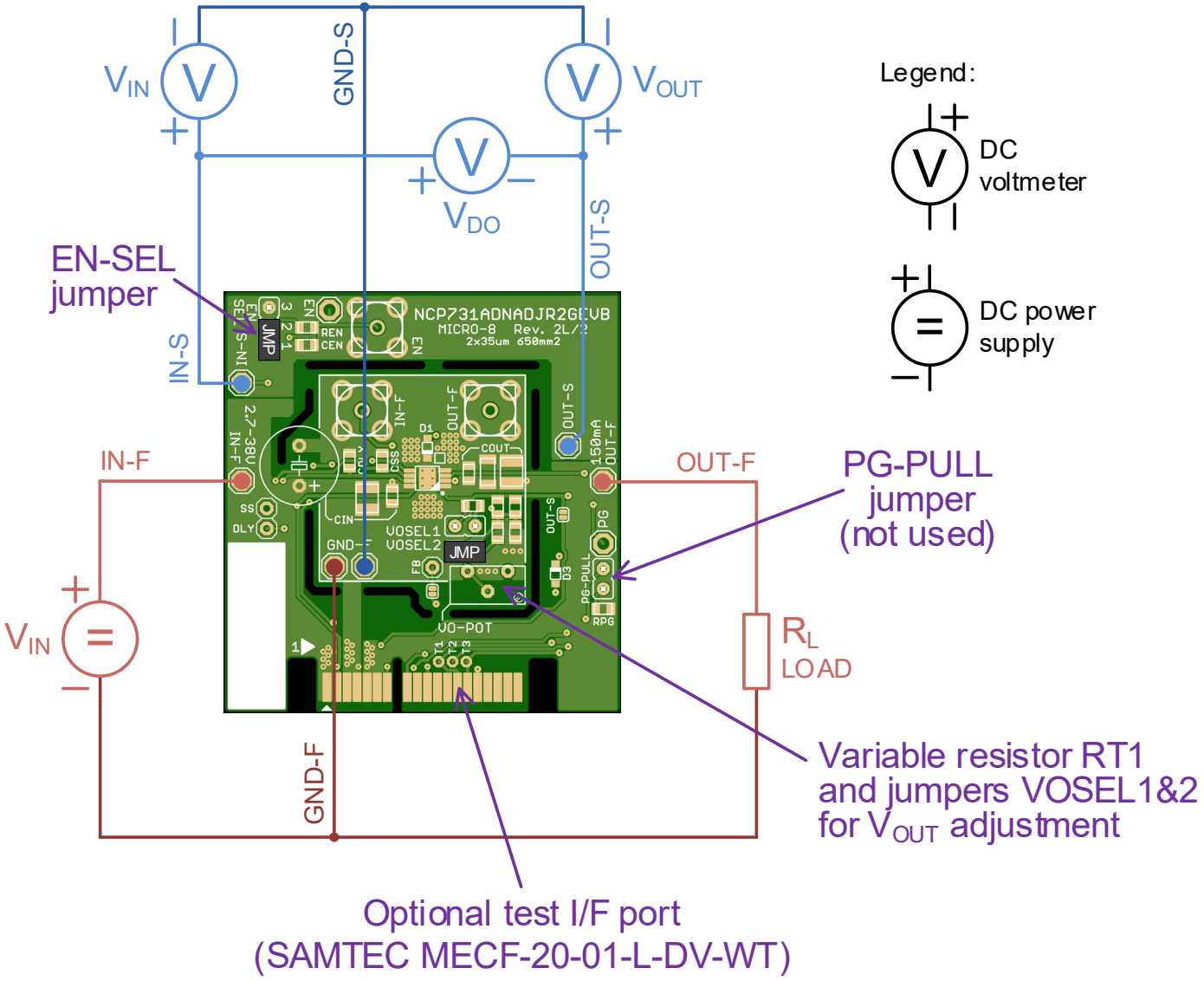
NCP731ADNADJR2GEVB Demo Board rev. 2L/2

Test procedure – Board connection



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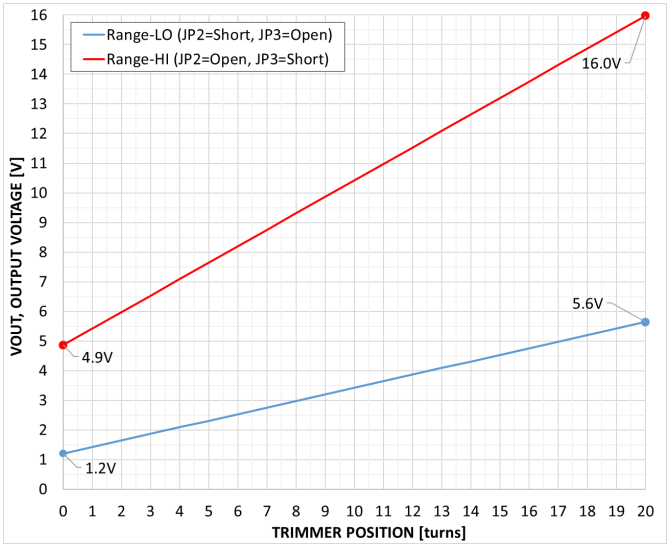
Test procedure – Description

Output voltage test:

1) Apply no load.
2) Set jumpers JP2=open and JP3=short.
3) Apply input voltage V_{IN} = 24V (or another value in range 17 – to – 38V).
4) Set the variable resistor RT1 from min. to max. value and measure V_{OUT} output voltage, it should be settable in range from 4.9V to 16V (as shown on the chart, red line).
5) Turn-off the input voltage, swap the jumpers JP2=short, JP3=open, turn-on input voltage.
6) Set the variable resistor RT1 again from max. to min. value and measure V_{OUT} output voltage, it should be settable in range from 1.2V to 5.6V (as shown on the chart, blue line).
7) Set the V_{OUT} voltage to 5.0V as the final value.



Notes:

The min. and max. output voltage values at each range (blue/red curve) have tolerance ±10% (caused mainly by the tolerance of the variable resistor).
The V_{IN} and I_{LOAD} could be changed in ranges V_{IN} = (V_{OUT} + 1V) to 38V and I_{OUT} = 0 to 150mA to measure line and load regulations. At output currents higher than about 27mA compute applicable input voltage to dissipate maximally 1W on the LDO, use equation:
$V_{IN-MAX} = P_{DIS-MAX} / I_{OUT} + V_{OUT} = 1W / I_{OUT} + V_{OUT}$
V_{IN-MAX} must be < 38V

Dropout voltage test:

1) Apply no load.
2) Apply input voltage V_{IN} = 24V (or another value in range 17 – to – 38V).
3) Set the output voltage to desired level, for example 3.3V.
4) Apply input voltage $V_{IN} = V_{OUT} + 0.5V$.
5) Apply desired load current (for example 150mA).
6) Decrease input voltage (V_{IN}) until measured output voltage (V_{OUT}) falls out of regulation to level $V_{OUT} = V_{OUT-NOM} – 100mV$.
7) Measure dropout voltage (V_{DO}) or compute it by eq.: $V_{DO} = V_{IN} - V_{OUT}$ (V_{DO} should be about 230mV at room temp. and 150mA).

Notes:

- During this test the LDO is self-heated by dissipated power $P_{DIS} = (V_{IN} – V_{OUT}) * I_{OUT}$ so take in mind that measured dropout voltage could be higher than a typical value specified at T_J = 25degC. Of course, it must be lower than specified max. value (130mV, assuming T_J < 125degC).
- For low output voltages (like < 2.4V) the dropout voltage can't be measured because the input voltage set during testing would be lower than minimum input voltage 2.7V (instead dropout state the LDO will enter UVLO shutdown state).