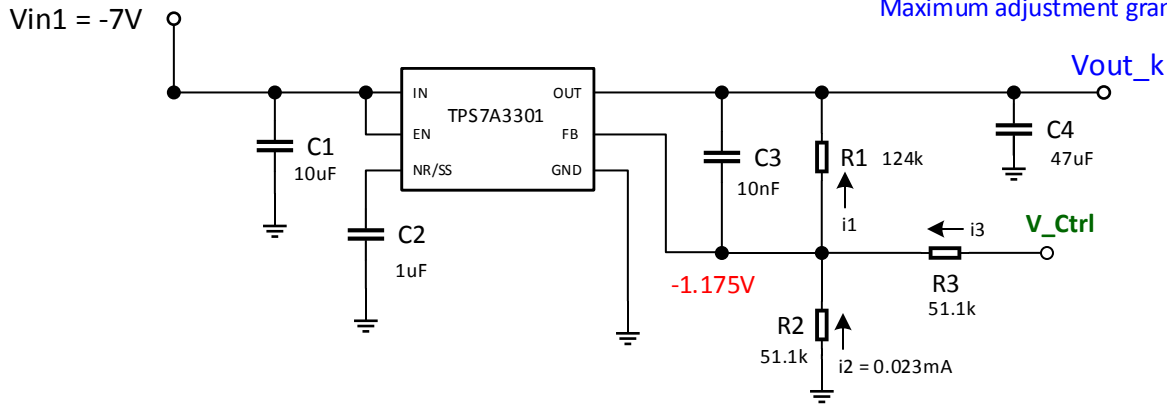


# DAC+OpAmp-Controlled, adjustable Vout, Negative-Voltage LDO circuit concept

Four independent Vouts, each adjustable between [-6.2, -1.8]V. Each: 120mA max. Maximum adjustment granularity: 0.02V.



- 1.) If  $V_{Ctrl} = -1.175V$ , then  $i3 = 0$  and  $i1 = i2$ .
- 2.) Select  $R1 = 122.826 \text{ k}\Omega$  so that  $V_{out\_k}$  is mid-range when  $i3=0$  (approx.  $-4V$ ). Nearest Standard Value:  $124 \text{ k}\Omega$ , making  $V_{out\_k} = -4.027V$
- 3.) To get  $V_{out\_k} = -6.2V$ ,  $i3 = i1 - i2 = [(-1.175+6.2)/124] - 0.023 = +0.017524 \text{ mA}$ . Thus,  $V_{Ctrl}$  would have to be  $-0.2795V$
- 4.) To get  $V_{out\_k} = -1.8V$ ,  $i3 = i1 - i2 = [(-1.175+1.8)/124] - 0.023 = -0.01796 \text{ mA}$ . Thus,  $V_{Ctrl}$  would have to be  $-2.093V$ .

