Differential capacitive position sensor

.param cap_sens -27.6e-9   **F/m sensitivity**
.param cap_nom 28e-12   **F nominal capacitance**

.lib tvc.lib
.tran 0 25m 4m
;ac dec 50 1m 1k

Displacement
1V = 1m

V4
PULSE(-10u 10u 5m 50u 50u 5m 10m)
AC 1e-6

CAPVAL_TOP
1V = 1F

V=cap_nom+V(Disp_M)*cap_sens

C1

C4

76p   **BOT**

TOP

CAPVAL_BOT

V=cap_nom-V(Disp_M)*cap_sens

C2

R1
20K

R2
20K

+8V

U1

Vdd

S1A   S2A

S3A   S4A

Ca+

Cosc   Ca-

Vss

LTC1043

OSC

-8V

OUT   R4   OUT_FILT
1meg

C5
4.7n

C3
4.7n

C7
120p

V1
8

V2
-8

+8V

-8V

+8V

U2

Vdd

S1A   S2A   -8V

S3A   S4A   -8V

+8V

Ca+

Cosc   Ca-

Vss

LTC1043

OSC

A   C6   B

100n

R3
4.7K

IC=5

V3
62.5 KHz clock
PULSE(-8 8 0 0 0 8u 16u 10000000)

Test output for comparison

DISP_M   R6   FILT
1meg

C9
470p