

R1: 0.02071k $\Omega$   
RD: 0.10066k $\Omega$   
R2: 0.02710k $\Omega$   
R3: 0.04624k $\Omega$   
R4: 0.09996k $\Omega$   
Rx: 0.02514k $\Omega$

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Voltage:

VIn from 1-5:

1.  $V_{in} = 1V, V_{out} = 249.046mV$
  2.  $V_{in} = 1.5V, V_{out} = 0.35718V$
  3.  $V_{in} = 2V, V_{out} = 0.44132V$
  4.  $V_{in} = 2.5V, V_{out} = 0.52933V$
  5.  $V_{in} = 3V, V_{out} = 0.62618V$
  6.  $V_{in} = 3.5V, V_{out} = 0.71285V$
  7.  $V_{in} = 4V, V_{out} = 0.79163V$
  8.  $V_{in} = 4.5V, V_{out} = 0.87522V$
  9.  $V_{in} = 5V, V_{out} = 0.95708V$
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Step 3:

$$V_{in} = 1.00156V$$

$$u=0.1\Omega$$

$$V_{out,0} = 141.701mV$$
$$V_{out,1} = 155.439mV$$
$$V_{out,2} = 174.402mV$$
$$V_{out,3} = 192.556mV$$
$$V_{out,4} = 212.202mV$$
$$V_{out,5} = 228.903mV$$

$$V_{out,6} = 249.465\text{mV}$$

$$V_{out,7} = 266.950\text{mV}$$

$$V_{out,8} = 285.170\text{mV}$$

$$V_{out,9} = 299.915\text{mV}$$

$$V_{out,10} = 313.520\text{mV}$$

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Step 4:

$$V_{out} = 136.156\text{mV}, R = 10\Omega$$

$$V_{out} = 1.38015\text{V}, R = 1010\Omega$$

$$V_{out} = 1.4454, R = 2010\Omega$$

$$V_{out} = 1.46874\text{V}, R = 3010\Omega$$

$$V_{out} = 1.48064\text{V}, R = 4010\Omega$$

$$V_{out} = 1.48788\text{V}, R = 5010\Omega$$

$$V_{out} = 1.49280\text{V}, R = 6010\Omega$$

$$V_{out} = 1.49629\text{V}, R = 7010\Omega$$

$$V_{out} = 1.49891\text{V}, R = 8010\Omega$$

$$V_{out} = 1.50098\text{V}, R = 9010\Omega$$

$$V_{out} = 1.50259\text{V}, R = 10010\Omega$$

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Step 5:

$$V_{out} = 0.2980\text{V}, R = 1\Omega$$

$$V_{out} = 0.5777\text{V}, R = 2\Omega$$

$$V_{out} = 0.85348\text{V}, R = 3\Omega$$

$$V_{out} = 1.13520\text{V}, R = 4\Omega$$

$$V_{out} = 1.4150\text{V}, R = 5\Omega$$

$$V_{out} = 1.51144\text{V}, R = 6\Omega$$

$$V_{out} = 1.51251\text{V}, R = 7\Omega$$

$$V_{out} = 1.51331\text{V}, R = 8\Omega$$

$$V_{out} = 1.51391\text{V}, R = 9\Omega$$

$$V_{out} = 1.51425\text{V}, R = 10\Omega$$

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**Step 6:**

$$V_{th} = 0.87075V$$

$$R_{th} = 0.04232k\Omega$$

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**Step 7:**

$$V_{out} = 165.1740mV, R = 10\Omega$$

$$V_{out} = 0.83550V, R = 1010\Omega$$

$$V_{out} = 0.85258, R = 2010\Omega$$

$$V_{out} = 0.85849V, R = 3010\Omega$$

$$V_{out} = 0.86146V, R = 4010\Omega$$

$$V_{out} = 0.86324V, R = 5010\Omega$$

$$V_{out} = 0.86445V, R = 6010\Omega$$

$$V_{out} = 0.86532V, R = 7010\Omega$$

$$V_{out} = 0.86595V, R = 8010\Omega$$

$$V_{out} = 0.86646V, R = 9010\Omega$$

$$V_{out} = 0.86684V, R = 10010\Omega$$

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**Step 8:**

$$R_{rb} = 0.49449M\Omega$$

$$R_{rw} = 0.6320M\Omega$$

$$R_{bw} = 131.263k\Omega$$

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**Step 9:**

$$V_r = 2.17784V$$

$$V_r = 0.195V \text{ for } 0.5$$

$$V_r = 0.725V \text{ for } 2.5$$

$$V_r = 1.4V \text{ for } 10$$

$$V_r = 2.0V \text{ for } 50$$