List of the sample examples provided with the SNAP program

Prefix „**dem**“ denotes the examples which can be solved by the SNAP Demo version (the circuit has a maximum of 3 nodes and a maximum of 3 elements).
Prefix „**stu**“ denotes the examples which can be solved by the SNAP Student version (the circuit has a maximum of 5 nodes).
All files without mentioned prefixes contain more than 5 nodes and have to be solved by the SNAP Standard version.

Note:
For your safety, all sample files *.cir have the attribute "read only". Nevertheless, if you need to save any changes you may have made, you must first cancel this attribute by using any file utility program.

.cir	***category***	***description***
all3	**filters**	Allpass 1st - order filter with two transimpedance OpAmps (CFAs).
all4	**filters**	Allpass 2nd - order filter with two transimpedance OpAmps (CFAs).
bpccii	**filters**	2nd - order bandpass filter with two current conveyors CCII+.
but3	**filters**	3rd - order lowpass filter with two positive current conveyors CCII+, Butterworth approximation.
cauer_mu	**filters**	3rd - order ladder filter, Cauer approximation. Floafing inductor is realized by 2 mutators. The original passive filter is in the file **STUCAU3.CIR**.
cauer5	**filters**	5th - order ladder filter, Cauer approximation. The FDNRs are realized by the circuit from the example **FDNR.CIR**.
ccii4	**filters**	General 2nd - order current mode building block with current conveyor CCII+.
cciii	**filters**	Tchebyshev lowpass filter with two current conveyors CCIII+.
cfa1	**filters**	DC accurate lowpass filter with transimpedance OpAmp. (CFA)
cfa2	**filters**	5th - order lowpass filter with transimpedance OpAmp (CFA), unstable.
fdnrl	**filters**	9th - order Cauer filter with a direct FDNR models. Filter is designed according to the Bruton transformation from the filter in the file **LADD.CIR**.
ladd	**filters**	9th - order Cauer ladder filter. Applying Bruton transformation yields filter from example **FDNRL.CIR**.
presens	**filters**	Presens filter for emphasis frequency range 2 - 3 kHz to enhance voice intelligibility.
rolloff	**filters**	Filter behind the DA converter for correction of the sin(x)/x distortion.
sallen3	**filters**	Sallen-Key 3rd - order lowpass filter.
sallen5	**filters**	Active 5th - order lowpass filter, cascade of the Sallen-Key 3rd order and 2nd order blocks.
stuall1	**filters**	Active noninverting 1st - order allpass filter.
stuall2	**filters**	Active inverting 1st - order allpass filter.
stubota	**filters**	Bandpass filter with two BOTA elements.
stubpa	**filters**	Active 2nd - order bandpass filter with one OpAmp.
stucau3	**filters**	3rd - order Cauer ladder filter, the prototype for the active filter in the file **CAUER_MU.CIR**.
stuladd	**filters**	5th - order Cauer ladder filter.
stulpa	**filters**	Active 2nd - order lowpass filter with one OpAmp.
stulpar	**filters**	Active 2nd - order lowpass filter with one OpAmp, one-pole OpAmp model.
stulpcc	**filters**	2nd - order current-mode lowpass filter with the current conveyor CCII-.

stuota	**filters**	OTA-C band-reject 2nd - order filter.
stusabc	**filters**	2nd - order Sallen-Key current-mode lowpass with current conveyor CCII-. It is an equivalent of the voltage-mode filter from the example **STUSALI.CIR**.
stusali	**filters**	2nd - order Sallen-Key voltage-mode lowpass with current conveyor CCII-. It is an equivalent of the current-mode filter from the example **STUSABC.CIR**.
stusalr	**filters**	2nd - order Sallen-Key filter from example **STUSALI.CIR**. Two-pole OpAmp model is used.
towthoma	**filters**	Tow-Thomas biquad with 3 OpAmps.
uni	**filters**	2nd - order lowpass filter with two OpAmps.
vrba	**filters**	3rd - order lowpass filter with AD844. It is the application of the principle which is described in the file **STUVRBA2.CIR**.
amp10_7	**hf**	Simple one-stage 10.7 MHz amplifier.
ante	**hf**	Simple one-stage 10 MHz-300 MHz antenna amplifier.
line	**hf**	Impulse generation using the artifical LC ladder lines.
line2	**hf**	Model of the uniform transmission line. Analysis of the input and output wave impedances.
stucoup	**hf**	Resonance circuit with mutual inductances, the coupling factor influence on the transmission properties.
stuneutr	**hf**	Neutralization of hf transistor amplifier.
colpitts	**oscillators**	Colpitts oscillator, extended linear model. Analysis of the oscillation setting.
demcolp	**oscillators**	Simple linear model of the Colpitts oscillator, analysis of the oscillation condition. Extended model is in the file **COLPITTS.CIR**.
demhart	**oscillators**	Simple linear model of Hartley oscillator, analysis of the oscillation condition.
oscilcc	**oscillators**	Oscillator based on the current conveyors CCII+. Derivation of the oscillation condition. Tuning simulation.
oscillc	**oscillators**	Feedback oscillator with series resonance circuit. Analysis of the oscillation condition.
oscilrct	**oscillators**	Linear model of the RC oscillator with the RC ladder cells and a FET. Analysis of the oscillation condition.
stucelma	**oscillators**	Oscillator with CCII+ by Celma and Martinez. Oscillation frequency is controlled independently on the oscillation condition.
stuoscrc	**oscillators**	One OpAmp RC oscillator. Analysis of the oscillation condition.
stutosc	**oscillators**	RC oscillator with T circuit. Analysis of the oscillation condition.
stuwiosc	**oscillators**	Oscillator with Wien RC circuit. Analysis of the oscillation condition.
antonius	**syntetic elements**	Antonious mutator.
demgic	**synthetic elements**	Definition and properties of the generalized impedance converter (GIC) and its special cases- current IC (CIC) and voltage IC (VIC).
demgii	**synthetic elements**	Definition and properties of the generalized impedance inverter (GII) and its special case - gyrator.
demgyr	**synthetic elements**	Realization of synthetic inductor by the capacitor transformation by ideal gyrator (for theory see file **DEMGII.CIR**).
demic	**synthetic elements**	Negative impedance converter using the current conveyor CCII+.
demindtr	**synthetic elements**	Synthetic inductor realized by two BJTs.
fdnr	**synthetic elements**	Nonideal FDNR realizer by one OpAmp.
gicc2	**synthetic elements**	General impedance converter with two current conveyors CCII-.
gyrcfa	**synthetic elements**	Gyrator with two transimpedance OpAmps (CFAs).
stuci	**synthetic elements**	Current-mode integrator with the current conveyor CCII+.
stugicc	**synthetic elements**	Negative impedance converter with two current conveyors CCII-.

stugyra	**synthetic elements**	Gyrator with positive and negative current conveyor CCII.
stuneg	**synthetic elements**	Negative impedance converter with one OpAmp.
stunegt	**synthetic elements**	Negative impedance converter with two BJTs.
stupred	**synthetic elements**	Prescott circuit simulating the FDNR in series with a capacitor.
stupred2	**synthetic elements**	Modified Prescott circuit simulating FDNR in parallel with a capacitor.
stupred3	**synthetic elements**	Circuit simulating FDNR in parallel with a capacitor.
stuprel	**synthetic elements**	Prescott circuit simulating inductor in series with a resistor.
stuprel2	**synthetic elements**	Modified Prescott circuit simulating inductor in series with a resistor.
stuprel3	**synthetic elements**	Circuit simulating inductor in parallel with a resistor.
stuvrba	**synthetic elements**	Impedance analysis of a circuit with the current conveyor CCII+ and a general two-port which is described by its chain parameters.
stuvrba2	**synthetic elements**	Analysis of a circuit with the current conveyor CCII+ and a general two-port which is described by its chain parameters.
biquads	**basics**	Modeling of cascade chain of 6 2nd - order blocks.
campbell	**basics**	Computation of the output current of the Campbell filter on the frequency 5 kHz.
dem2fq	**basics**	2nd - order block modeling using the frequency f0 and the quality factor Q.
dem2nd	**basics**	2nd - order block modeling using the transfer function coefficients.
demcr	**basics**	1st - order CR highpass filter.
demlr	**basics**	1st - order LR lowpass filter.
demm1	**basics**	Circuit with the mutual inductance.
demrc	**basics**	1st - order RC lowpass filter.
demrl	**basics**	1st - order RL highpass filter.
demrlc1	**basics**	2nd - order RLC bandpass filter, R in series with the L and C in parallel.
demtra	**basics**	Circuit with the ideal transformer.
demye	**basics**	Two-port y and h parameters conversion of a BJT.
stu2port	**basics**	Resistive T-circuit as a two-port. Explanation of the principle of the wave two-port impedances.
stucfbri	**basics**	Carey-Foster bridge for capacitance measurement. Derivation and verification of the equilibrium conditions.
stucrcr	**basics**	Double CR circuit of highpass type.
studivi	**basics**	Noncompensated, compensated, and overcompensated resistive-capacitive voltage divider.
stugorbr	**basics**	Design of resistance R in the Gorges bridge to reach phase shift 90 degrees between the input and output voltages on the frequency 50 Hz.
stuimptr	**basics**	Model of the impulse transformer.
stumutu1	**basics**	Two coils in series with mutual inductance.
stumutu2	**basics**	Two coils in parallel with mutual inductance.
stumwbri	**basics**	Maxwell-Wien bridge for inductance measuring. Derivation of the equilibrium conditions.
sturccr	**basics**	RC and CR cells in cascade - passive bandpass filter.
sturcrc	**basics**	Double RC cell of lowpass filter type.
stureal	**basics**	Design of a resistance R in a RCL circuit to reach real impedance for all frequencies.
sturlc	**basics**	Parallel resonanceRCL circuit.

sturlc1	basics	Series resonance RCL circuit connected as a bandpass filter.
sturlc2	basics	2nd order RCL circuit, parallel resonance circuit with a lossy inductor.
stuscbri	basics	Schering bridge for capacitance measuring. Derivation and verification of the equilibrium conditions.
stuwbri	basics	Frequency dependent Wien bridge for capacitance measuring. Derivation and verification of the equilibrium conditions.
stuwheat	basics	Wheatstone bridge, equilibrium condition.
stuwien	basics	Wien cell.
bootstra	amplifiers	One-stage transistor "bootstrap-type"amplifier with high input impedance.
cfacomp	amplifiers	Internal compensation of the frequency response of a CFA inverter, utilizing compensation pin of the AD844.
cfacvcco	amplifiers	Compensation of the frequency response of the current-voltage converter with CFA.
cfaibw	amplifiers	Compensation of the frequency response of a CFA inverter to increase bandwidth.
demamp	amplifiers	Model of one-stage CE transistor amplifier with a parasitic capacitance Ccb.
demcc	amplifiers	Model of the emitter follower.
demopa1	amplifiers	OpAmp 741 connected as unity-gain buffer (one-pole model).
demopa2	amplifiers	OpAmp 741 connected as unity-gain buffer (two-pole model).
demopa3	amplifiers	OpAmp 741 connected as unity-gain buffer (two-pole model, influence of the parasitic capacitance of inverting input and load).
equalize	amplifiers	Active equalizer with the synthetic inductance, which is designed in the file **STUPREL.CIR**.
physio	amplifiers	Physiological volume regulator.
stuamp1	amplifiers	One-stage CE transistor amplifier, influence of the coupling capacity and the parasitic Cce capacity on the frequency response.
stuamp2	amplifiers	One-stage CE transistor amplifier with the AC shunted emitter resistor.
stuamp3	amplifiers	Model of a transistor amplifier: inverter/follower when output in collector/emitter.
stucfa1	amplifiers	Inverting amplifier with the ideal transimpedance OpAmp (CFA).
stucfa2	amplifiers	Inverting amplifier from the example **STUCFA1.CIR**. Model of real CFA is used.
studarli	amplifiers	Two BJTs in the Darlington connection. Computation of the current gain.
stufet1	amplifiers	One-stage amplifier with a MOSFET.
stuopa4	amplifiers	Noninverting amplifier with the VFA (voltage feedback amplifier).
stuopa5	amplifiers	Noninverting amplifier with the VFA (voltage feedback amplifier), one-pole VFA model.
stuopa6	amplifiers	Inverting amplifier with the VFA (voltage feedback amplifier).
stuopa7	amplifiers	Inverting amplifier with the VFA (voltage feedback amplifier), one-pole VFA model.