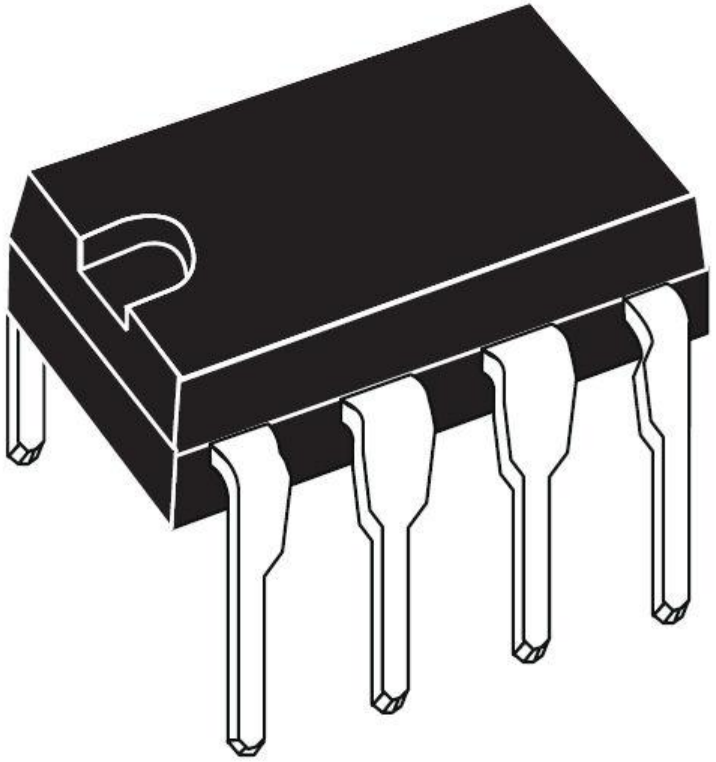
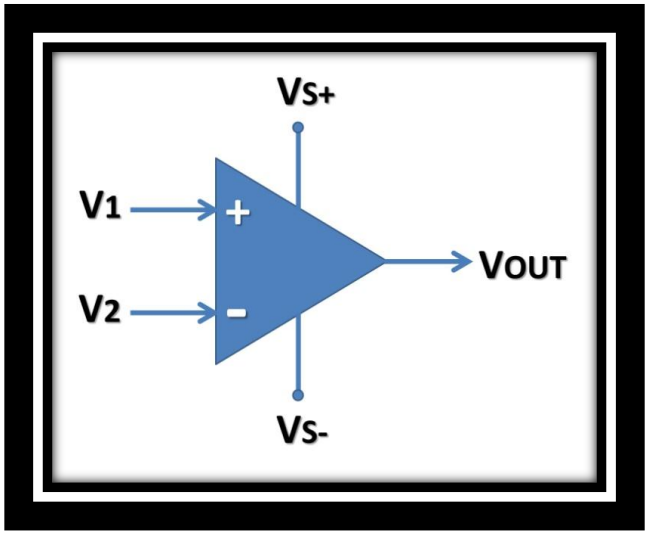


OTRAS CONFIGURACIONES DEL AMPLIFICADOR OPERACIONAL

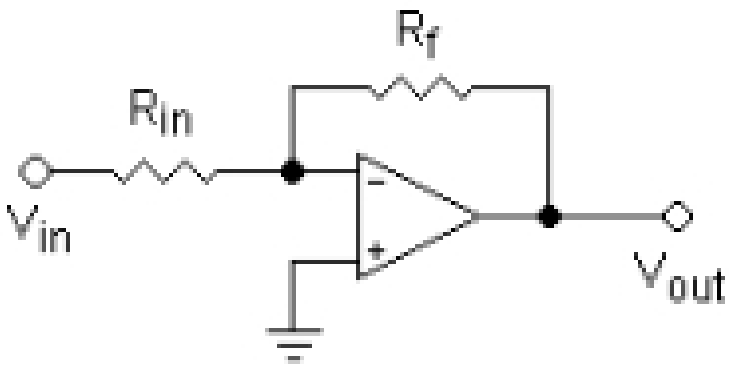
RECAPITULACIÓN

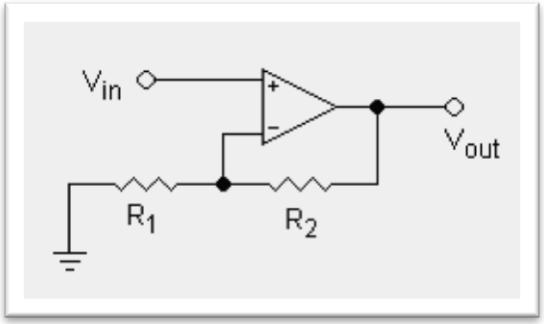


$$V_{out} = \begin{cases} V_{S+} & V_1 > V_2 \\ V_{S-} & V_1 < V_2 \end{cases}$$

- V1=V2
- Corrientes de entrada igual a cero

RECAPITULACIÓN

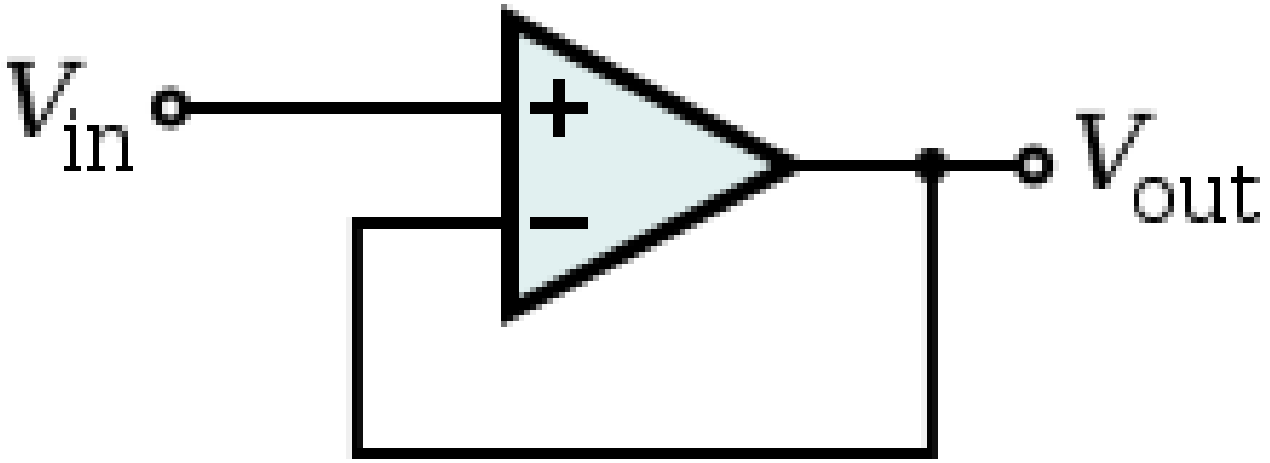




$$V_{out} = V_{in}\left(\frac{R_f}{R_{in}}\right)$$

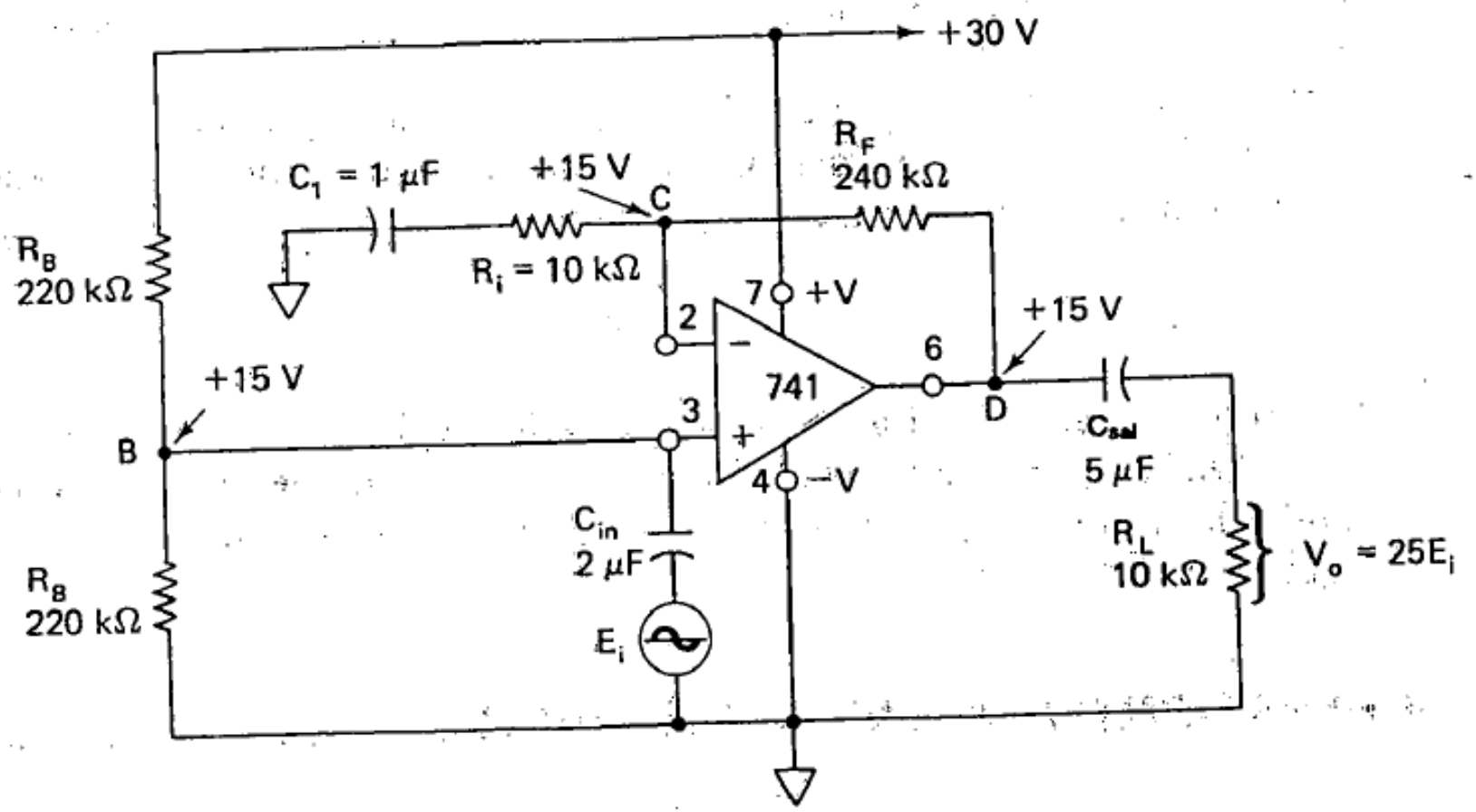
$$V_{out} = V_{in}\left(1 + \frac{R_2}{R_1}\right)$$

SEGUIDOR DE VOLTAJE O BUFFER



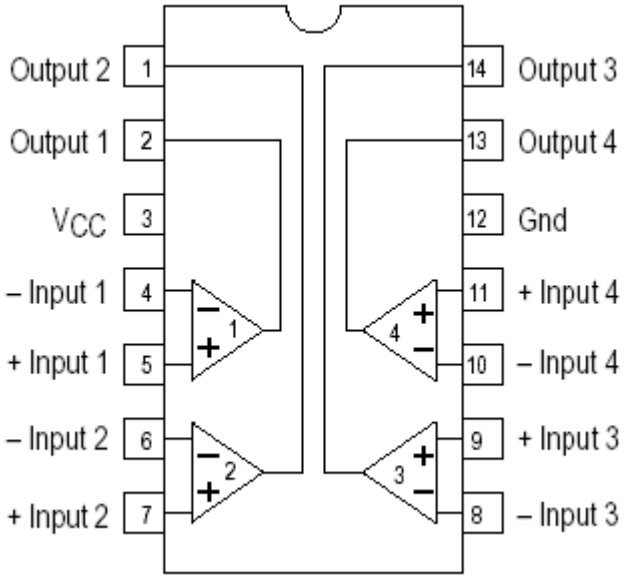
- **ALTA IMPEDANCIA DE ENTRADA**
- **AISLAMIENTO DE LA SALIDA CON RESPECTO A LA ENTRADA**
- **ELIMINACIÓN DEL EFECTO DE «CARGA»**

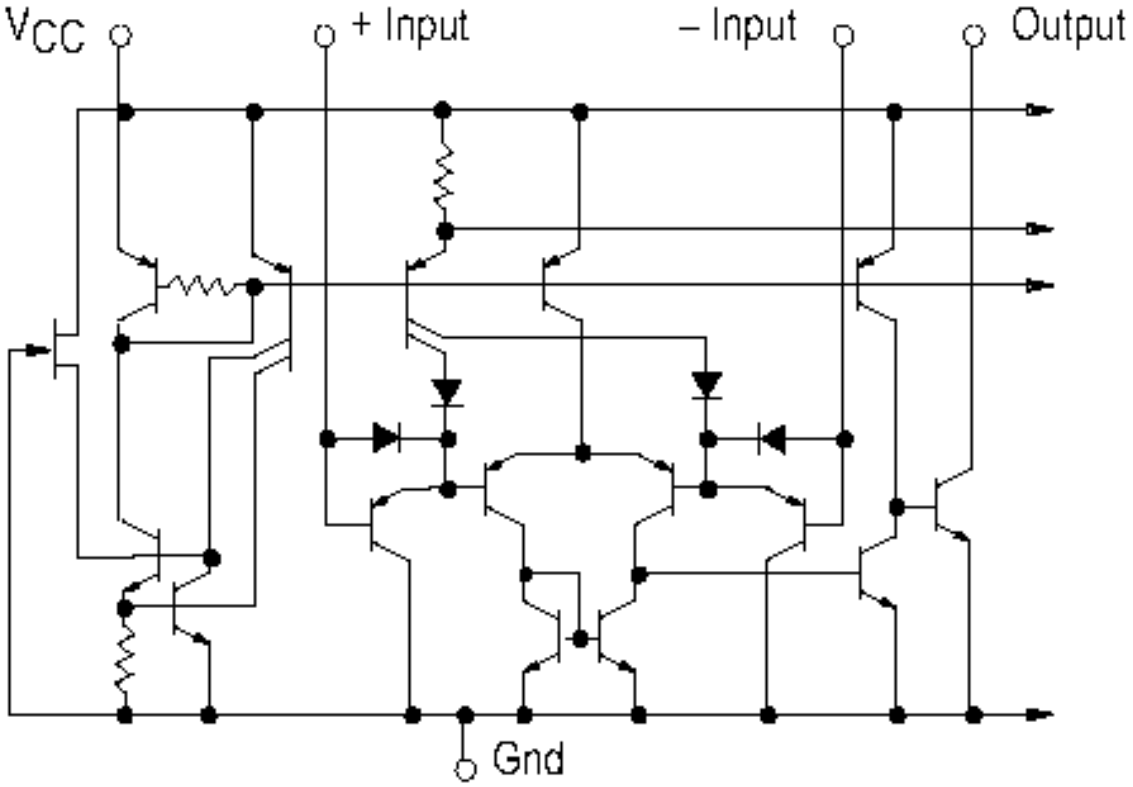
OPERACIÓN CON ALIMETACIÓN ÚNICA

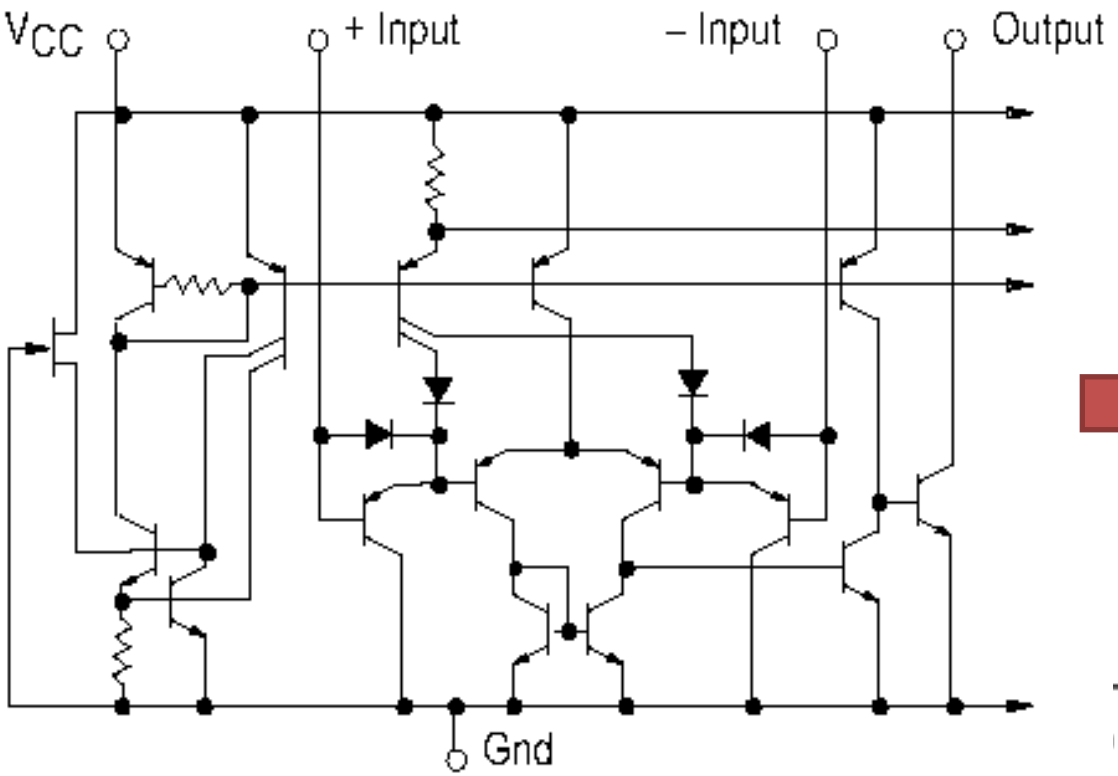


PARA SEÑALES AC (NO AMPLIFICA EL NIVEL DC)

LM339 (OPEN COLLECTOR)

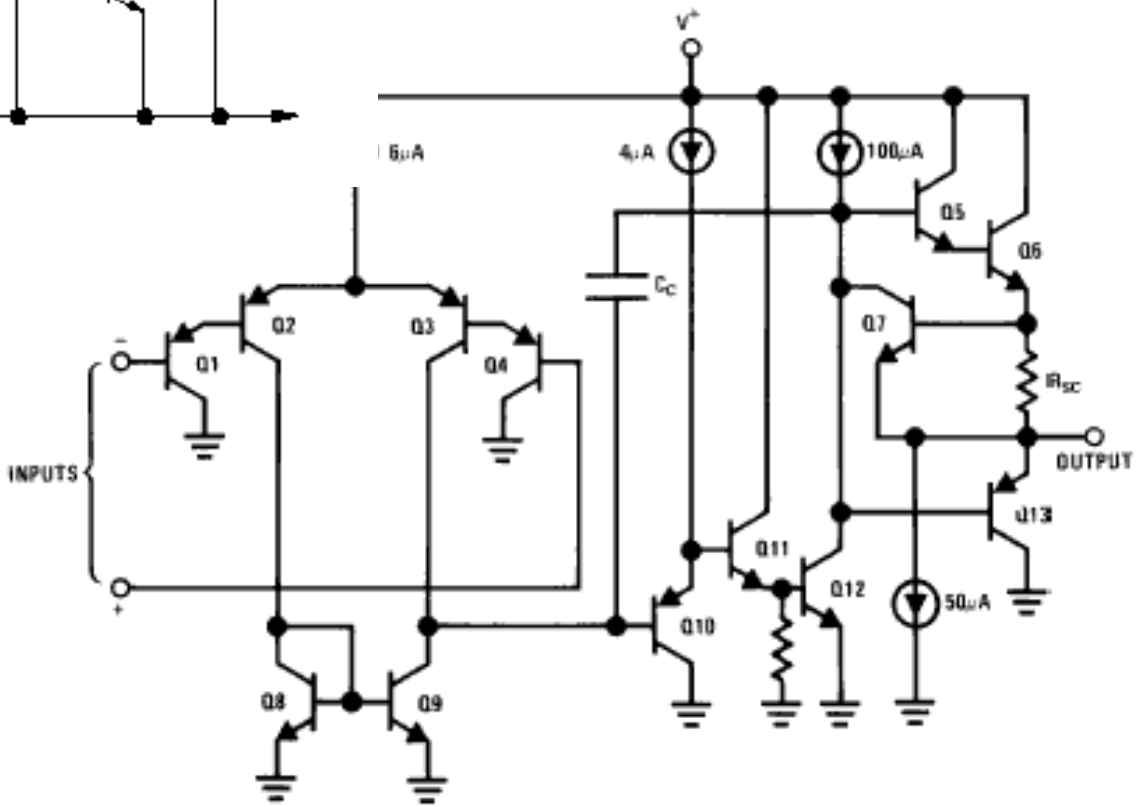




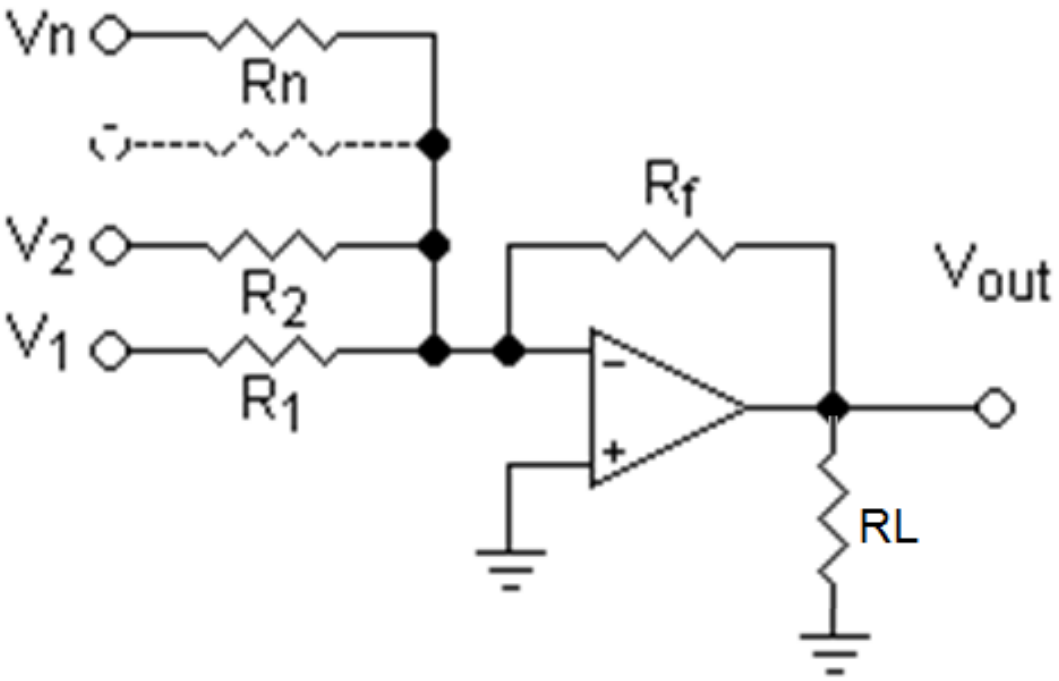

VCC
+ Input
– Input
Output
Gnd

741

324

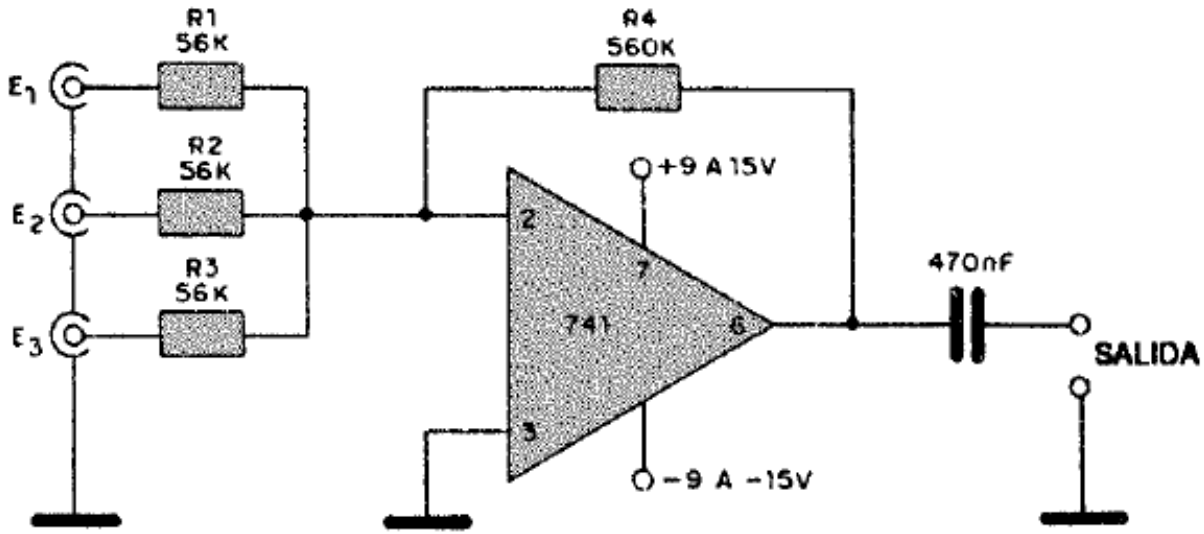

V+
6μA
4μA
100μA
Q5
Q6
Cc
Q2
Q3
Q7
Q1
Q4
RSC
INPUTS
OUTPUT
Q13
Q11
Q12
50μA
Q10
Q8
Q9

SUMADOR INVERSOR



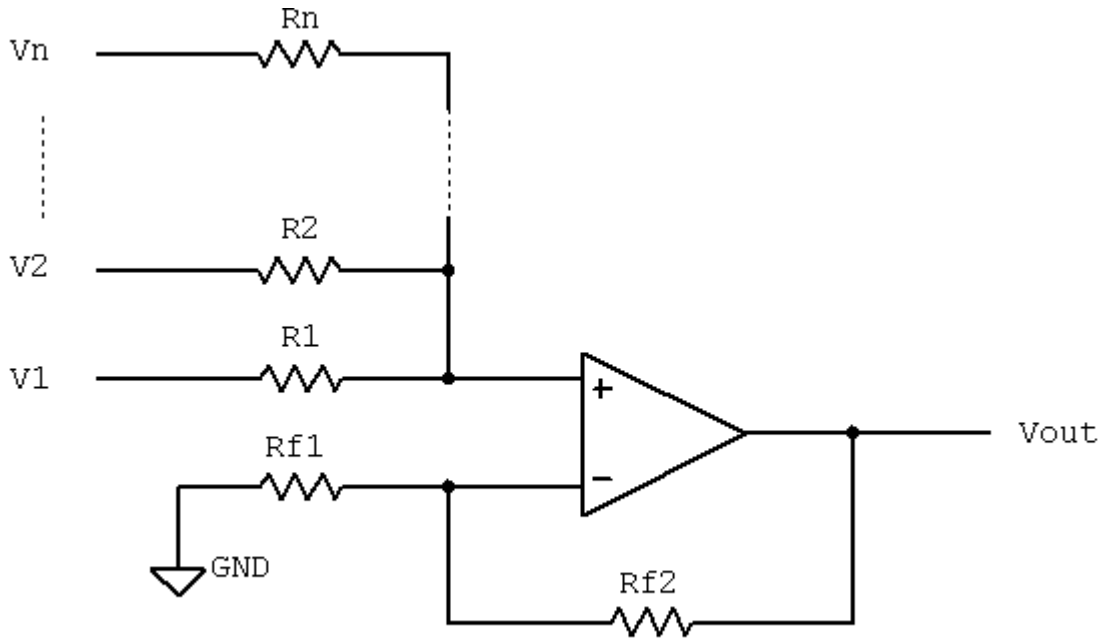
- **SUMADOR**
- **AMPLIFICADOR INVERSOR MULTICANAL**
- **AMPLIFICADOR INVERSOR DE PROMEDIO**

MEZCLADOR DE AUDIO



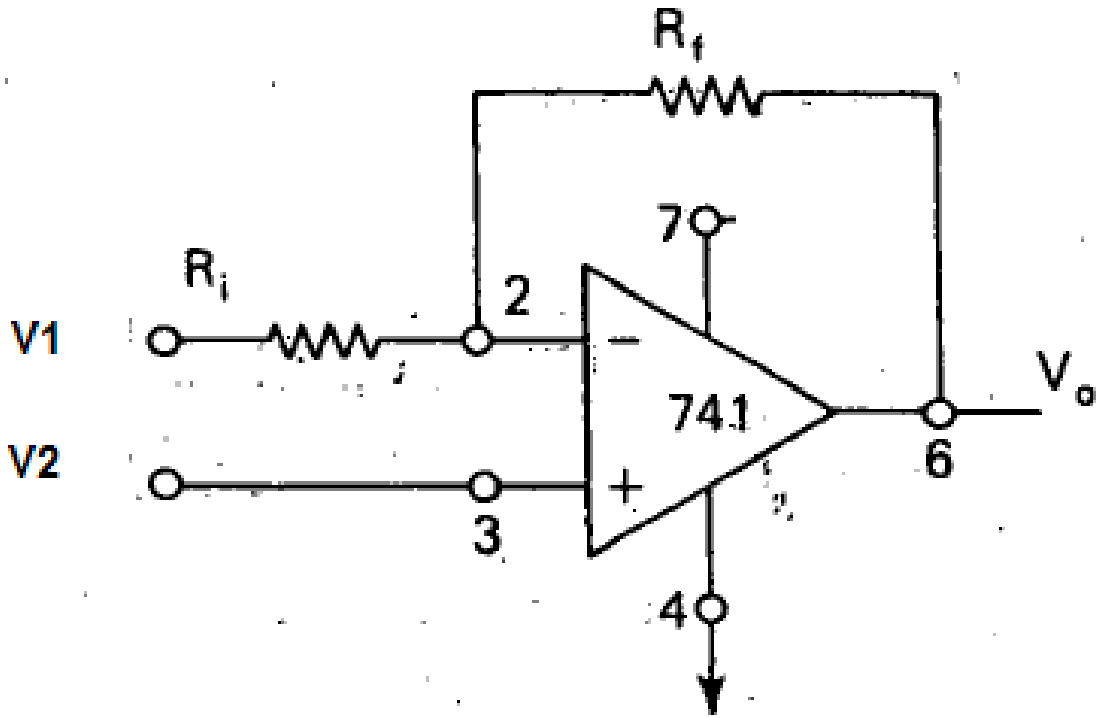
Fuente: http://electronica-circuitos-diagramas.blogspot.com/2013/08/circuito-mesclador-de-audio-con.html

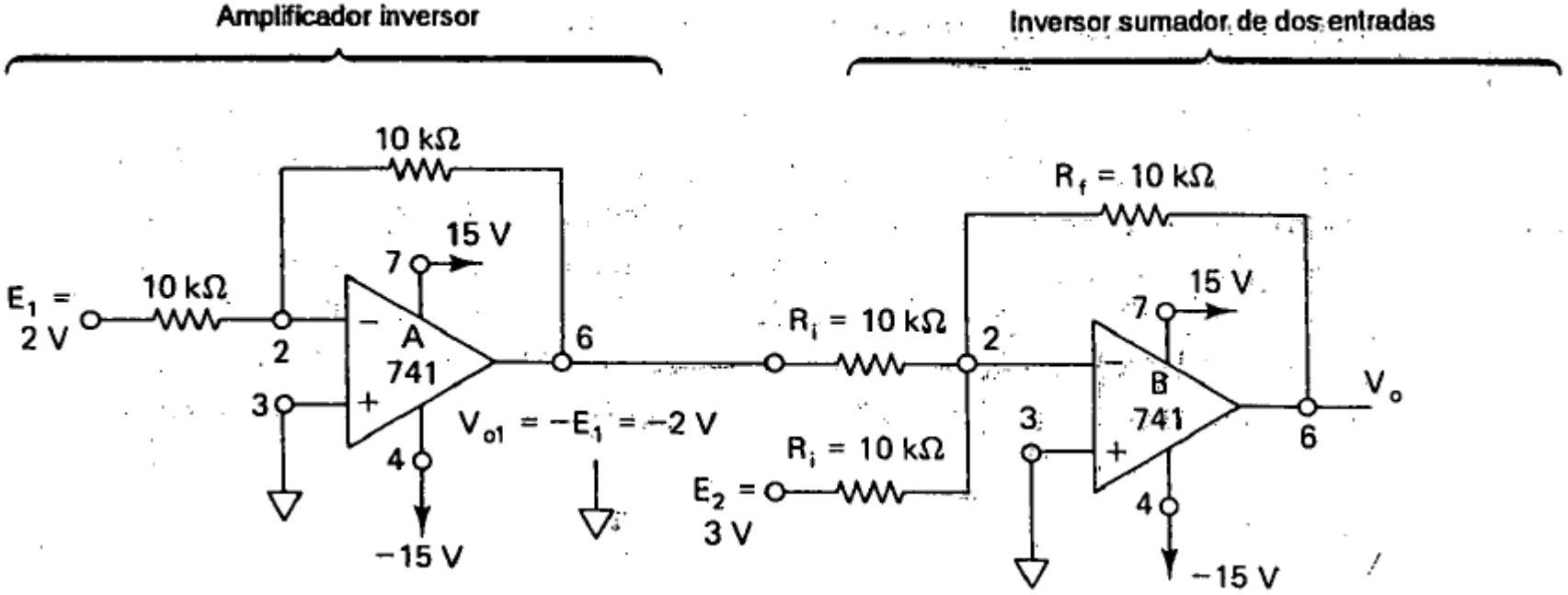
SUMADOR NO INVERSOR



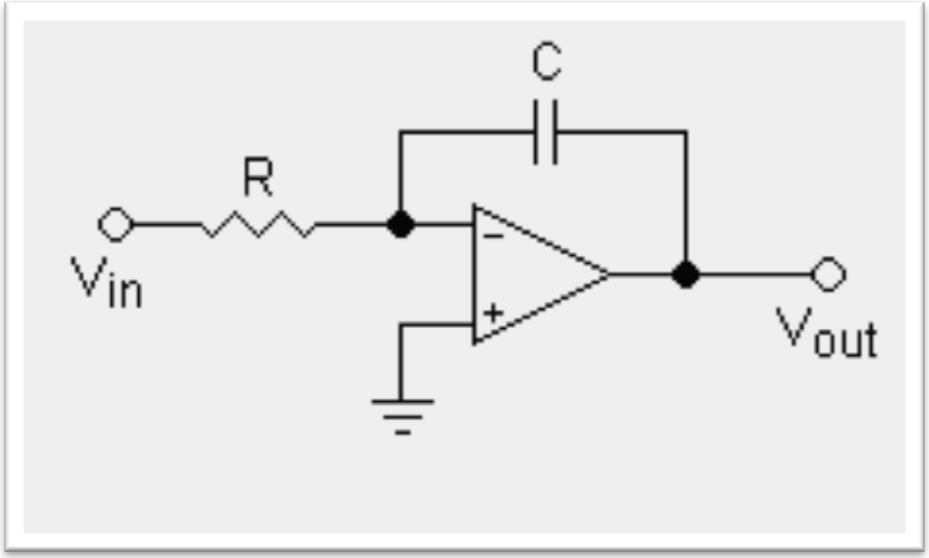
$$Vout = \left(1 + \frac{Rf2}{Rf1}\right) \cdot \left(V1 \cdot \frac{R2}{R1 + R2} + V2 \cdot \frac{R1}{R1 + R2}\right)$$

RESTADOR



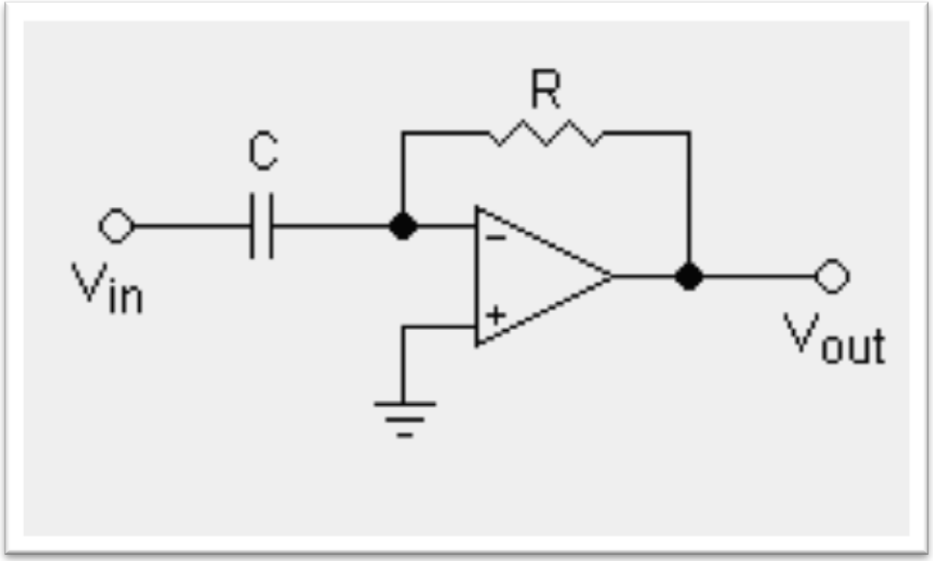

Amplificador inversor
Inversor sumador de dos entradas
10 kΩ
15 V
7
E_1 = 2 V
10 kΩ
2
3
A 741
+
−
6
4
−15 V
$V_{o1} = -E_1 = -2$ V
R_f = 10 kΩ
R_i = 10 kΩ
R_i = 10 kΩ
E_2 = 3 V
15 V
7
2
3
B 741
+
−
6
4
−15 V
V_o

INTEGRADOR

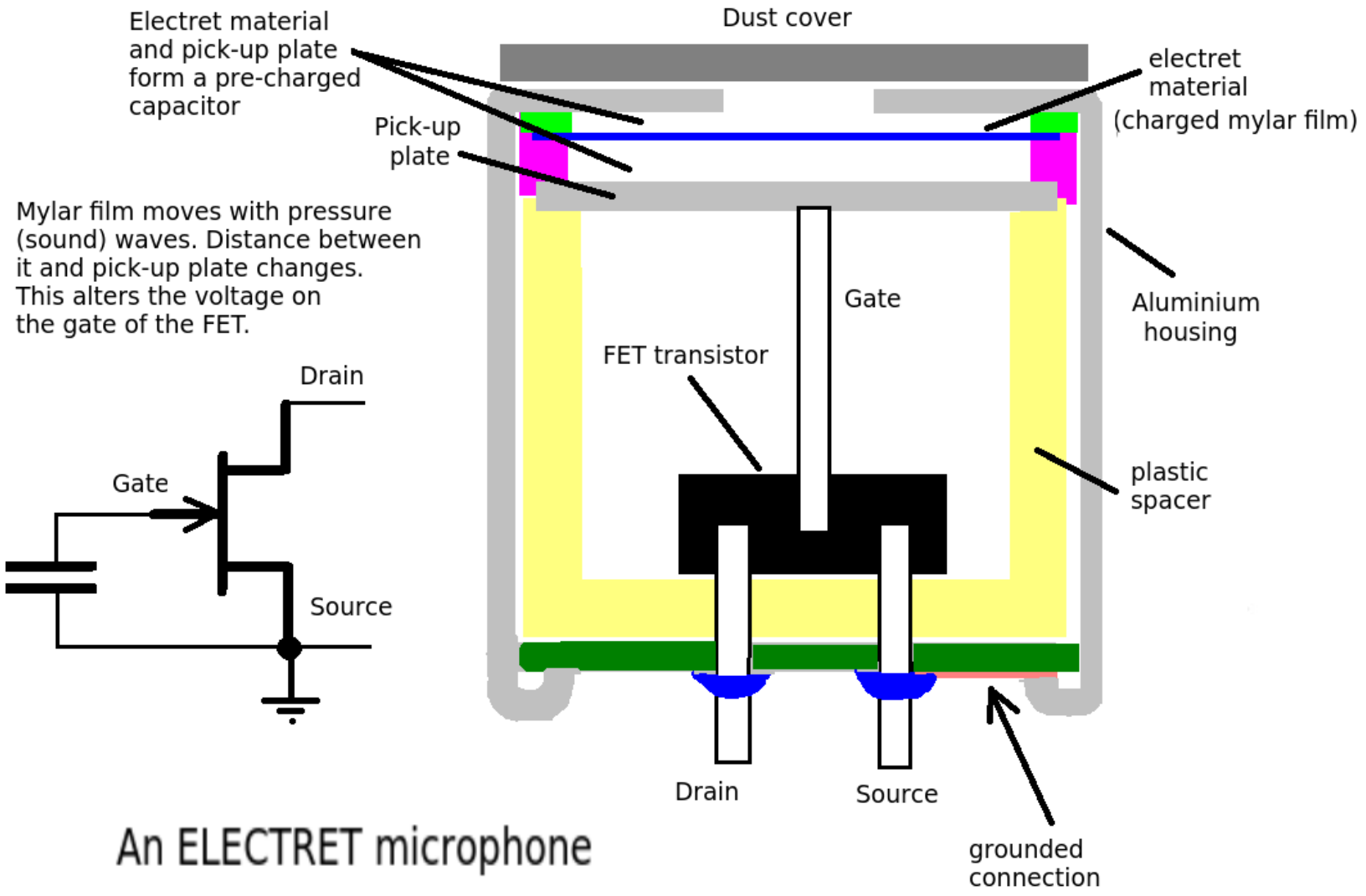


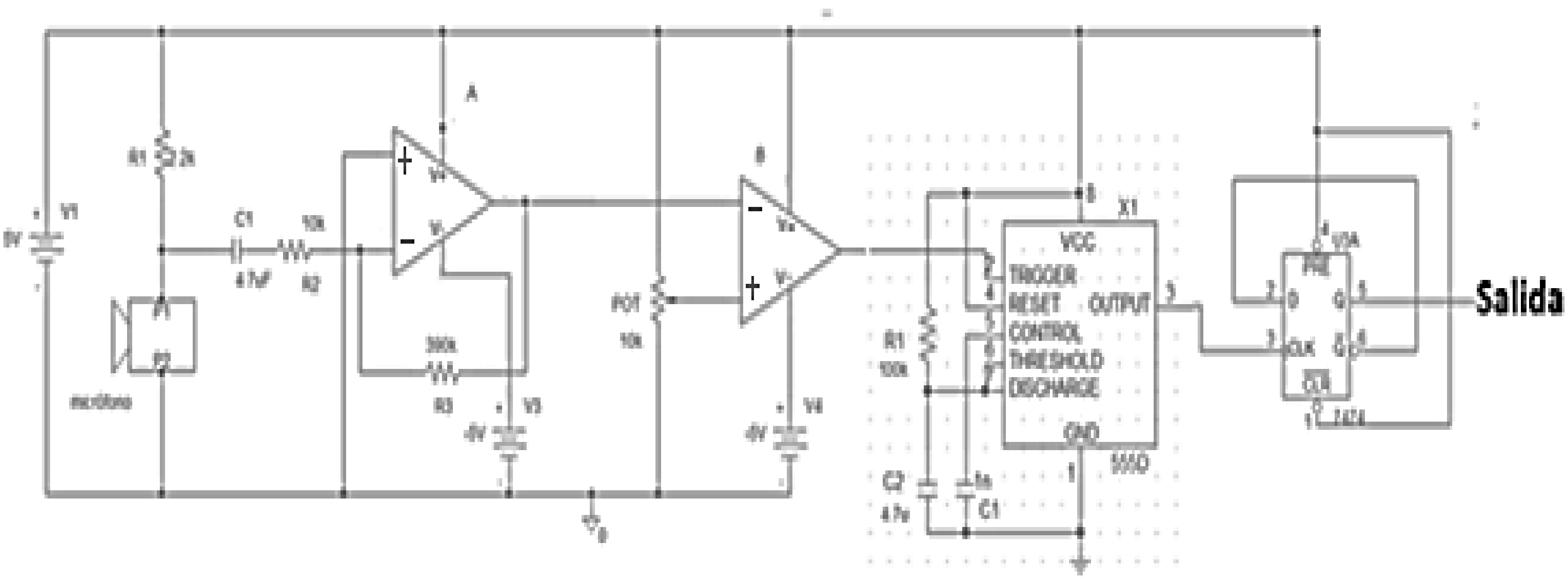
$$V_{out} = \int_0^t -\frac{V_{in}}{RC}\,dt + V_{inicial}$$

DERIVADOR



$$V_{out} = -RC\,\frac{dV_{in}}{dt}$$


Electret material
and pick-up plate
form a pre-charged
capacitor
Dust cover
electret
material
(charged mylar film)
Pick-up
plate
Mylar film moves with pressure
(sound) waves. Distance between
it and pick-up plate changes.
This alters the voltage on
the gate of the FET.
Gate
Aluminium
housing
FET transistor
plastic
spacer
Drain
Gate
Source
Drain
Source
grounded
connection
An ELECTRET microphone


V1
5V
R1
2k
C1
4.7uF
10k
R2
A
300k
R3
V3
-5V
microfono
POT
10k
B
V4
-5V
X1
VCC
TRIGGER
RESET
CONTROL
THRESHOLD
DISCHARGE
OUTPUT
GND
555D
R1
100k
C2
4.7u
C1
U1A
PRE
D
CLK
CLR
Q
7474
Salida