Drive a motor / read a sensor

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Fundamentals
- Electricity, Analog, Digital and datasheets

Power source
- Batteries

Switch
- Momentary, latching

Control - Brain
- Micro-controller

Control – Muscle
L298 or simular

Software
- Arduino IDE, basic layout, Libraries

Hardware - Actuators
- DC Motor
- Servo
- Stepper

Hardware - Sensors
- IR
- Ultrasonic
- IMU / Compass

Basic Fundamentals

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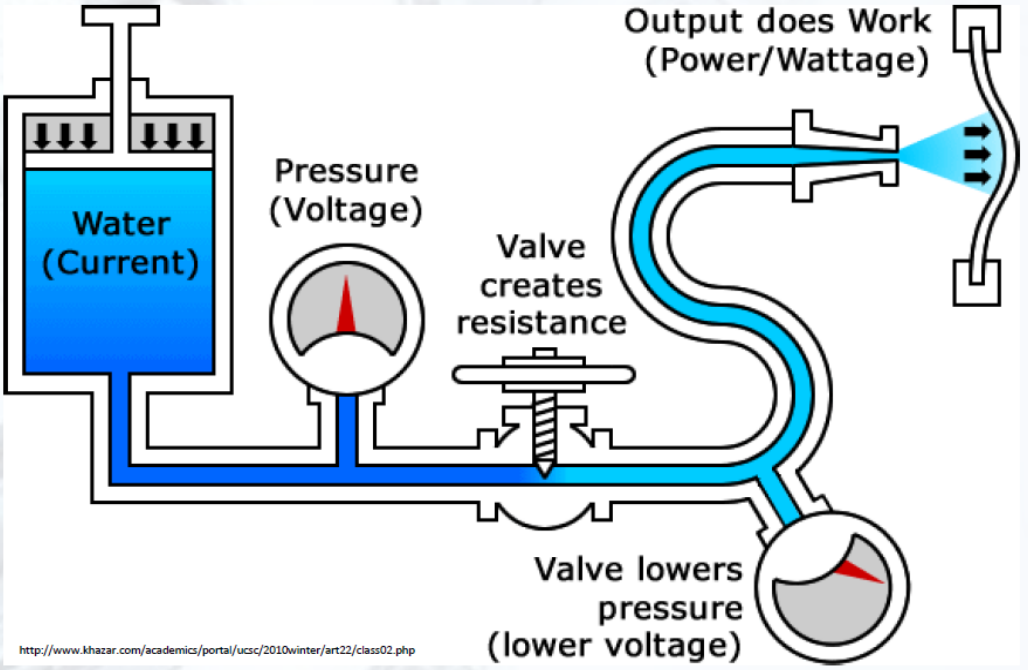
Electricity water analogy



Ohms Law: V= I*R Where V=voltage, I=current and R=resistance

Basic Fundamentals

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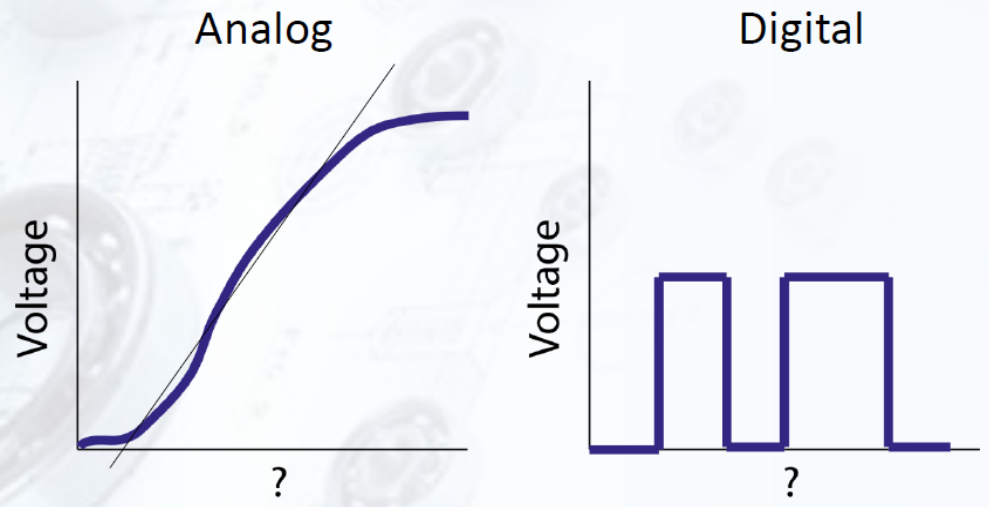
Analog and Digital

Analog - Signal varies with output conditions

Digital – Signal is either off (0) or on (1)



?= Time, speed, sensor input (load cell)

Basic Fundamentals

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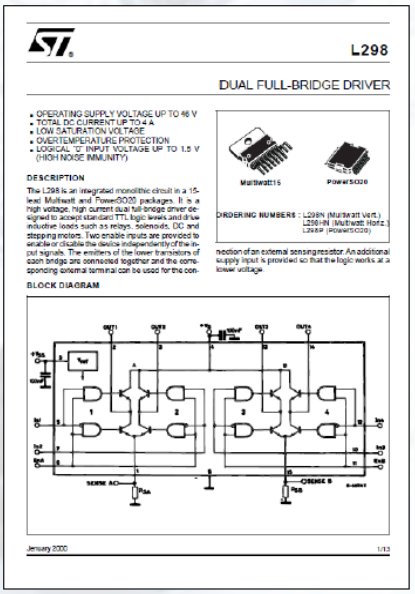
Data Sheets

- Power requirements
- dimensions
- How to wire examples



L298

DUAL FULL-BRIDGE DRIVER

- OPERATING SUPPLY VOLTAGE UP TO 46 V
- TOTAL DC CURRENT UP TO 4 A
- LOW SATURATION VOLTAGE
- OVERTEMPERATURE PROTECTION
- LOGICAL "0" INPUT VOLTAGE UP TO 1.5 V (HIGH NOISE IMMUNITY)

Multiwatt15 PowerSO20

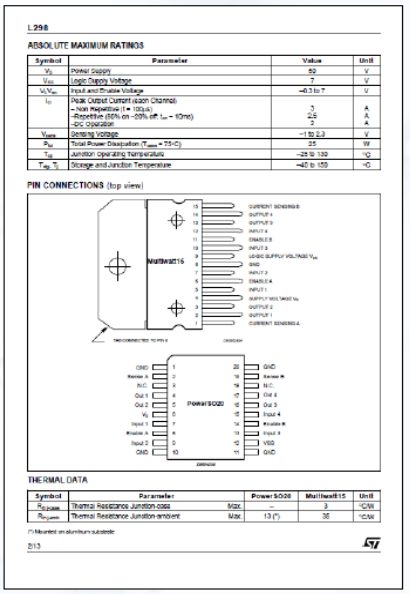
DESCRIPTION

The L298 is an integrated monolithic circuit in a 15-lead Multiwatt and PowerSO20 packages. It is a high voltage, high current dual full-bridge driver designed to accept standard TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors. Two enable inputs are provided to enable or disable the device independently of the input signals. The emitters of the lower transistors of each bridge are connected together and the corresponding external terminal can be used for the connection of an external sensing resistor. An additional supply input is provided so that the logic works at a lower voltage.

ORDERING NUMBERS : L298N (Multiwatt Vert.)
L298HN (Multiwatt Horiz.)
L298P (PowerSO20)

BLOCK DIAGRAM

January 2000 1/13



L298

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Power Supply	50	V
V_{SS}	Logic Supply Voltage	7	V
V_I, V_{en}	Input and Enable Voltage	−0.3 to 7	V
I_O	Peak Output Current (each Channel) – Non Repetitive (t = 100 µs) – Repetitive (80% on −20% off t_{on} = 10ms) – DC Operation	3 2.5 2	A A A
V_{sens}	Sensing Voltage	−1 to 2.3	V
P_{tot}	Total Power Dissipation (T_{case} = 75°C)	25	W
T_{op}	Junction Operating Temperature	−25 to 130	°C
T_{stg}, T_j	Storage and Junction Temperature	−40 to 150	°C

PIN CONNECTIONS (top view)

THERMAL DATA

Symbol	Parameter		PowerSO20	Multiwatt15	Unit
$R_{th\ j\text{-case}}$	Thermal Resistance Junction-case	Max.	–	3	°C/W
$R_{th\ j\text{-amb}}$	Thermal Resistance Junction-ambient	Max.	13 (*)	35	°C/W

(*) Mounted on aluminum substrate

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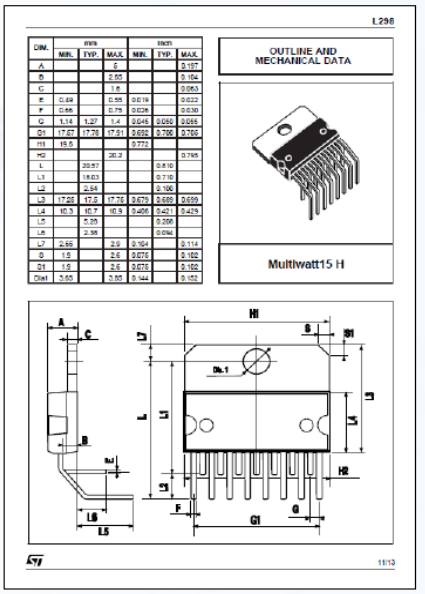

L298

DIM.	mm MIN.	mm TYP.	mm MAX.	inch MIN.	inch TYP.	inch MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
E	0.49		0.55	0.019		0.022
F	0.66		0.75	0.026		0.030
G	1.14	1.27	1.4	0.045	0.050	0.055
G1	17.57	17.78	17.91	0.692	0.700	0.705
H1	19.6			0.772		
H2			20.2			0.795
L		20.57			0.810	
L1		18.03			0.710	
L2		2.54			0.100	
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L5		5.28			0.208	
L6		2.38			0.094	
L7	2.65		2.9	0.104		0.114
S	1.9		2.6	0.075		0.102
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152

OUTLINE AND MECHANICAL DATA

Multiwatt15 H

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Batteries

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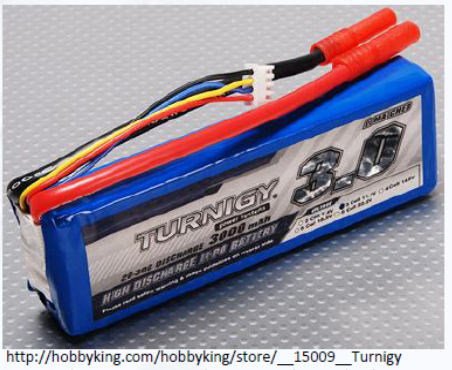
Rechargeable

http://www.megabatteries.com/item_details2.asp?id=16208&cat_id=161&uid=1318

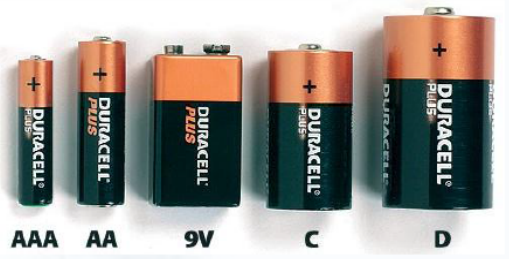


http://hobbyking.com/hobbyking/store/__15009__Turnigy_3000mAh_3S_20C_Lipo_Pack_USA_Warehouse_.html

NiMH – (Nickel Metal Hydride)
These have memory

Lipo – (Lithium Polymer)
Dangerous without managment

Non-Rechargeable



http://imgbuddy.com/duracell-batteries.asp