



DYNAST v elektronice a mechatronice

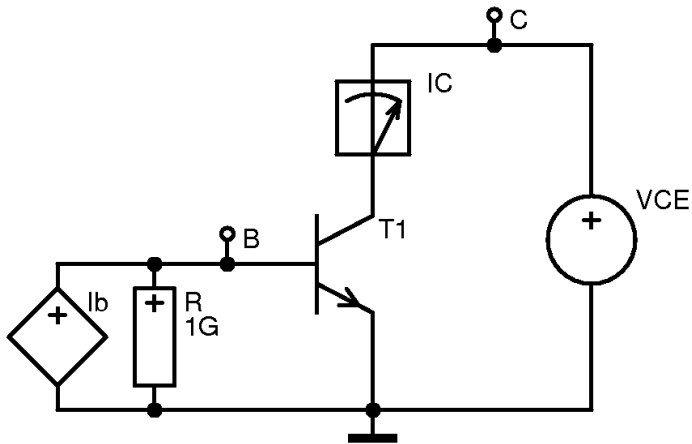
Ing. Jan Míchal



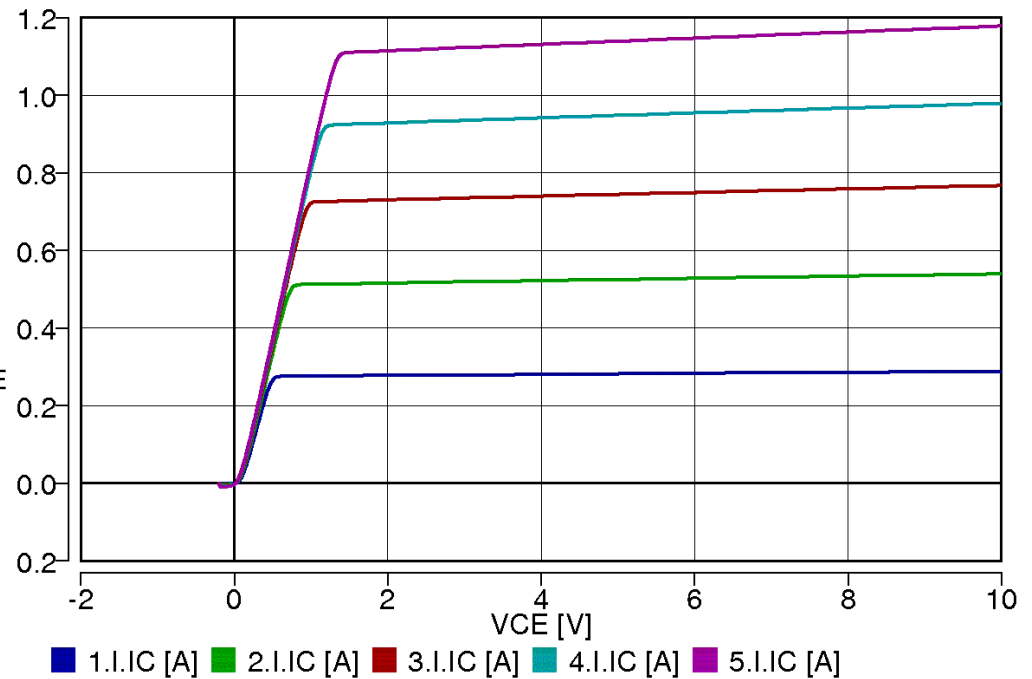
Elektronické modely

- Lineární, nelineární
- Statické, dynamické
- Fyzikální, empirické
- Neustálý vývoj modelů elektronických prvků
- Potřeba modelů různých stupňů složitosti
 - složitější jsou obvykle přesnější,
 - jednodušší se snáze identifikují, menší numerická náročnost

V-A charakteristiky tranzistoru

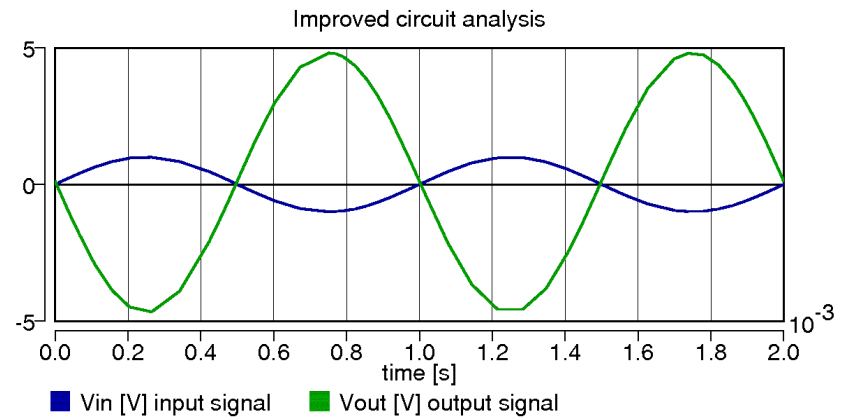
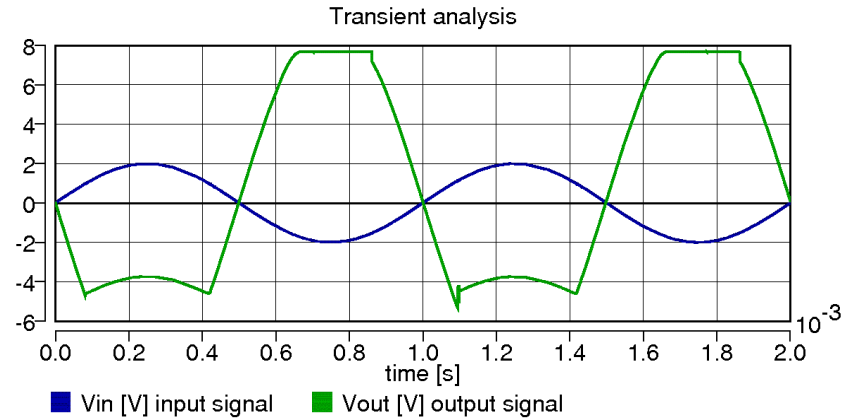
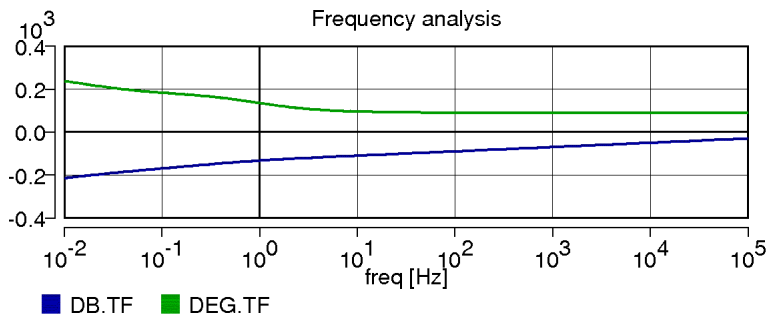
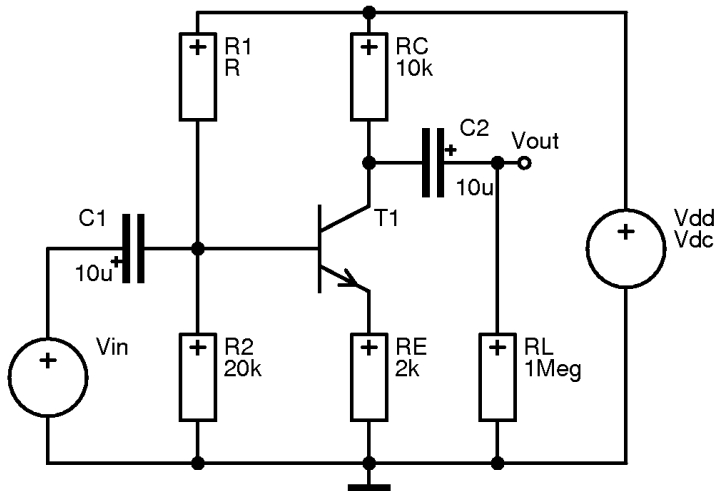


NPN BJT-Characteristic I.



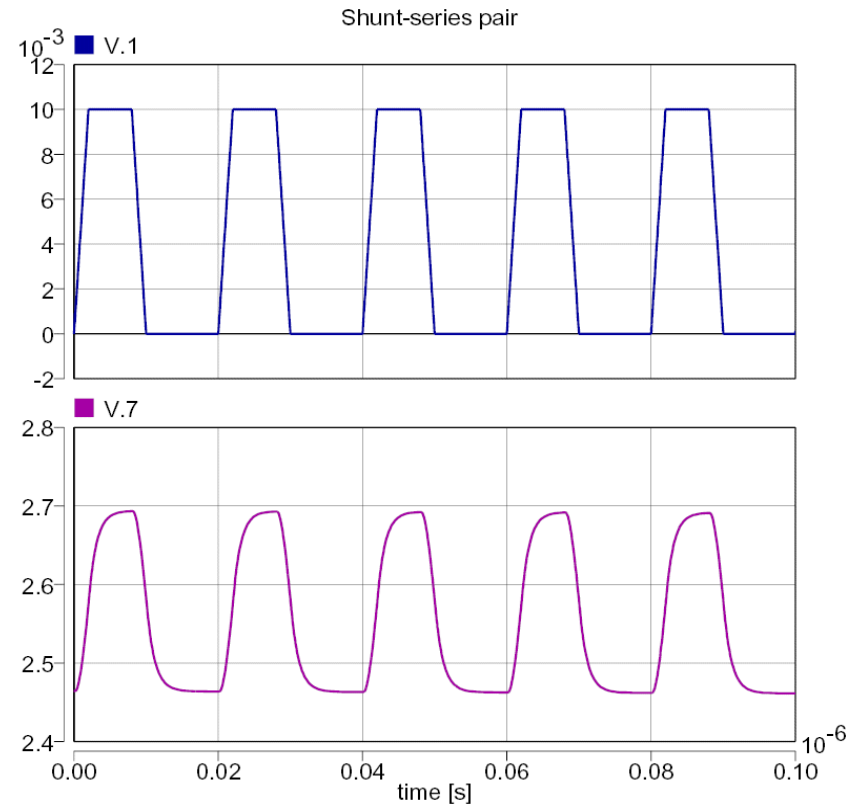
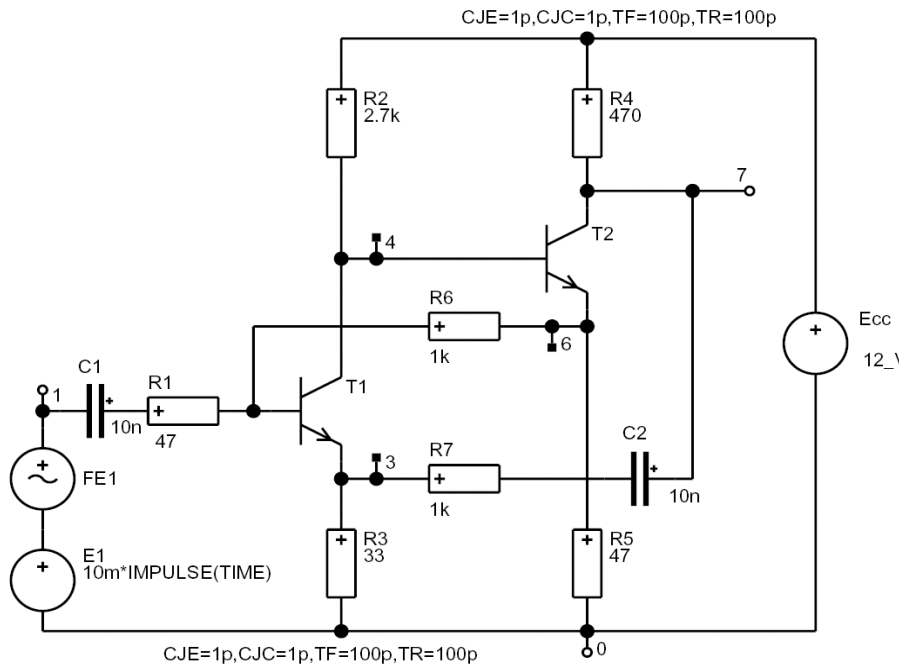
- o NPN BJT-Characteristic I.

Zesilovač s bipolárním tranzistorem

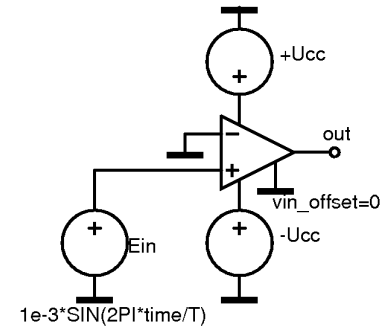
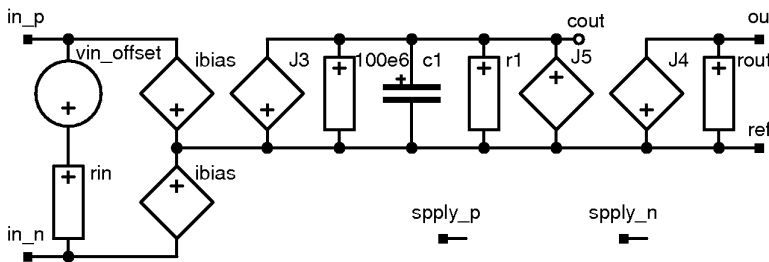


- [Single stage BJT ac amplifier](#)

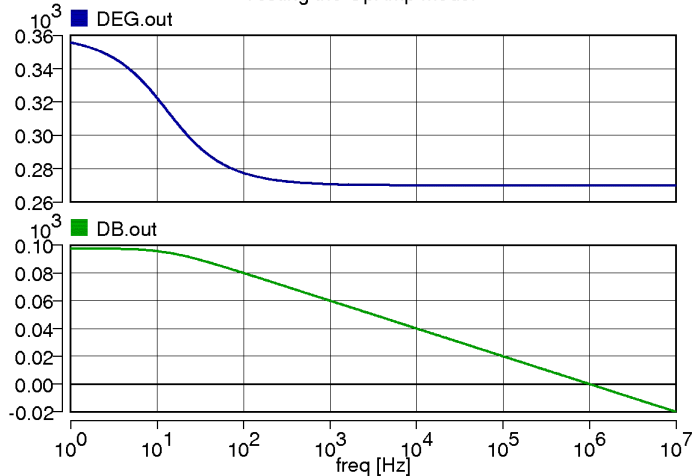
Širokopásmový zesilovač



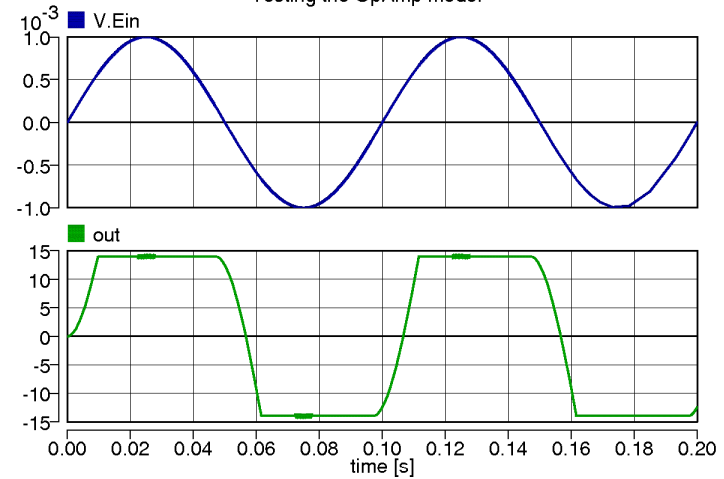
Operační zesilovač



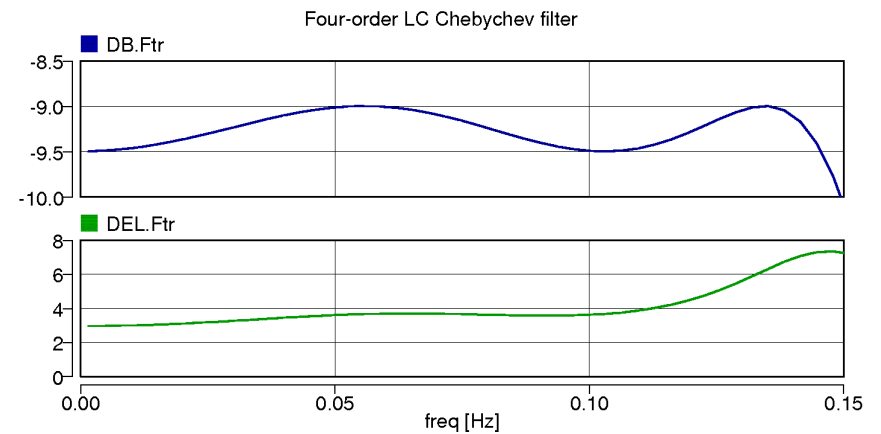
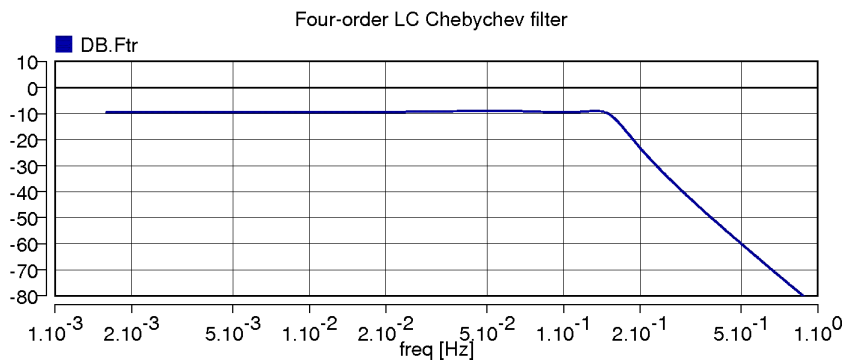
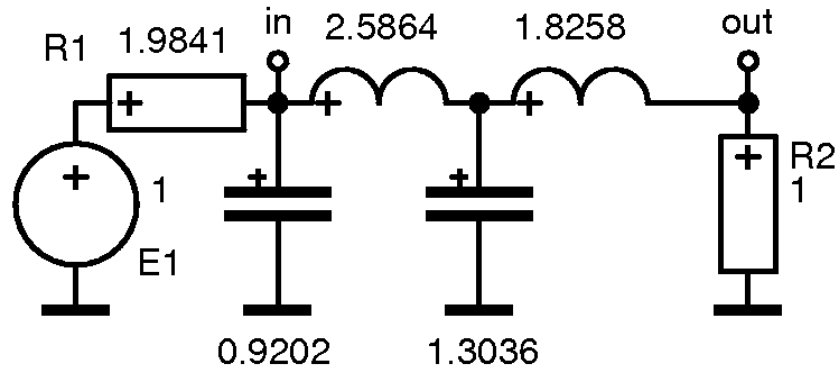
Testing the OpAmp model



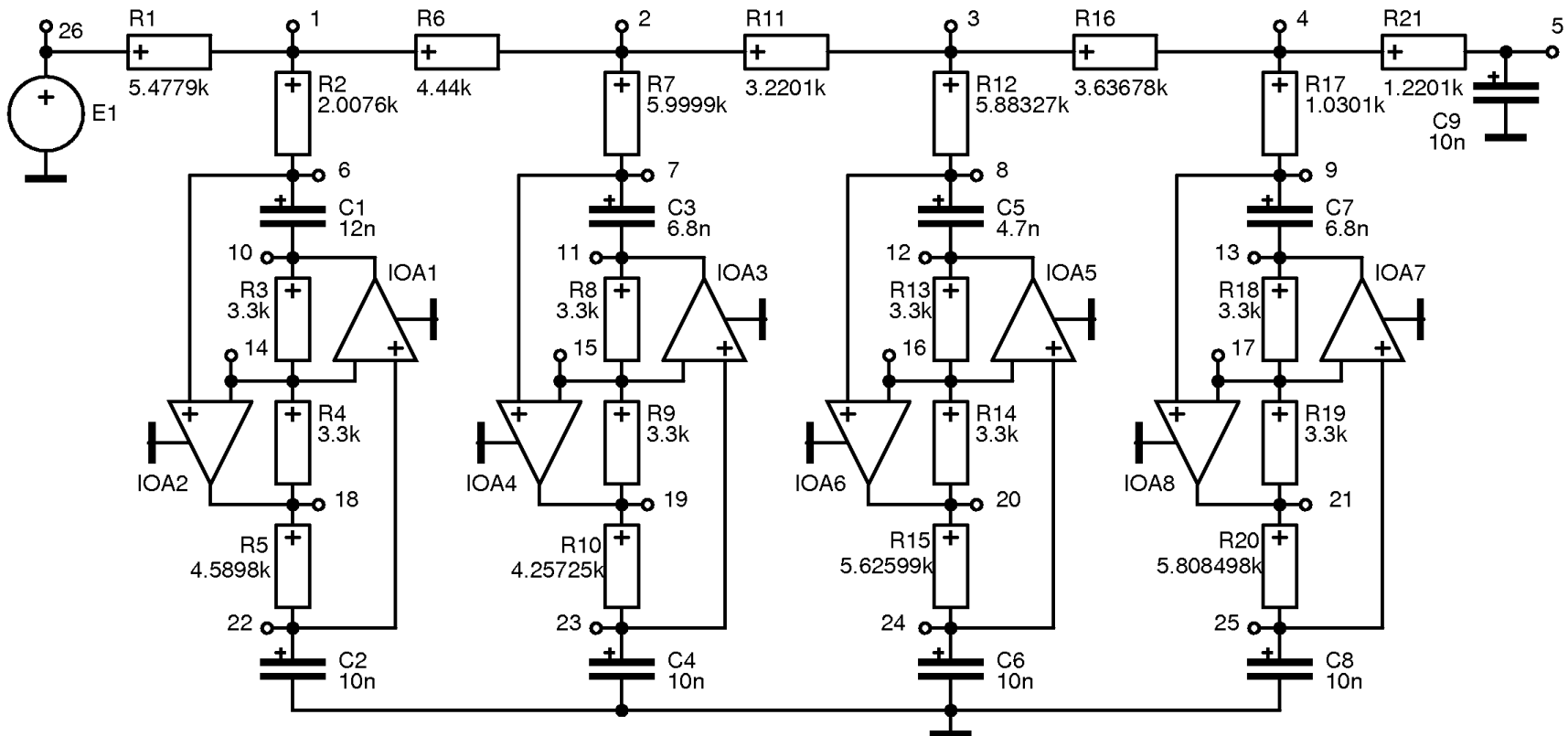
Testing the OpAmp model



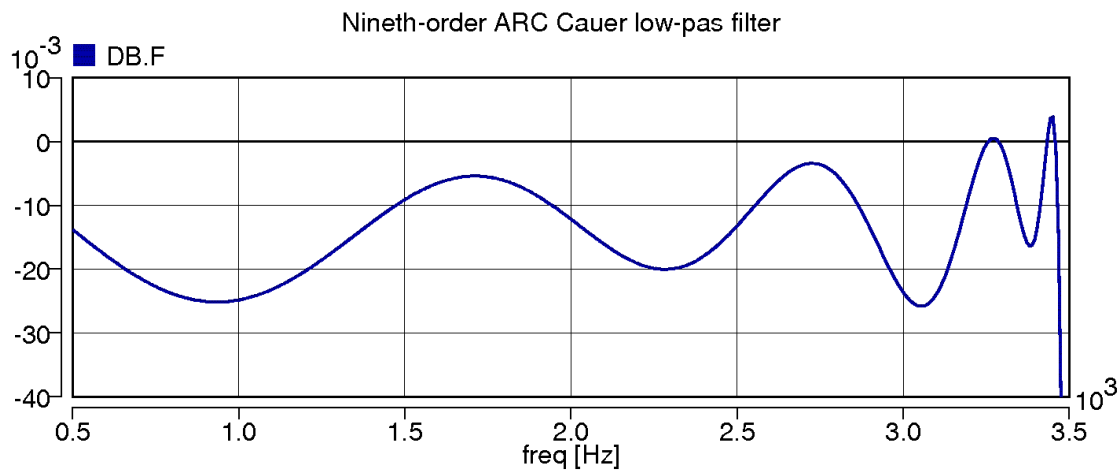
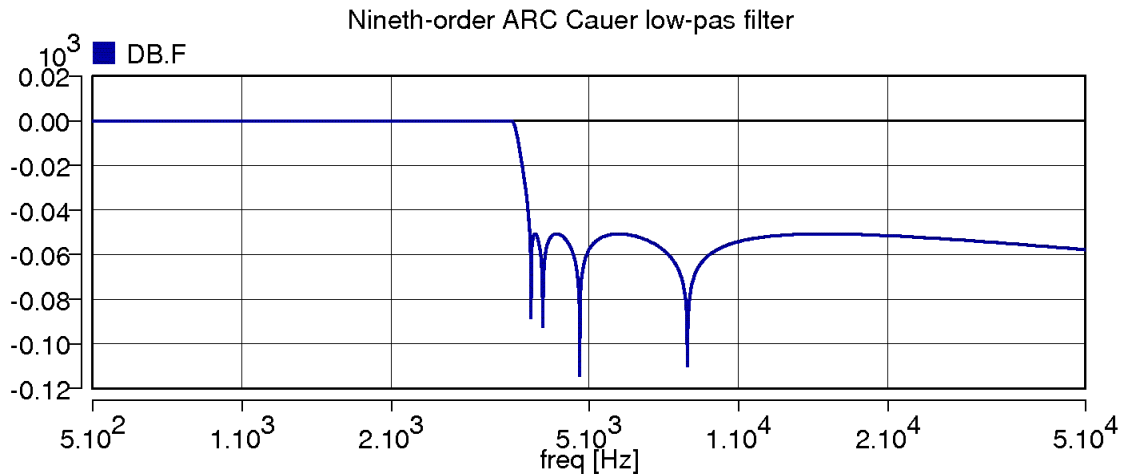
Čebyševův filtr RLC



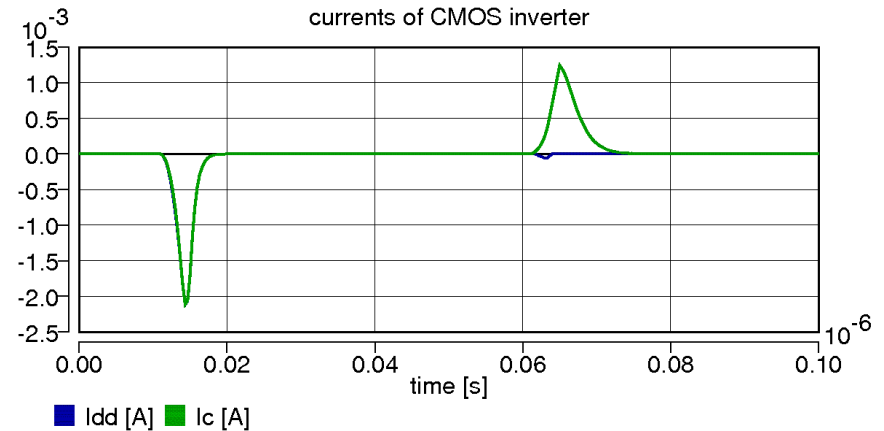
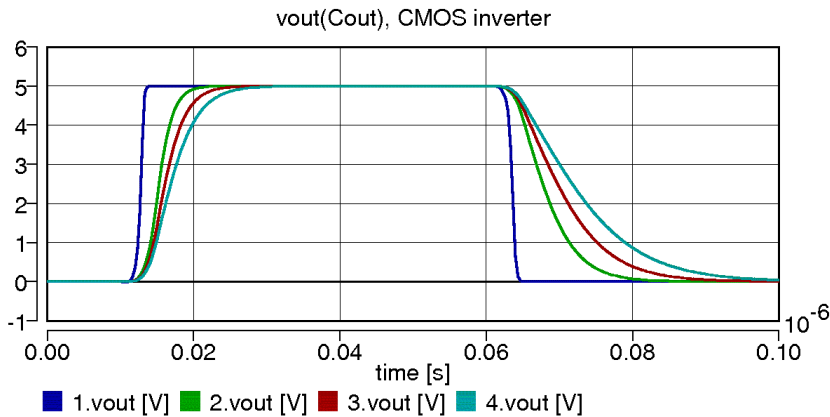
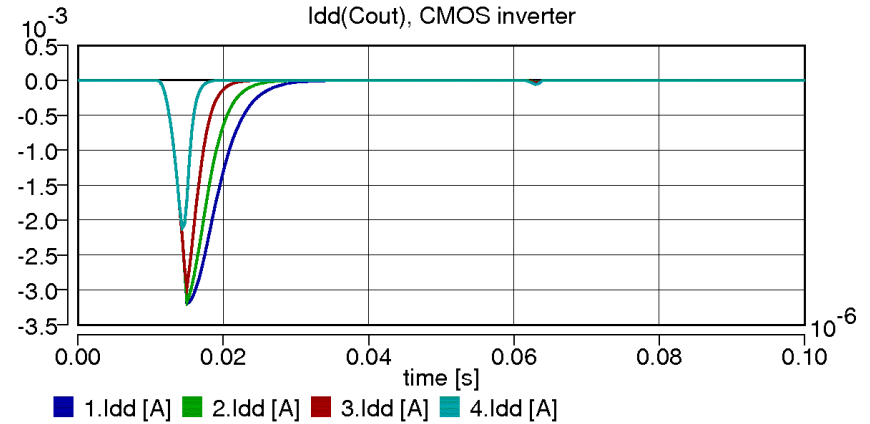
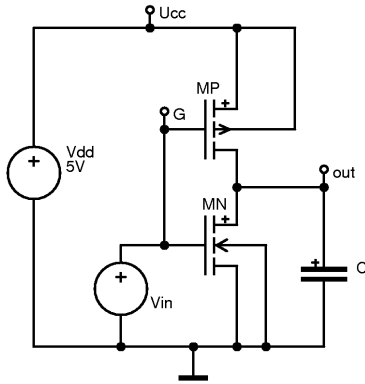
Cauerův filtr ARC – zapojení



Cauerův filtr ARC – výsledky

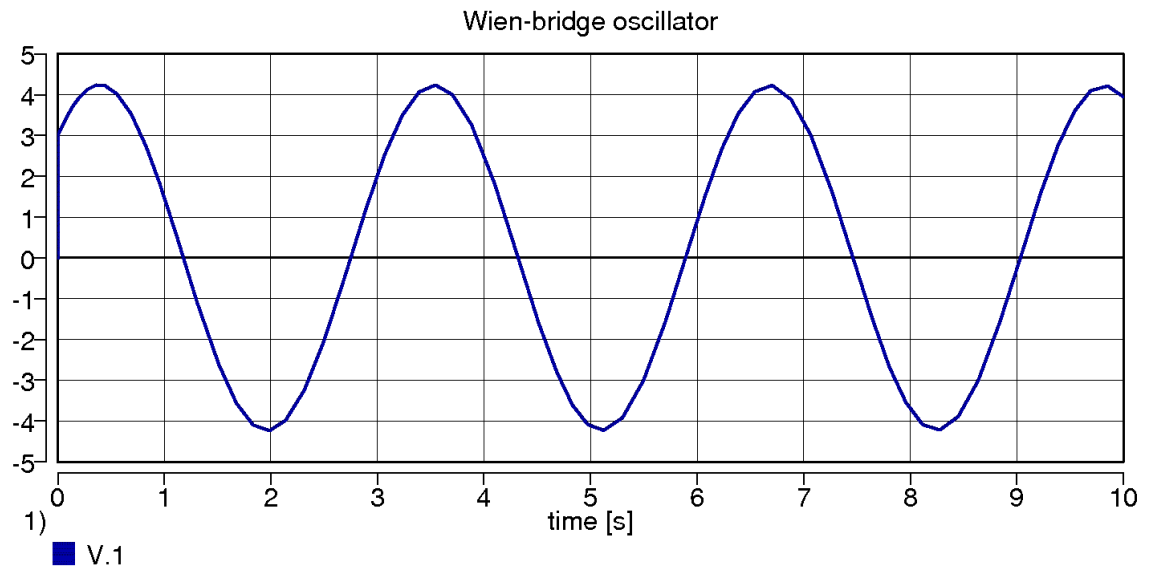
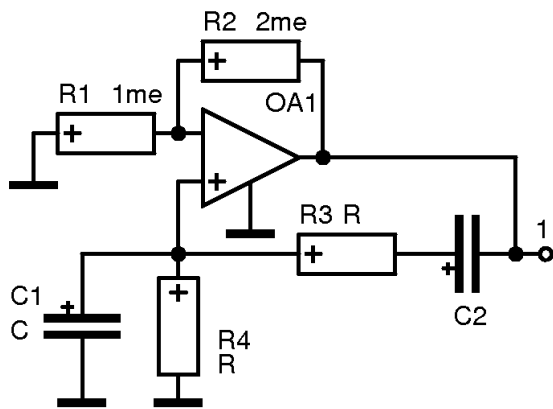


Invertor CMOS



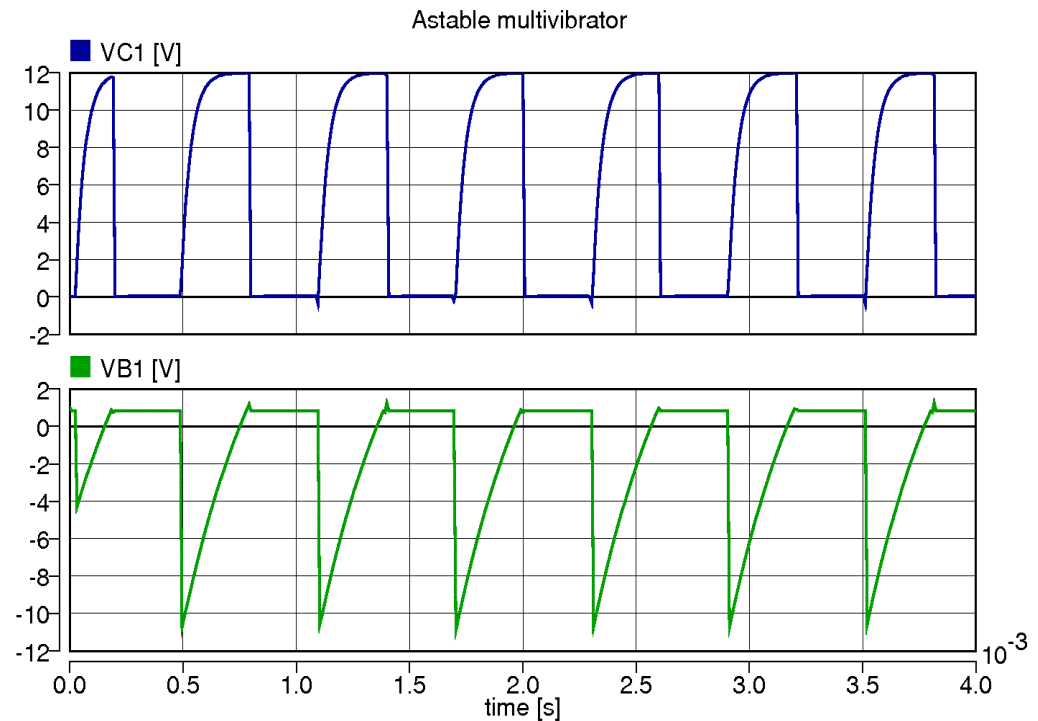
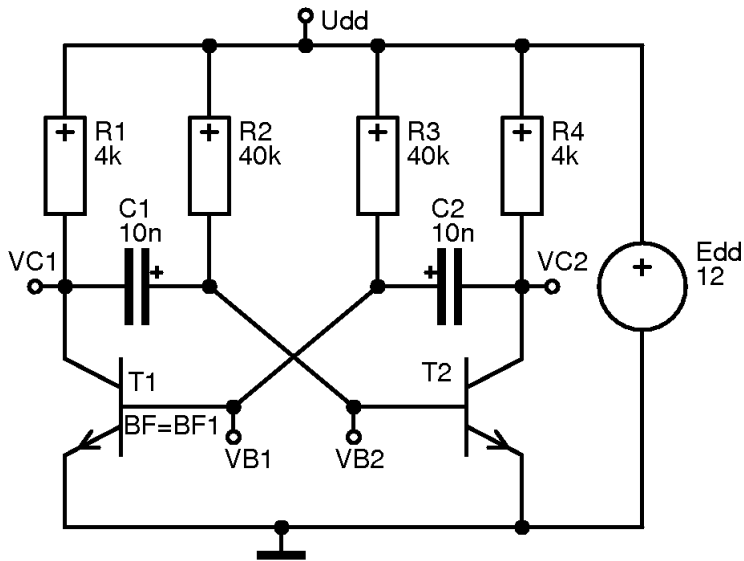
o CMOS inverter, dynamic

Wienűv oscilátor



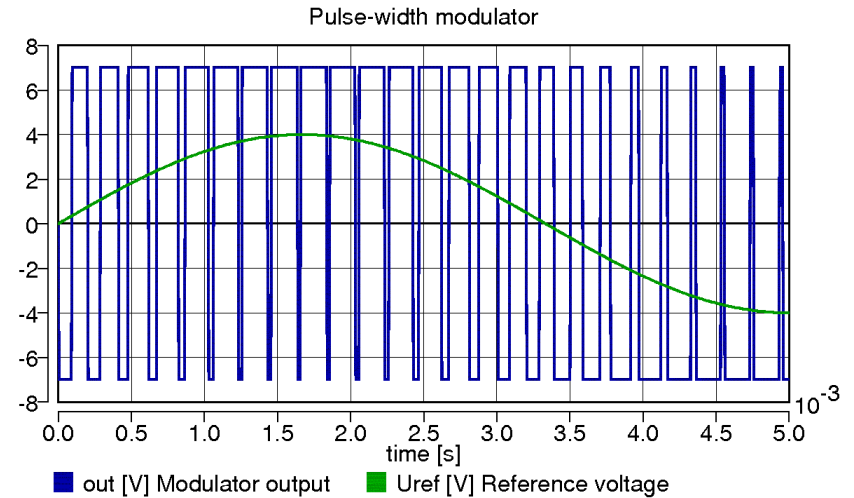
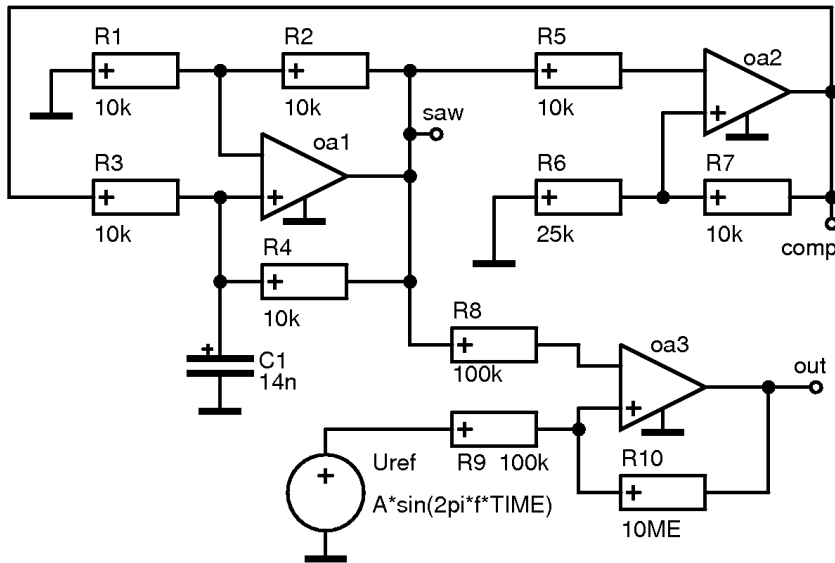
- o Wien-bridge oscillator

Astabilní multivibrátor



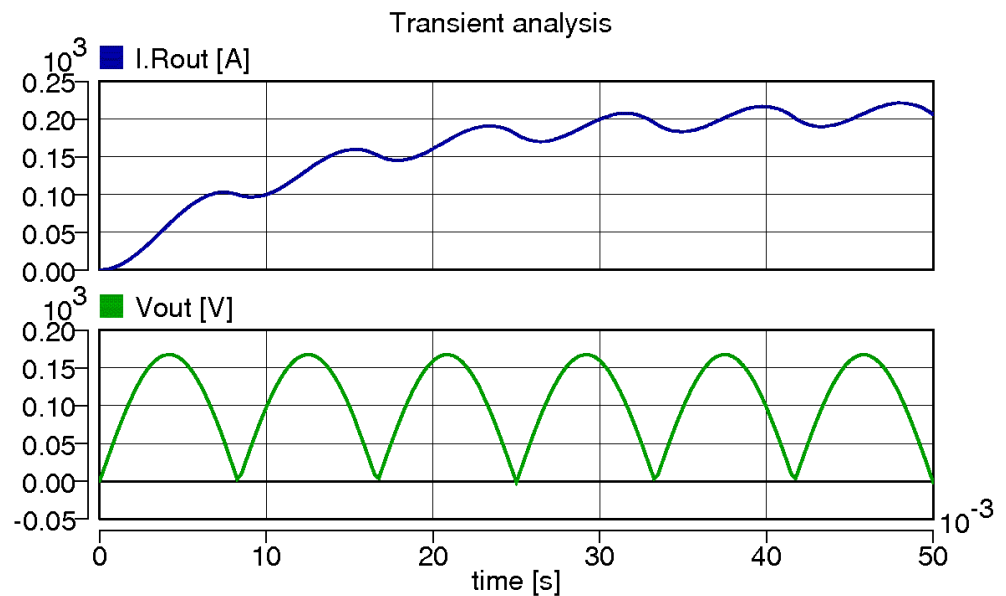
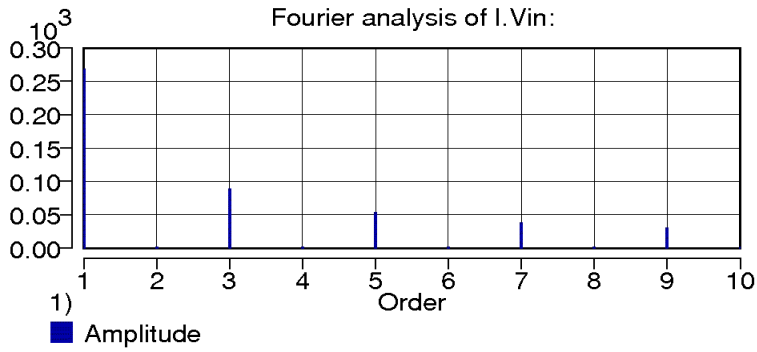
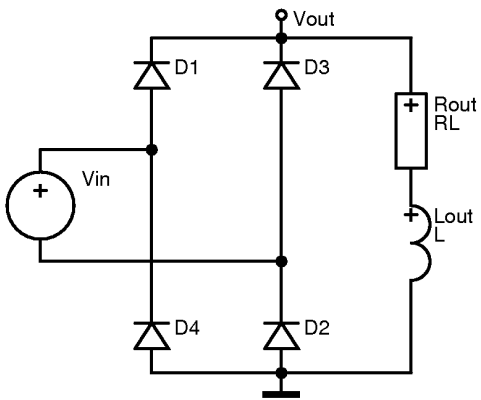
- Astable multivibrator

Modulátor šířky impulsů



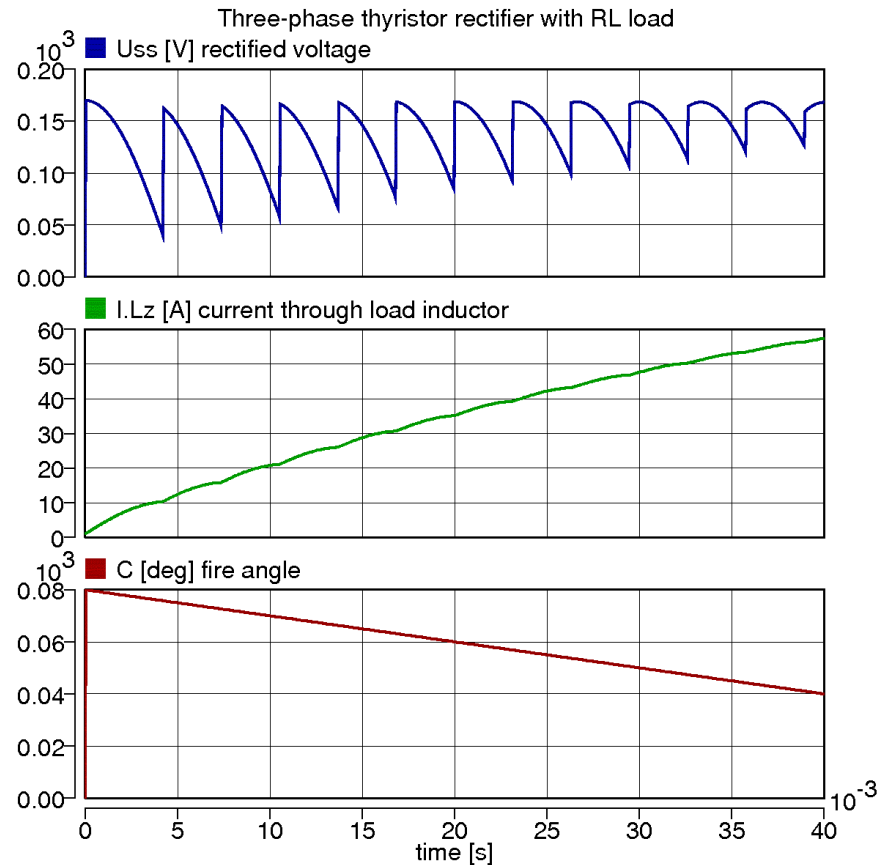
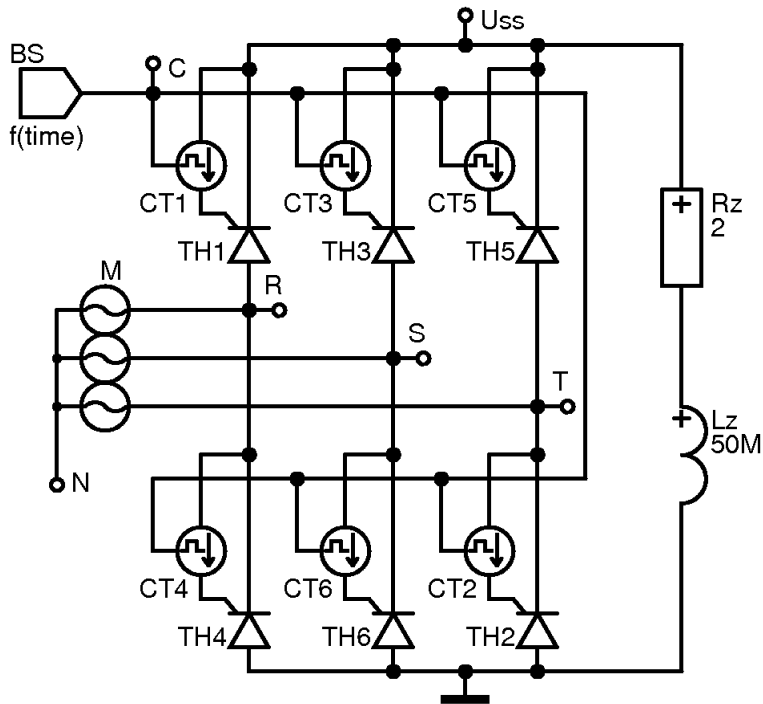
- Pulse-width modulator

Jednofázový můstkový usměrňovač



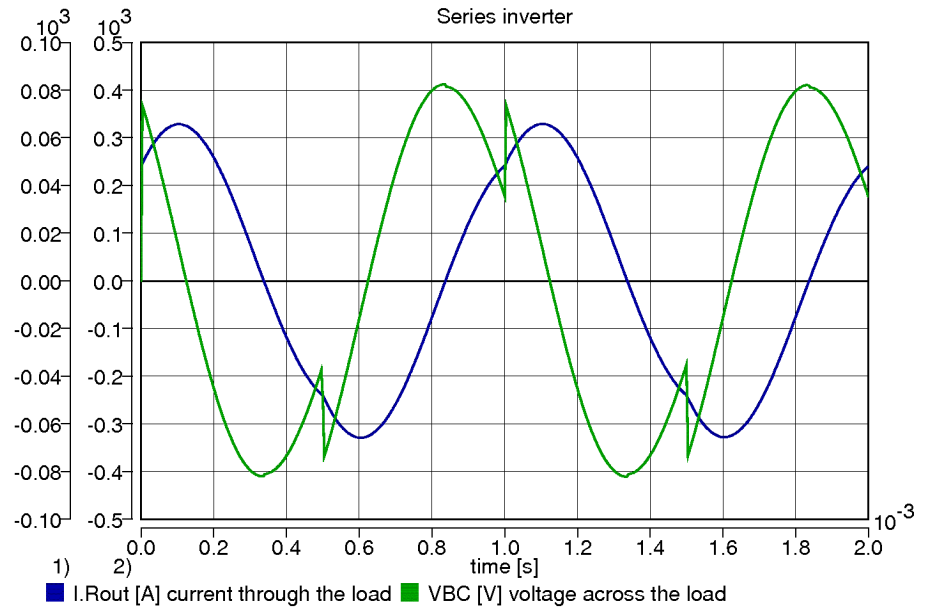
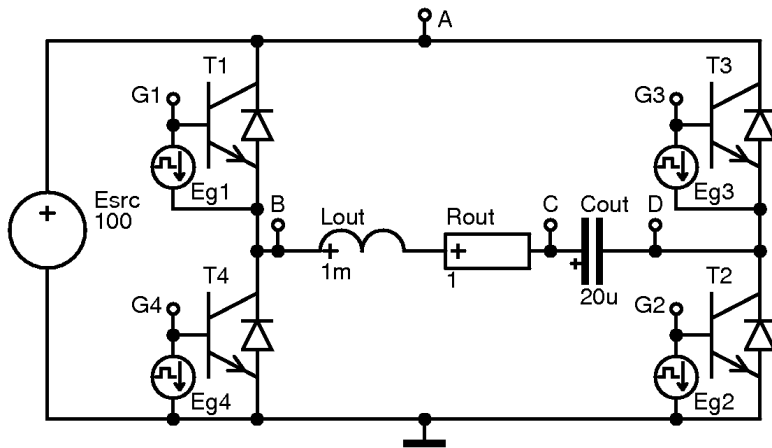
- Single-phase bridge rectifier with RL load

Trojfázový tyristorový usměrňovač



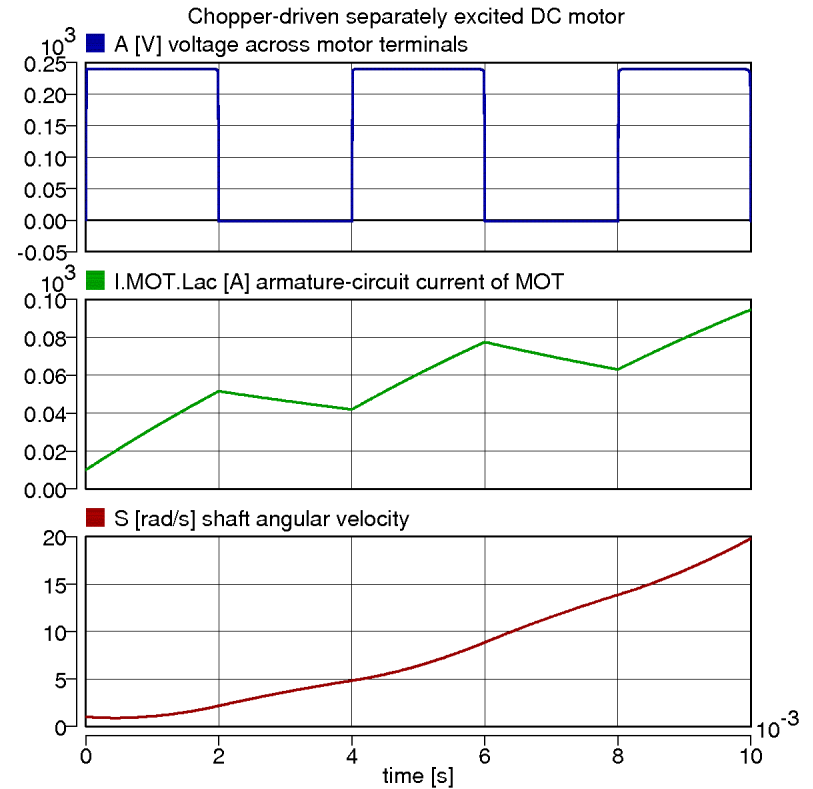
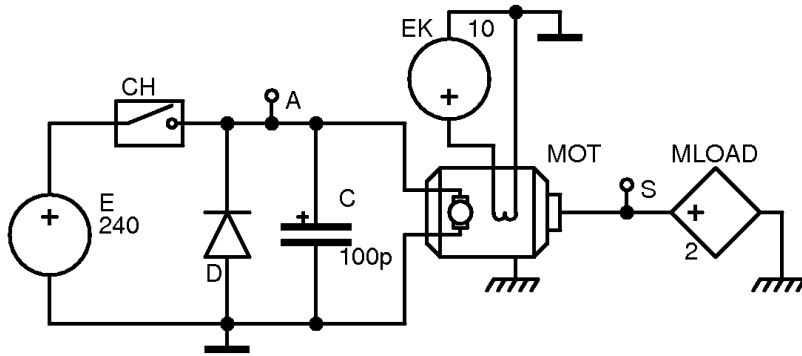
- o Three-phase thyristor rectifier with RL load

Měníč DC/AC



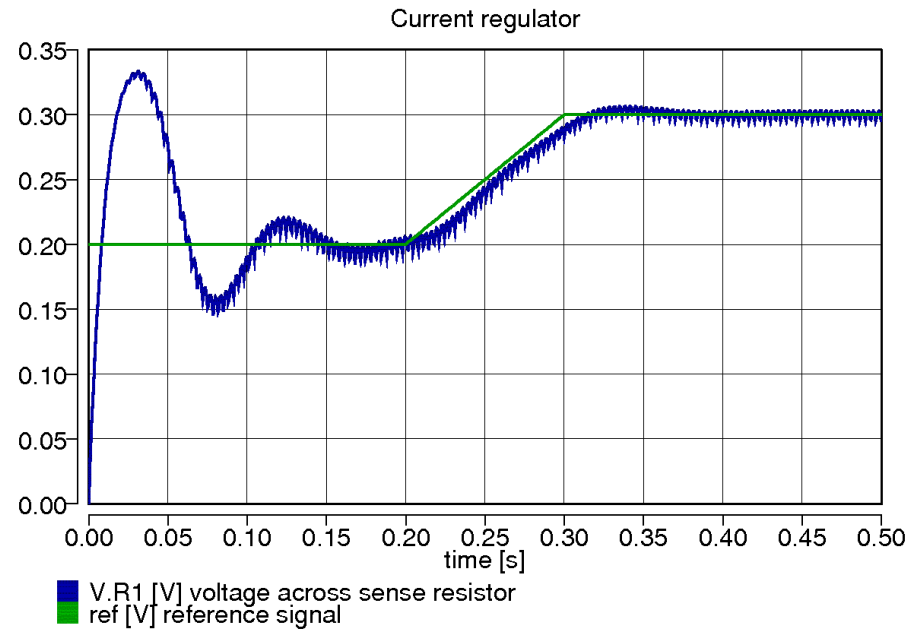
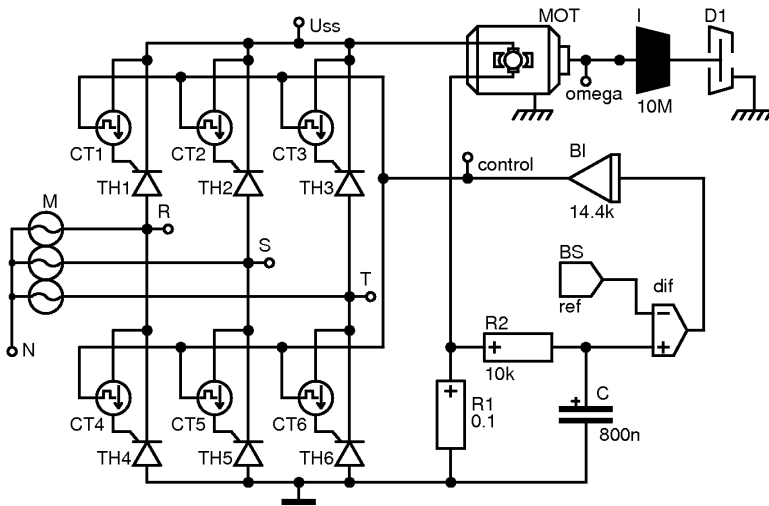
o Series inverter

Impulsně buzený motor



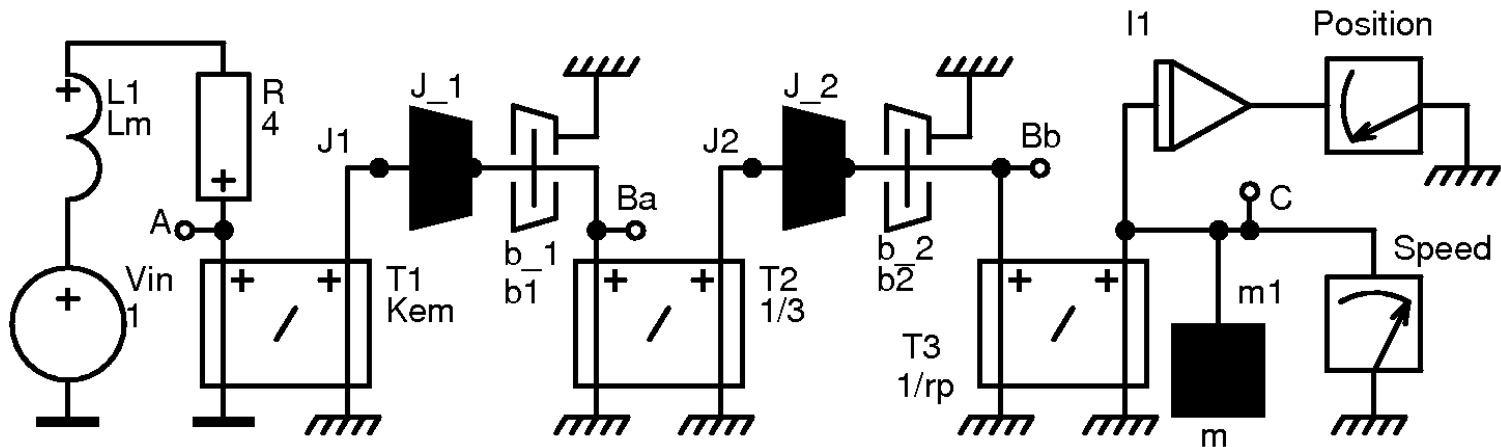
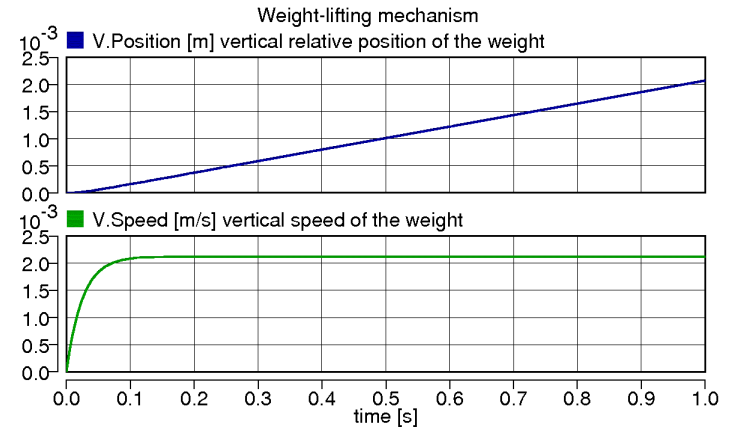
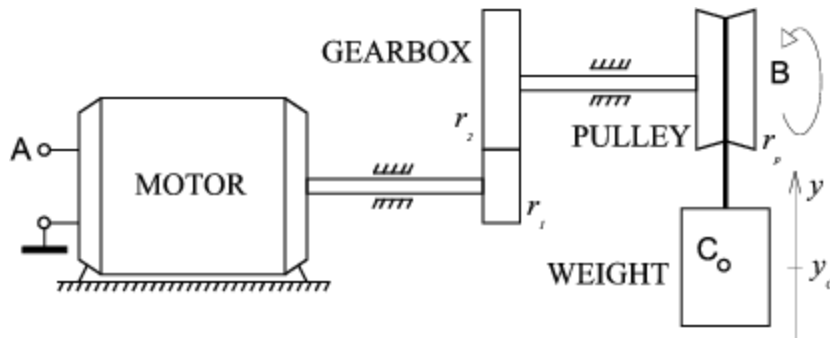
- Chopper-driven separately excited DC motor

Pohon s regulací proudu



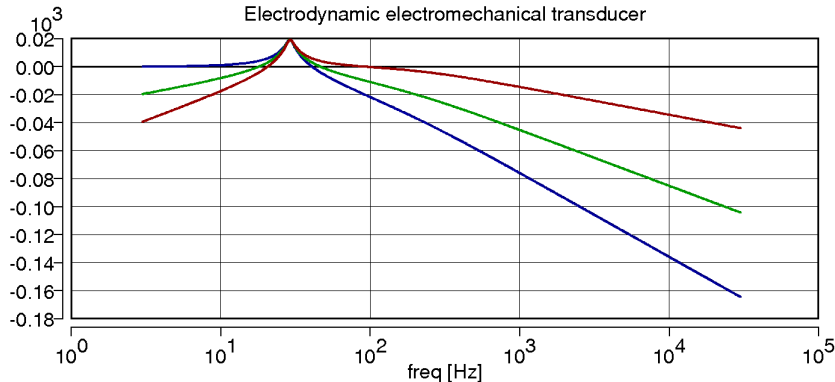
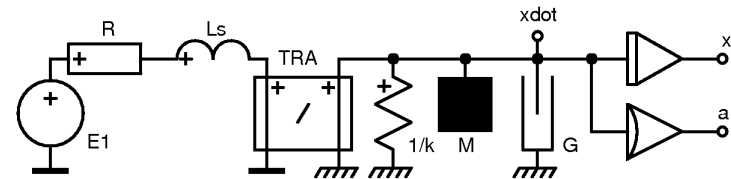
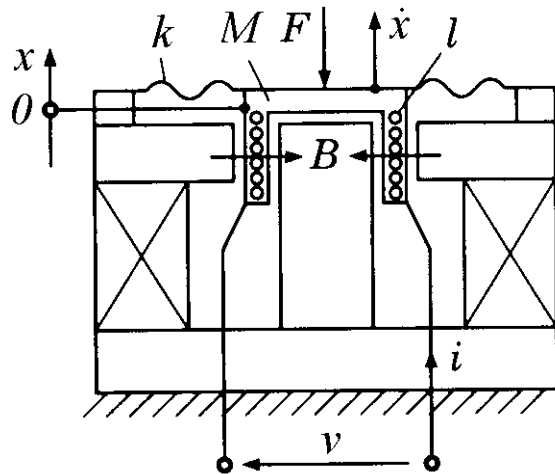
o Current regulator

Elektrický výtah

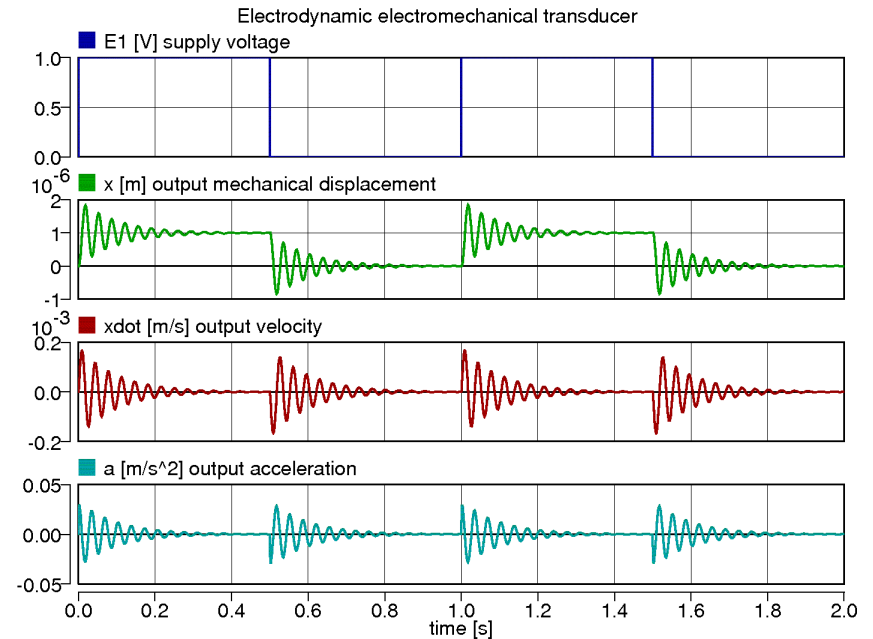


- [Weight-lifting mechanism](#)

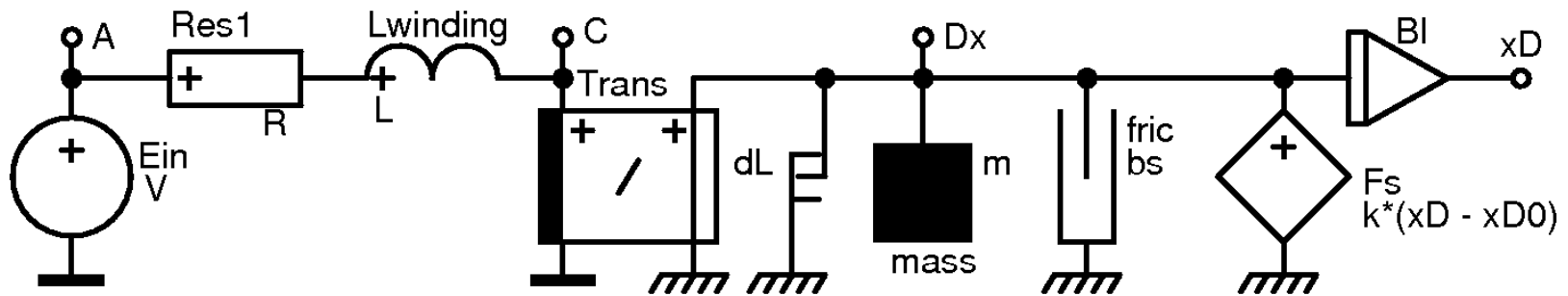
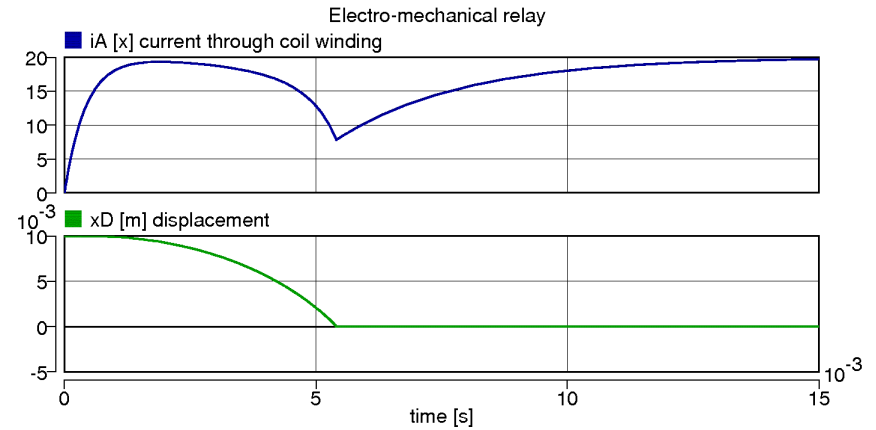
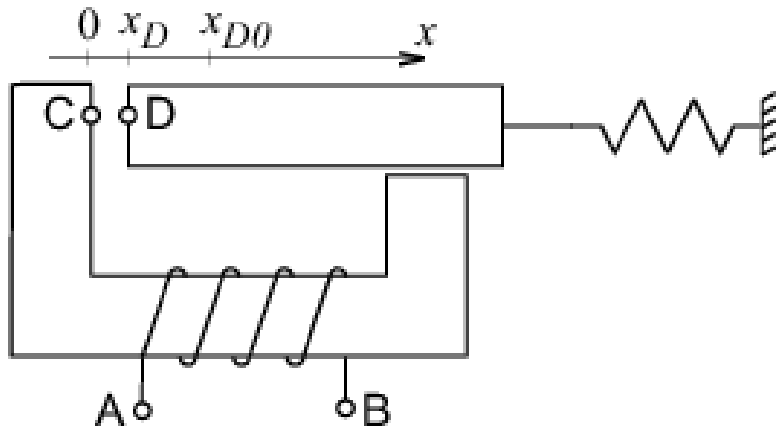
Elektrodynamický měnič



■ DB.xn [dB] normed displacement
■ DB.xdotn [dB] normed velocity
■ DB.an [dB] normed acceleration

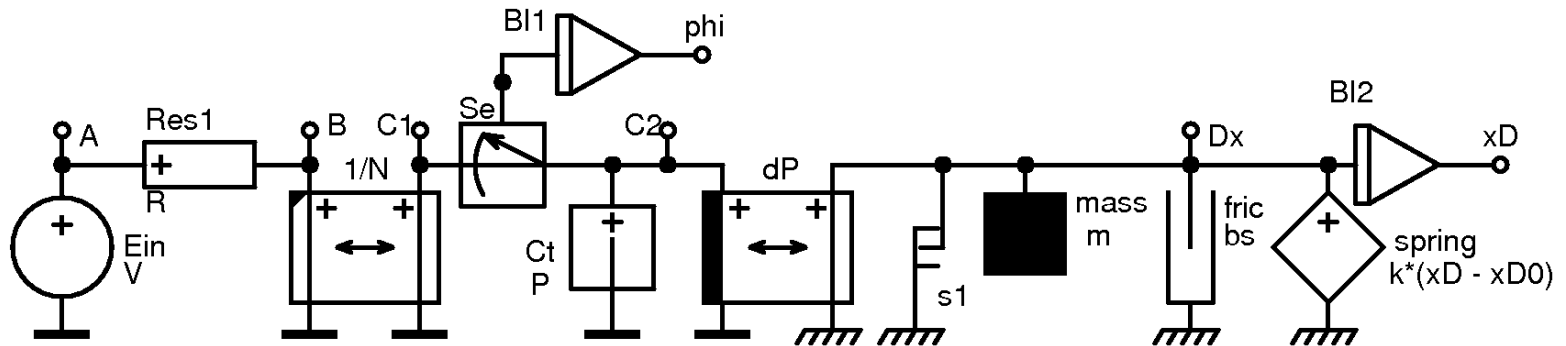


Elektromechanické relé

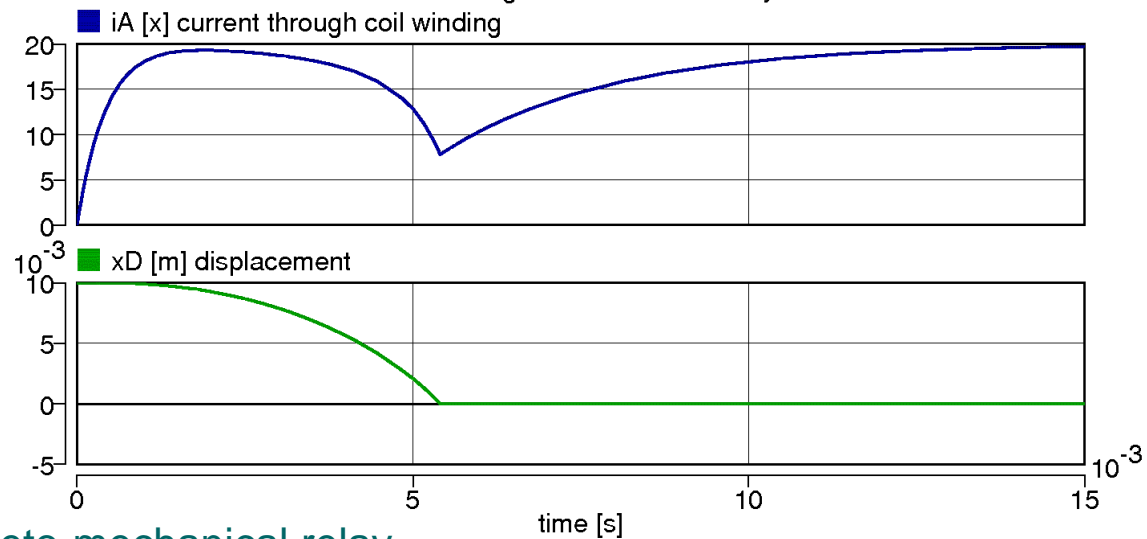


- o [Electro-mechanical relay](#)

Elektro-magneticko-mechanický model relé

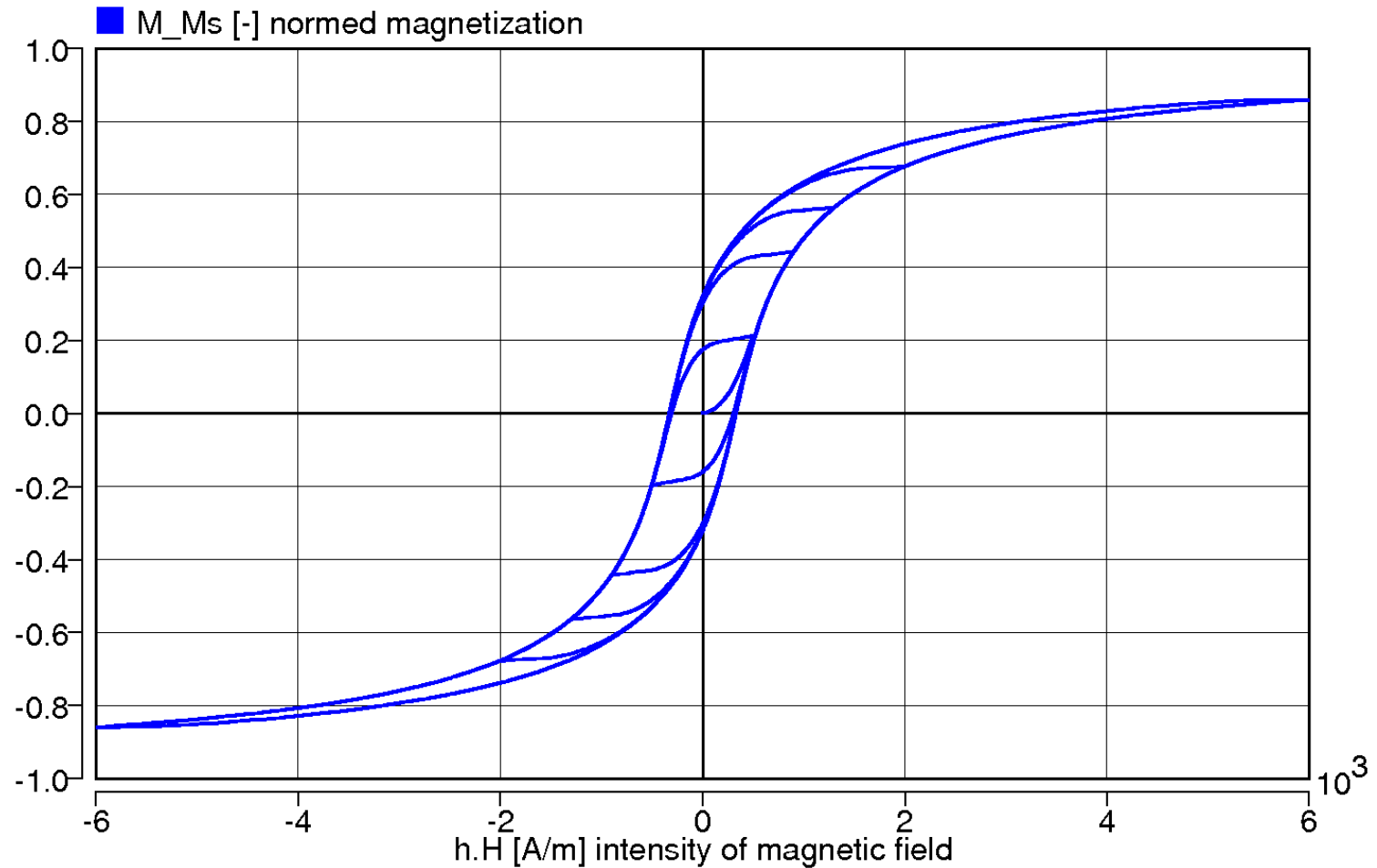


Electro-magneto-mechanical relay

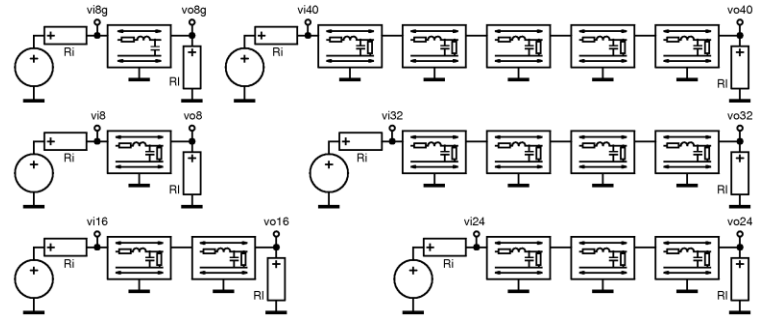
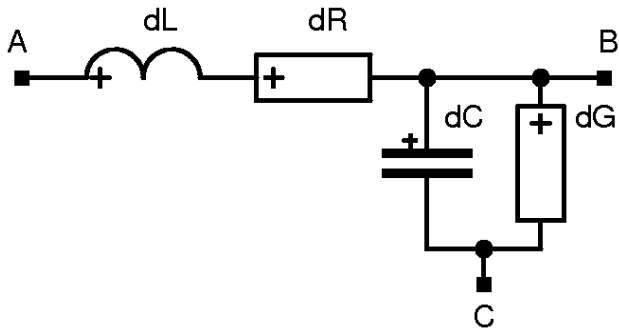


- [Electro-magneto-mechanical relay](#)

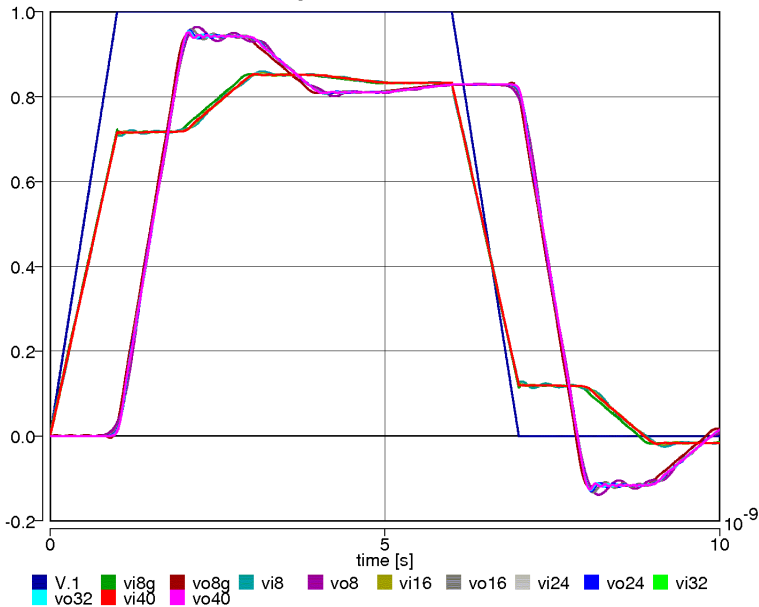
Ferromagnetická hystereze



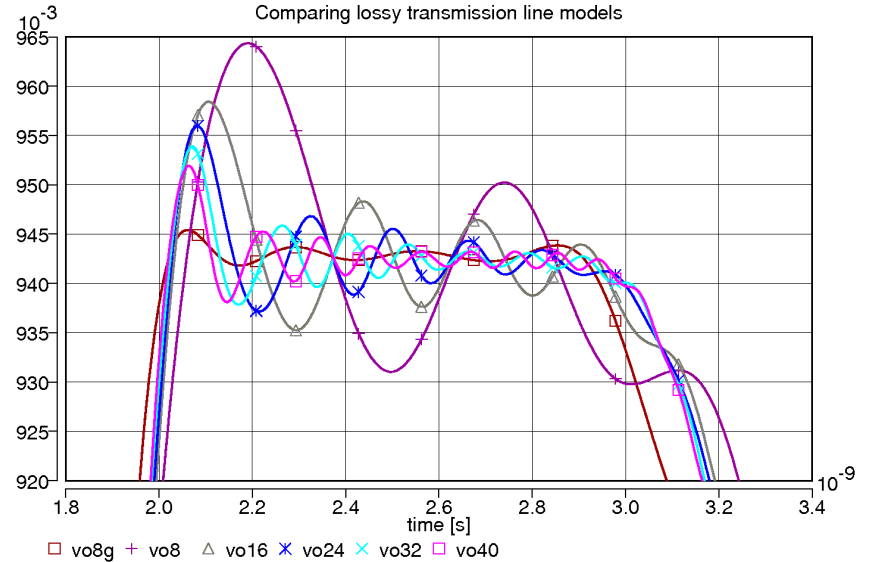
Model ztrátového vedení



Comparing lossy transmission line models



Comparing lossy transmission line models





Shrnutí

Charakteristiky elektronických prvků

Analogové obvody

Číslicové obvody

Generátory signálu

Elektro-magneto-mechanické převodníky

Feromagnetické materiály

Obvody s rozprostřenými parametry

– vedení