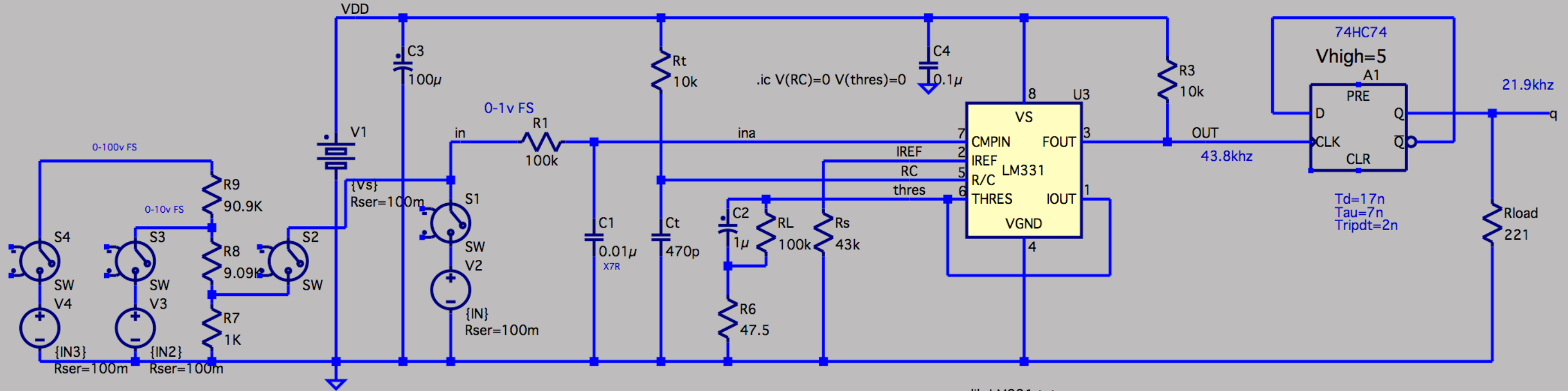Stand-Alone V-to-F Converter

.meas tran t1_q FIND time WHEN V(q) = V(Vdd)*0.5 rise=4 TD=td
.meas tran t2_q FIND time WHEN V(q) = V(Vdd)*0.5 rise=5 TD=td
.meas tran per_q param (t2_q-t1_q)
.meas tran freq_q param 1/(t2_q-t1_q)

VDD

74HC74
Vhigh=5
A1
PRE
D      Q
CLK
Q
CLR

21.9khz
q

C3
100μ

Rt
10k

.ic V(RC)=0 V(thres)=0

C4
0.1μ

R3
10k

Td=17n
Tau=7n
Tripdt=2n

0-1v FS

V1
in      R1      ina
100k

{Vs}
Rser=100m

8      U3
VS
7  CMPIN   FOUT  3
2  IREF          OUT
IREF
RC  5  R/C   LM331
thres  6  THRES  IOUT  1
VGND
4

43.8khz

0-100v FS

R9
90.9K

S2
SW

S1
SW
V2

C1
0.01μ
X7R

Ct
470p

C2
1μ

RL
100k

Rs
43k

Rload
221

0-10v FS

S3
SW
V3

R8
9.09K

{IN}
Rser=100m

R6
47.5

S4
SW
V4

R7
1K

{IN2}
Rser=100m

{IN3}
Rser=100m

.lib LM331.txt

.param IN2 = 1.25
.param IN3 = 12.5

.op

.tran {Duration}
.param Duration=35m

.param IN = .125
.param Vs=5
.step param IN 250m 1 250m

.param td = Duration*0.9
.meas tran P6_P1 AVE Ix(U3:IOUT) TD=td
.meas tran t1 FIND time WHEN V(OUT) = V(Vdd)*0.5 rise=4 TD=td
.meas tran t2 FIND time WHEN V(OUT) = V(Vdd)*0.5 rise=5 TD=td
.meas tran per param (t2-t1)
.meas tran freq param 1/(t2-t1)