Operational Amplifiers / Comparators

Op amp Circuit Collection

No.11049EAY02

Full Swing Low Voltage Operation CMOS Operational Amplifiers

BU7261G, BU7261SG, BU7295HFV, BU7295SHFV, BU7262F/FVM/NUX, BU7262SF/FVM/NUX, BU7264F, BU7264SF, BU7241G, BU7241SG, BU7275HFV, BU7275SHFV, BU7242F/FVM/NUX, BU7242S F/FVM/NUX, BU7244F, BU7244SF

Ultra Low Power CMOS Operational Amplifiers

BU7265G,BU7265SG,BU7205HFV,BU7205SHFV,BU7271G,BU7271SG, BU7245HFV,BU7245SHFV,BU7411G,BU7411SG,BU7421G,BU7421SG, BU7475HFV,BU7475SHFV

Ground Sense Low Voltage Operation CMOS Operational Amplifiers

BU7461G, BU7461SG, BU7441G, BU7441SG, BU7462F/FVM/NUX, BU7462SF/FVM/NUX, BU7442F/FVM/NUX, BU7442SF/FVM/NUX, BU7464F, BU7464SF, BU7444F, BU7444SF, BU7465HFV, BU7465SHFV, BU7445HFV, BU7445SHFV

●Examples of circuit

○Voltage follower

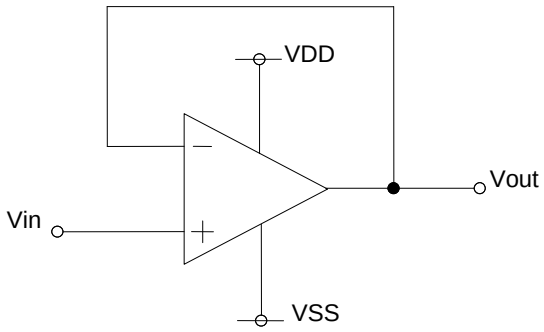

Fig.1 Voltage follower

Voltage gain is 0 [dB].
This circuit controls output voltage (Vout) equal input voltage (Vin), and keeps Vout with stable because of high input impedance and low output impedance.
Vout is shown next formula.

Vout=Vin

○Inverting amplifier

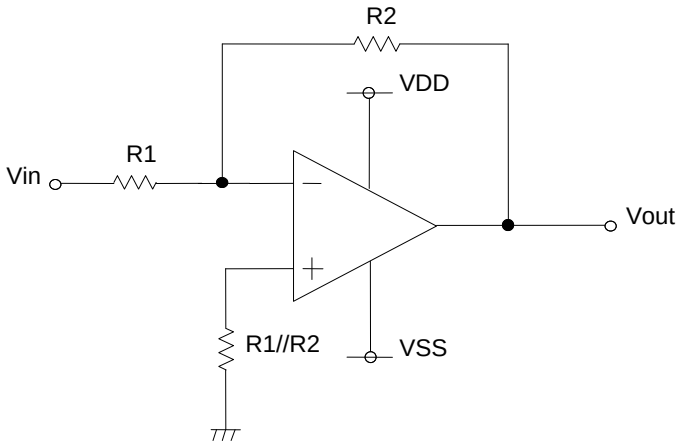

Fig.2 Inverting amplifier

For inverting amplifier, Vin is amplified by voltage gain decided R1 and R2, and phase reversed voltage is outputted.
Vout is shown next formula.

Vout=-(R2/R1)・Vin

Input impedance is R1.

○Non-inverting amplifier

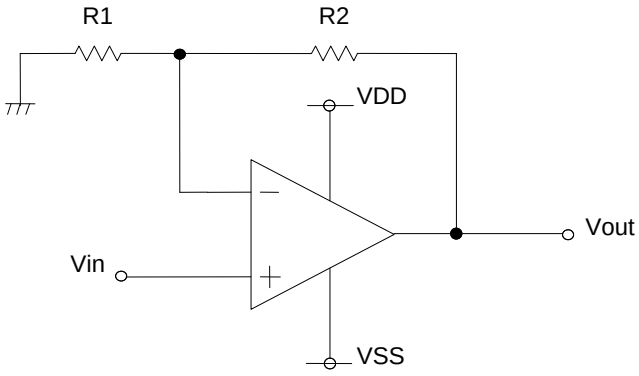

Fig.3 Non-inverting amplifier

For non-inverting amplifier, Vin is amplified by voltage gain decided R1 and R2, and phase is same with Vin.
Vout is shown next formula.

Vout=(1+R2/R1)・Vin

This circuit realizes high input impedance because Input impedance is operational amplifier's input Impedance.

○Adder circuit

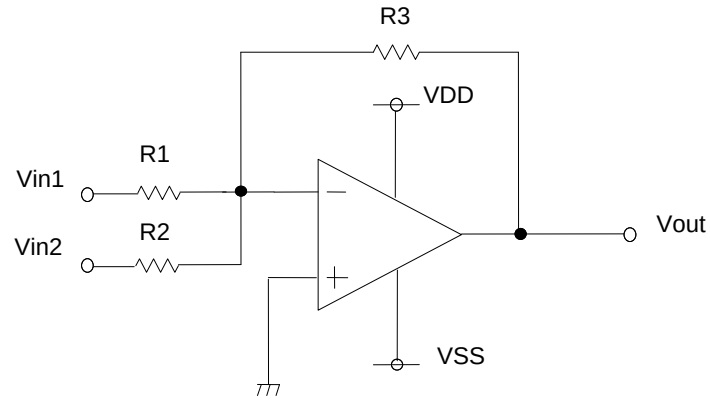

Fig.4 Adder circuit

Adder circuit output the voltage that added up Input voltage. A phase of the output voltage turns orver, because non-inverting circuit is used.
Vout is shown next formula.

Vout = -R3(Vin1/R1+Vin2/R2)

When three input voltage is as above, it connects with input through resistance like R1 and R2.

○Differential amplifier

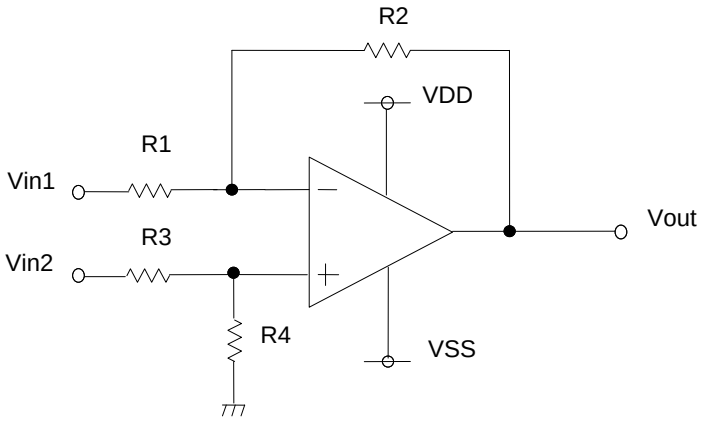

Fig.5 Differential amplifier

Differential amplifier output the voltage that amplified a difference of input voltage.
In the case of R1=R3=Ra, R2=R4=Rb
Vout is shown next formula.

Vout = -Rb/Ra(Vin1-Vin2)

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