

- performance art as a political instrument -

searching for a meaning making machine
a prothesis form to interact
illegal mutated ethnographies and love zones
bio and moral modifications!

Notes for the workshop the body as sound post gender instrument
berlin, july 2013

Transnoise was growing at Barcelona (A getrificated city, full of tourists, evictions, racist police and museums of design) We meet inside the transfeminist post porno movement, at parties, demos and hack meetings. At self organised spaces where we collectively explore and deconstruct our identities, we exchange tools, articulate inquietudes and experiment on gender bending practises. We intervention. perceive our bodies as public platforms for and out of collective our body as artificial, as an architecture, a political social an artefact.

We understand construction, As a platform, that makes possible the materialization of political imagination. So we experiment on fluid forms, texts, our bodies and moving images; bodies disfigured, mutated, fluid that love each other. Whatever that means. Under this frame we conceive sexuality as an artistic and technological creation, we engage on post porn self organised events- We understand no separation between private and public, art and life. Out of our experiences on gendered behaviours, classifications, discriminations and privileges, we infiltrate our bodies and contaminate the visual capital of production introducing noise, a conceptual and embodied blitch at the mainstream flow through intimate performances, vj sets and public interventions.

Under the concept of performance art melted with the performativity concept (on gender), we understand our actions as presences than as representations.

Following Donna Haraway's notion of cyborg as theorized and fabricated hybrids of machine and organism:

our artworks display entities created by visual, sound and textual prothesis that grow out of our personal experience

Understanding the term of prosthetics not only as modification of the bodies under a feminist perspective that aims on the performative destruction of culturally imposed gender codes, but also as an expansion of the self by modifying and creating new organs and functions, different ways of being and doing.

Where we occupy no conforming decisions or positions.

As Beto preciado says: Gender is not only a performative effect is most of all a process of prosthetic incorporation.

We use the term exo-sculpture, referring to recycled sensors and circuits attached to our body implemented with other urban elements. Exosculptures are not only aesthetic outfits, they fulfil functions and favour practises.

Through them we expand like liquid organic architectures.
We sound we sound out of homemade bended recycled circuits. Bending means introduce oneself to the machine and intervene or penetrate with wet fingers at its guts, by becoming resistance.
Noise As multiplicity according to M. Serres If we cut out noise (understanding it as queerness), we risk cutting out possibility.
Noise is misunderstood for the same reasons as drag: it shows through the appropriation of nonmusical elements that tone and rhythm are, like gender, simply social constructions.
According to this, we take Noise as a central element to provoke opening in a symbolic performative way.

Transnoise study the articulations between art & science and art & technology, and their function in the production of subjectivities. Open code Is a community creation and a response to proprietary corporations and patents.
We always appropriate technology under a critical view thinking on its use, circulation and hyper consumption. We consider that the understanding and use of low technologies is important in terms of knowledge and constitutes us more autonomous in our every day activities. inviting in a more active attitude towards the machines and open source attitudes.

The workshop is focused on experimental music and performance emphasizing the way we produce and generate our technologies in a similar sense to also generate our freedom of gender and play the roles that we want to (re-appropriate) and perform.

We are interested in a collective creation of DIY artefacts that produce noise as a tool of re-signification of our relationship with technology. We aim to create a recreational space, by creating hybrid bodies through recycling technics as a symbolic process of transformation through the re-appropriation of everyday objects and electronics.

0101010 -Logic/non logic gender of nOise- 00001010101010101001

Some important things to take under account :

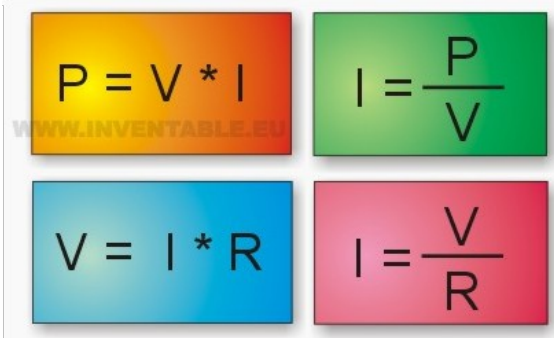
During the workshop you will hear a lots of terms that you might be or might not be familiar with. In any case it helps to clear out the terms, so we made a short glosary of terms:

An **integrated circuit** or **monolithic integrated circuit** (also referred to as an **IC**, a **chip**, or a **microchip**) is a set of electronic circuits on one small plate ("chip") of semiconductor material, normally silicon. This can be made much smaller than a discrete circuit made from independent components.

Integrated circuits are used in virtually all electronic equipment today and have revolutionized the world of electronics.

ICs can be made very compact, having up to several billion transistors and other electronic components in an area the size of a fingernail.

Ohm's law states that the current through a conductor between two points is directly proportional to the potential difference across the two points.



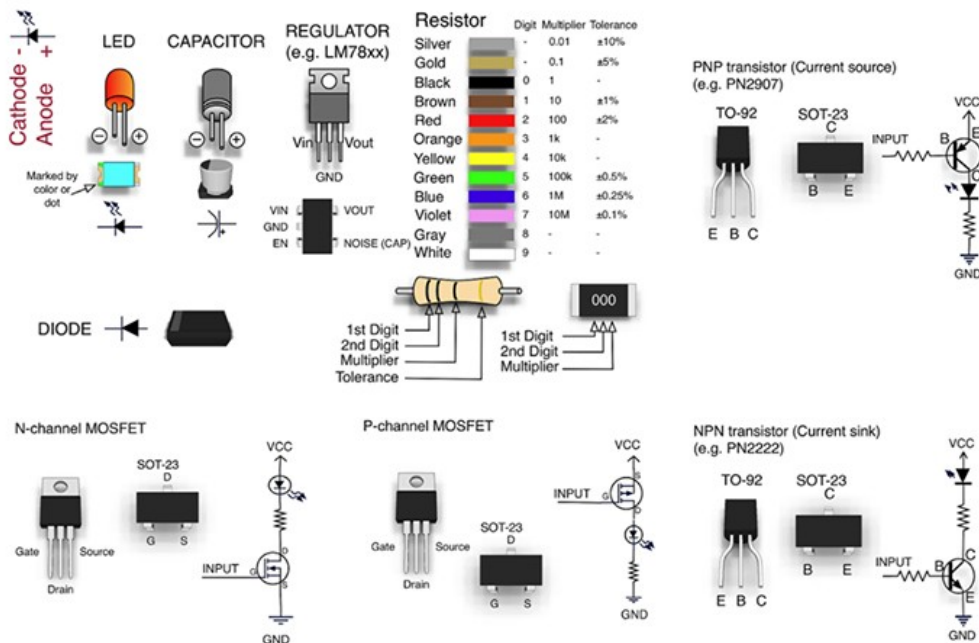
$P = V * I$	$I = \frac{P}{V}$
$V = I * R$	$I = \frac{V}{R}$

where I is the current through the conductor in units of amperes, V is the potential difference measured across the conductor in units of volts, and R is the resistance of the conductor in units of ohms. More specifically, Ohm's law states that the R in this relation is constant, independent of the current.

I= amperes
V= volts
R= Ohms

- **resistance is the inverse of conductance.** $R=1/C$
- Resistors, condensers, inductors, are passive elements. They are used together as frequency determining circuits.
- **Resistor** is a passive electric element that "burns" electric energy. It is used for **setting the voltage drops**, it limits/defines the electric current.
- Different resistors:
 - a) **normal resistor** (with fixed value depends on the colours of the lines)
 - b) **POT** (potentiometer or variable resistor)
 - c) **LDR** (light dependent resistor)
- **Capacitor/ condenser** : is a passive two-terminal electrical component used to store energy electrostatically in an electric field. It is used to keep an amount of energy (as electrons) for alternate current. It shows frequency dependent resistance: the higher the frequency the less resistance. ($X_c = 1/wC$).
- **Led**: is a light emitting diode.

Electronics Reference Sheet

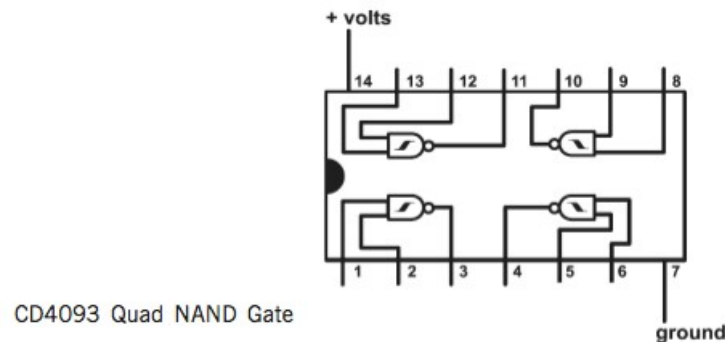


* Please note that some components may have a different pinout than the one showed above, you should always check the data sheet before using a new component.

NanD Gate Smith Trigger // synthetizer ! !

This experiment is based on an example in [Nicolas Collins'](#) book: "Handmade Electronic Music, The Art of Hardware Hacking". The motivation for this experiment is to learn IC logic chips and to prepare inexpensive experiments for sound making electronics workshops.

The IC 4093 may not have complicated specifications and attributes yet it proposes many useful utilities. It consists of some fundamental blocks which can be configured according to personal preferences and used for numerous different applications



The misuse of [Quad NAND Gate 4093](#) chip makes simple & cheap way to synthesise modulating square waves. Misuse, since the 4093 chip was not designed to make sounds but to do boolean logic, as a member of highly successful [CMOS 4000 series](#) IC chips form late sixties.

IC 4093 :

It consists of 14 pins and has four CMOS blocks internally embedded inside its package.

These blocks are called gates, here these are termed NAND gates.

A single [NAND gate](#) has two inputs and one output. The 4093 chip has four NAND gates, hence the name QuadNAND gate. The NAND stands for one of the common [boolean logics](#) (Not AND) where two input states, highs(ones) or lows(zeros), define the state of the output. In NAND case, if neither of inputs are high (being low) the output keeps high. If both of the inputs are pulled high the output inverts to low. If one of the inputs is low the output is always high. The chip uses [Schmitt Trigger](#) comparators, which provides noisless & direct swapping of the states.

A NAND (NOT+AND) gate adds an inverter stage after the AND logic to flip the output like this:

Input A	Input B	Output
0	0	1
1	0	1
0	1	1
1	1	0

To turn this to sound it helps to understand basics of the sound. To put it very short, when there is changing states there is [frequency](#). If the frequency oscillates through air and is in the range of hearing, there is sound. If we do the above mentioned state swapping we generate [oscillation](#), a square [wave](#) signal of highs and lows, which can be [amplified](#) and heard.

Basic square wave can be made with just one NAND gate. The first input is connected high(+5 to 15V) the second is connected low(GND) via capacitor and the output is fed back to the second input via resistor. The chain of events in a fast loop:

- input 1 is driven high, the input2 is low, making the output high
- the high output recharges the capacitor in time affected by the feedback resistor
- charged capacitor pulls the input2 high, output goes low, capacitor discharges
- back to the beginning

The frequency generated is based on the capacitance and resistance of the components mentioned above. Increasing the resistance with eg. a potentiometer, less current will flow to capacitor, slowing the "swapping", lowering the pitch. The higher the capacitance, the longer it takes to recharge, forcing the range of the sweeping pitch lower. This experiment uses 100k pots with 0.1uF and 2.2uF caps. The big cap keep the range very low, in rhythmic clicks, where the small one takes the range high in clear pitch frequencies.

NAND gates can modulate each other. By connecting the output of gate1 to the input1 of gate2, the swapping high-low cycle enables and disables the second gate very fast while the the second gate produces its own frequencies. This can be fed further to the gate3 and so on. This results to complex square wave modulations worth experimenting so read on.

Using it

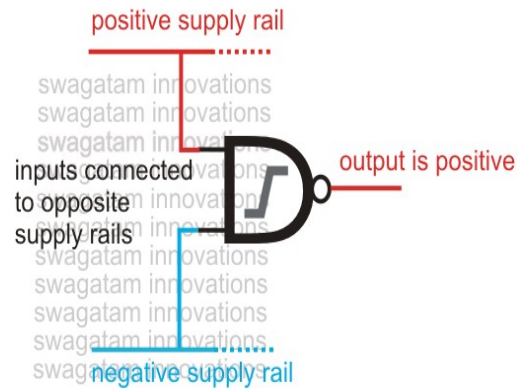
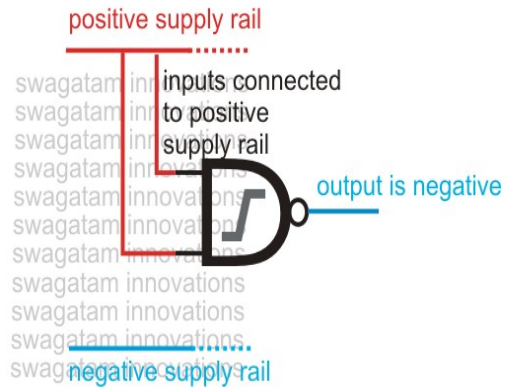
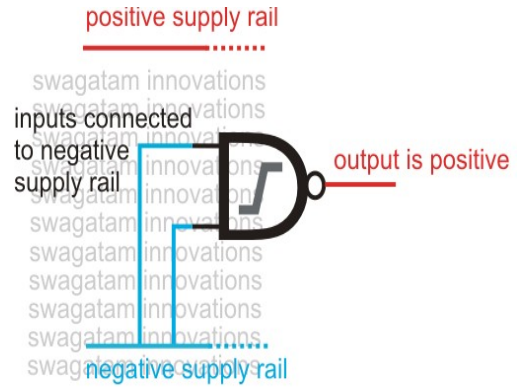
Start with the first gate, varying the resistance between pins2&3. Take the audio out from header in pin3. Try the difference with a jumper enabling the bigger cap in gate1. Move to gate1 modulating gate2. Put another pot between pins 4&5 and move the audio out signal to pin4 (gate2 output). Experiment with the pots and cap jumpers. Carry on to gate3 and gate4.

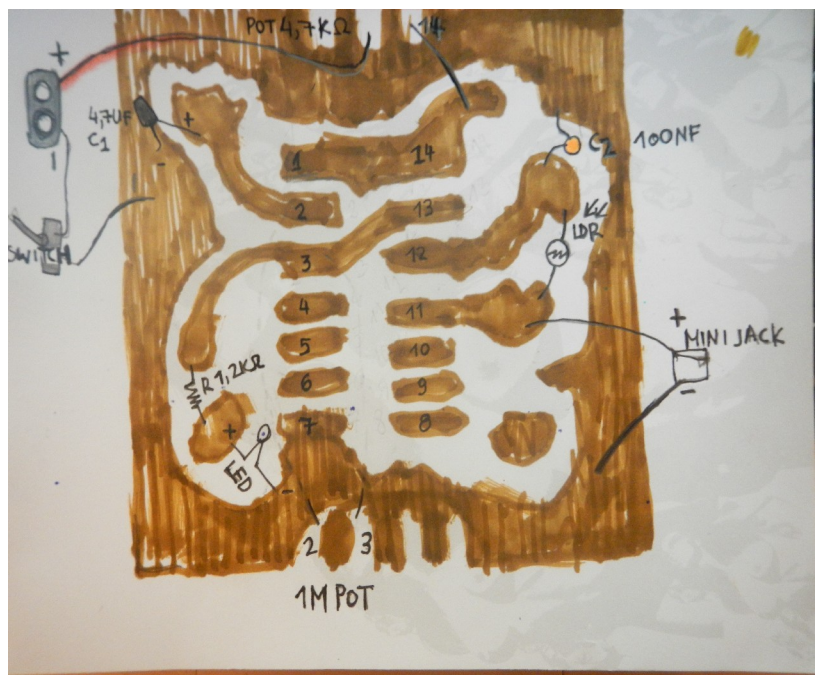
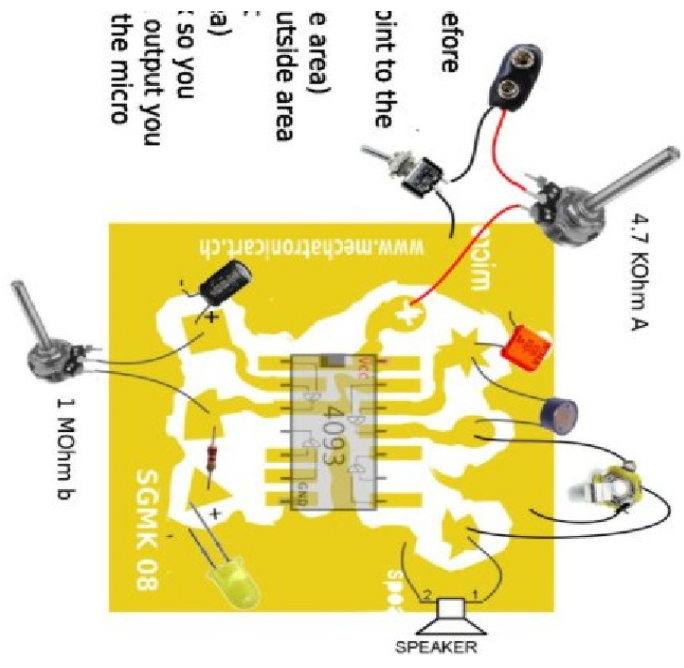
How the truth table is operation into the gates.

Truth table (theoretical)

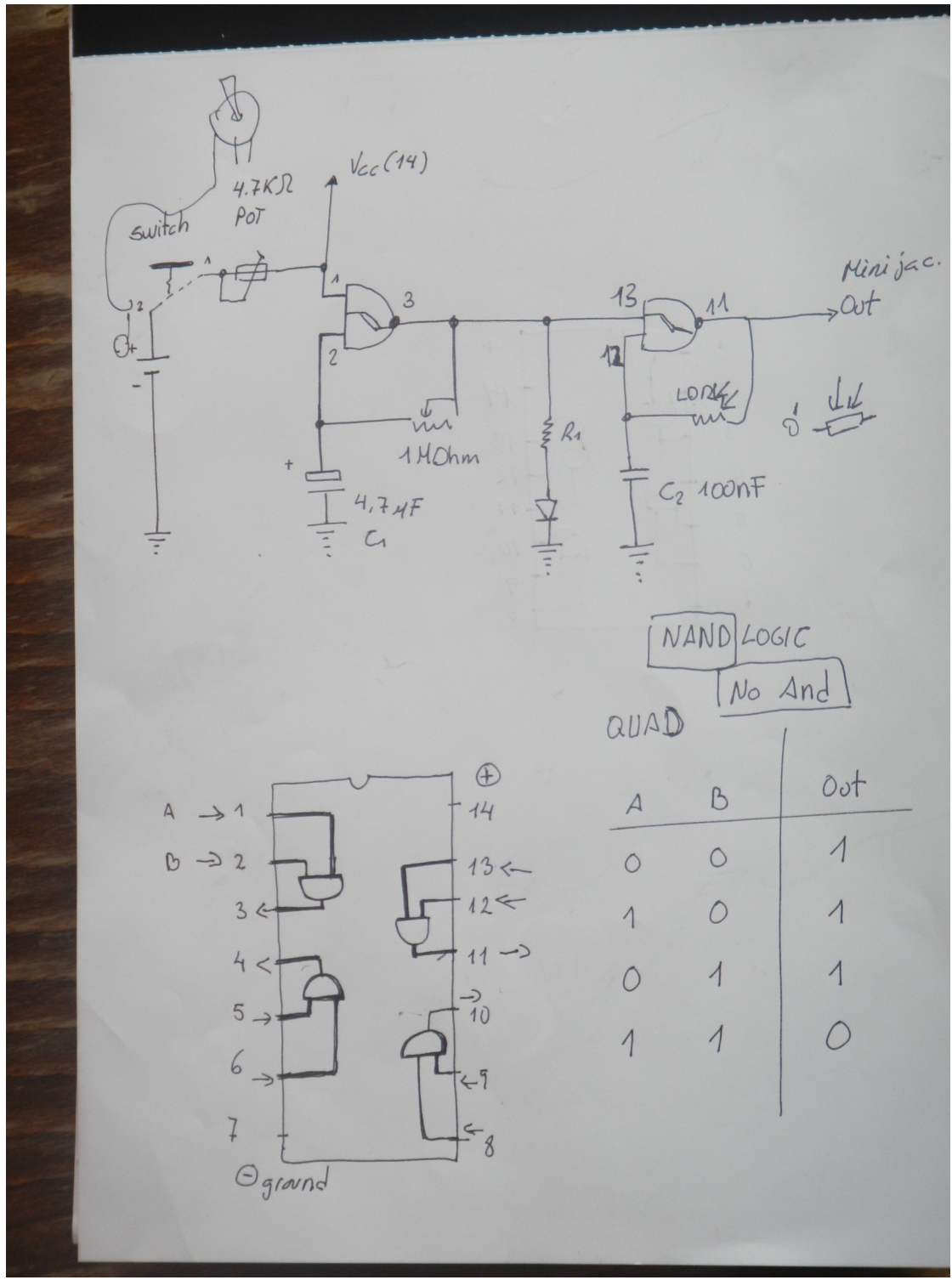
Input A	Input B	Output
0	0	1
1	0	1
0	1	1
1	1	0

into the fisical wordl



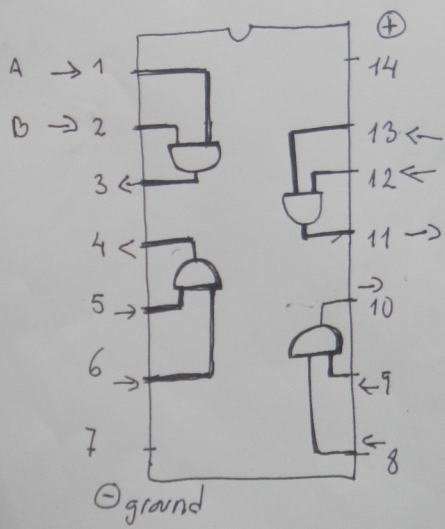


this is a simple type of double LFO (low frequency oscillator) and light dependent audio frequency oscillator (OSC); whereby the later signal is modulated by the former. That means that OSC is modulated by the LFO; It produces a two channel audio



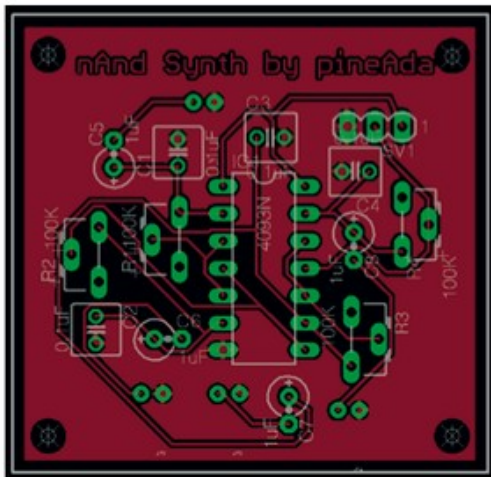
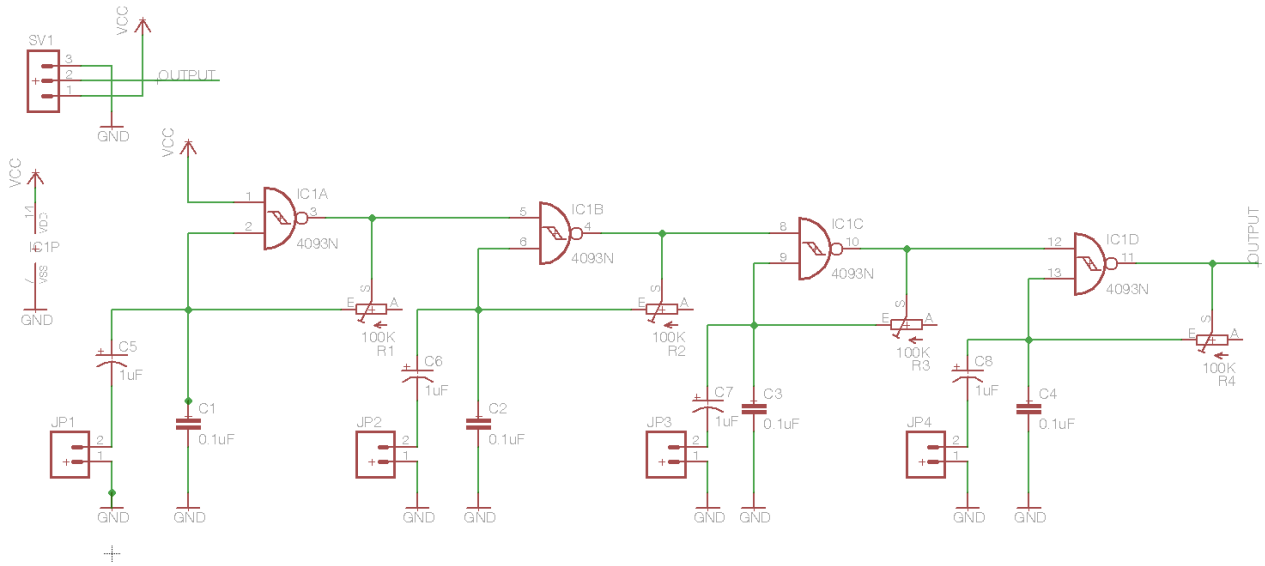
NAND LOGIC
No And

QUAD

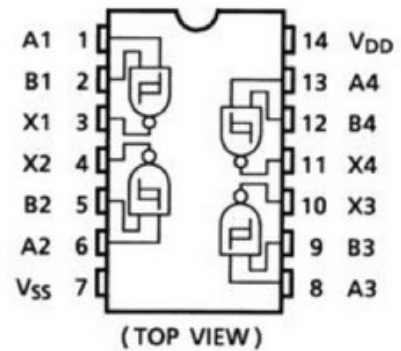


A	B	Out
0	0	1
1	0	1
0	1	1
1	1	0

Another version of NaNd Gate logic with 4 gates in action



CMOS Quad NAND Gate Schmitt Trigger Integrated Circuit(CD4093)
Pin Assignment



El sintetizador 4093 NAND es un generador de ruido súper modificable con una enorme cantidad de potencial sonoro ! Aviones no tripulados de baja pulsación, el caos robótico del azar y los sonidos agudos láser - todo aquí en este pequeño kit; perfecto para comenzar a explorar la síntesis sonora !!!

El Kit NAND /synth incluye: 4 potenciómetros (resistencias variables) de 100 KΩ, 4 condensadores electrolíticos de 1µF(con polaridad), 4 condensadores cerámicos 0.1µF, 4 switch on/of (interruptor de palanca) , adaptador para pila de 9V y salida de audio Jack hembra.

LM386 Low Voltage Audio Power Amplifier

General Description

The LM386 is a power amplifier designed for use in low voltage consumer applications.

The gain is internally set to 20 to keep external part count low, but the addition of an external resistor and capacitor between pins 1 and 8 will increase the gain to any value up to 200.

The inputs are ground referenced while the output is automatically biased to one half the supply voltage. The quiescent power drain is only 24 milliwatts when operating from a 6 volt supply, making the LM386 ideal for battery operation.

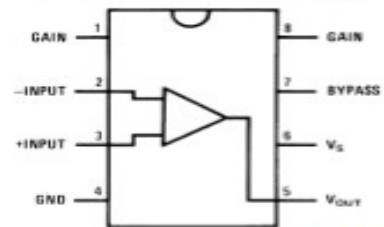
Features:

- Battery operation
- Minimum external parts
- Wide supply voltage range
- Low quiescent current drain
- Voltage gains from 20 to 200
- Ground referenced input
- Self-centering output quiescent voltage
- Low distortion
- Available in 8 pin MSOP package

Applications:

- AM-FM radio amplifiers
- Portable tape player amplifiers
- Intercoms
- TV sound systems
- Line drivers
- Ultrasonic drivers
- Small servo drivers
- Power converters

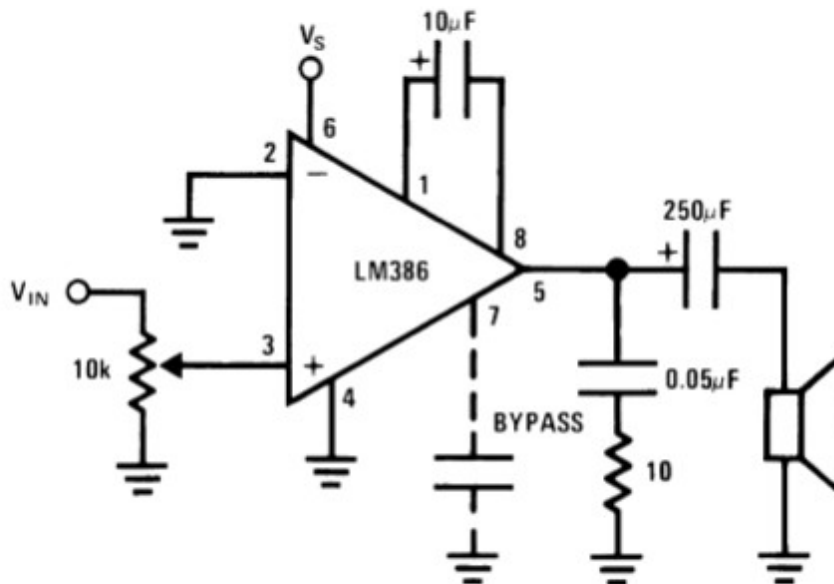
Small Outline, Molded Mini Small Outline, and Dual-In-Line Packages



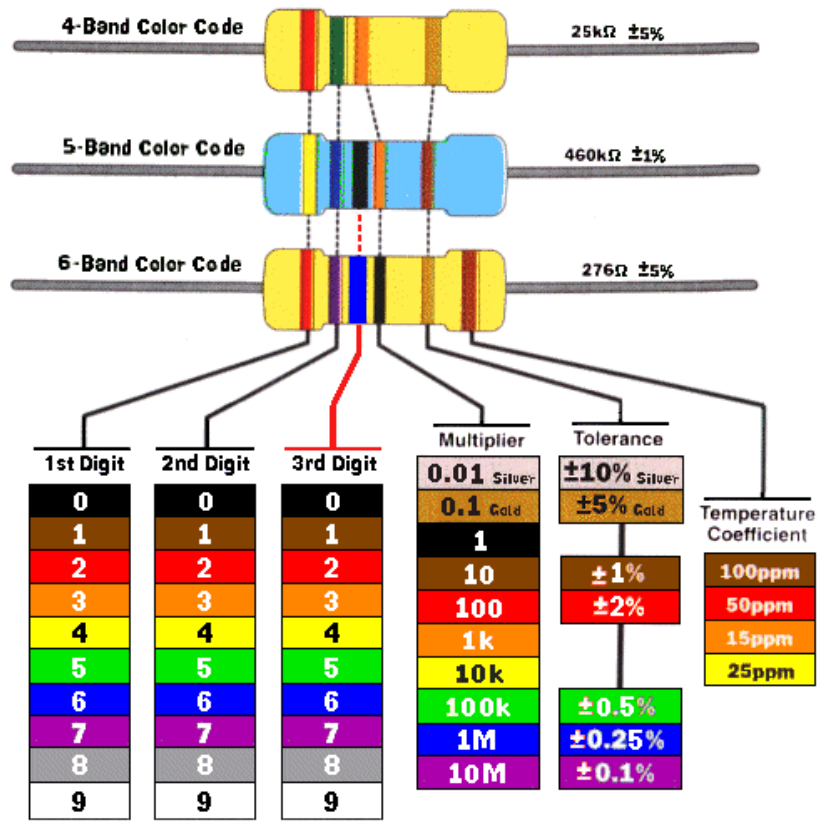
DS006976-2

Top View
Order Number LM386M-1, LM386MM-1, LM386N-1, LM386N-3 or LM386N-4
See NS Package Number M08A, MUA08A or N08E

Amplifier with Gain = 200



DS006976-4



there is more examples that we can build ! !

electromagnetic amplifier

amplifier with square wave

copper coil to hear electromagnetic fields

galvanic sensors for humans and plants

simple theremin

hex inverter

piezos

effect
