

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

VFB = 0.5V
 $R2 \leq 100K$, 91K recommended

$R1 = R2 \times (VOUT / VFB - 1)$
1.8V : $R1 = R2 \times (1.8 / 0.5 - 1) = R2 \times 2.6 = 234K$
3.3V : $R1 = R2 \times (3.3 / 0.5 - 1) = R2 \times 5.6 = 511K$

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

$1/RP = 1/R + 1/R$
 $1/260K = 1/R + 1/511K$
 $1/R = 1/234K - 1/511K$
 $1/R = -1/436K$
 $R = -436K$

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

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.

