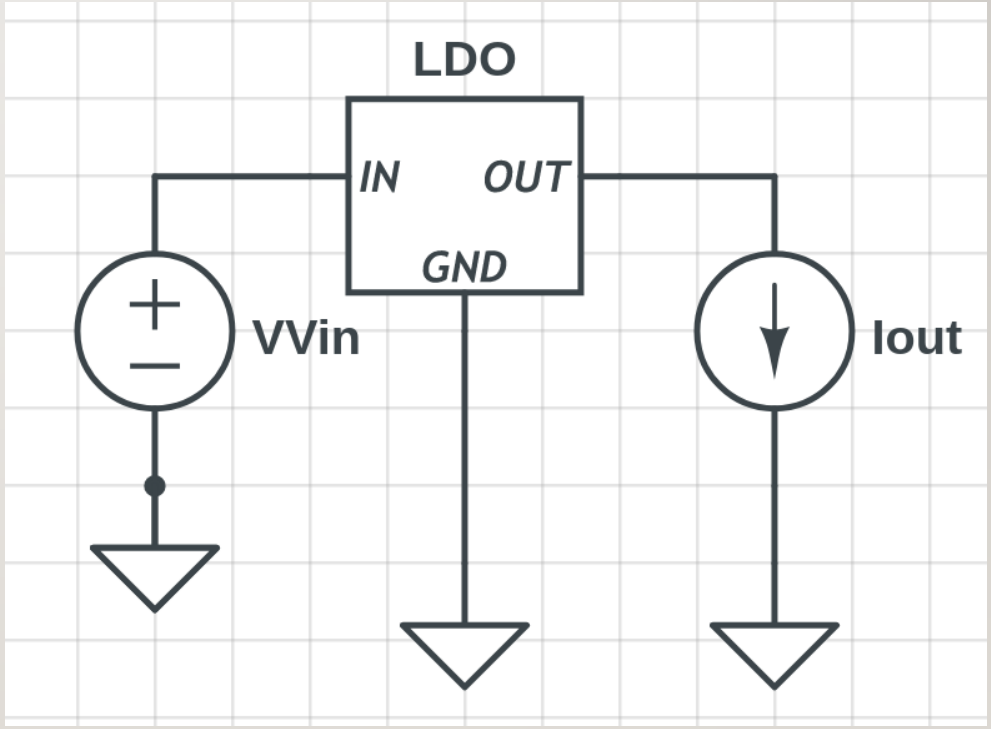
LDO TESTBENCHES

LDO AS A BLACK BOX

Given:-

1. Output voltage = 1.8v
2. Input voltage range 2v to 2.2v
3. Maximum output current = 1mA



1. DROPOUT VOLTAGE

Iout out 0 1m

And

Iout out 0 100u

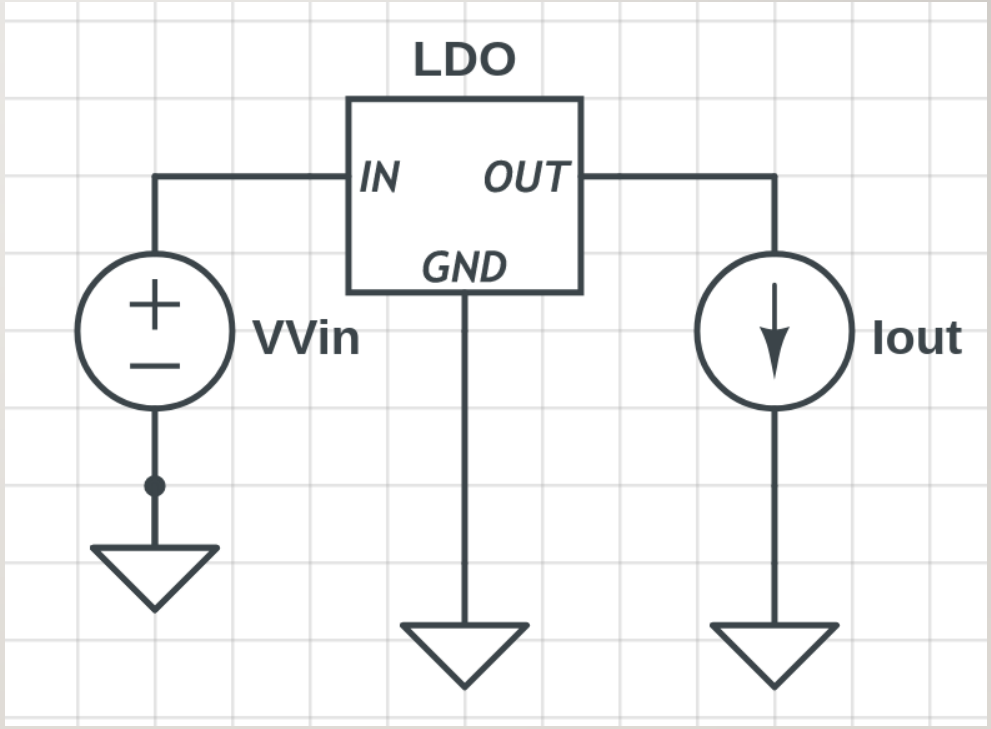
.DC VVin 0 2.2 0.1

.plot in out

.measure DC Vreg when Vout = 1.8

.print Vreg-1.8

Last line above will print Vdo value



2. LINE REGULATION

Iout out 0 1m

And

Iout out 0 100u

And

Iout out 0 500u

.DC VVin 2 2.2 0.1

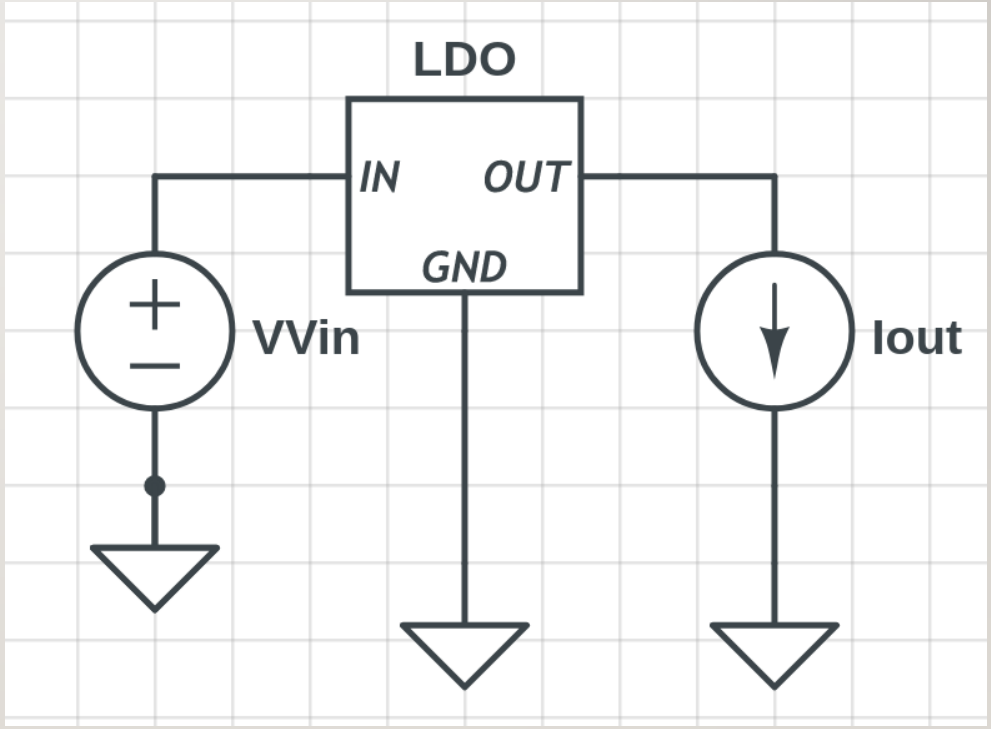
.plot out

.measure DC Vomax find out at = 2

.measure DC Vomin find out at = 2.2

.print (Vomax-Vomin)/0.2

Last line above will print the line regulation



3. LINE TRANSIENT

Iout out 0 1m

And

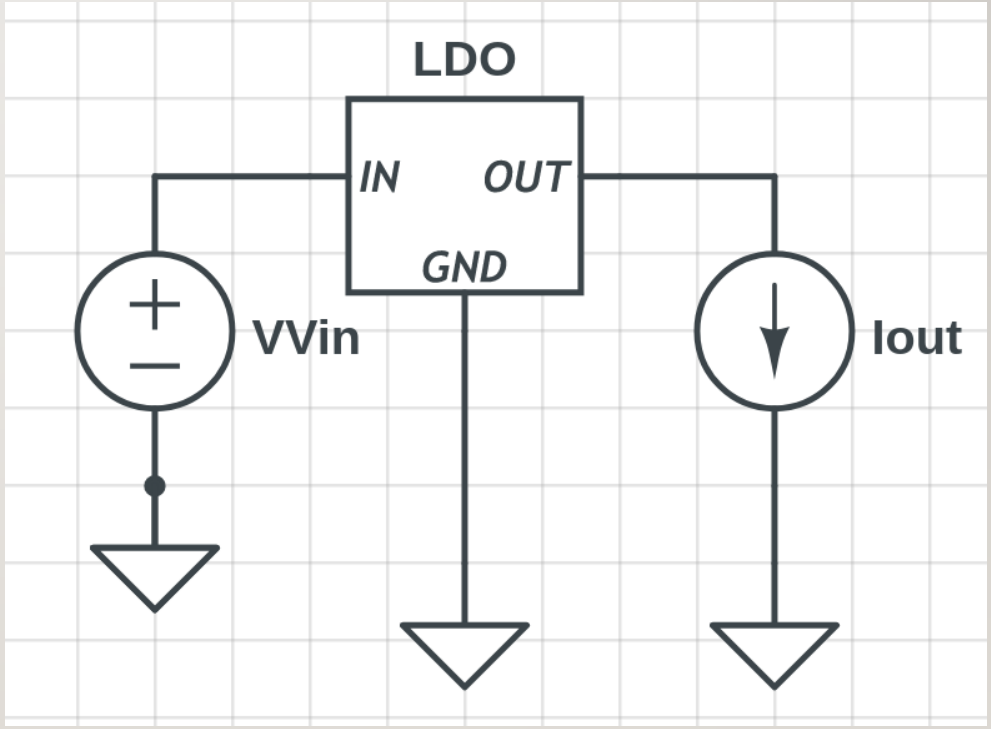
Iout out 0 100u

And

Iout out 0 500u

VVin in 0 pulse(2 2.2 50u 5u 5u 50u 100u)

.tran 20u 150u



4. LOAD REGULATION

VVin in 0 2.1

.DC Iout 0 1m 10u

And

.DC Iout 0 100u 1u

And

.DC Iout 100u 500u 1u

And

.DC Iout 500u 1m

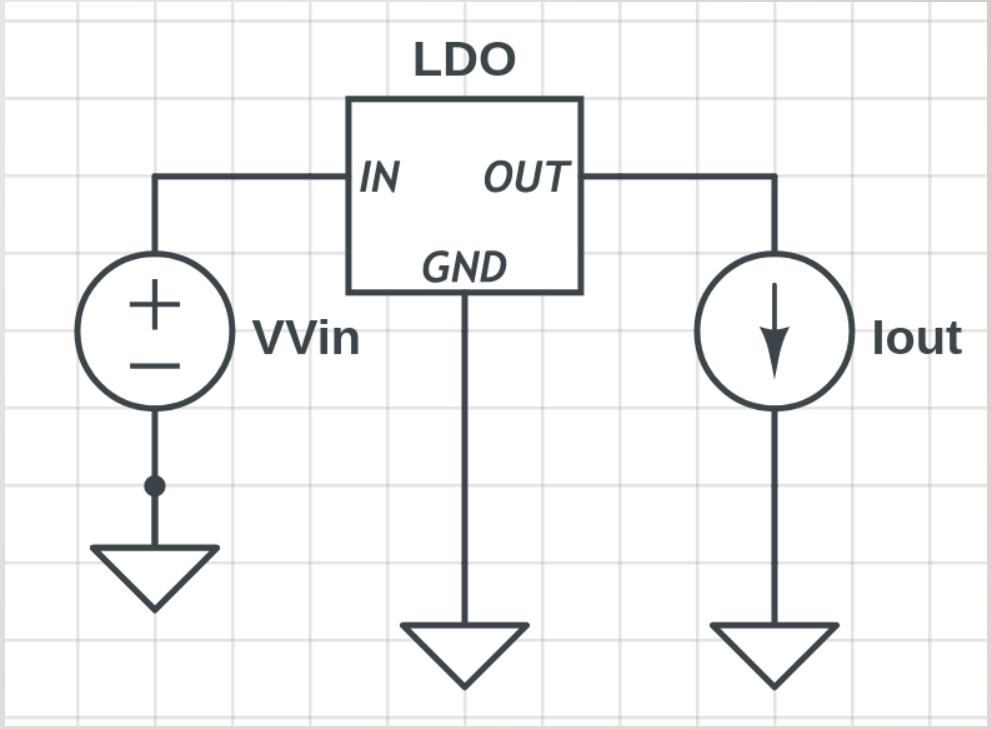
.plot out

.measure DC Vomax find Vout AT= Istart

.measure DC Vomin find Vout AT = Iend

.print(Vomax-Vomin) / Idiff

Last line above will print the load regulation



5. LOAD TRANSIENT

VVin in 0 2.1

Iout out 0 pulse(0 100u 50u 5u 5u 50u 100u)

And

Iout out 0 pulse(0 1m 50u 5u 5u 50u 100u)

And

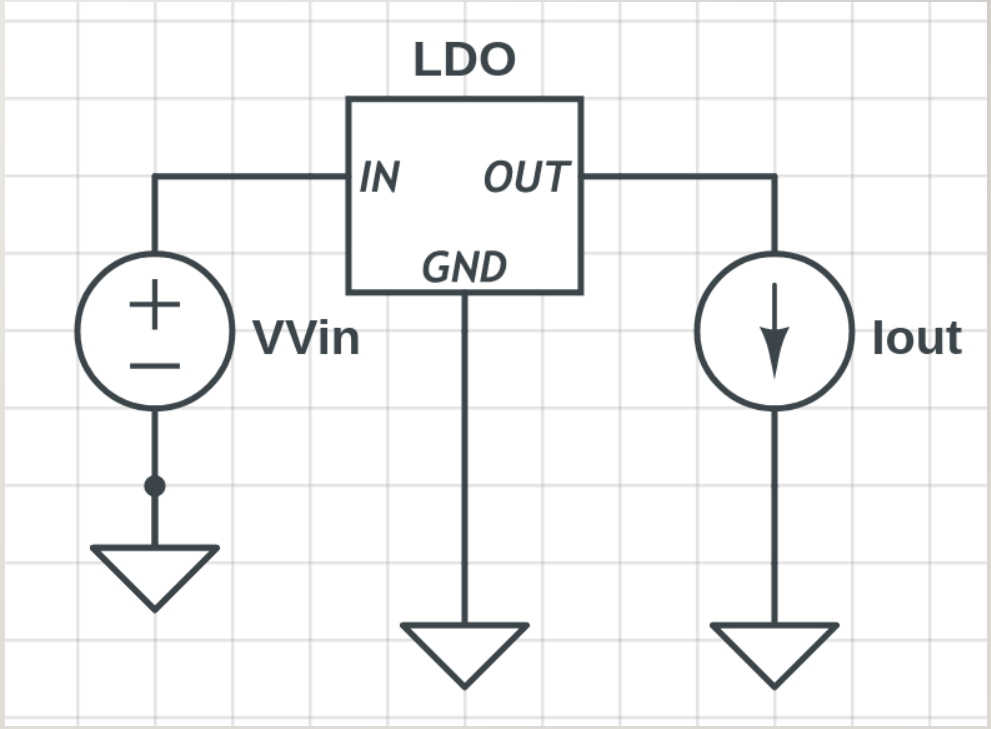
Iout out 0 pulse(100u 500u 50u 5u 5u 50u 100u)

And

Iout out 0 pulse(500u 1m 50u 5u 5u 50u 100u)

.tran 20u 150u

.plot I(out) out



6. POWER SUPPLY REJECTION

VVin in 0 DC = 2

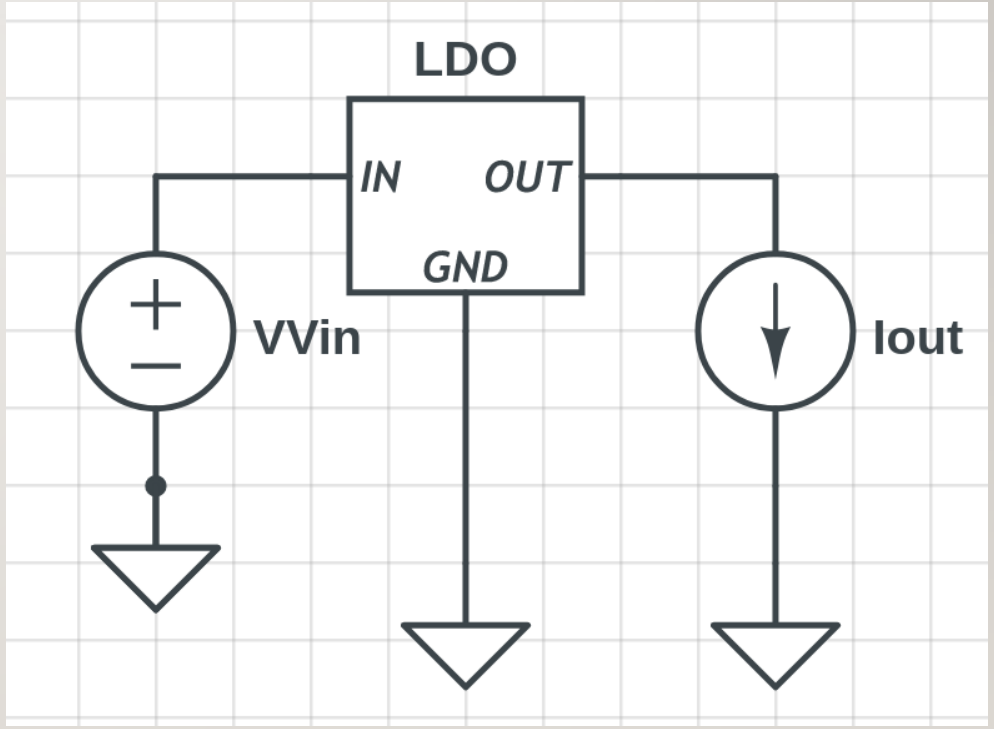
VVin in 0 AC = 1

.ac dec 10 1 100MEG

.plot db(out)

.measure AC PSR_1k find vdb(out) at = 1k

.measure AC PSR_1M find vdb(out) at = 1MEG



7. QUIESCENT CURRENT

a. DC

VVin in 0 2.1

.dc Iout 0 1m 10u

.plot I(VVin)

.measure DC Iq find I(VVin) at = 0

b. Transient

VVin in 0 2.1

.tran 20u 200u

.plot I(VVin)