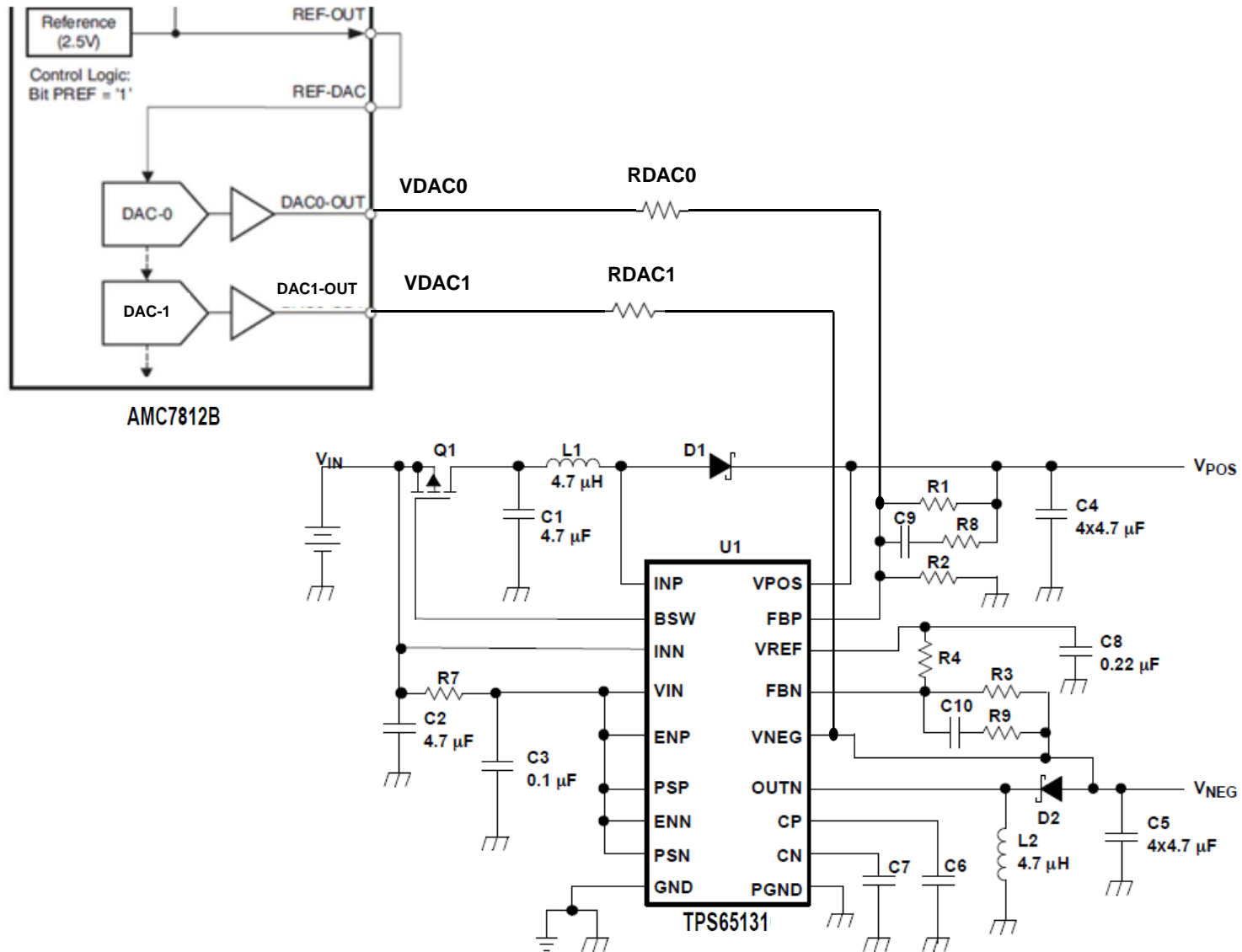


# TPS65131 : Variable Dual Vout(Vpos/Vneg) controlled by AMC7812B DACs



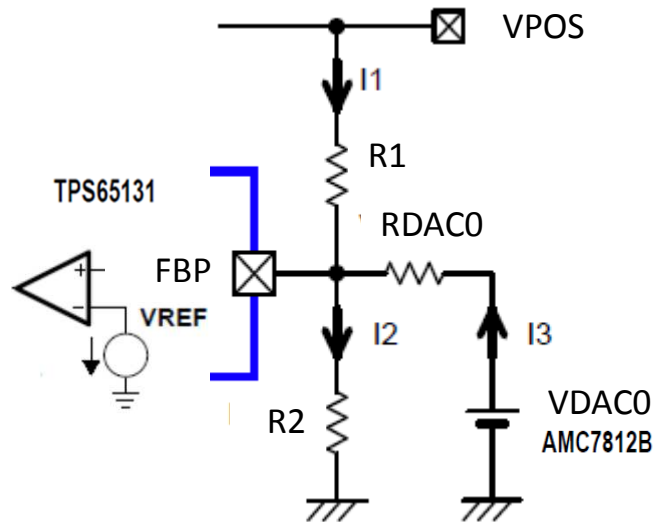
## Determine R1, R2 and RDAC0

Conditions:

VDAC 0: 0V to 5V(2xVref in AM7812B)

VPOS : 15V to 3V

VREF : 1.213V (TPS65131)



$$I2 = I1 + I3$$

$$VREF/R2 = (VPOS-VREF)/R1 + VDAC0/RDAC0 \quad \text{---- (1)}$$

When  $VDAC0(\min)=0V$  ,  $VPOS(\max)=15V$

$$1.213/R2 = (15-1.213)/R1 + 0$$

$$R1 = 11.366 * R2$$

Use  $R2=47K\Omega$  (should be lower than  $200K\Omega$ )

$$R1 > 534K$$

$$\underline{R1 : 560K\Omega} \quad (VPOS : 15.0V @ VDAC0=0.214V)$$

When  $VDAC0(\max)=5V$ ,  $VPOS(\min)=3V$

$$1.213/R2 = (3-1.213)/R1 + 5/RDAC0$$

$$5/RDAC0 = 1.213/R2 - 1.787/R1$$

Use  $R1= 560K$ ,  $R2=47K$

$$RDAC0 < 194K$$

$$\underline{RDAC0 : 180K} \quad (VPOS : 3.0V @ VDAC0=4.071V)$$

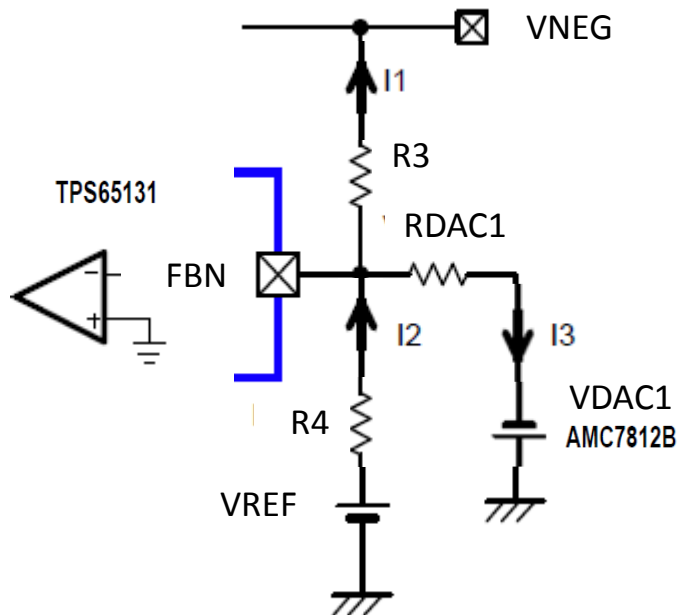
## Determine R3, R4 and RDAC1

Conditions:

VDAC 1: 0 to 5V(2 x Vref in AMC7812B)

VNEG : -15V to 0V

VREF : 1.213V



$$I2 = I1 + I3$$

$$VREF/R4 = VNEG/R3 + VDAC1/RDAC1 \quad \text{----- (1)}$$

When VDAC1(min)=0V, VNEG(max)=(-)15V

$$1.213/R4 = 15/R3 + 0/RDAC1$$

$$R3 = 12.366 * R4$$

Use R4=47KΩ (should be lower than 200KΩ)

$$R3 > 580K$$

R3 : 680KΩ (VNEG : (-)15.0V@VDAC1=0.675V)

When VDAC1(max)=5V, VNEG(min)=0V

$$1.213/R4 = 0/R3 + 5/RDAC1$$

$$5/RDAC1 = 1.213/R4$$

Use R4= 47K

$$RDAC1 < 194K$$

RDAC1 : 180K (VNEG : 0V @ VDAC1=4.64V)