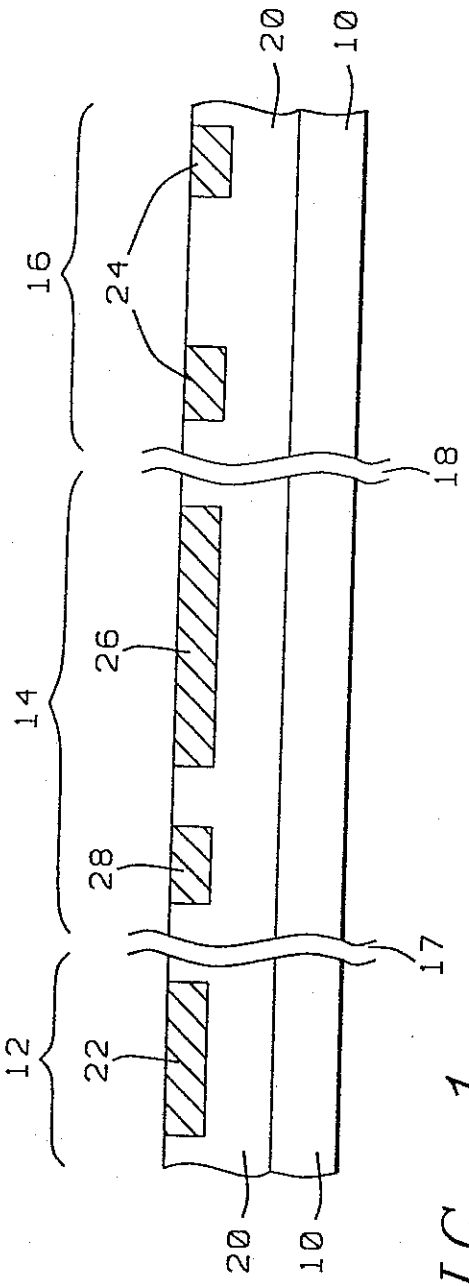

20
10
16
24
18
14
26
28
17
12
22
20
10

FIG. 1

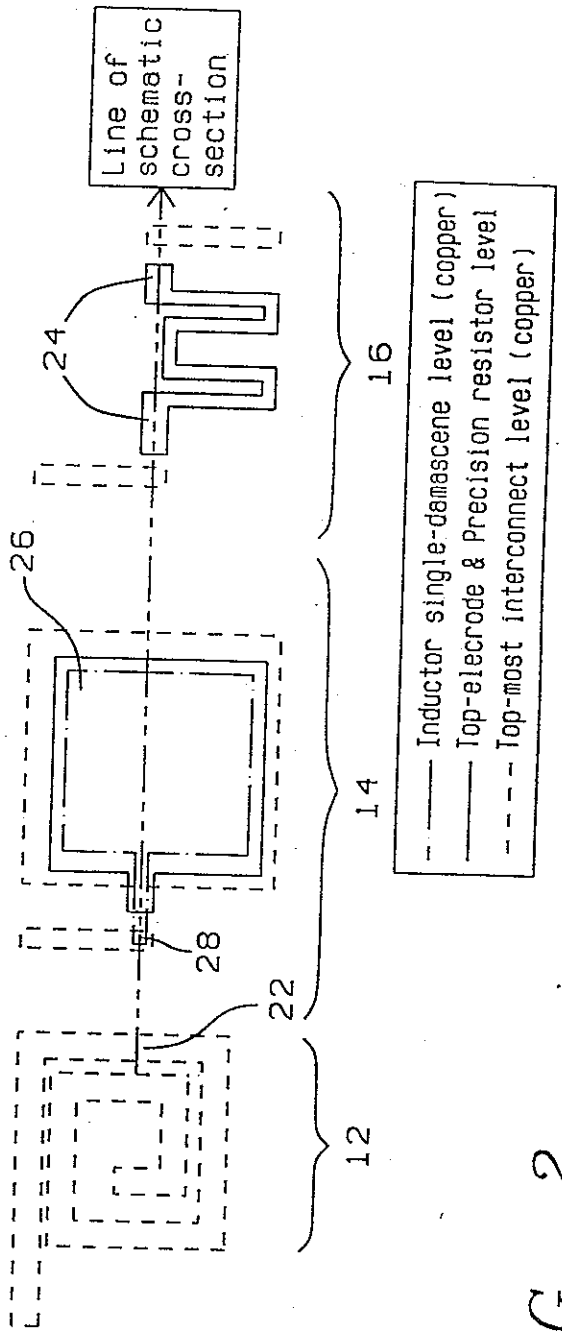

Line of schematic cross-section
24
16
26
14
28
22
12
Inductor single-damascene level (copper)
Top-elecrode & Precision resistor level
Top-most interconnect level (copper)

FIG. 2

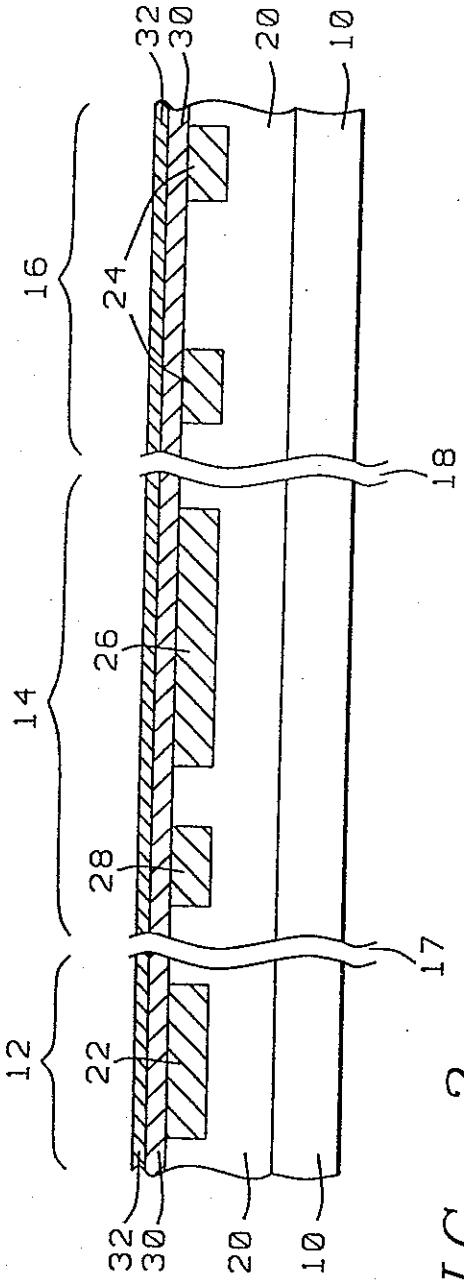

32
30
20
10
16
24
18
14
26
28
17
12
22
32
30
20
10

FIG. 3

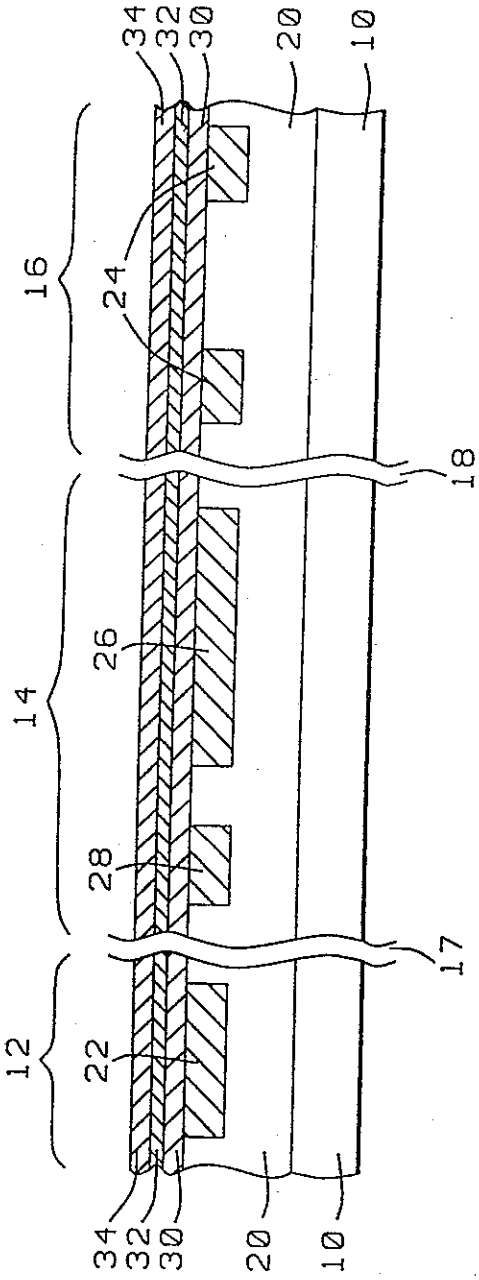

34
32
30
20
10
16
24
18
14
26
28
17
12
22
34
32
30
20
10

FIG. 4

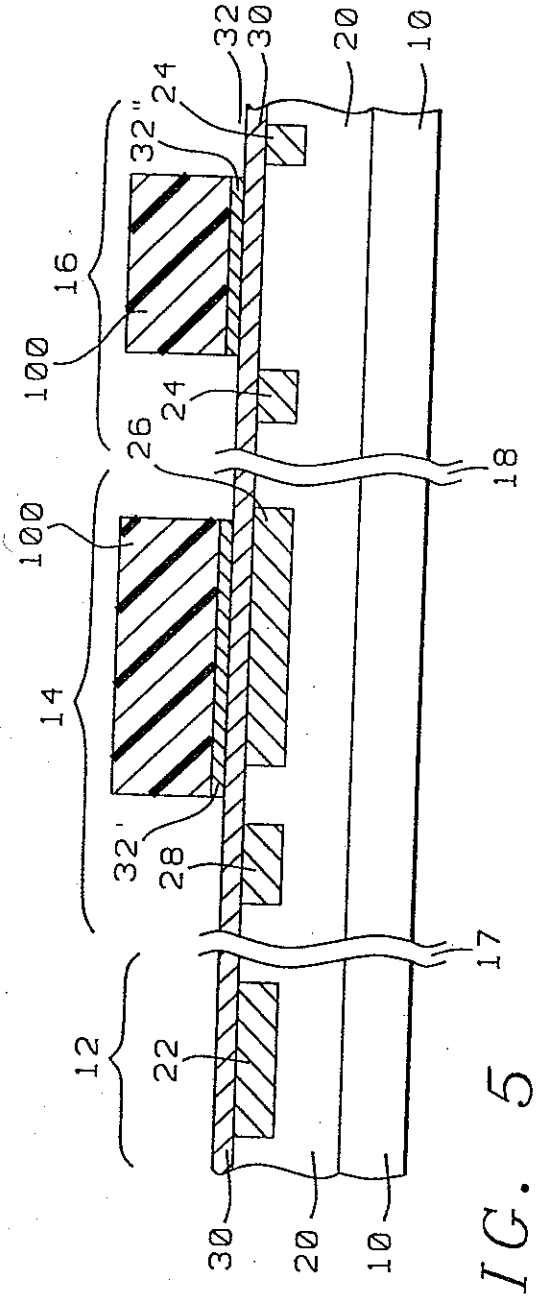

32
30
20
10
24
32"
16
100
24
26
18
100
14
32'
28
17
12
22
30
20
10

FIG. 5

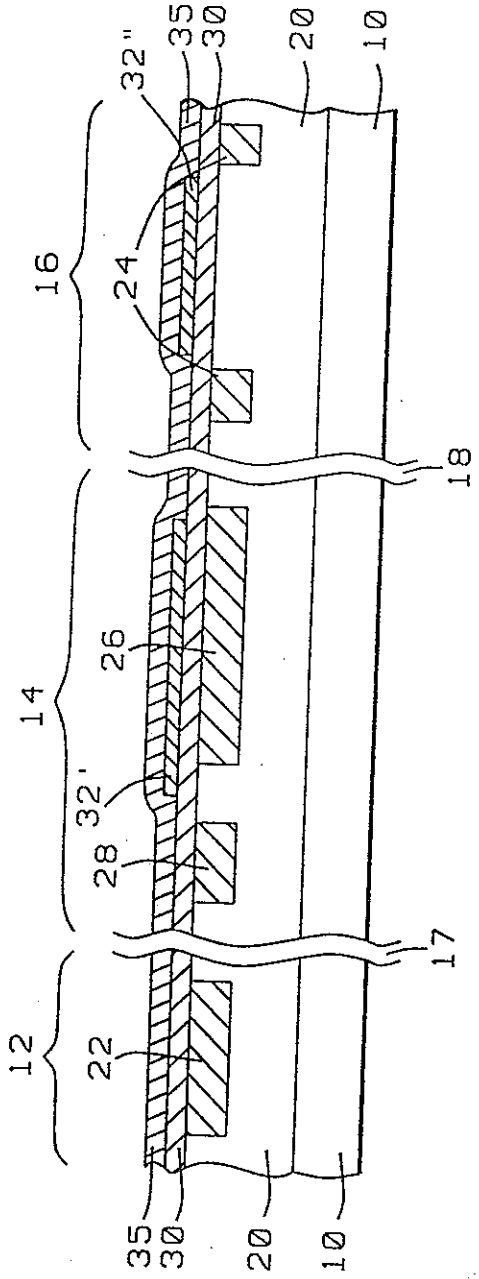

32"
35
30
20
10
16
24
18
26
14
32'
28
17
12
22
35
30
20
10

FIG. 6

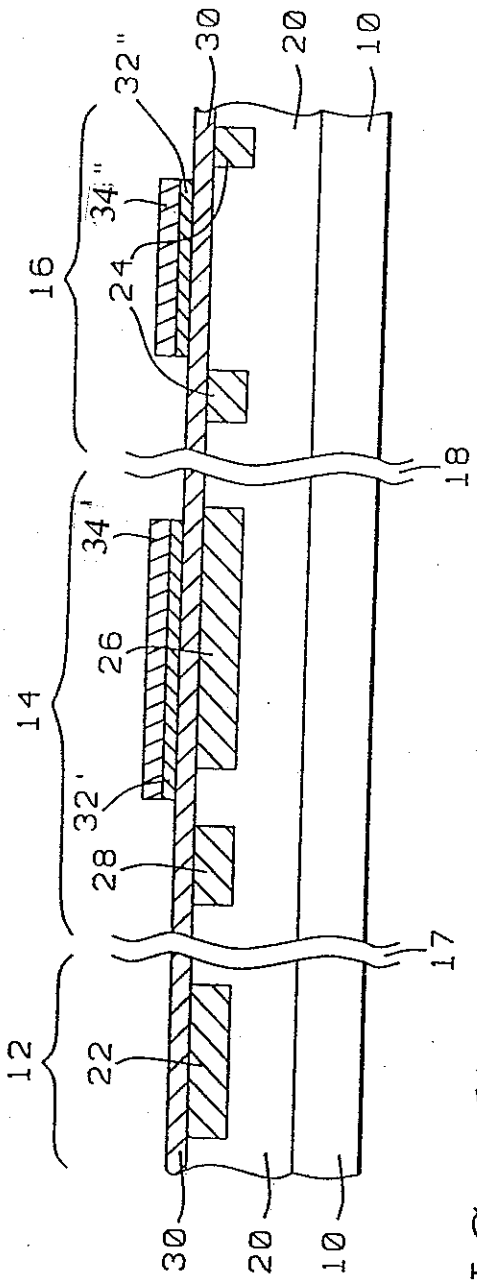

16
14
12
32"
34"
24
34'
26
32'
28
22
30
20
10
18
17

FIG. 7

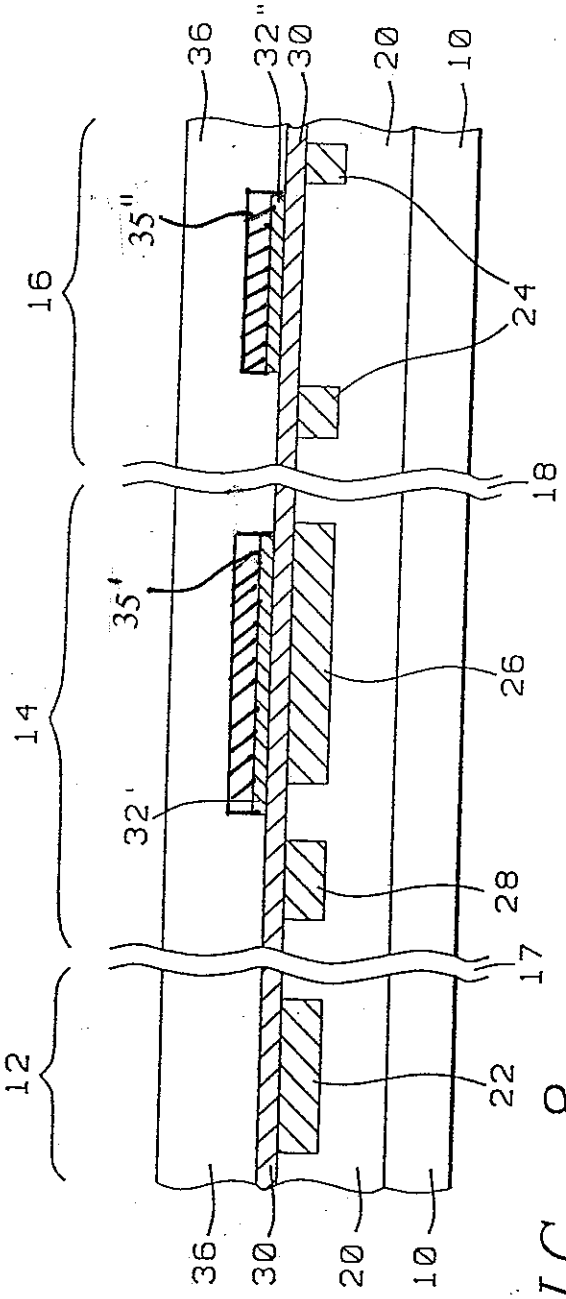

16
14
12
36
32"
30
20
10
35"
24
35'
26
32'
28
22
18
17

FIG. 8

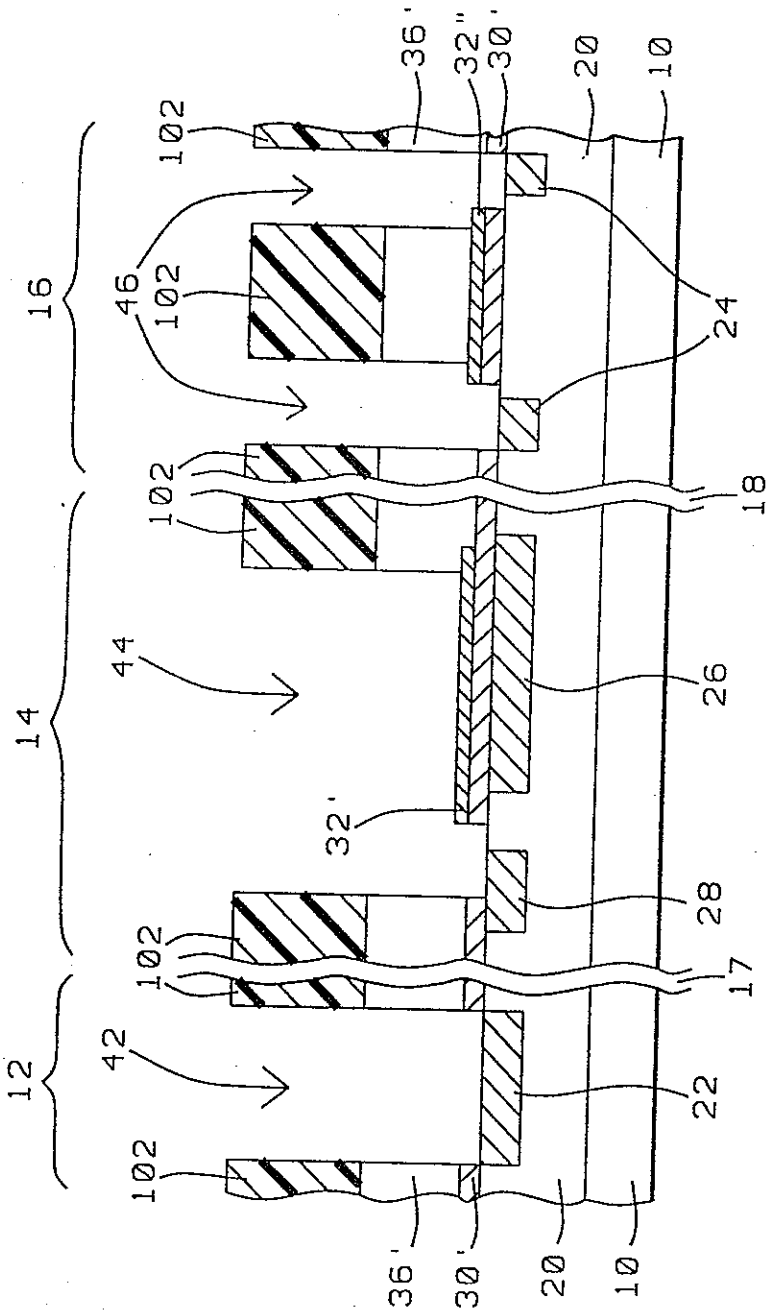

36'
32''
30'
20
10
102
16
46
102
24
102
18
44
26
14
32'
28
102
17
42
12
22
102
36'
30'
20
10

FIG. 9

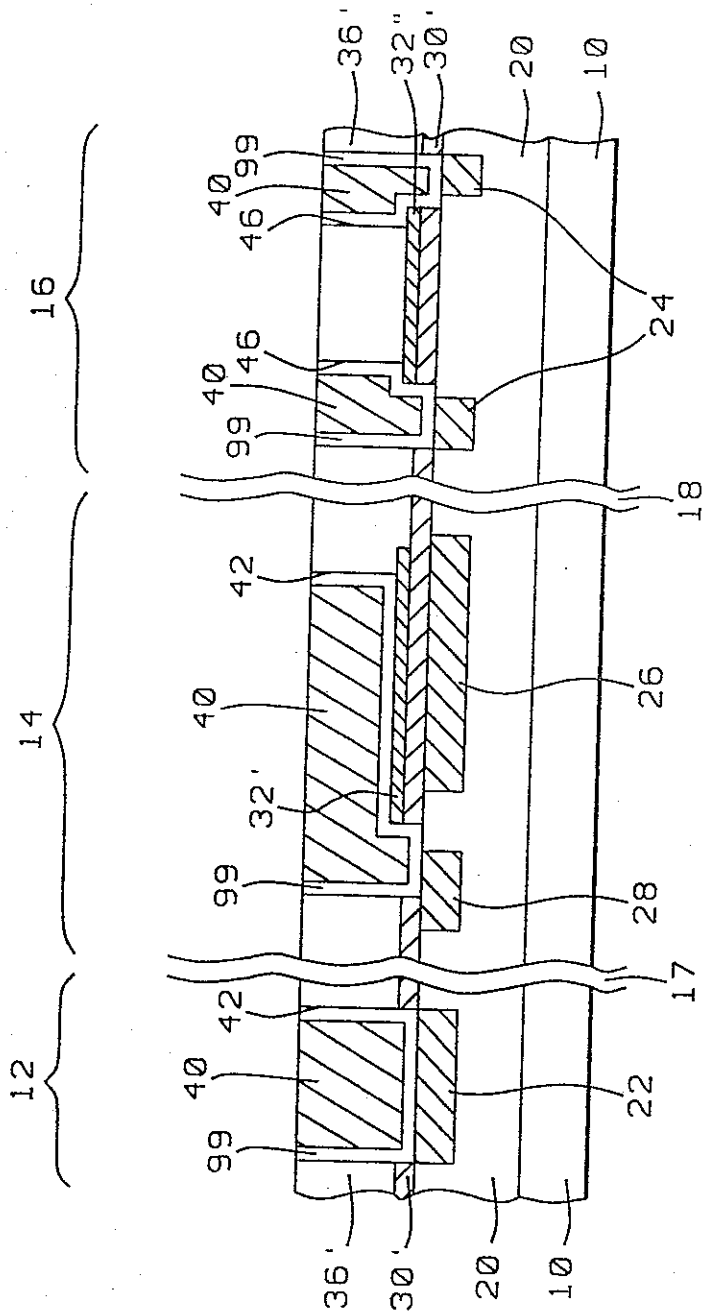


FIG. 10

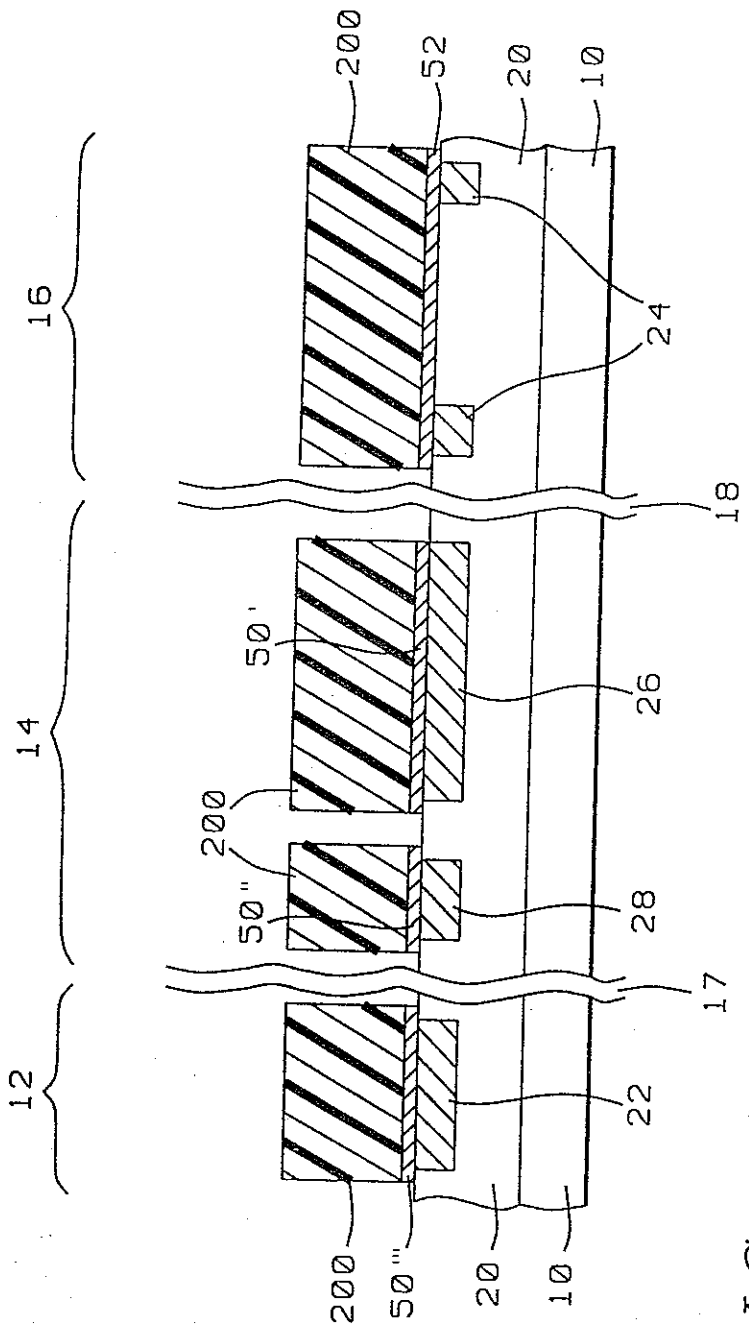


FIG. 11

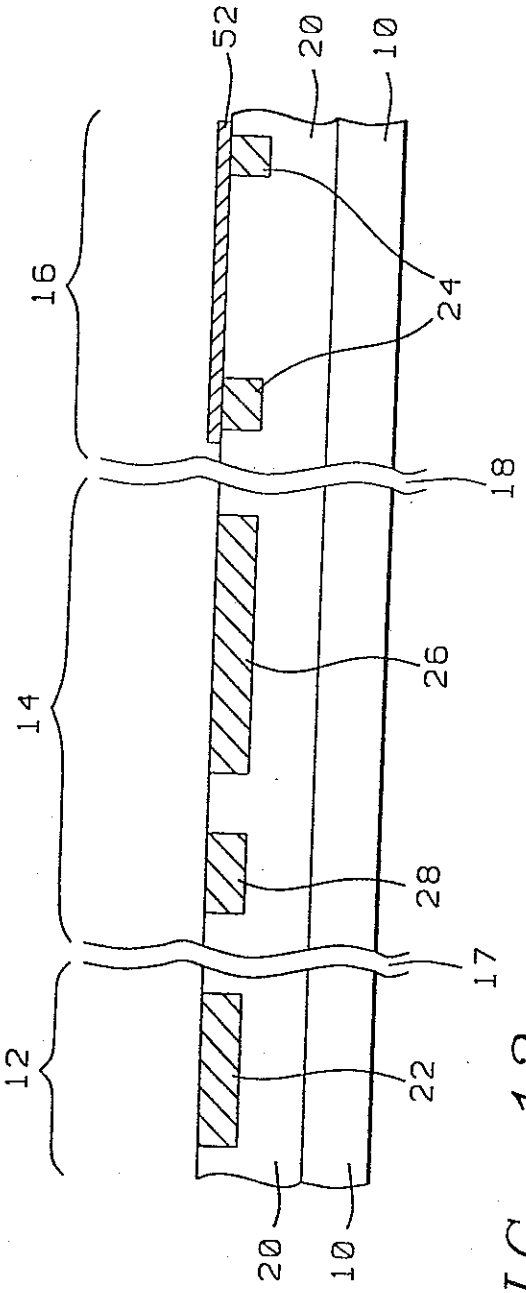

52
20
10
16
24
18
14
26
28
17
12
22
20
10

FIG. 12

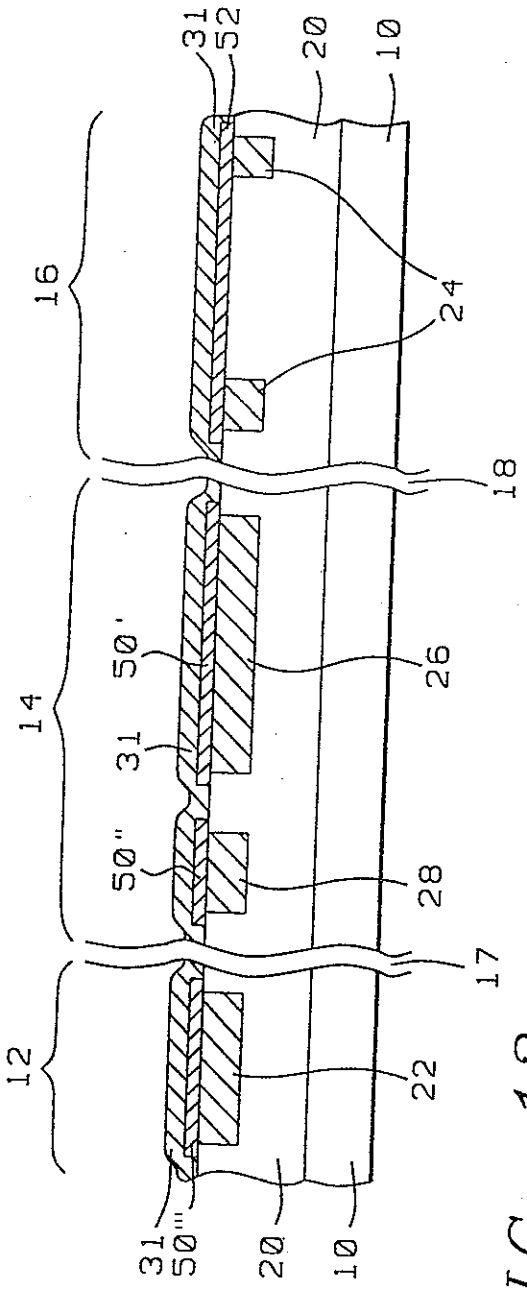

31
52
20
10
16
24
18
14
50'
26
31
50"
28
17
12
22
31
50'''
20
10

FIG. 13

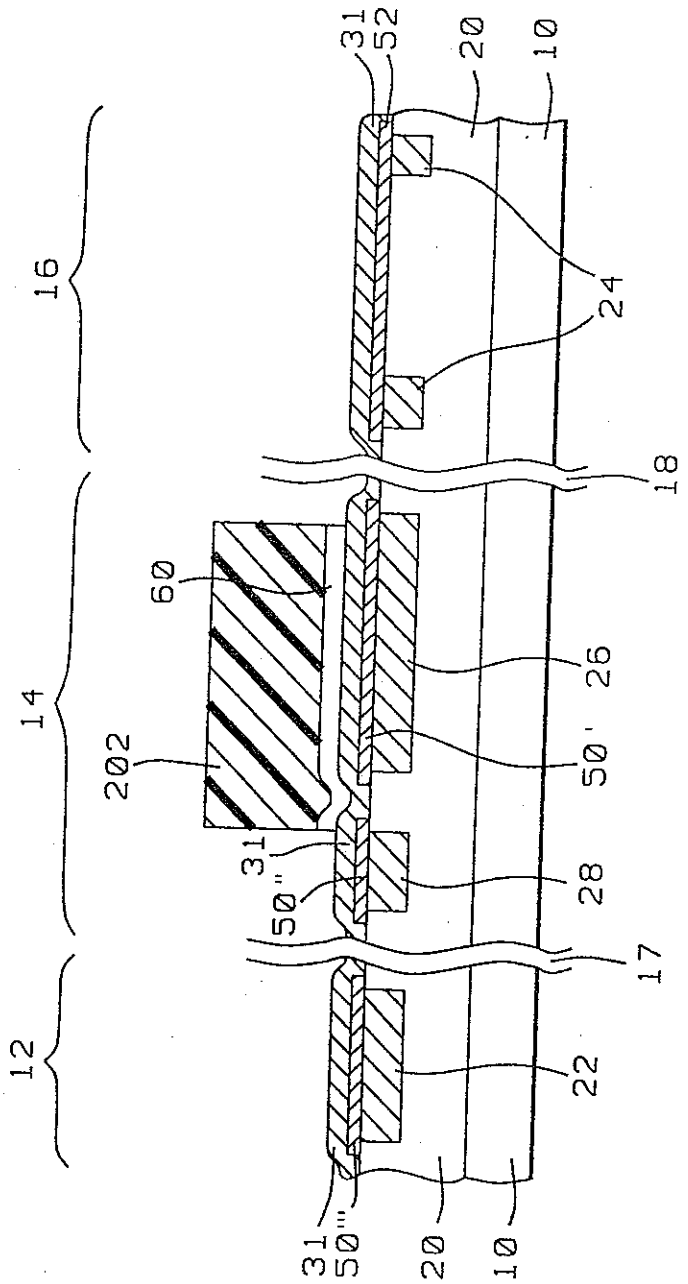


FIG. 14

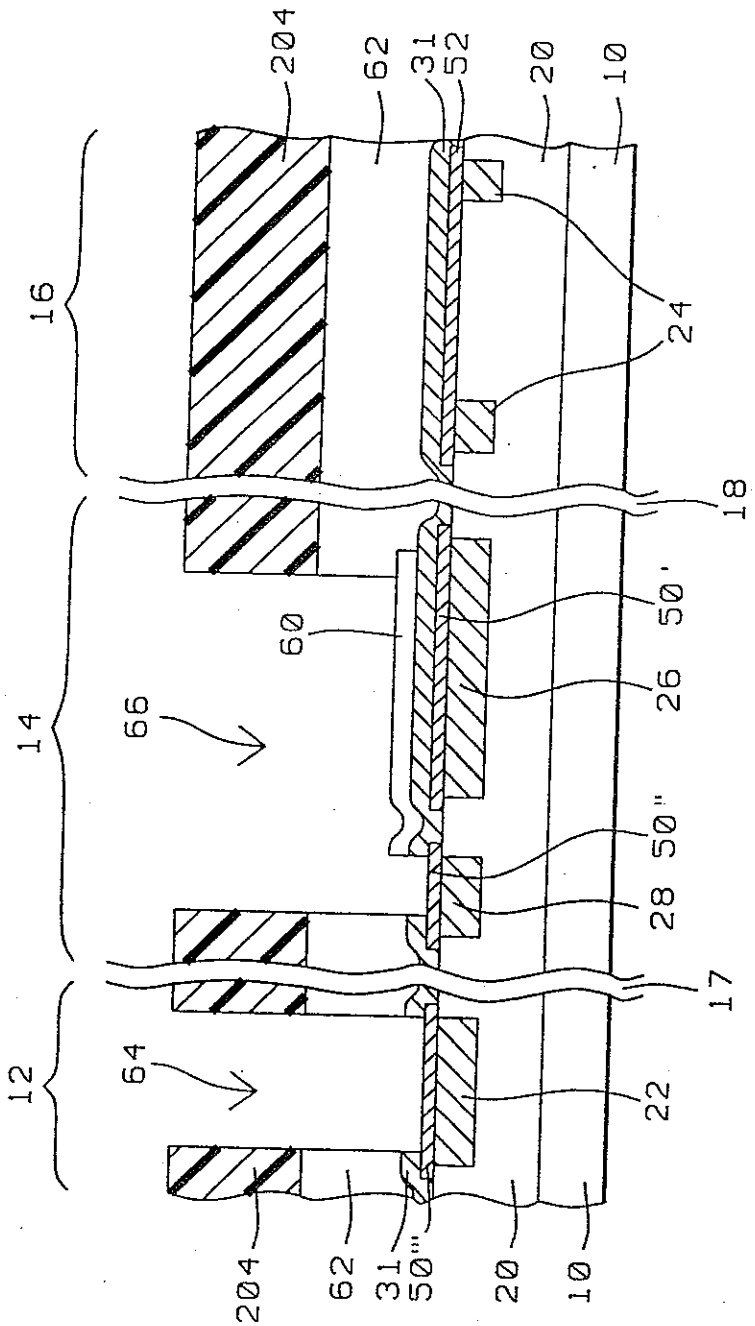

204
62
31
52
20
10
16
24
18
60
50'
26
14
66
50"
28
17
12
64
22
204
62
31
50"'
20
10

FIG. 15

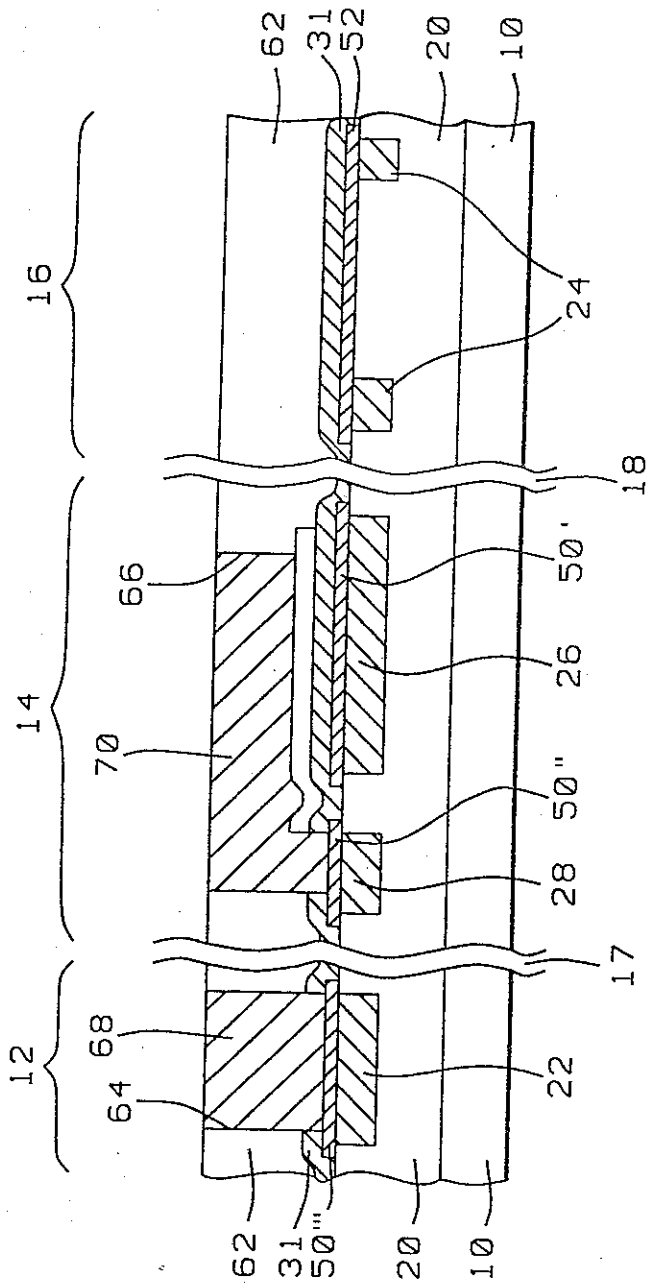

62
31
52
20
10
16
24
18
66
50'
26
14
70
50"
28
17
68
12
64
22
62
31
50'''
20
10

FIG. 16

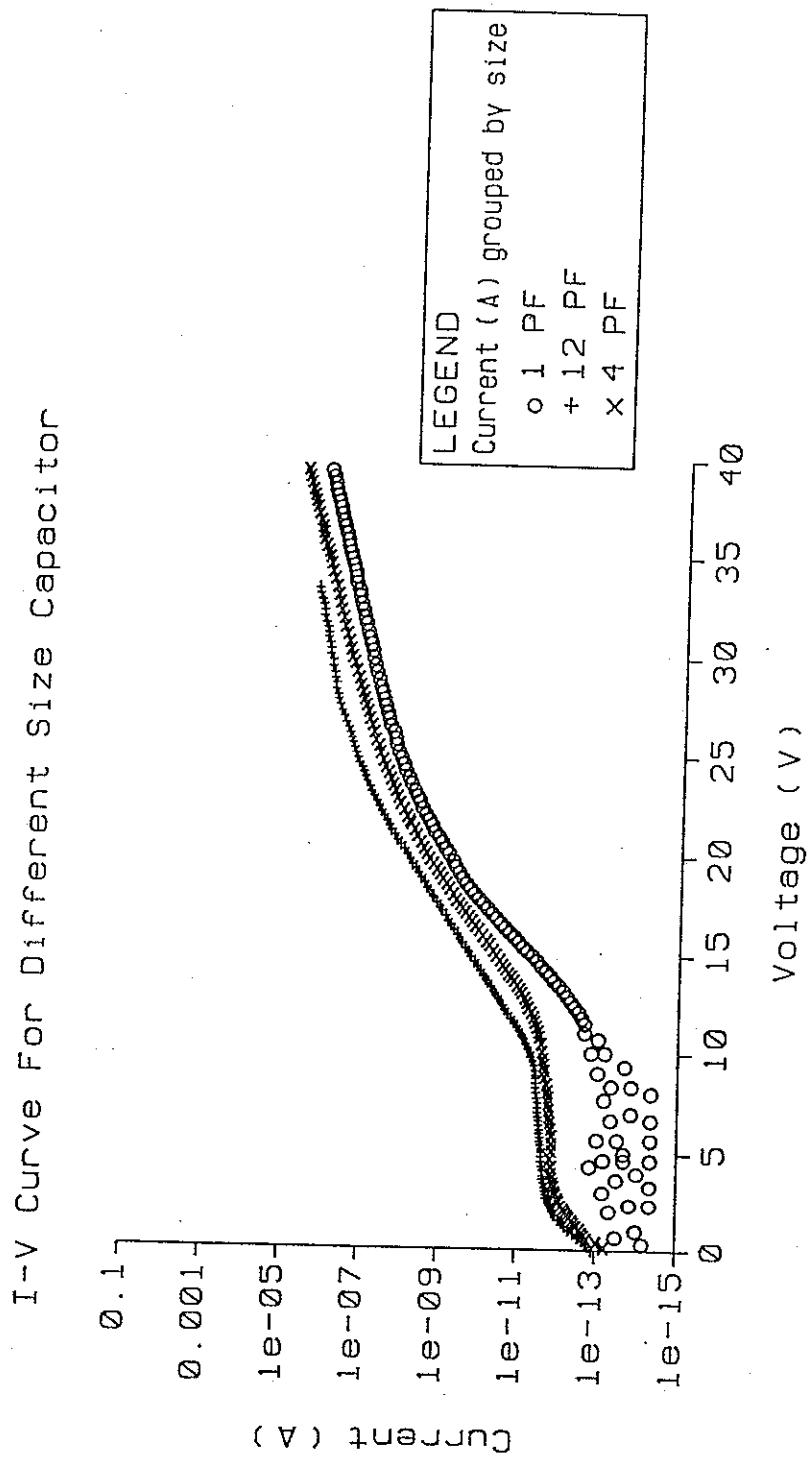

I-V Curve For Different Size Capacitor
LEGEND
Current (A) grouped by size
o 1 PF
+ 12 PF
x 4 PF
Current (A)
0.1
0.001
1e-05
1e-07
1e-09
1e-11
1e-13
1e-15
0
5
10
15
20
25
30
35
40
Voltage (V)

FIG. 17

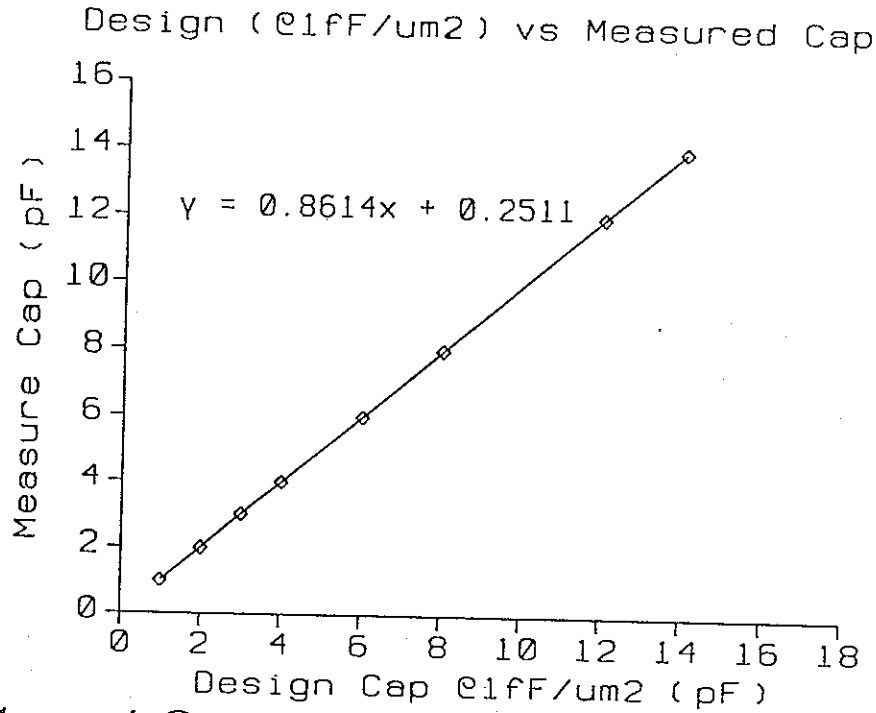

Design (@1fF/um2) vs Measured Cap
Y = 0.8614x + 0.2511
Measure Cap (pF)
Design Cap @1fF/um2 (pF)
0
2
4
6
8
10
12
14
16
18

FIG. 18

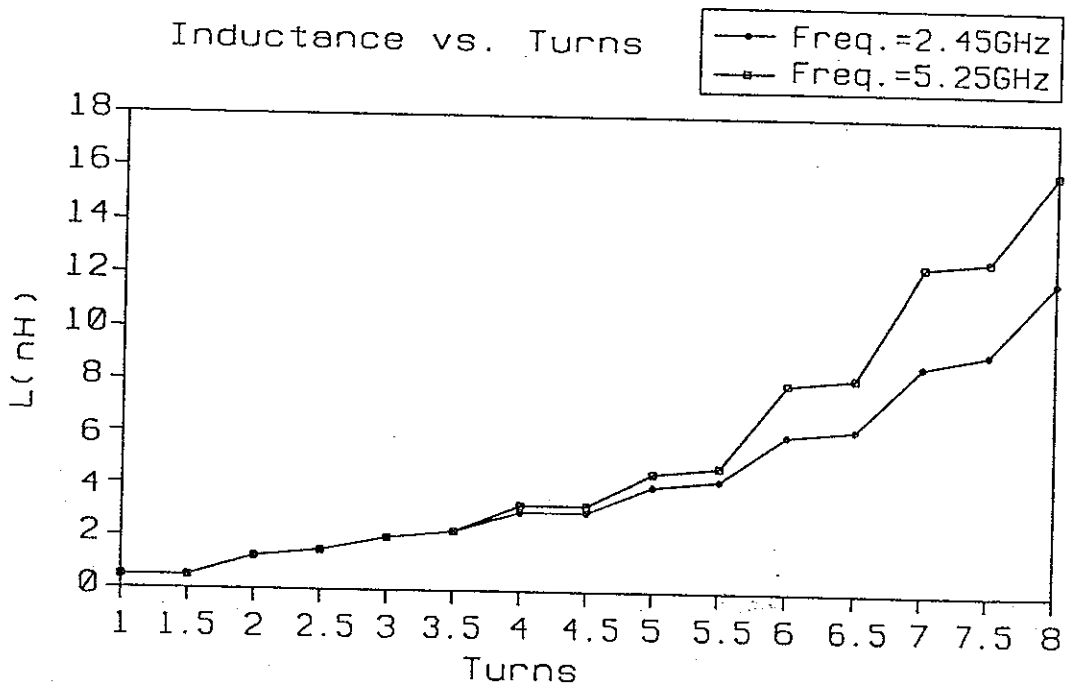

Inductance vs. Turns
Freq.=2.45GHz
Freq.=5.25GHz
L(nH)
Turns
0
2
4
6
8
10
12
14
16
18
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8

FIG. 19

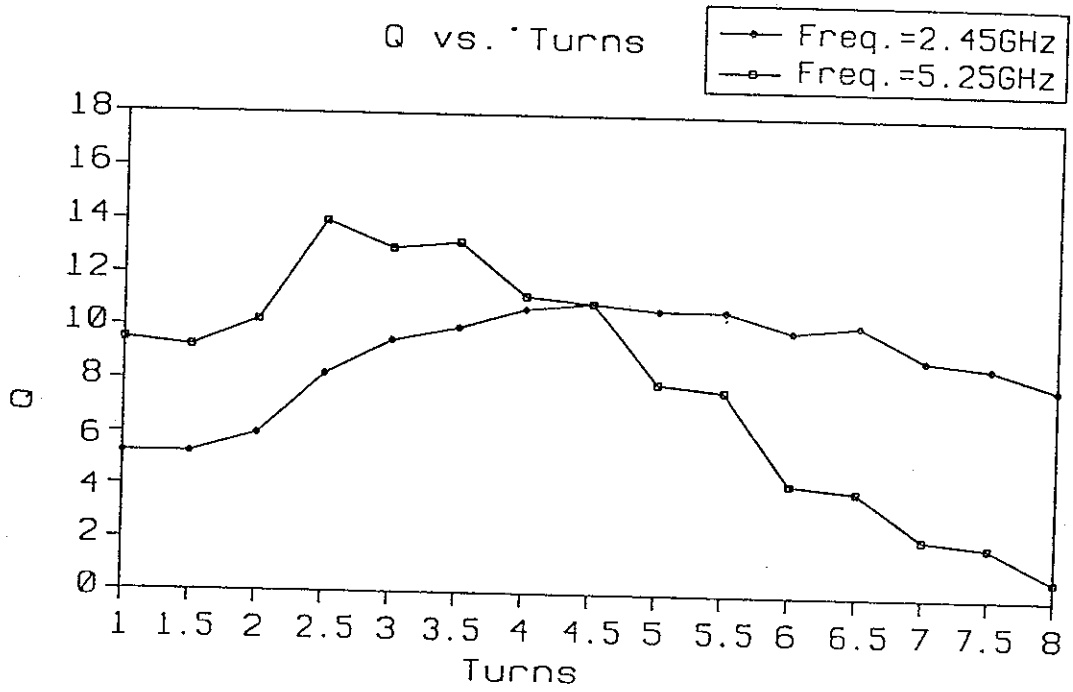

Q vs. Turns
Freq.=2.45GHz
Freq.=5.25GHz
Q
Turns
0
2
4
6
8
10
12
14
16
18
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8

FIG. 20

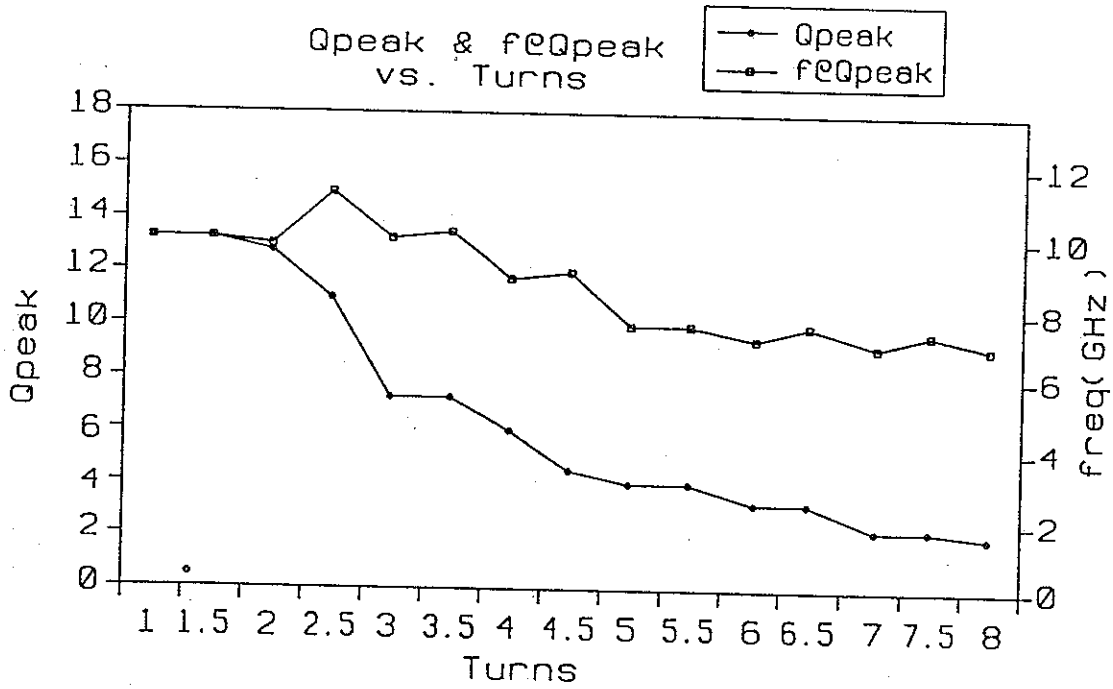

Qpeak & f@Qpeak
vs. Turns
Qpeak
f@Qpeak
Qpeak
Freq(GHz)
Turns
0
2
4
6
8
10
12
14
16
18
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8

FIG. 21