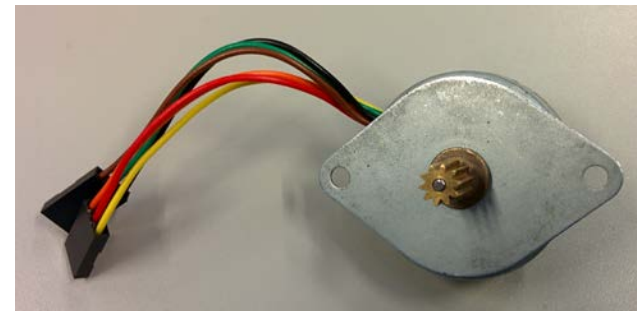
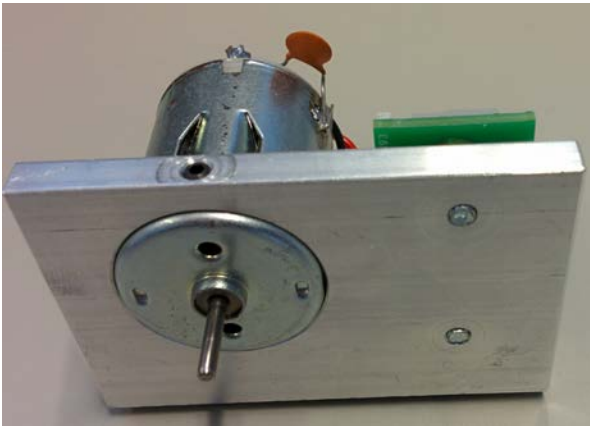
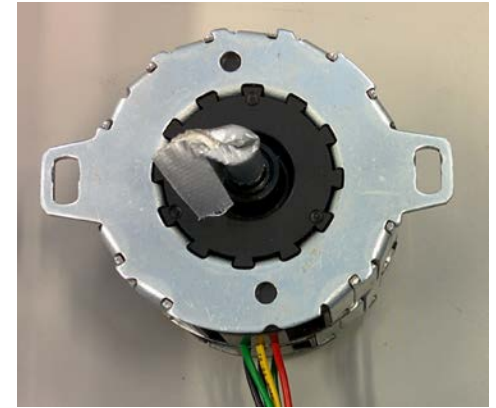


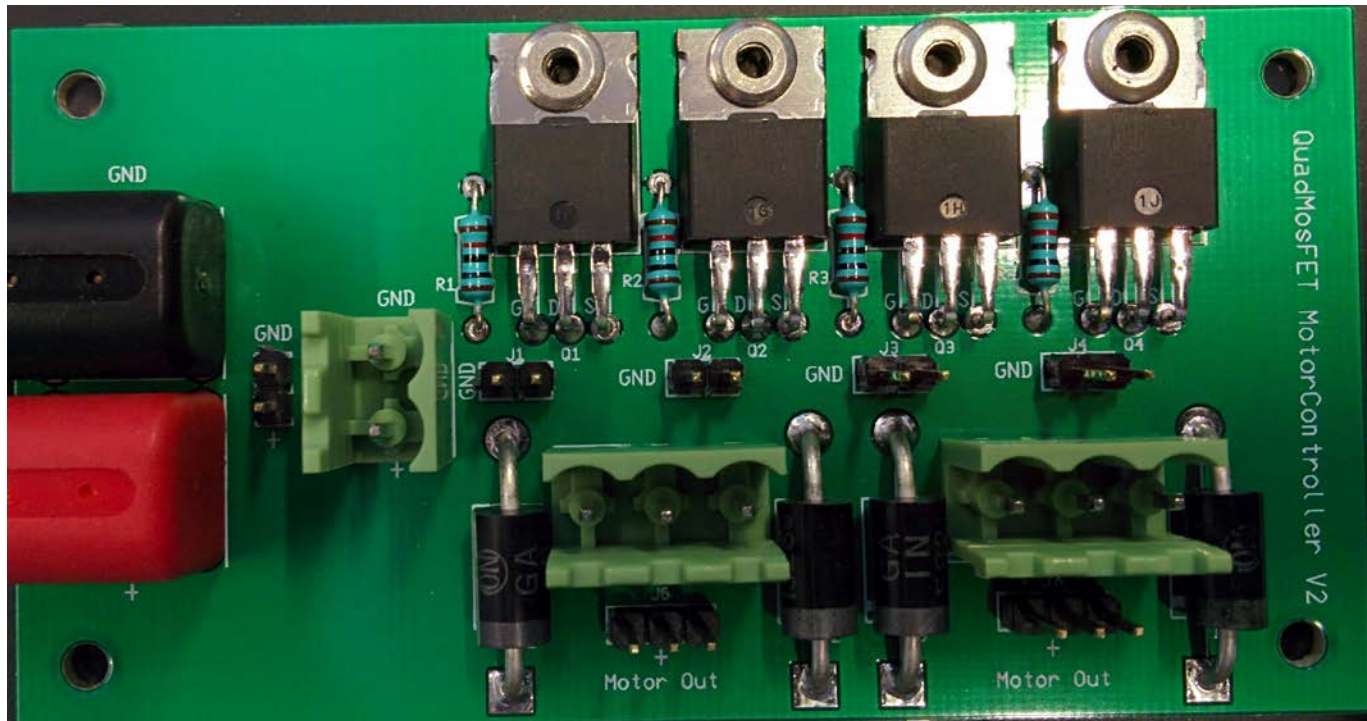
Motor control Lab experiment



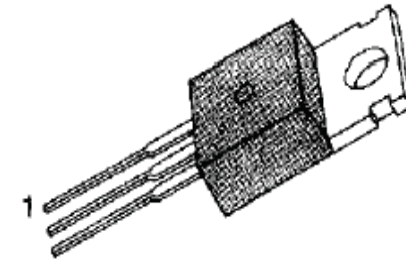
3 experiments

- DC motor speed control with PWM.
- DC motor speed control with PWM and direction control with an H-Bridge.
- Stepper motor control.
- (+optional: Servo motor)

MOSFET PCB



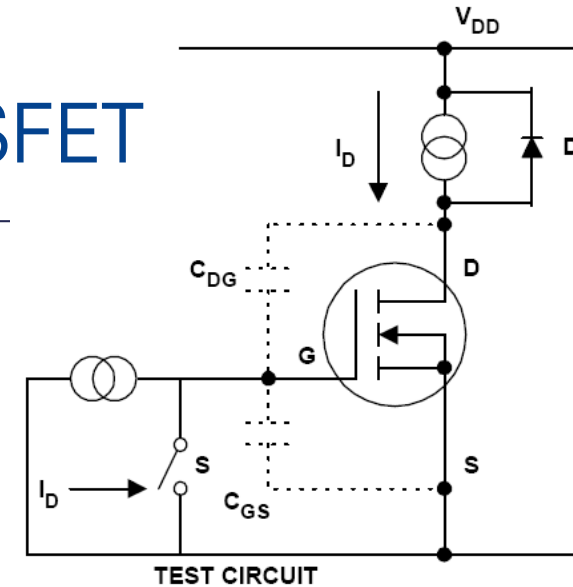
IRLZ24 N-channel MOSFET



1. Gate 2. Drain 3. Source

Characteristic	Symbol	IRLZ24	IRLZ20	Unit
Drain-Source Voltage (1)	V_{DS}	60	50	Vdc
Drain-Gate Voltage ($R_{GS}=1M\Omega$)(1)	V_{DGR}	60	50	Vdc
Gate-Source Voltage	V_{GS}	± 15		Adc
Continuous Drain Current $T_c=25^\circ\text{C}$	I_D	14.0		Adc
Continuous Drain Current $T_c=100^\circ\text{C}$	I_D	9.8		Adc
Drain Current - Pulsed (3)	I_{DM}	56		Adc
Total Power Dissipation @ $T_c=25^\circ\text{C}$	P_D	50		Watts
Derate Above 25°C		0.33		W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +175		$^\circ\text{C}$
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T_L	300		$^\circ\text{C}$

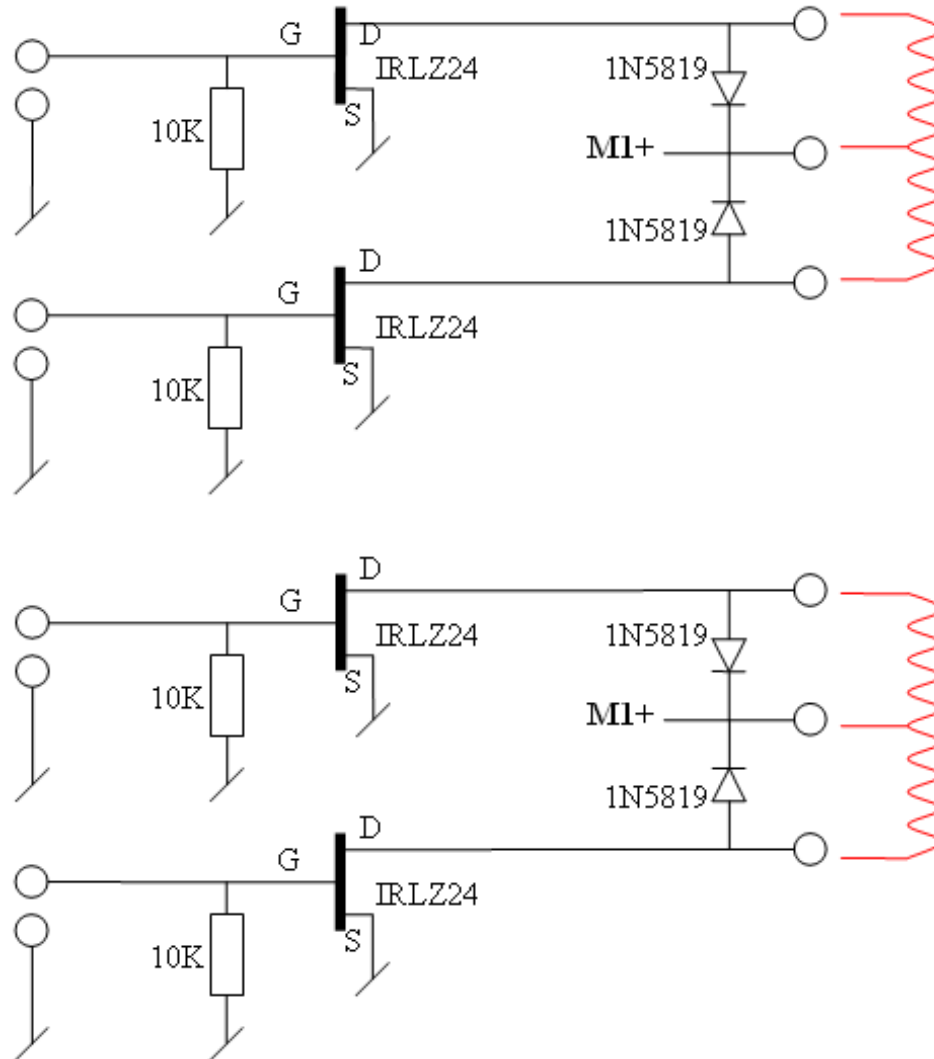
IRLZ24 N-channel MOSFET



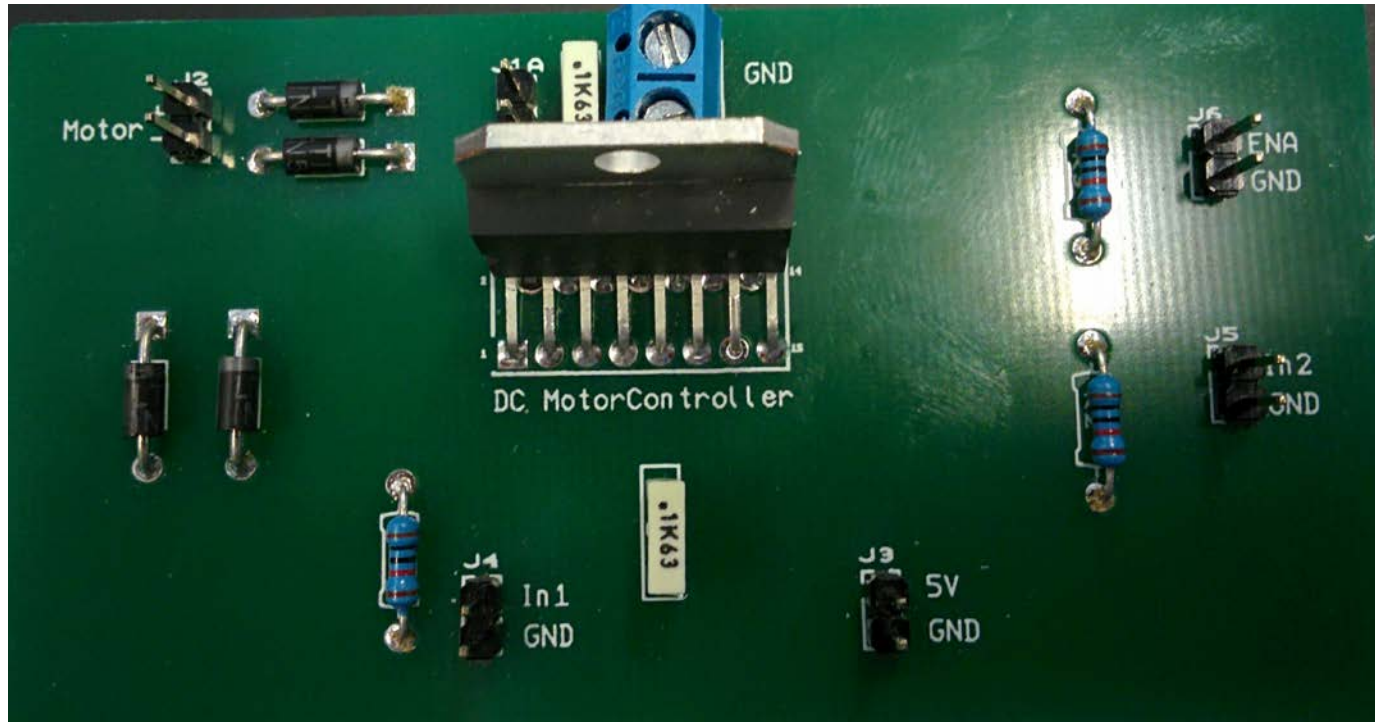
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	IRLZ24	60	-	-	V	V _{GS} =0V, I _D =250μA
	IRLZ20	50	-	-	V	
V _{GS(th)}	Gate Threshold Voltage	1.0	-	2.0	V	V _{DS} =V _{GS} , I _D =1mA
I _{GSS}	Gate-Source Leakage Forward	-	-	100	nA	V _{GS} =15V
I _{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	V _{GS} =-15V
I _{DSS}	Zero Gate Voltage Drain Current	-	-	250	μA	V _{DS} =Max. Rating, V _{GS} =0V
		-	-	1000	μA	V _{DS} =0.8 Max. Rating, V _{GS} =0V, T _C =125°C
R _{DS(on)}	Static Drain-Source On-Resistance(2)	-	-	0.15	Ω	V _{GS} =5.0V, I _D =7A
g _{fs}	Forward Transconductance (2)	2.0	-	-	U	V _{DS} ≥15V, I _D =7A

-
- There are two revisions of the MOSFET PCB. On the new revision of the PCB, the IRLZ24 is replaced by IRLZ44.
 - For IRLZ44, the gate-threshold voltage can be up to 3V.
 - So the PSoC shall use 5V logic, i.e. no modifications on the PSoC and set output to strong drive (the default).

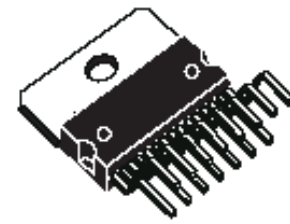
MOS FET driver (LAB)



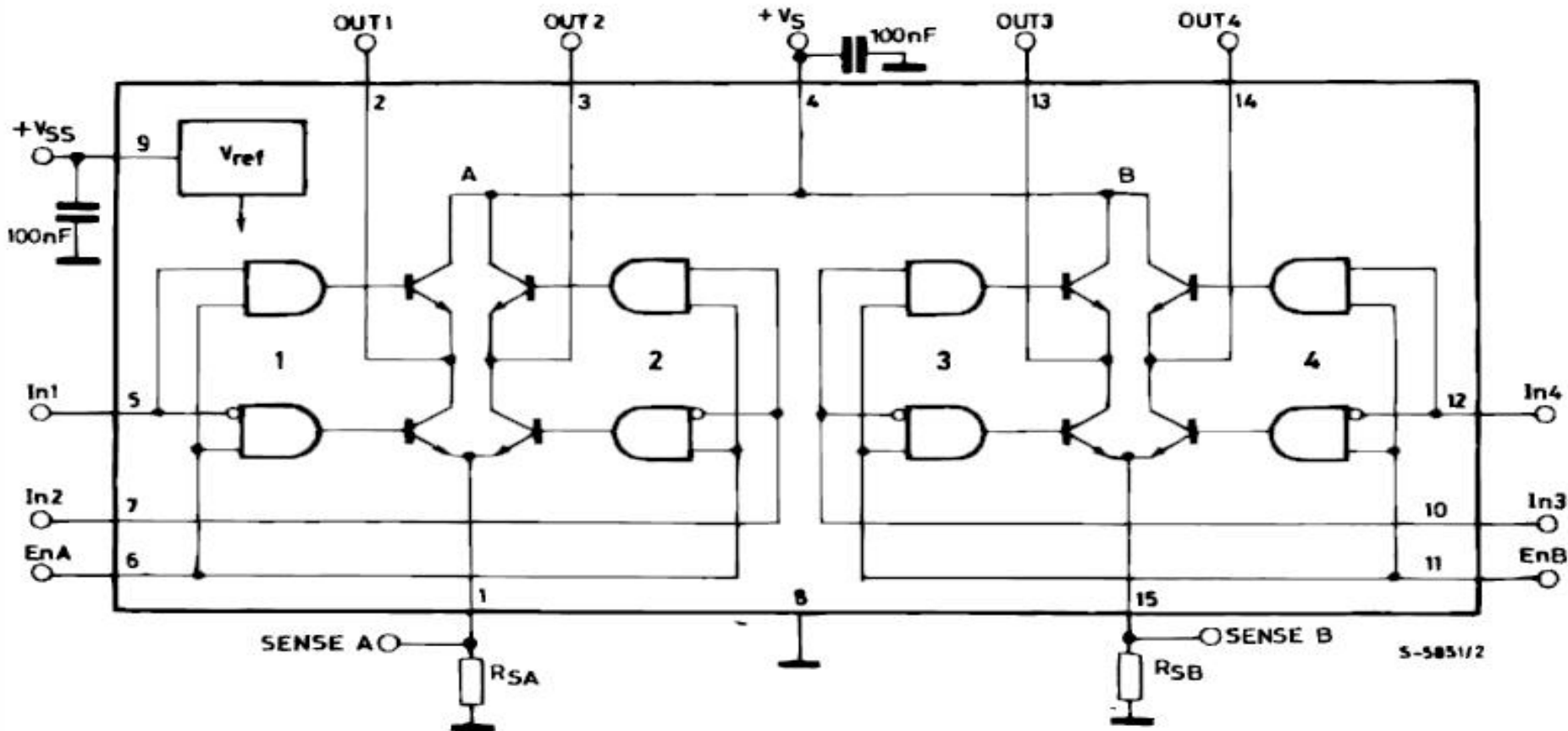
L298 PCB



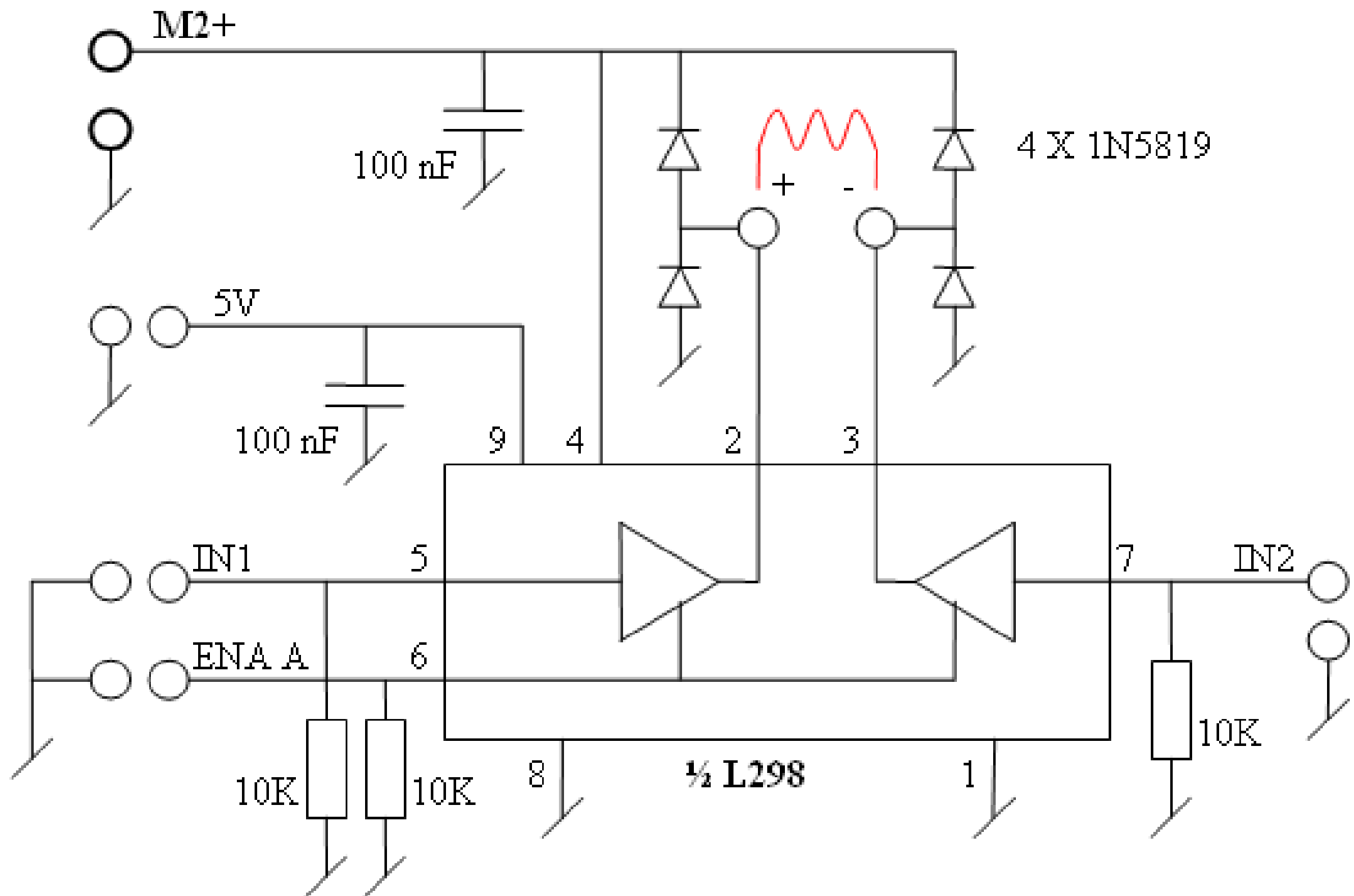
L298: Dual Full Bridge Driver



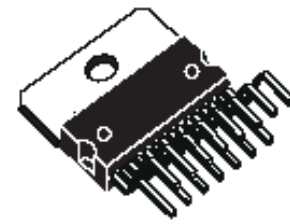
Multiwatt15



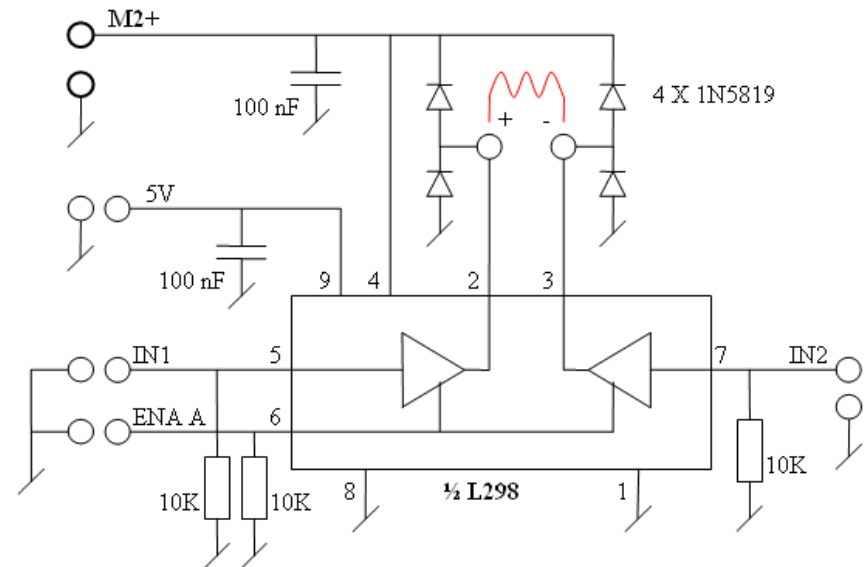
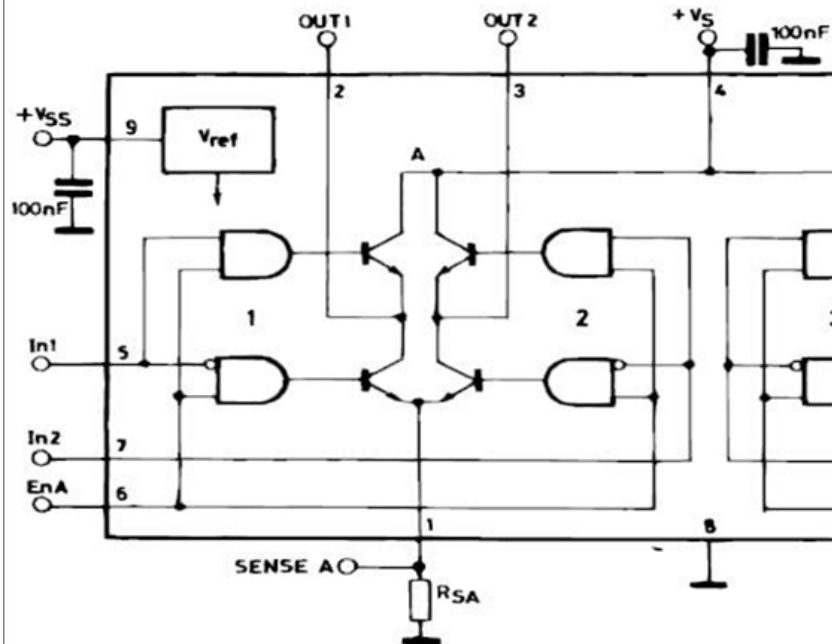
Lab H-Bridge



L298: Dual Full Bridge Driver



Multiwatt15



PSoC project on blackboard

- You can use the provided PSoC project on blackboard as a starting point.
- It has a UART and a PWM component.

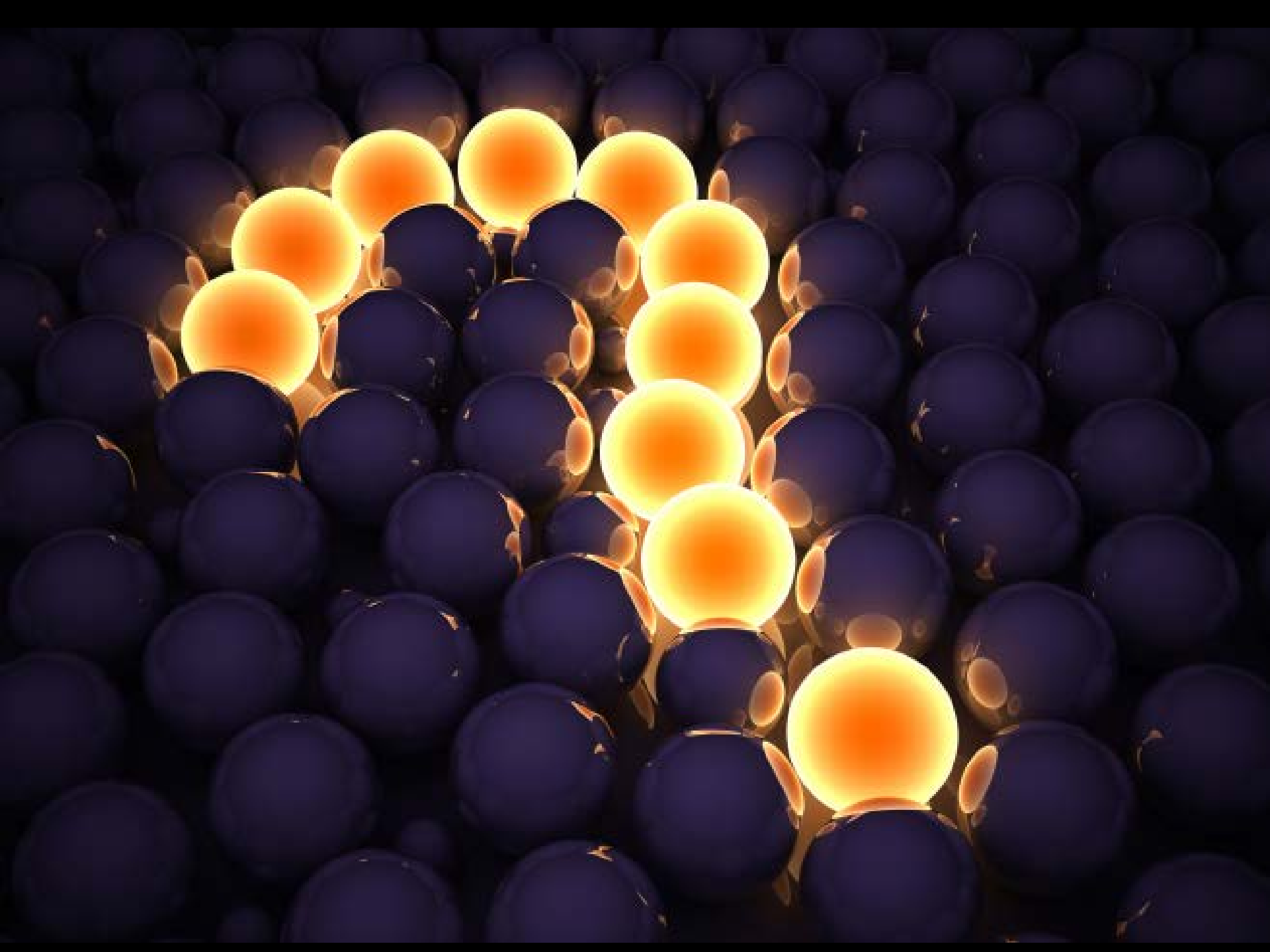


Image resources

- Question mark: <https://wall.alphacoders.com/big.php?i=437563>