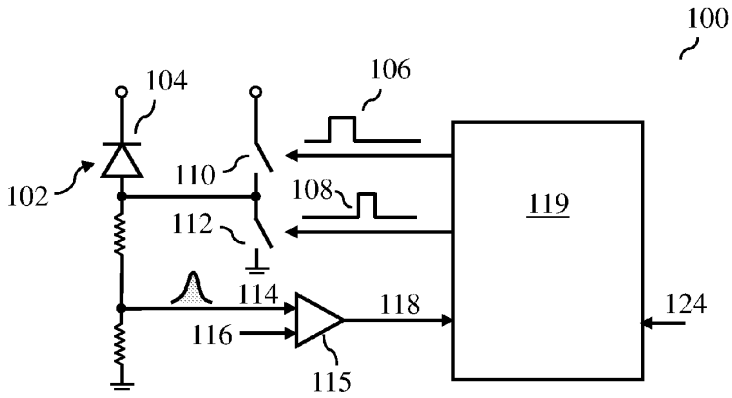


FIGURE 1

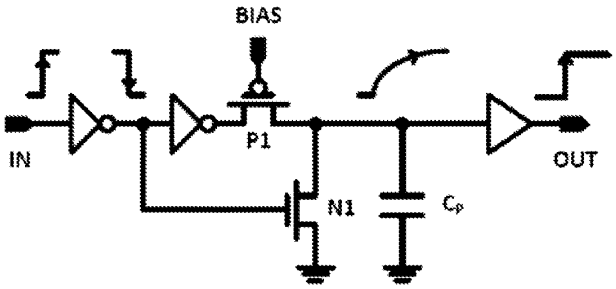


FIGURE 2a

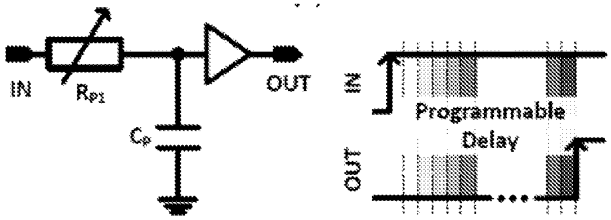


FIGURE 2b

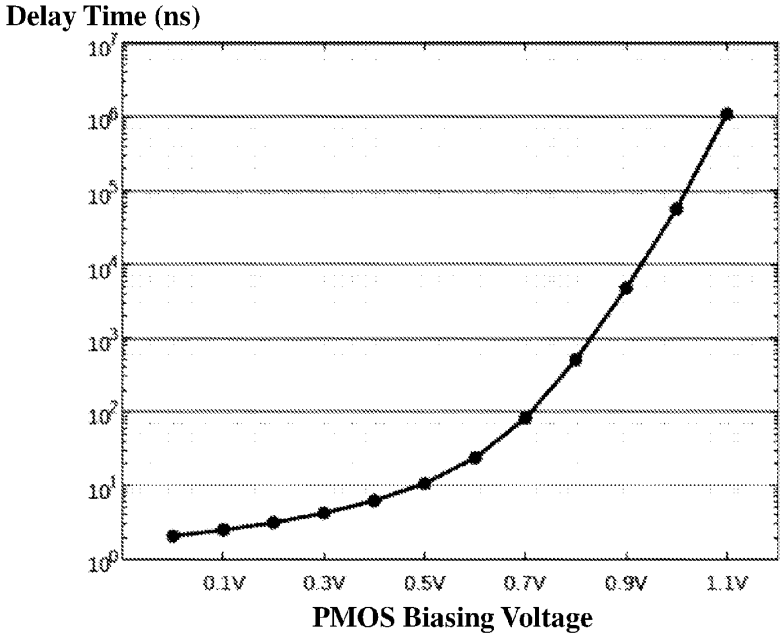

Delay Time (ns)
10^7
10^6
10^5
10^4
10^3
10^2
10^1
10^0
0.1V
0.3V
0.5V
0.7V
0.9V
1.1V
PMOS Biasing Voltage

FIGURE 3

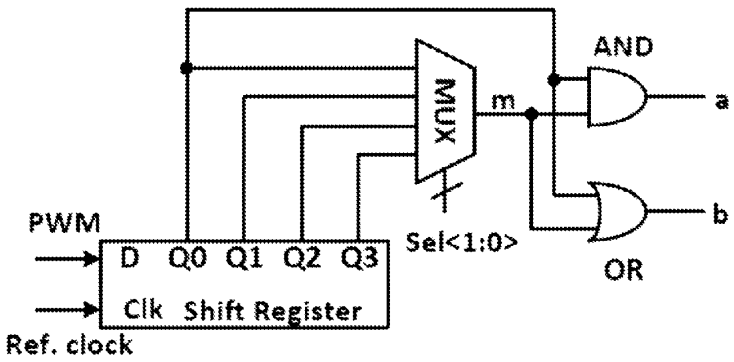


FIGURE 4a

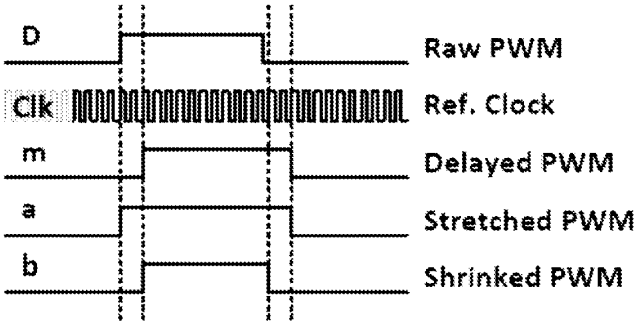


FIGURE 4b

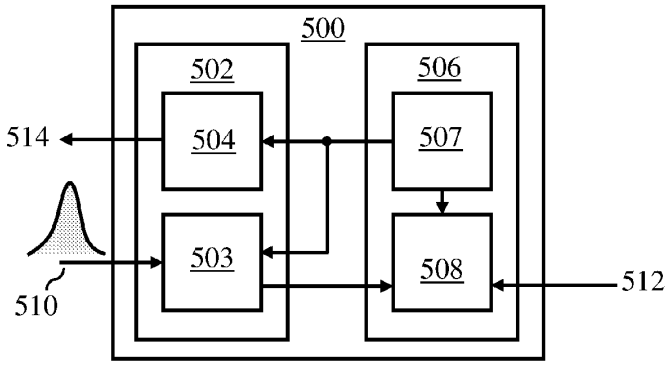


FIGURE 5

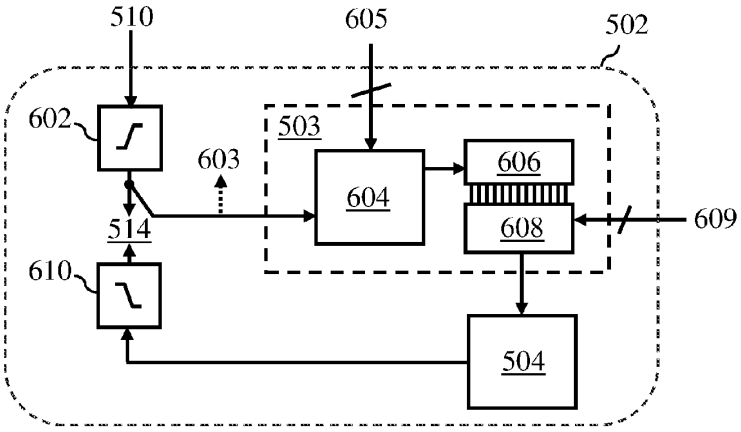


FIGURE 6

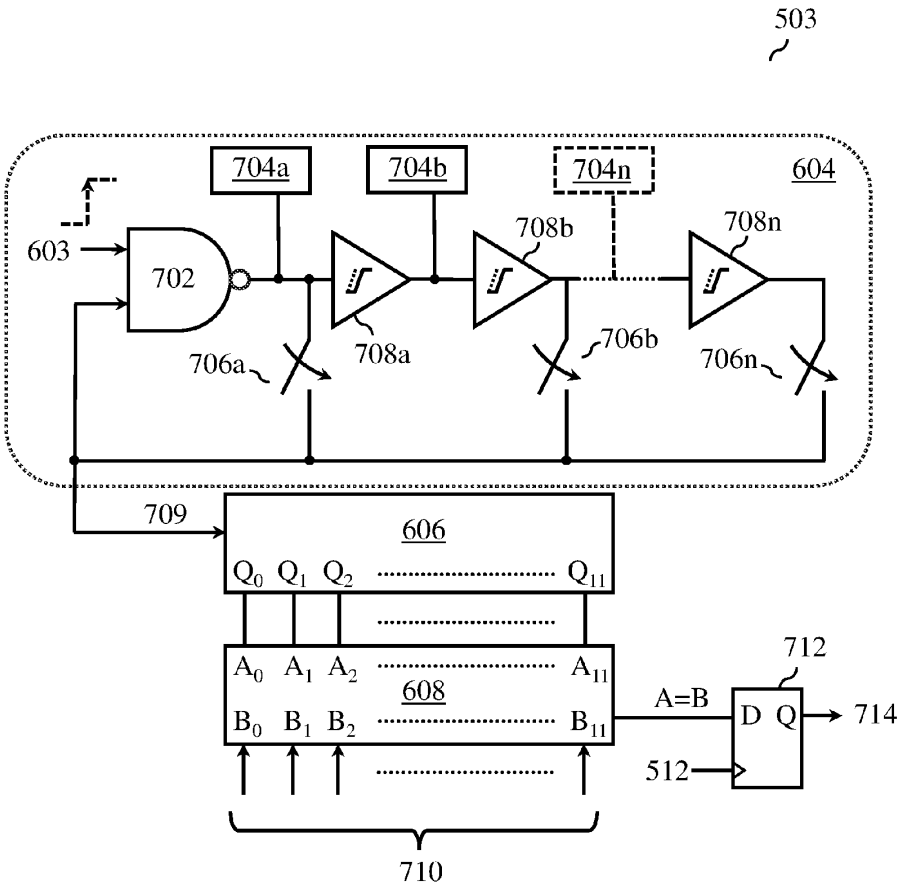

503
604
704a
704b
704n
603
702
708a
708b
708n
706a
706b
706n
709
606
Q_0 Q_1 Q_2 ..... Q_{11}
A_0 A_1 A_2 ..... A_{11}
608
B_0 B_1 B_2 ..... B_{11}
712
A=B
D Q
714
512
710

FIGURE 7

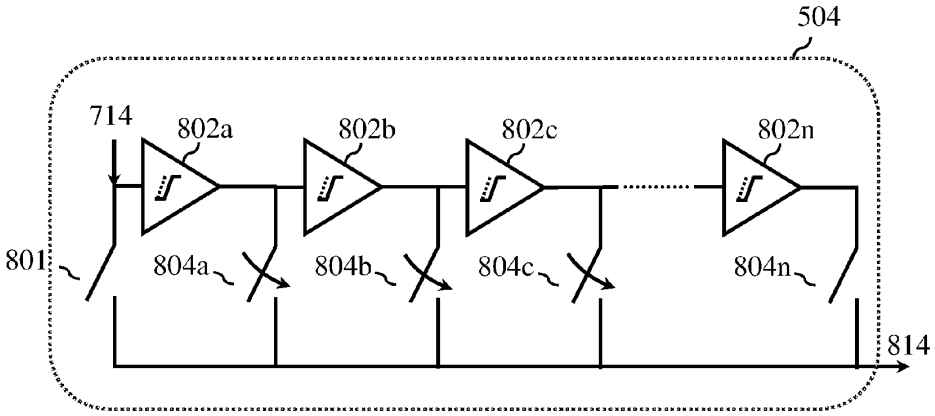


FIGURE 8

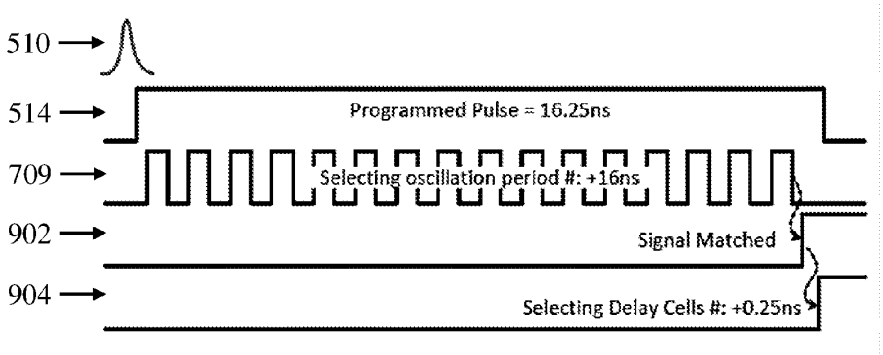


FIGURE 9

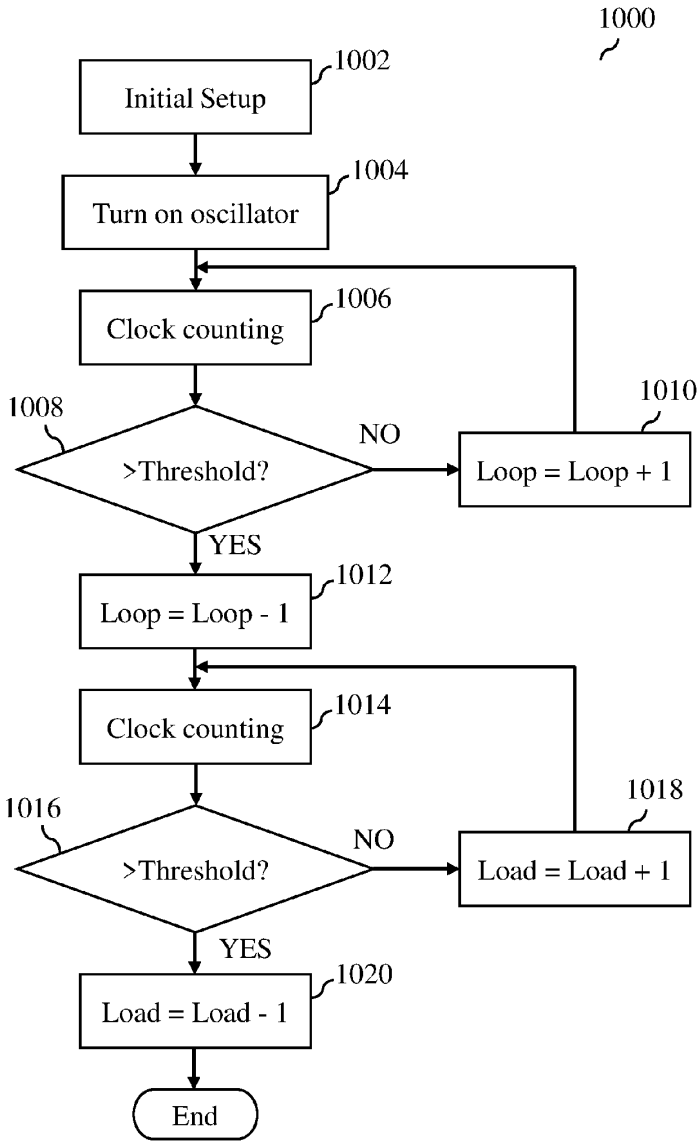

1000
1002
Initial Setup
1004
Turn on oscillator
1006
Clock counting
1008
>Threshold?
NO
1010
Loop = Loop + 1
YES
1012
Loop = Loop - 1
1014
Clock counting
1016
>Threshold?
NO
1018
Load = Load + 1
YES
1020
Load = Load - 1
End

FIGURE 10

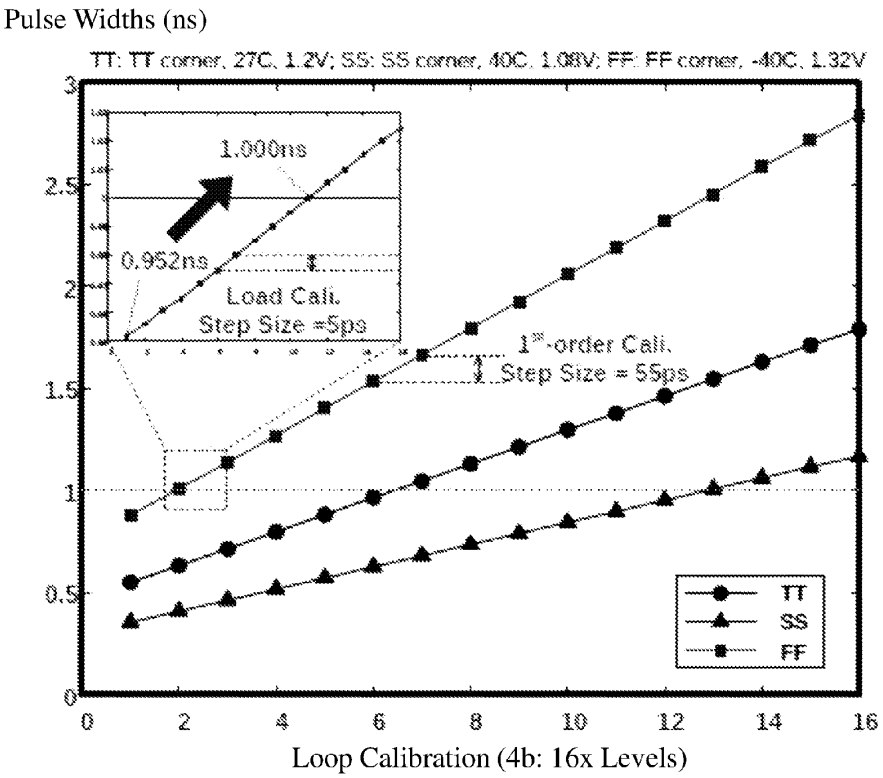


FIGURE 11

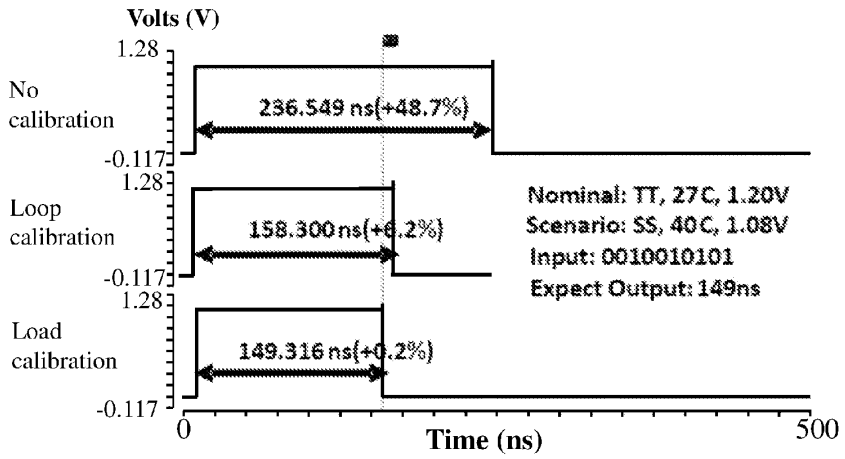


FIGURE 12

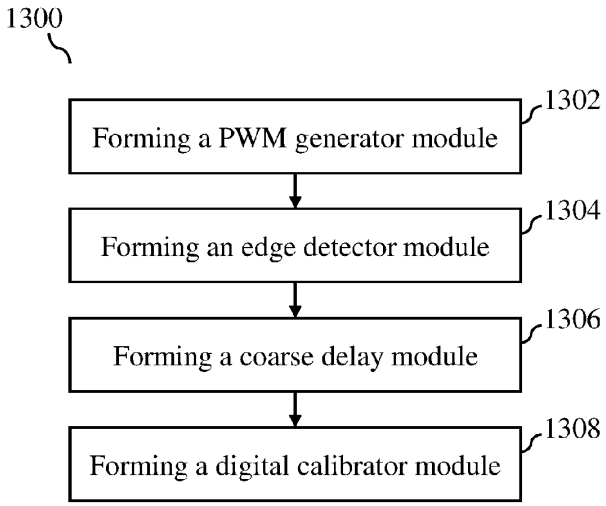

1300
Forming a PWM generator module
1302
Forming an edge detector module
1304
Forming a coarse delay module
1306
Forming a digital calibrator module
1308

FIGURE 13