

1 2 3 4 5 6

Mega65Modular Cellular modem v0.1
gardners
License: CERN-OHL-S v2
Year: 2025

$$VFB = 0.5V$$

$$R2 \leq 100K. 91K \text{ recommended}$$

$$1.8V : R1 = R2 * (1.8 / 0.5 - 1) = R2 * 2.6 = 234K$$

$$3.3V : R1 = R2 * (3.3 / 0.5 - 1) = R2 * 5.6 = 511K$$

So SEL1V8 should tie FB to VOUT with a resistor that is parallel to 511K yields 234K.

$$1/R_P = 1/R + 1/R$$

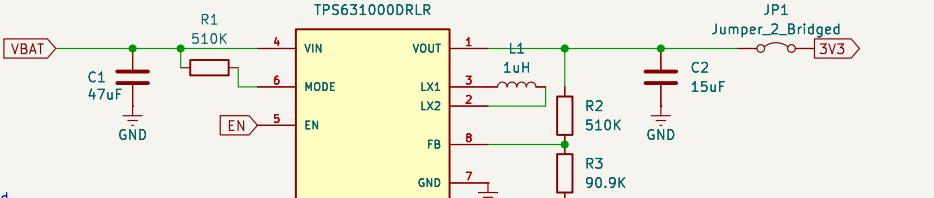
$$1/260K = 1/R + 1/511K$$

$$1/R = 1/234K - 1/511K$$

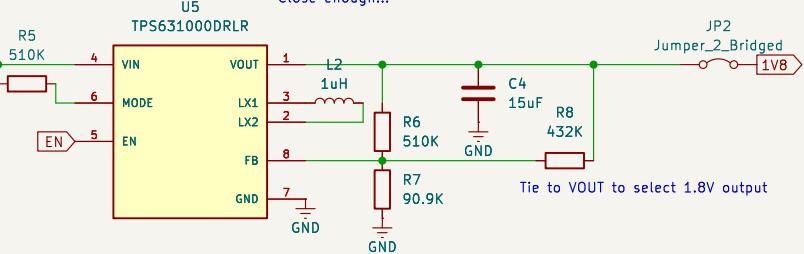
$$1/R = -1/436K$$

$$R = -436K$$

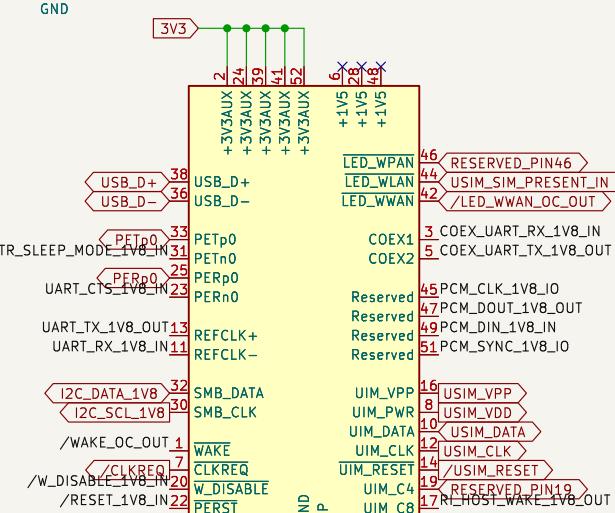
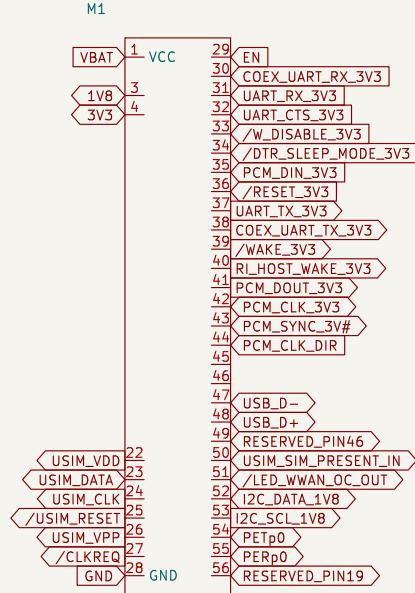
$$R1 = R2 \times (VOUT / VFB - 1)$$



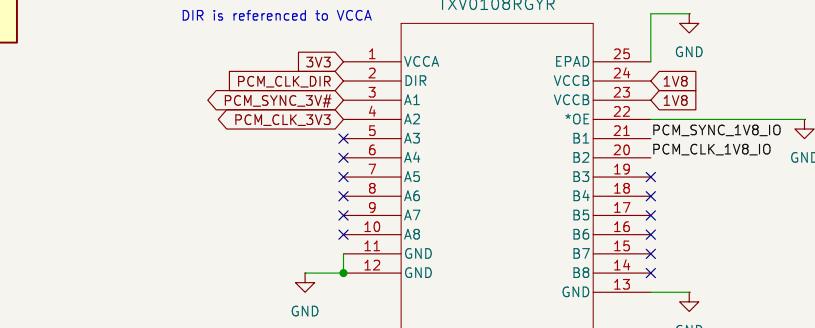
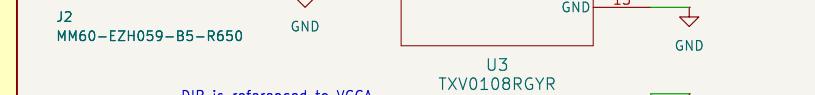
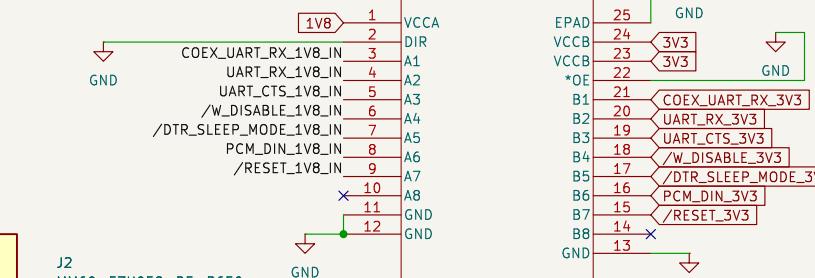
Actual values = 90.9K, 510K, so VFB = 0.5V at junction means
 $VOUT = (1 + 510K/90.9K) * 0.5V = 3.305V$
 And with SEL1V8 tied to VOUT:
 $1/R = 1/510K + 1/432K = 233.8K$
 $VOUT = (1 + 233.8K/90.9K) * 0.5V = 1.79V$
 Close enough...



Tie to VOUT to select 1.8V output



A High on DIR allows data transmission from A to B while a Low on DIR allows data transmission from B to A when OE is set to Low. When OE is set to High, both Ax and Bx pins will be forced into a high-impedance state.



CERN-OHL-S v2
gardners
Sheet: /
File: cellular-modem.kicad_sch
Title: Mega65Modular Cellular modem
Size: A4 Date: 2025-11-10
KiCad E.D.A. 9.0.1 Rev: v0.1
Id: 1/1