

Self Biased Sub 1-V Bandgap Reference Circuit

1 Schematics:

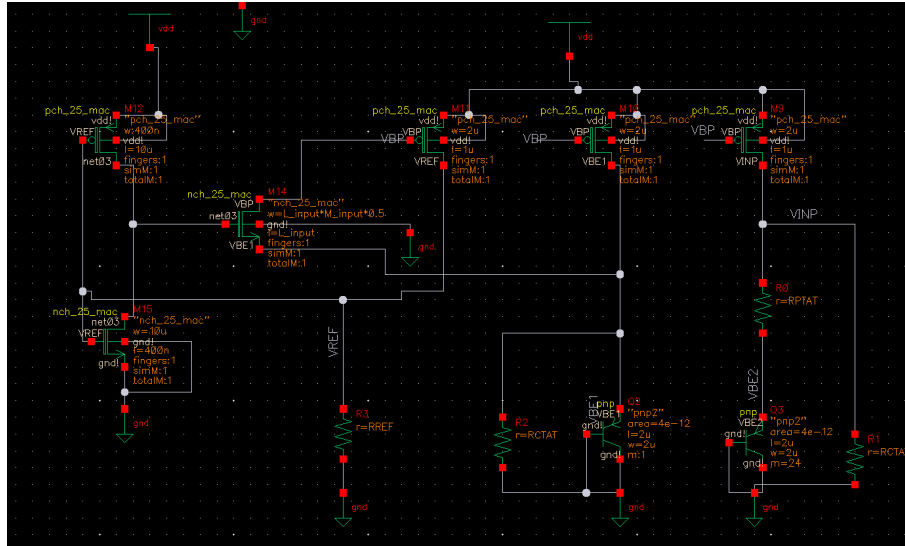


Figure 1. BandGap Reference with Startup Circuit

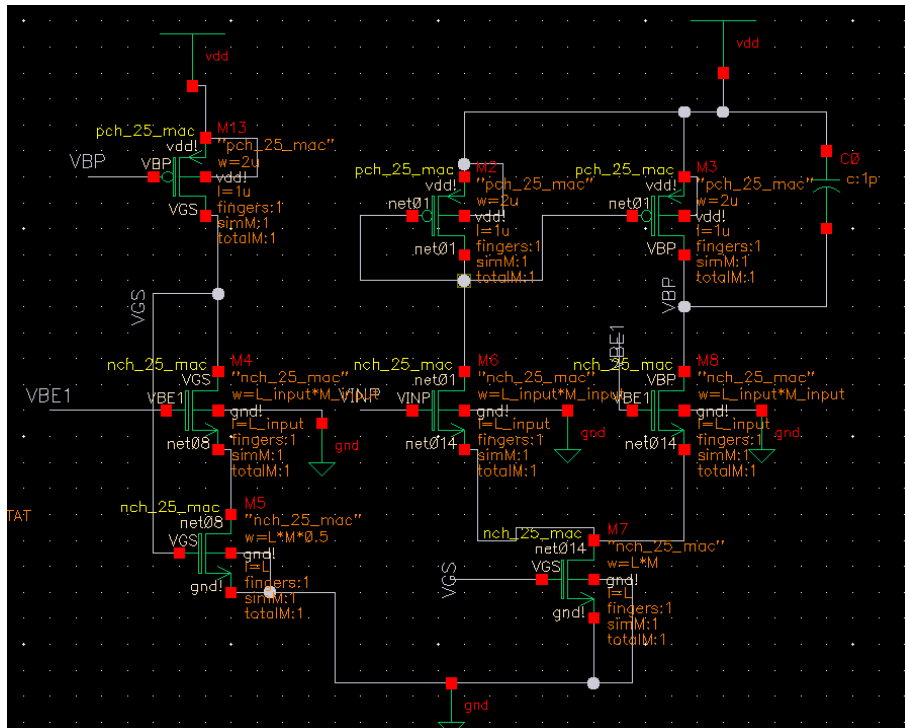


Figure 2. OTA schematic

2 DC temperature sweep:

2.1 Operating point

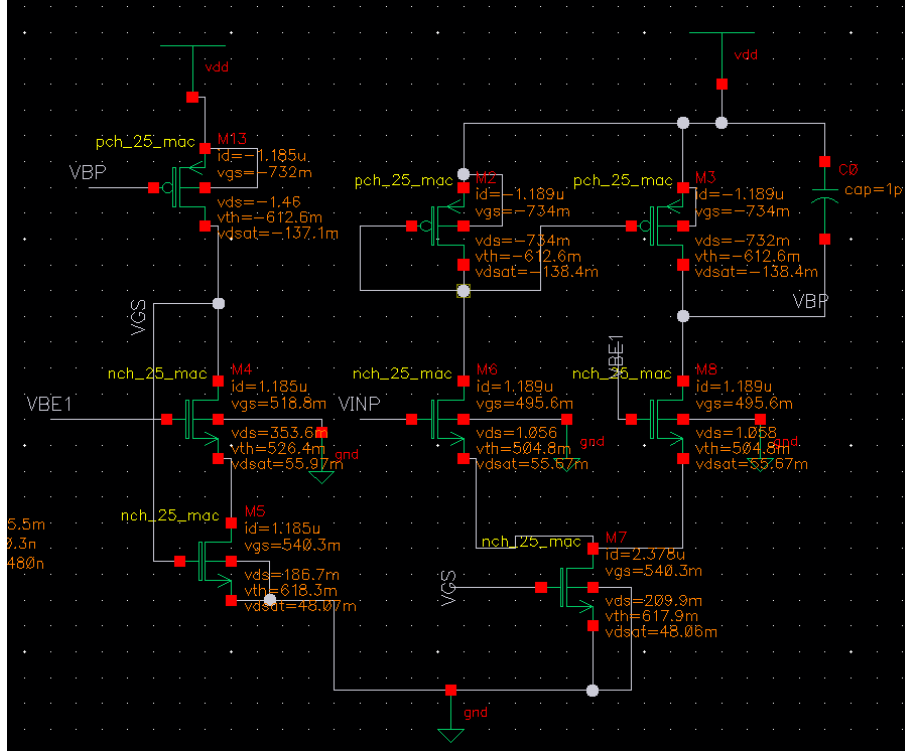


Figure 3. OTA Operating point annotated

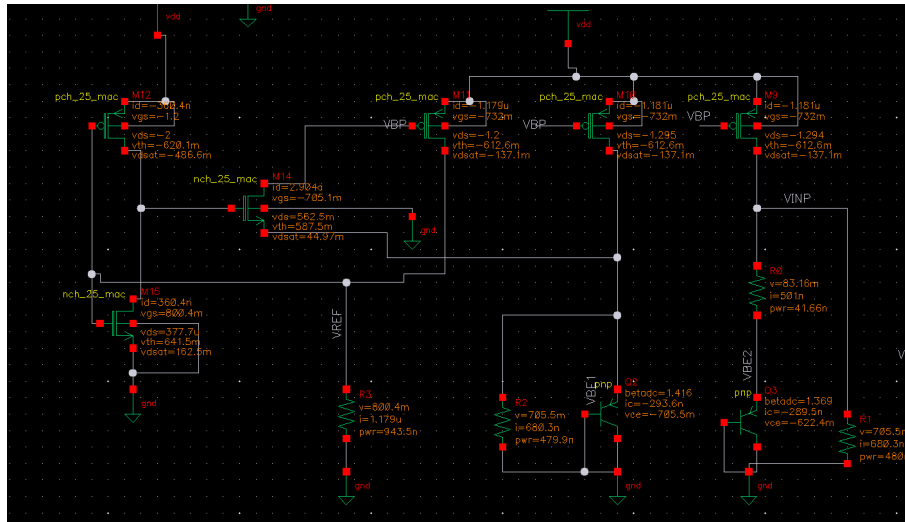


Figure 4. BGR and startup circuit OP annotated

Maximum current consumption across corners = $7.5\mu A$

2.2 Temperature Sweep:

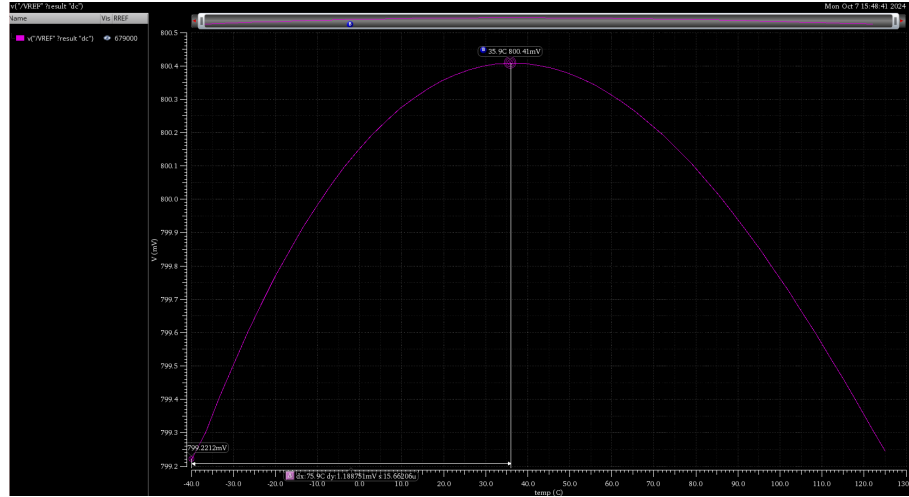


Figure 5. Temperature sweep typical corner

Test	Output	Nominal	Spec	Weight	Pass/Fail	Min	Max	C0	C1
BandGapReference:BGR_test:1	v("/VREF" ?result "dc")					1.189m	3.608m		
BandGapReference:BGR_test:1	max_variation	1.189m						3.608m	2.738m

Figure 6. Maximum Variation across corners (TT,FF,SS)

As shown maximum variation across corner is 3.6m which is SS corner

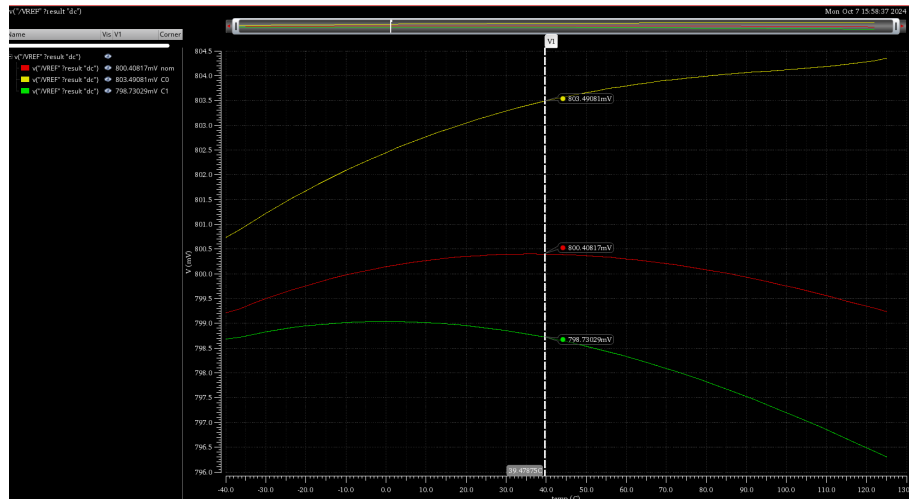


Figure 7. V_{ref} Variation Vs temperature across corners (FF, SS, TT)

3 Transient Simulation

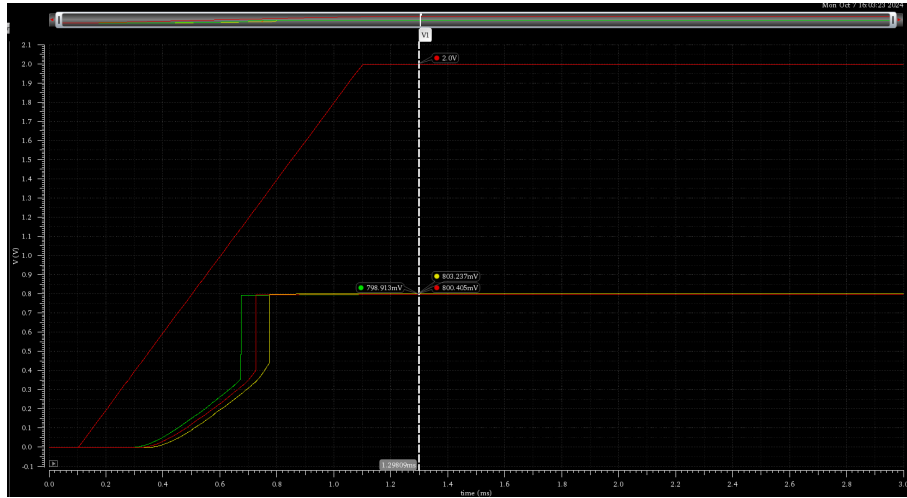


Figure 8. V_{ref} Vs Time (V_{in} Ramp with $t_r=1ms$)