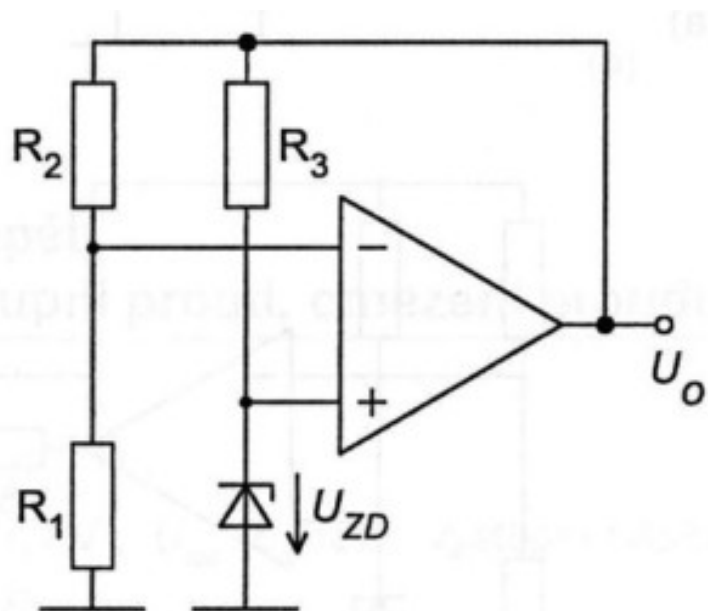
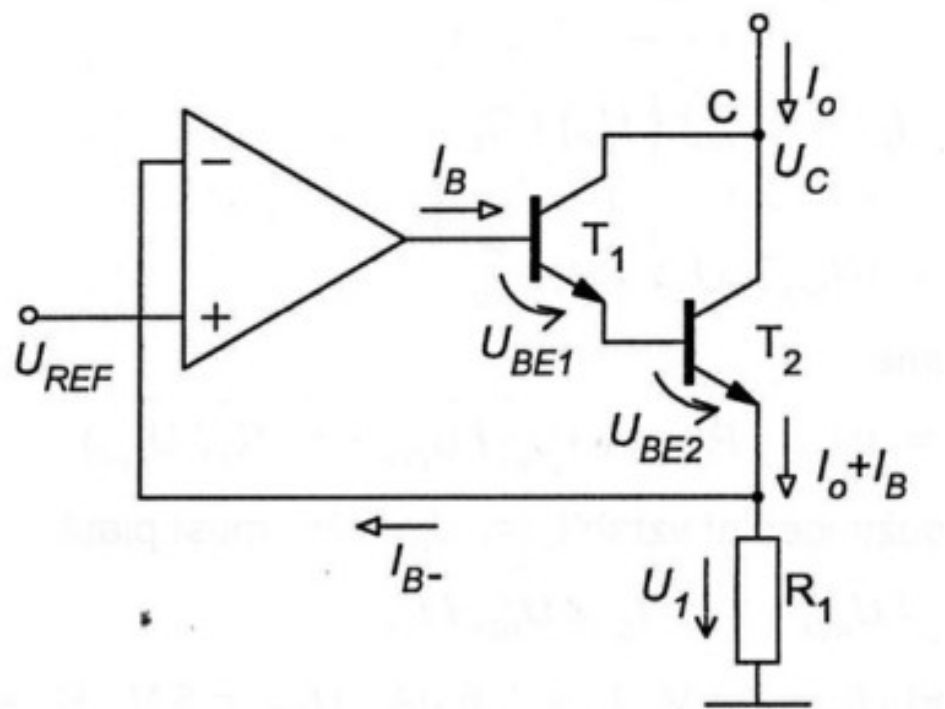


Stabilizátor napětí – referenční zdroj



$$U_O = U_{ZD} \cdot \left(1 + \frac{R_2}{R_1}\right)$$

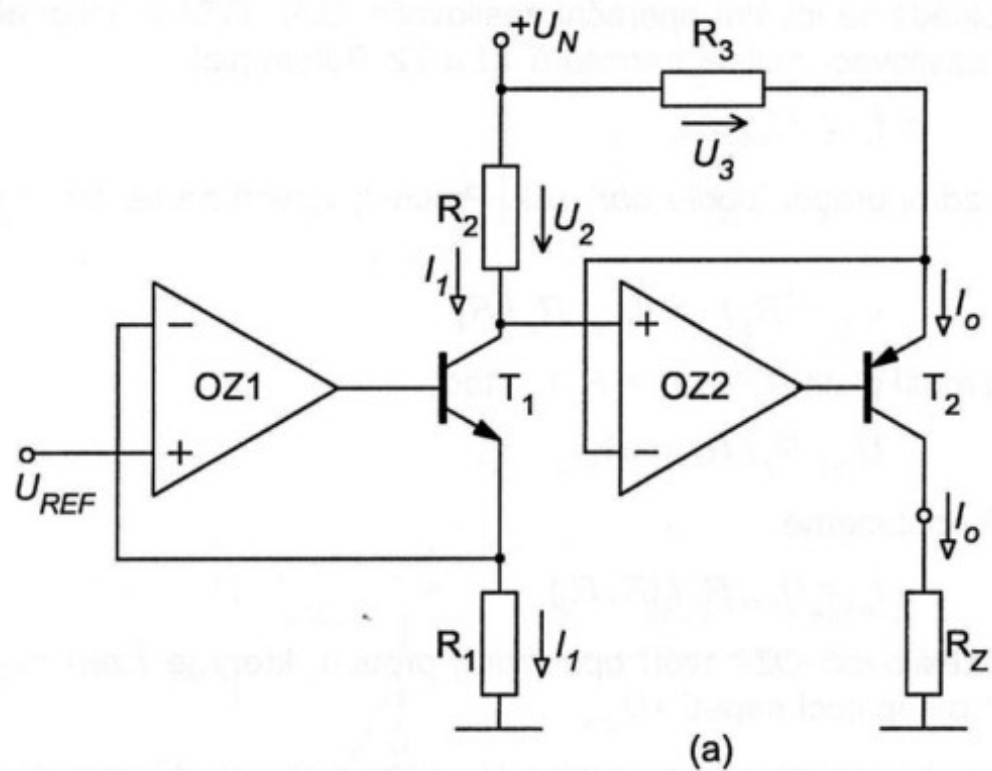
Řízený zdroj proudu s „plovoucí“ zátěží



$$I_o \approx \frac{U_{REF}}{R_1}$$

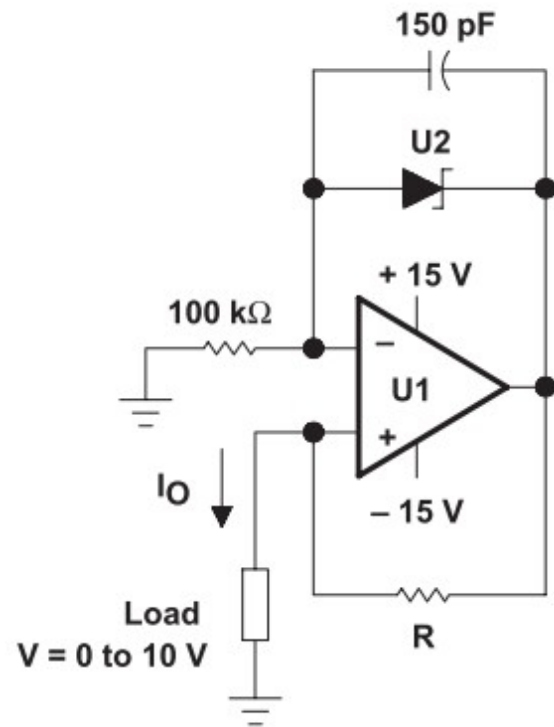
$$U_C > U_{REF} + U_{BE1} + U_{BE2}$$

Řízený zdroj proudu s uzemněnou zátěží



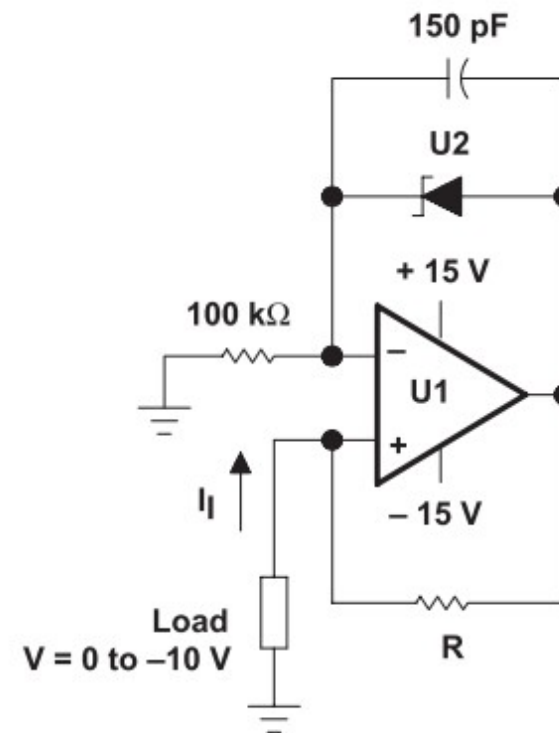
$$I_o = U_{REF} \cdot \frac{R_2}{R_1 \cdot R_3}$$

Zdroj proudu s uzemněnou zátěží



(a) SOURCE CURRENT LOAD

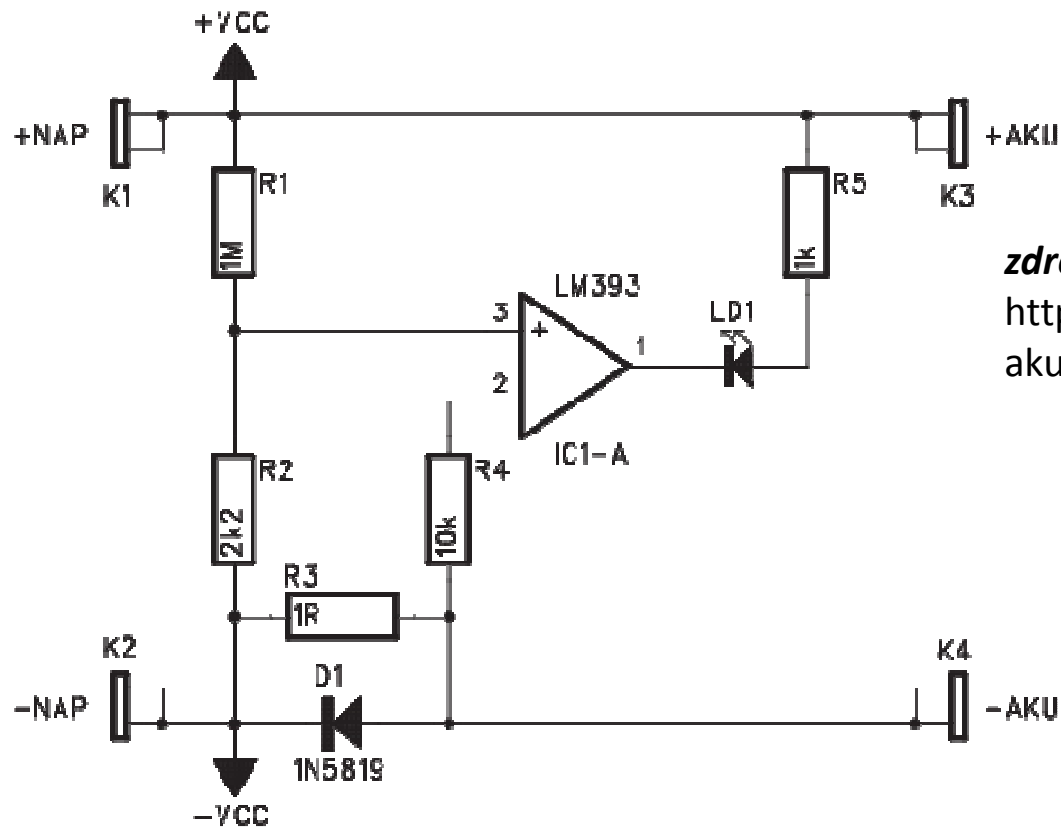
$$I_O = \frac{U_{REF}}{R}$$



(b) SINK CURRENT LOAD

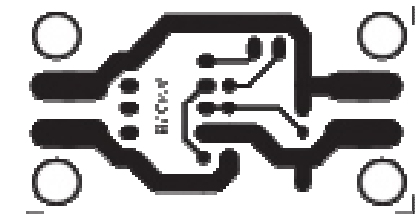
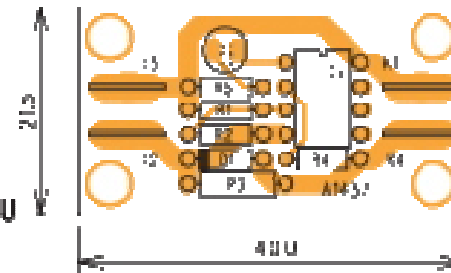
U2 – napěťová reference (LM385, LT1004, LT1009 atp.)

Kontrola nabíjení 12 V akumulátoru



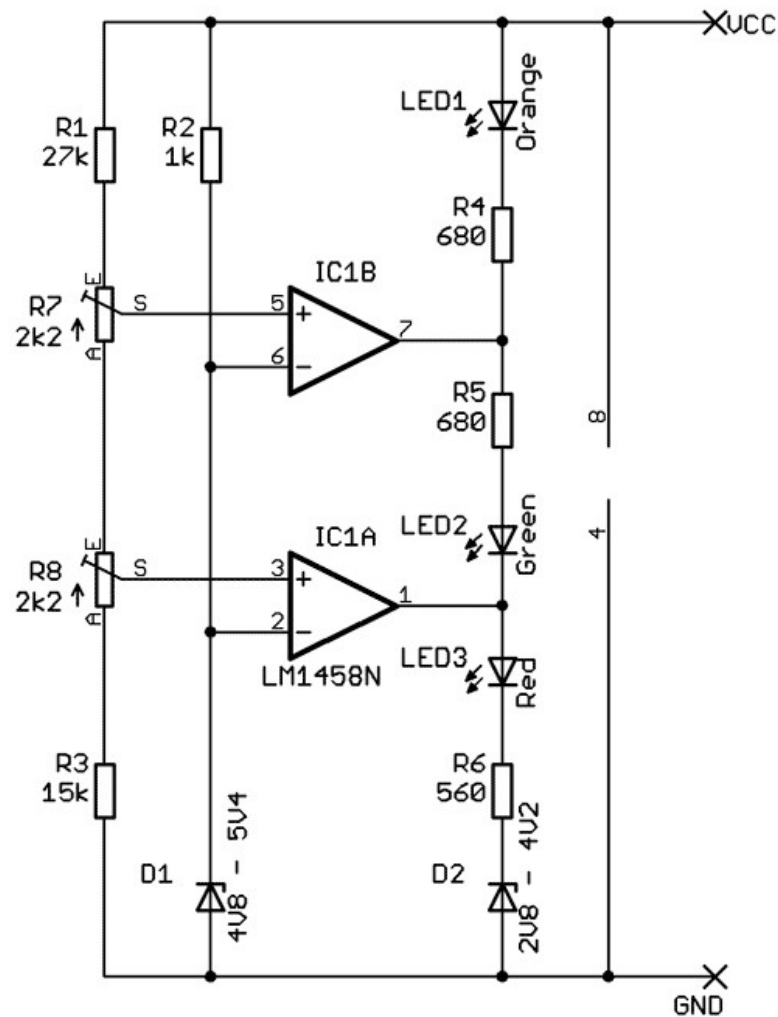
zdroj:

<http://www.elektronovinky.cz/konstrukce/kontrola-nabijeni-akumulatoru>



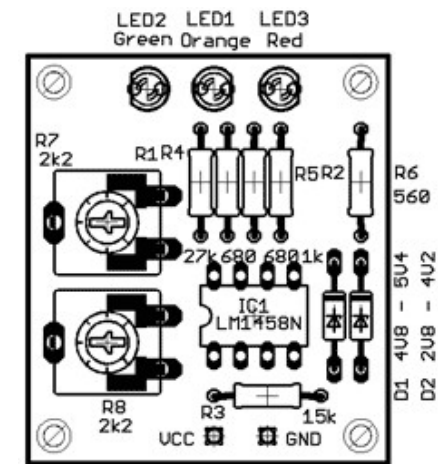
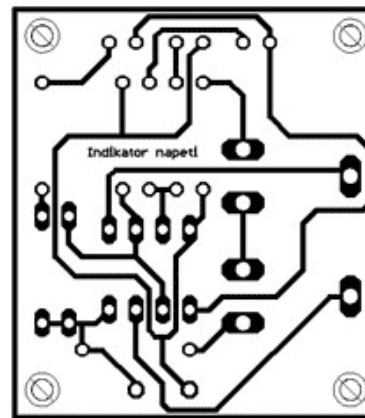
LD1 indikuje proud akumulátorem větší než 25 mA

Indikátor napětí (autobaterie) se dvěma OZ



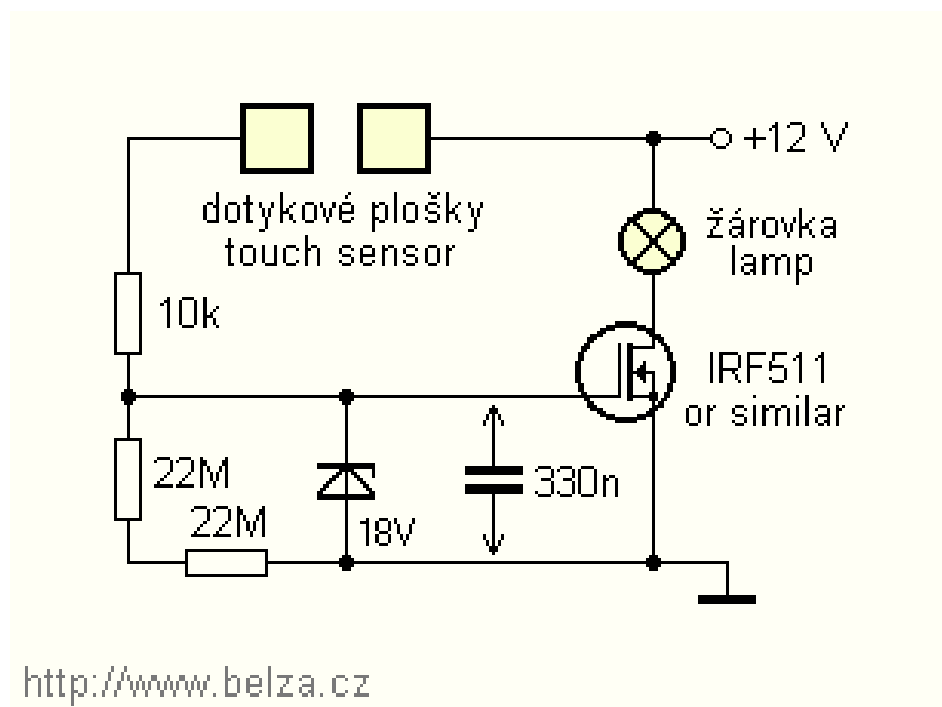
zdroj:

<http://www.hw.cz/teorie-a-praxe/konstrukce/indikator-napeti-se-dvema-oz.html>



Senzorový spínač

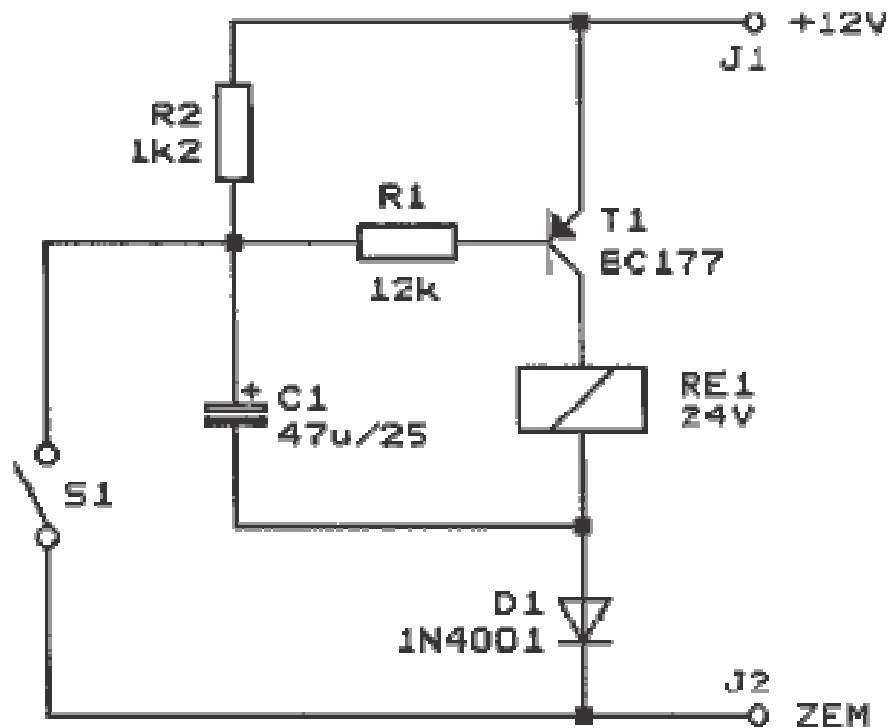
zdroj: <http://www.belza.cz/simple/sesp.htm>



Ovládání 24 V relé napětím 12 V

zdroj:

<http://www.elektronovinky.cz/konstrukce/prozatecniky-ovladani-24v-rele-napetim-12v>



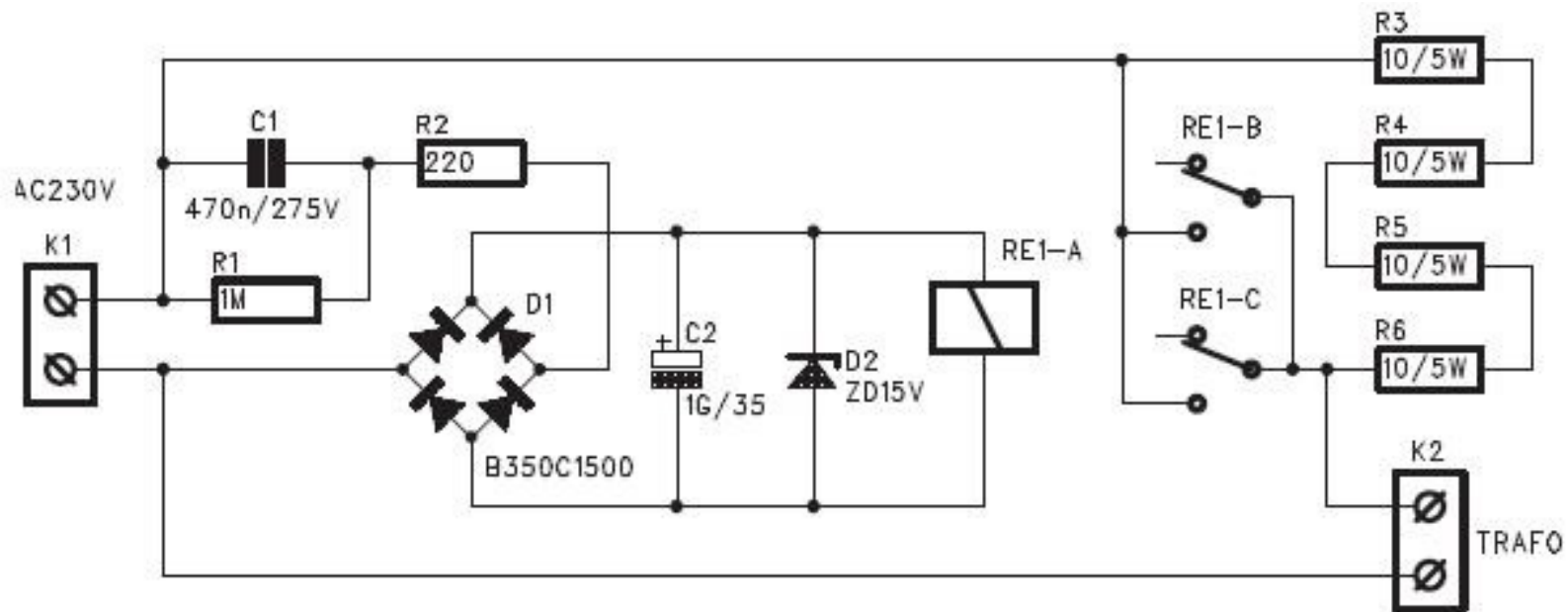
Coil versions, DC coil

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance $\Omega \pm 10\%^{(2)}$	Rated coil power mW
005	5	3.5	0.5	62	403
006	6	4.2	0.6	90	400
009	9	6.3	0.9	200	400
012	12	8.4	1.2	360	400
024	24	16.8	2.4	1440	400
048	48	33.6	4.8	5520	417
060	60	42.0	6.0	8570 ⁽²⁾	420
110	110	77.0	11.0	28800 ⁽²⁾	420

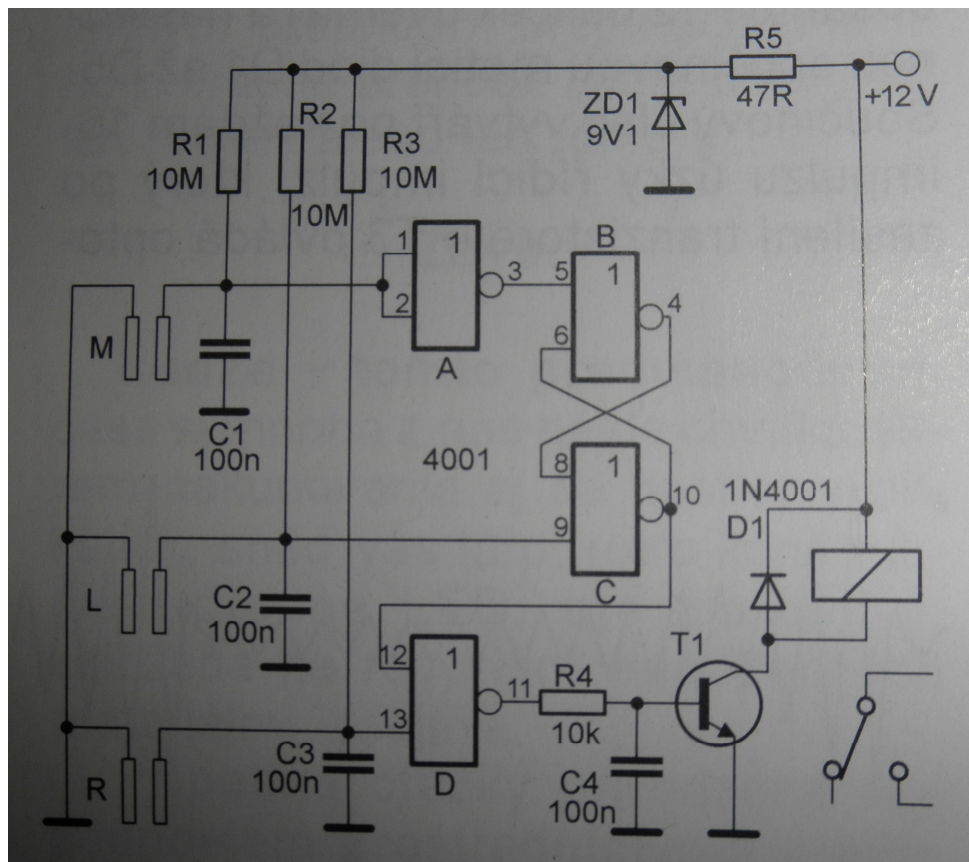
Hodnoty relé SCHRACK RT424024

Obvod pro zpožděný start zesilovače

zdroj: AMATÉRSKÉ RÁDIO 12/2004



Řídicí jednotka čerpadla s ochranou

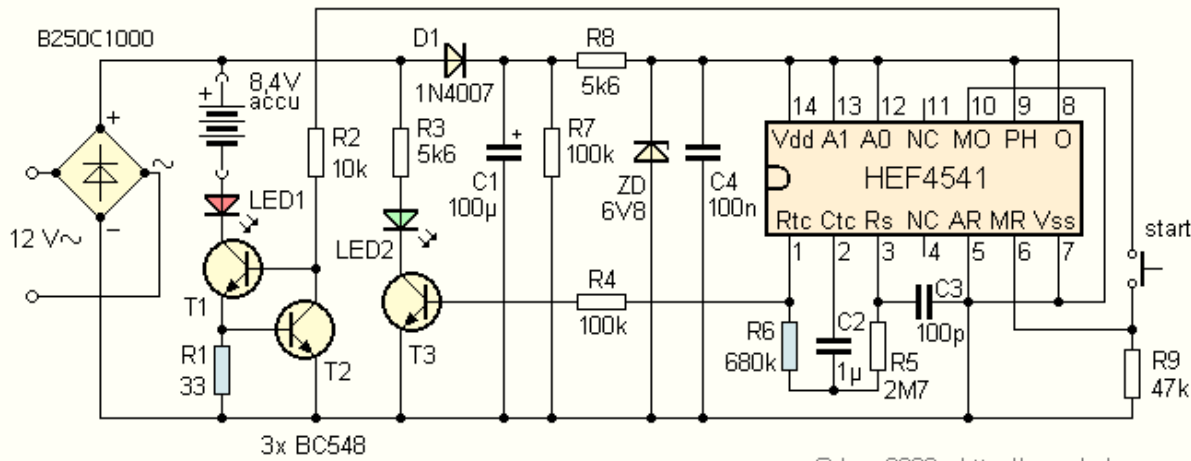


- M** – snímač horní úrovně hladiny
- L** – snímač dolní úrovně hladiny
- R** – snímač úrovně hladiny v rezervoáru (zásobníku)

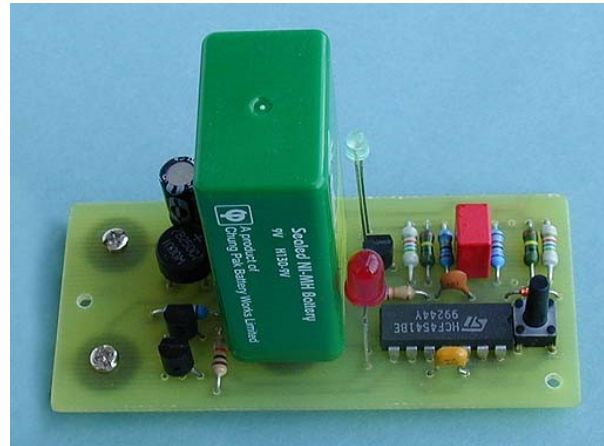
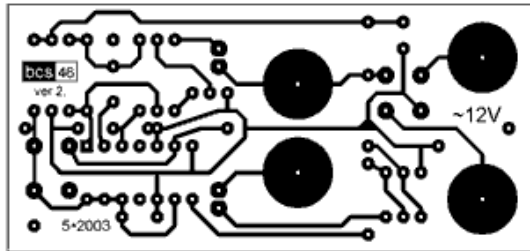
zdroj: Praktická elektronika – AR 12/2013

Nabíječka 9 V akumulátoru s časovačem

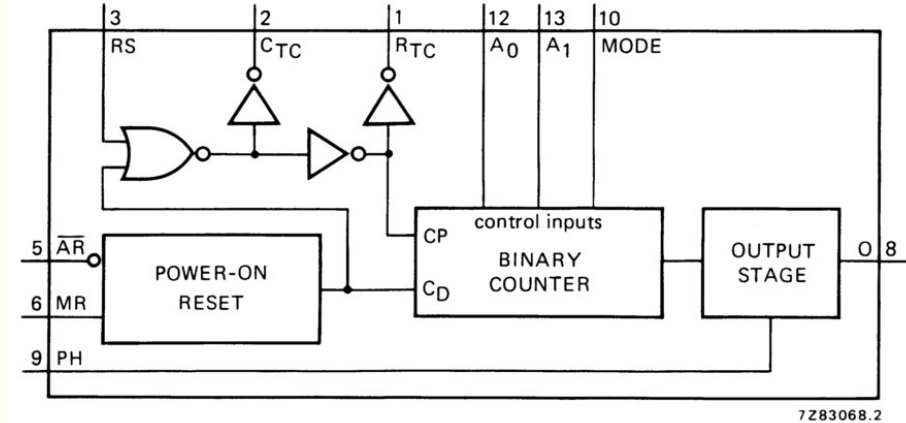
9 V accumulator charger



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zdroj: <http://www.belza.cz/charge/nab9v.htm>



PINNING

A ₀ , A ₁	address inputs
MODE	mode select input
AR	auto reset input
MR	master reset input
PH	phase input
R _{TC}	external resistor connection (R _i)
C _{TC}	external capacitor connection (C _i)
RS	external resistor connection (R _s) or external clock input

FREQUENCY SELECTION TABLE

A ₀	A ₁	NUMBER OF COUNTER STAGES n	$\frac{f_{osc}}{f_{out}} = 2^n$
L	L	13	8 192
L	H	10	1 024
H	L	8	256
H	H	16	65 536

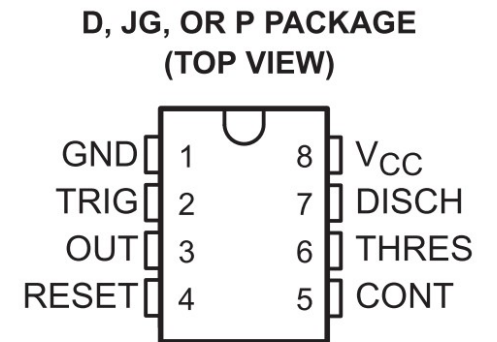
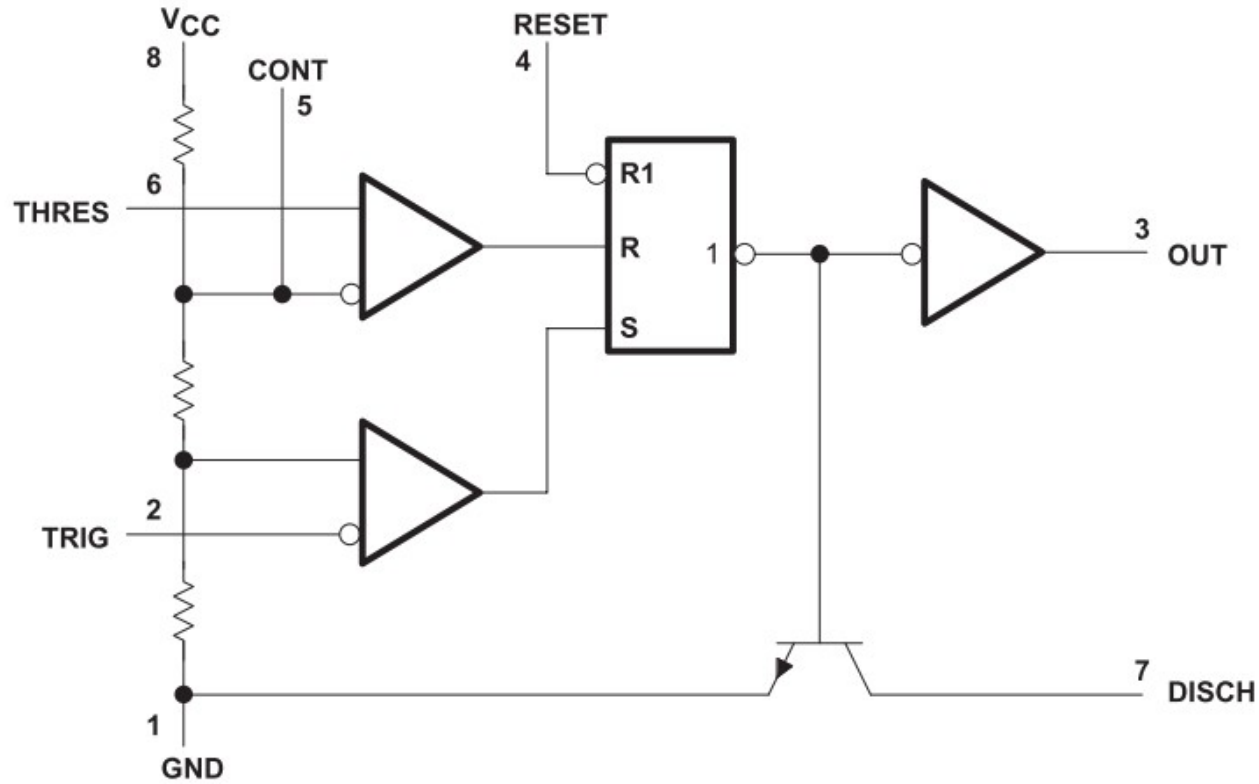
FUNCTION TABLE

INPUTS				MODE
AR	MR	PH	MODE	
H	L	X	X	auto reset disabled
L	L	X	X	auto reset enabled ⁽¹⁾
X	H	X	X	master reset active
X	L	X	H	normal operation selected
X	L	X	L	division to output
X	L	L	X	single-cycle mode ⁽²⁾
X	L	L	X	output initially LOW, after reset
X	L	H	X	output initially HIGH, after reset

Notes

- For correct power-on reset, the supply voltage should be above 8.5 V. For V_{DD} < 8.5 V, disable the autoreset and connect AR to V_{DD}.
- The timer is initialized on a reset pulse and the output changes state after 2ⁿ⁻¹ counts and remains in that

Časovací obvod NE555

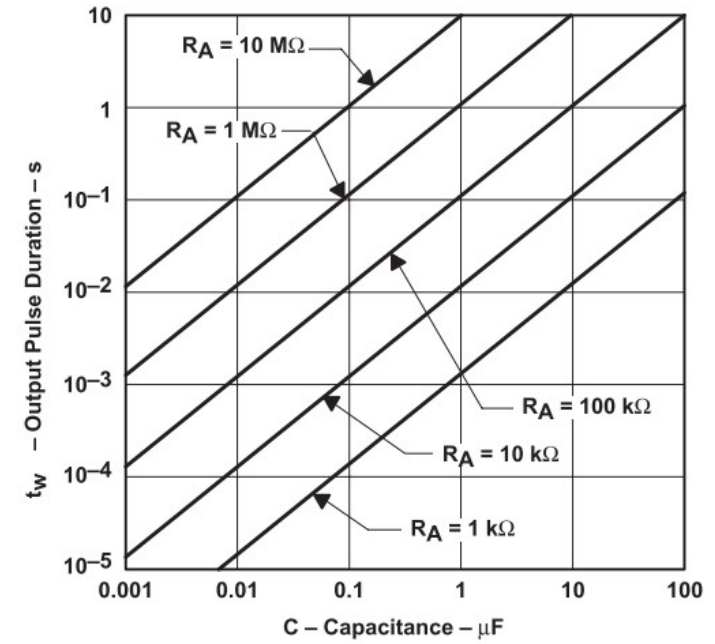
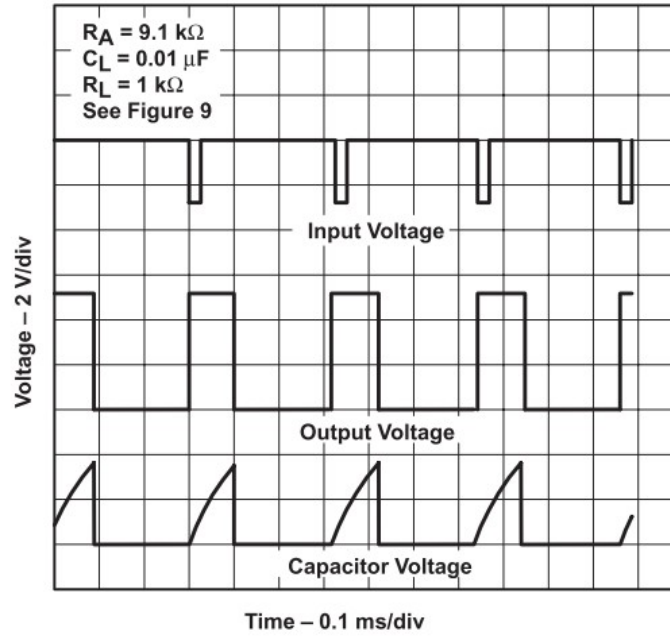
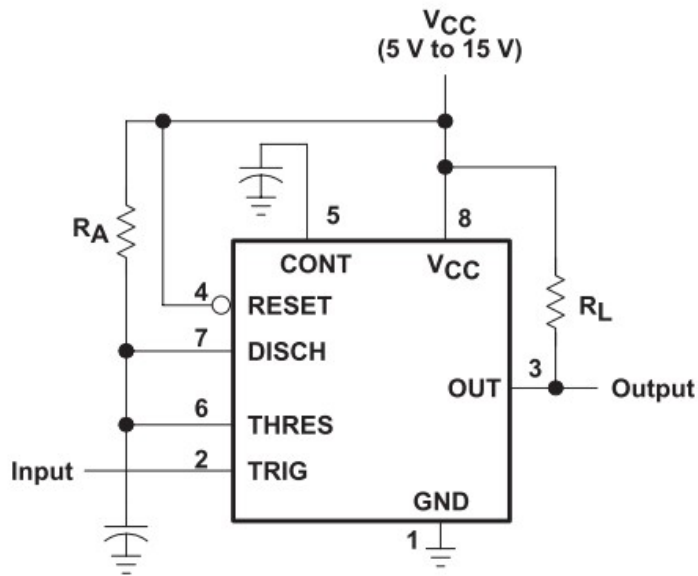


FUNCTION TABLE

RESET	TRIGGER VOLTAGE†	THRESHOLD VOLTAGE†	OUTPUT	DISCHARGE SWITCH
Low	Irrelevant	Irrelevant	Low	On
High	$< 1/3 V_{DD}$	Irrelevant	High	Off
High	$> 1/3 V_{DD}$	$> 2/3 V_{DD}$	Low	On
High	$> 1/3 V_{DD}$	$< 2/3 V_{DD}$	As previously established	

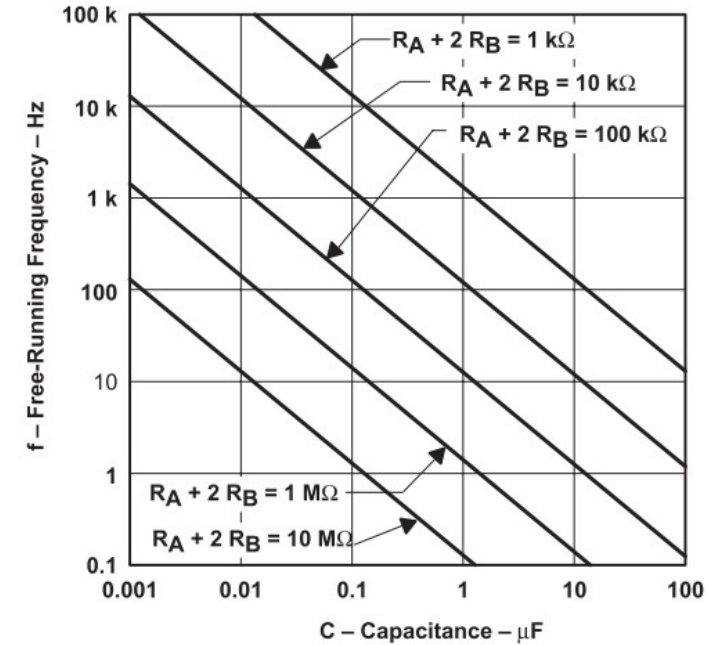
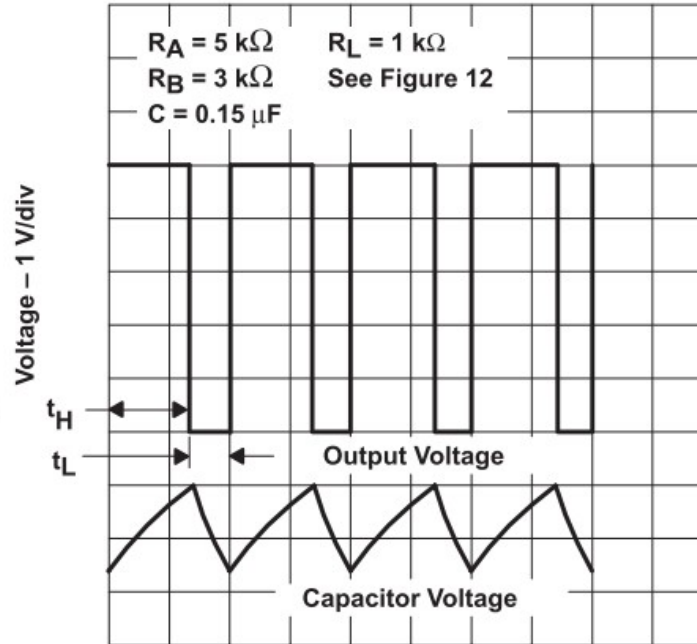
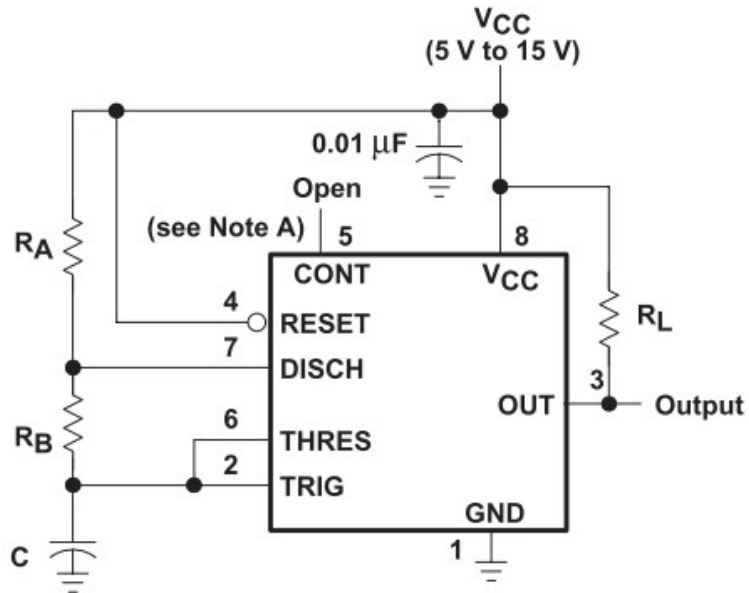
† Voltage levels shown are nominal.

Časovací obvod NE555 – MKO



$$t_w = 1,1 \cdot R_A \cdot C$$

Časovací obvod NE555 – AKO



$$t_H = \ln 2 \cdot (R_A + R_B) \cdot C$$

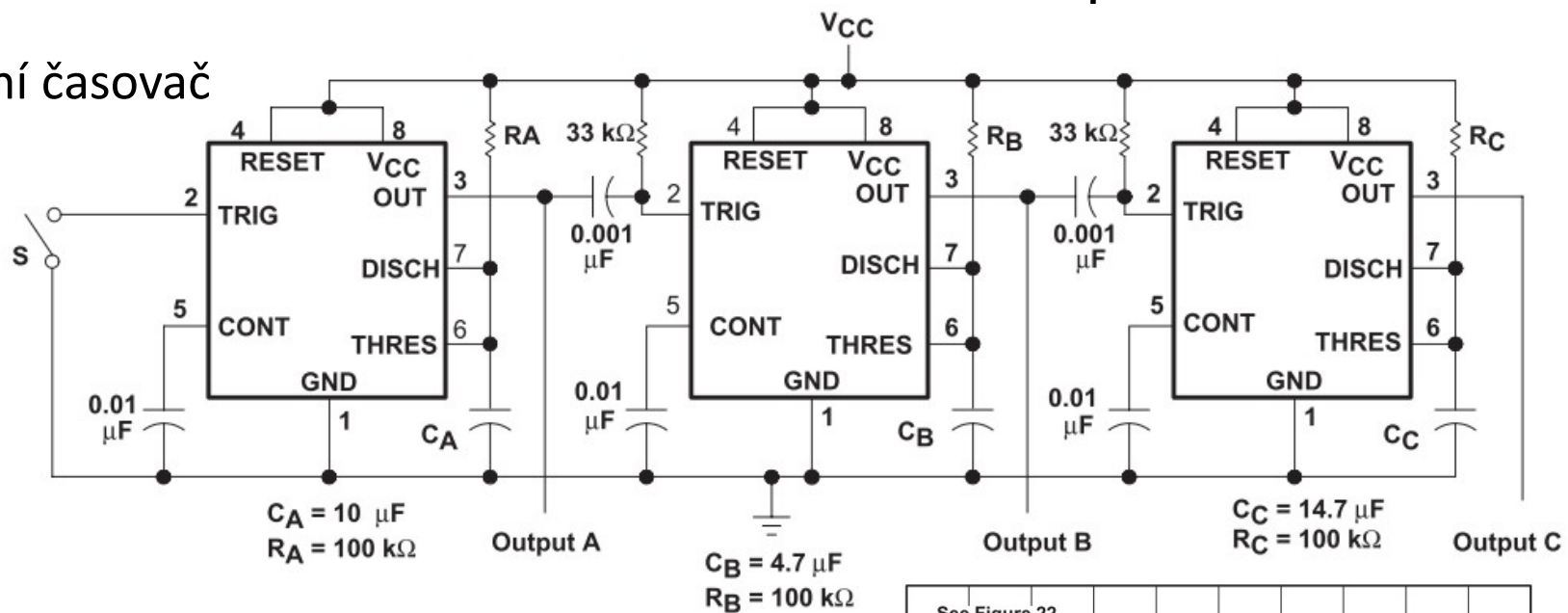
$$t_L = \ln 2 \cdot R_B \cdot C$$

$$T = t_H + t_L \Rightarrow T = \ln 2 \cdot (R_A + 2R_B) \cdot C$$

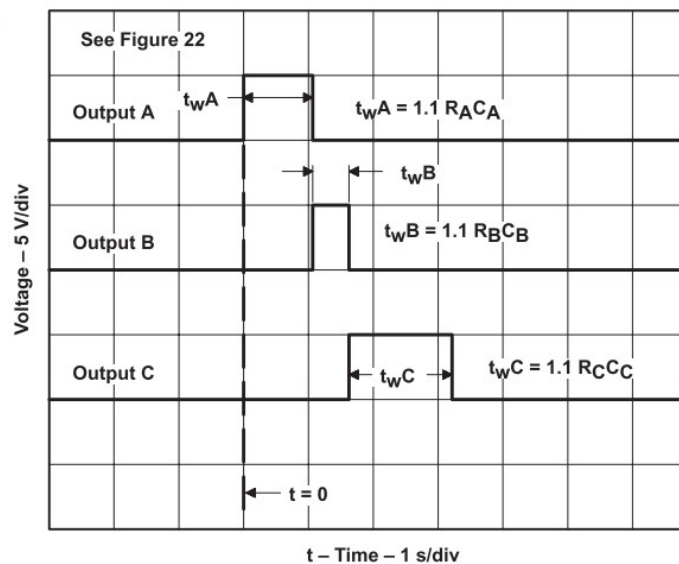
$$f \approx \frac{1,44}{(R_A + 2R_B) \cdot C}$$

Časovací obvod NE555 – příklad

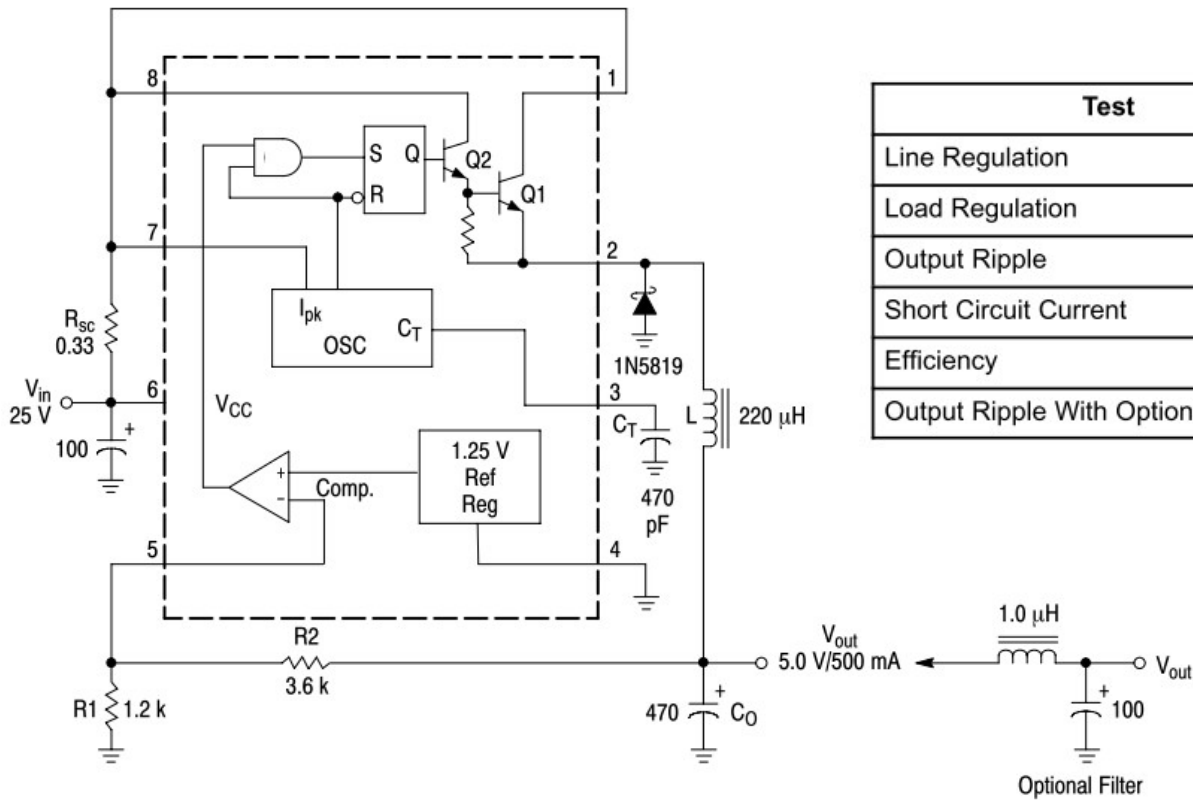
Sekvenční časovač



S closes momentarily at $t = 0$.



Snižující měnič napětí s obvodem MC34063



Test	Conditions	Results
Line Regulation	$V_{in} = 15 \text{ V to } 25 \text{ V}, I_O = 500 \text{ mA}$	$12 \text{ mV} = \pm 0.12\%$
Load Regulation	$V_{in} = 25 \text{ V}, I_O = 50 \text{ mA to } 500 \text{ mA}$	$3.0 \text{ mV} = \pm 0.03\%$
Output Ripple	$V_{in} = 25 \text{ V}, I_O = 500 \text{ mA}$	120 mVpp
Short Circuit Current	$V_{in} = 25 \text{ V}, R_L = 0.1 \Omega$	1.1 A
Efficiency	$V_{in} = 25 \text{ V}, I_O = 500 \text{ mA}$	83.7%
Output Ripple With Optional Filter	$V_{in} = 25 \text{ V}, I_O = 500 \text{ mA}$	40 mVpp

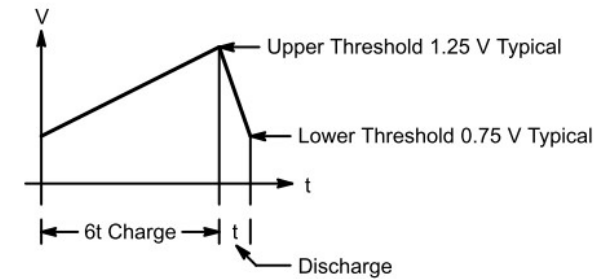
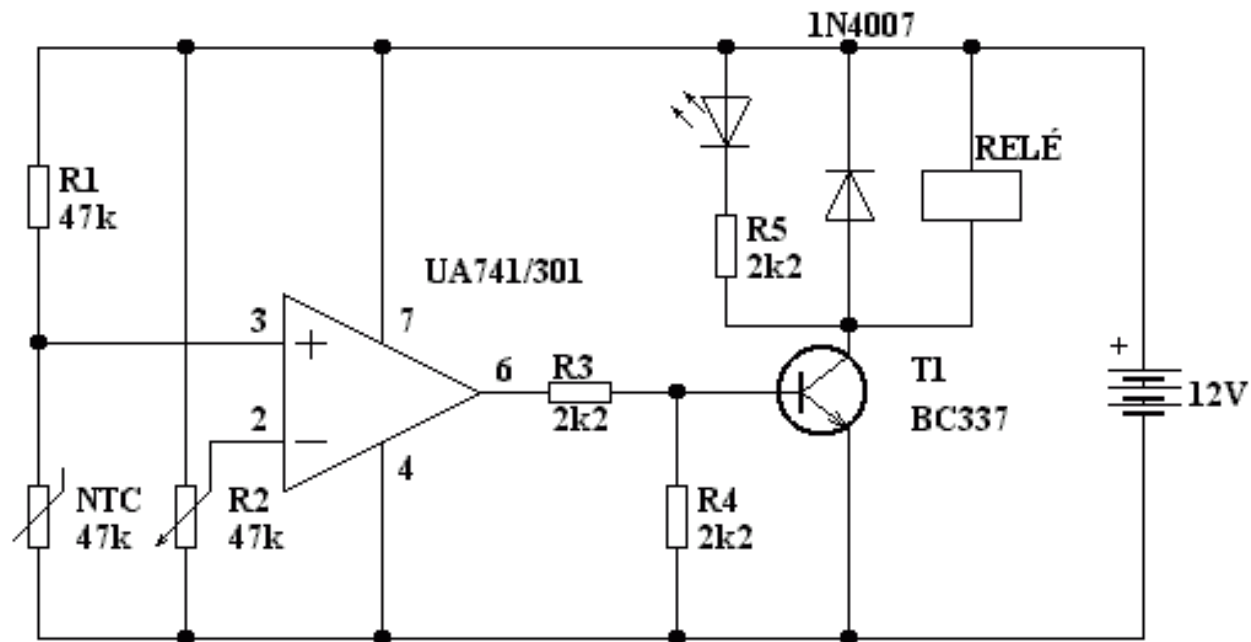


Figure 3. C_T Voltage Waveform

Teplotní spínač

zdroj:

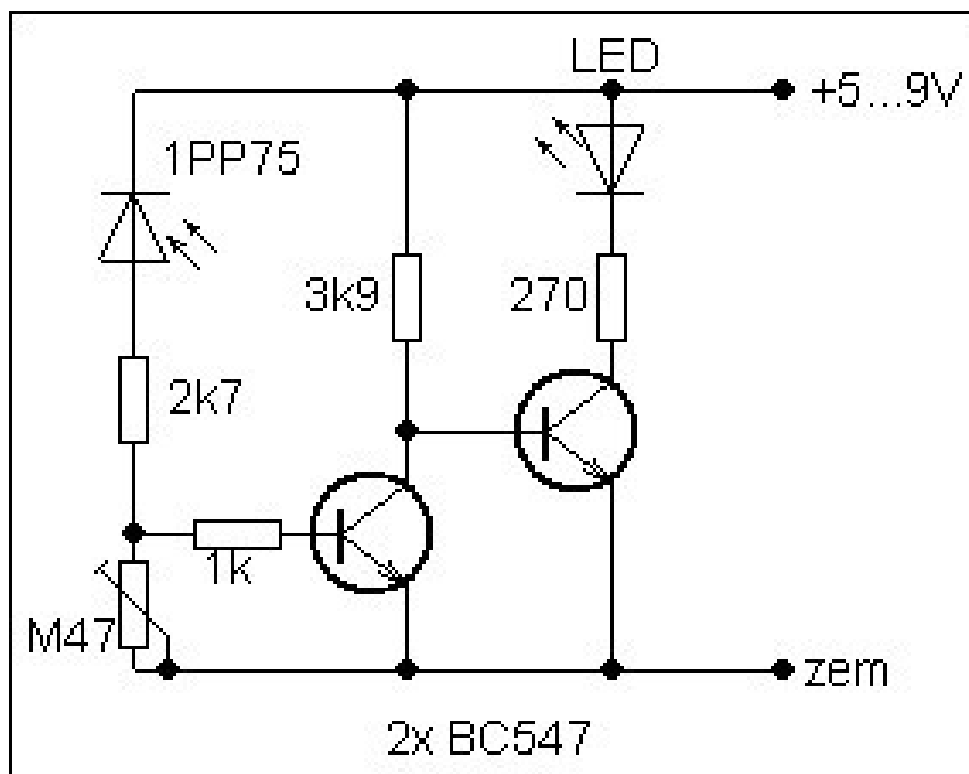
<http://www.elektronikacz.borec.cz/Data/Teplotni%20spinac.htm>



Fotoelektrický spínač

zdroj:

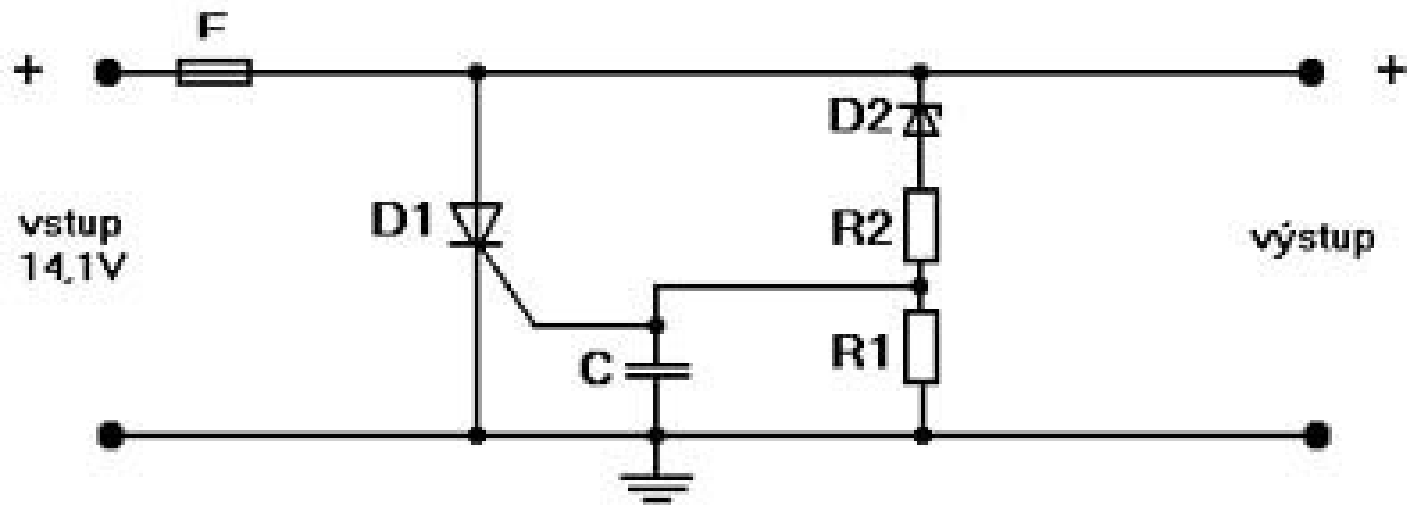
http://www.volta.estranky.cz/clanky/blikace_-svitilny/fotoelektrickyspinac.html



Ochrana proti přepětí

zdroj:

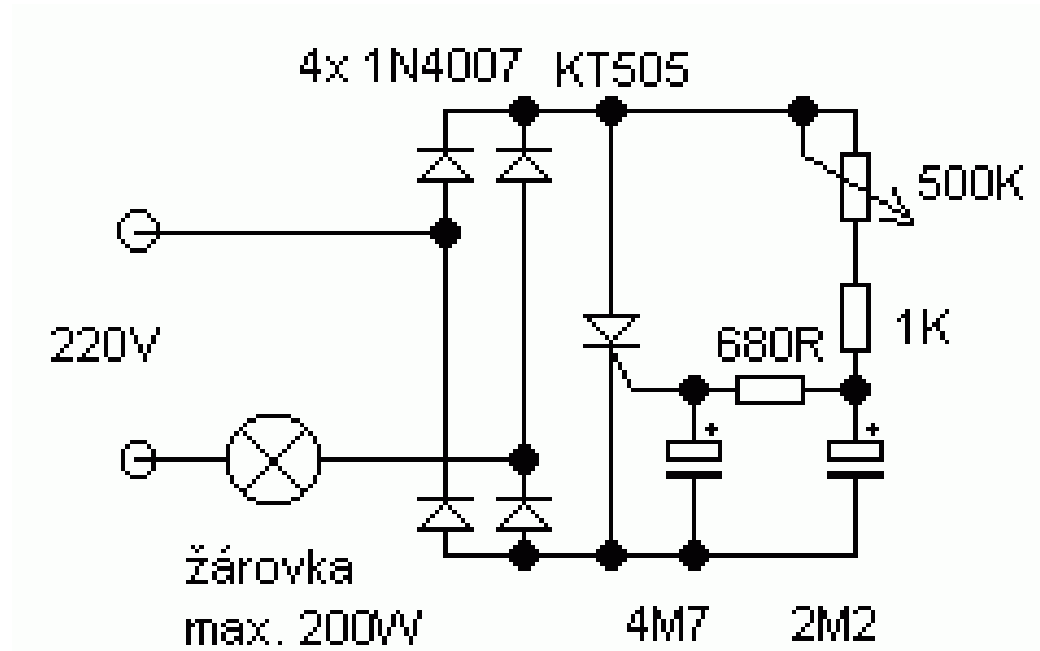
[http://www.elektronikacz.borec.cz/Data/Ochran
a%20proti%20prepeti.htm](http://www.elektronikacz.borec.cz/Data/Ochran%20a%20proti%20prepeti.htm)



Regulátor jasu žárovky

zdroj:

<http://www.elektronikacz.borec.cz/Data/Regulator%20jasu%20zarovek.htm>



Regulátor teploty

zdroj:

<http://www.elektronikacz.borec.cz/Data/Regulator%20teploty.htm>

