KUMPULAN SKEMA RANGKAIAN

“ AUDIO AMPLIFIER “

- **Mini Audio Amplifier using IC LM 386.**
- **12 Volt Mono Amplifier**
- **TIP 41 - 4 watt Audio Amplifier**
- **2 x 5 watt Amplifier menggunakan IC Ba5406**
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- **STK4050II-200 Watt Audio Amplifier**
- **Amplifier Hifi 12 watt Stereo - IC TDA 2616.**
- **Amplifier BTL 24 watt Menggunakan IC TDA1516**
- **15 Watt Stereo Power Amplifier using TDA4935**

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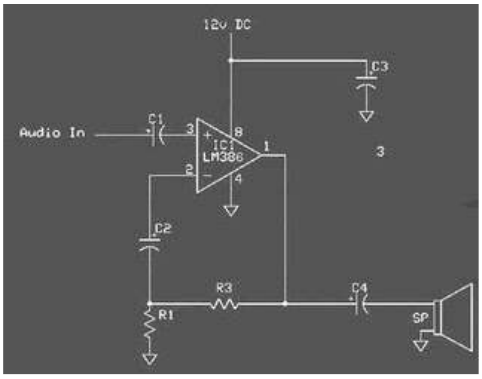
Mini Audio Amplifier using IC LM 386.

This amplifier is much suitable for small game amplifying applications .The circuit has few components and works of a 12 Volt power supply.You can increase the supply voltage up to 18V for a bit more power, with out changing the components.But I would say 12V is OK. A 4 Ohm speaker can be used as load.Volume can be controlled by connecting a 10k pot at the audio input to the IC.



Skema rangkaian audio amplifier using IC LM 386

Component List:

C1 = 10uf Electrolytic Capacitor C2 = 470uf Electrolytic Capacitor
C3 = 0.1uF Disc Capacitor C4 = 2000uf Electrolytic Capacitor 2200uF
R1 = 2.2 Ohm Resistance (Anything Within 10% tolerance)
R3 = 220 Ohm Resistance (Anything Within 10% tolerance)
IC1 = LM383 IC

IC LM386 Description

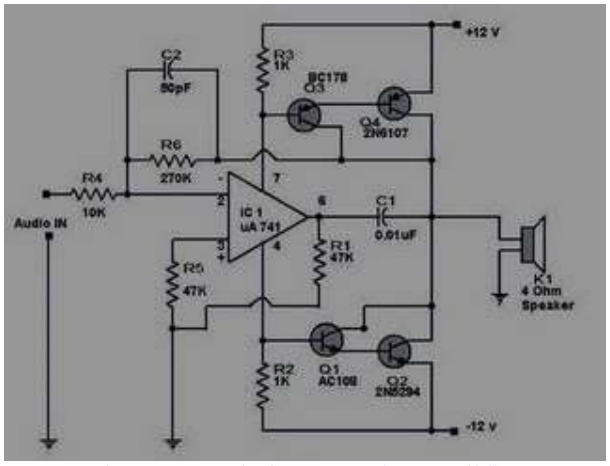
The LM386 is a power amplifier designed for use in low voltage consumer applications. The gain is internally set to 20 to keep external part count low, but the addition of an external resistor and capacitor between pins 1 and 8 will increase the gain to any value from 20 to 200.
The inputs are ground referenced while the output automatically biases 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.

IC LM386 Features

- Minimum external parts
- Low quiescent current drain: 4mA
- Ground referenced input
- Wide supply voltage range: 4V-12V or 5V-18V
- Voltage gains from 20 to 200
- Self-centering output quiescent voltage
- Low distortion: 0.2% (AV = 20, VS = 6V, RL = 8Ohm, PO = 125mW, f = 1kHz)
- Available in 8 pin MSOP package.

12 Volt Mono Amplifier

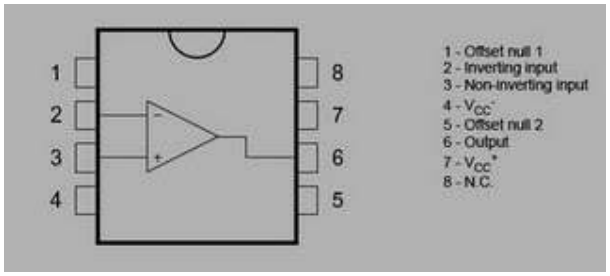
This is circuit amplifier contains only an op-amp and four transistors (easily available from your electronics junk box). the op-amp used is uA 741 which produces the required gain.The four transistors are wired as complementary Darlington's which produces the drive for the speaker.



Skema Rangkaian 12 volt Amplifier

The voltage drop across the resistors R2 and R3, are used as the input of the Darlington pairs. As the input current to the op-amp depends on the level of the signal op amp is amplifying the voltage drop across the resistors R2 and R3 will be proportional to the input signal.These voltage drops are given to the base of Darlington pairs. The amplification is stabilized as a result of the negative feedback from the junction of collectors of Q2 and Q4. The theory may seem little awkward for you.But its working good.Such a simple but stable circuit as this can produce a reasonable output of 12W on a 4 Ohm speaker.

IC Op-Amp UA741
The UA741 is a high performance monolithic operational amplifier constructed on a single silicon chip. The high gain and wide range of operating voltages provide superior performances in integrator, summing amplifier and general feedback applications. The internal compensation network (6dB/ octave) insures stability in closed loop circuits.

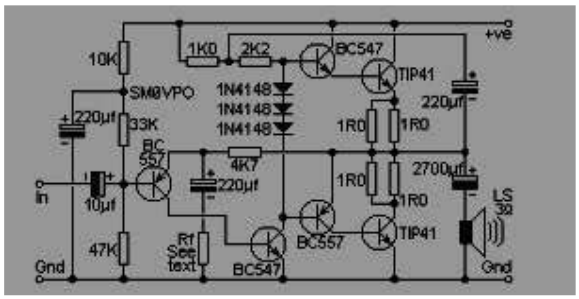


Data max Ic UA741

* Symbol Parameter UA741M UA741I UA741C Unit.
* Supply voltage (VCC) ±22 V.
* Differential Input Voltage (Vid) ±30 V.
* Input Voltage (Vi) ±15 V.
* Power Dissipation (Ptot) 500 mW.
* Storage Temperature Range (Tstg) -65 to +150 °C.

TIP 41 - 4 watt Audio Amplifier

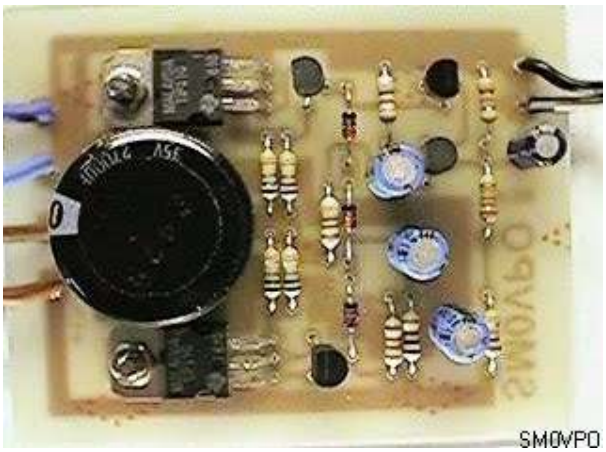
This 4W Audio Amplifier circuit is powered by 2 pieces of transistor TIP41. The circuit is very simple and incorporates darlington output transistors that will provide more than enough output current than is needed to drive a 3-ohm speaker. The gain may be pre-set for a variety of input levels, making it suitable for amplifying computer and cassette-deck Line-output levels. The input level is also suitable for use with the TDA7000 receiver. All components are easily available and I will shortly be making this project available as a kit.



Skema rangkaian 4 watt audio amplifier

The circuit Parameter

Supply voltage	: 8 -15 volts
Output power	: 5.4 Watts
I/P for full O/P	: 30 -4000 mV (RMS)
Noise O/P no I/P	: 0.0005 Volts RMS
Supply current (no-signal)	: 50 mA
Supply Current (Full O/P)	: 1.9 Amperes
3dB Frequency Response	: 42 - 34000 Hertz
6dB Frequency Response	: 21 - 62000 Hertz
Distortion at 2-watts	: 0.01 % (Vgain=10)



Data transistor TIP 41

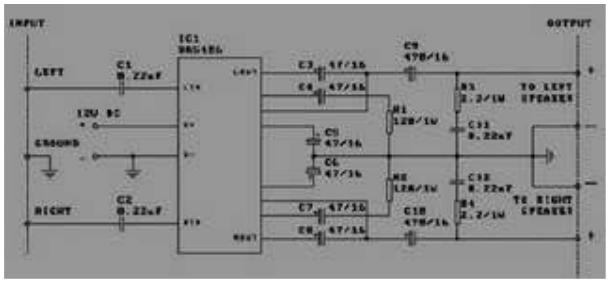
1. Base 2. Collector 3. Emitter

- Collector-Base Voltage (VCBO) : TIP41: 40V, TIP41A: 60V, TIP41B: 80V, TIP41C: 100V.
- Collector-Emitter Voltage (VCEO) : TIP41: 40V, TIP41A: 60V, TIP41B: 80V, TIP41C: 100V.
- Emitter-Base Voltage (VEBO): 5V.
- Collector Current (DC): 6A.
- Collector Current (Pulse): 10A.
- Base Current (IB): 2A.
- Collector Dissipation (TC=25°C): 65W.
- Collector Dissipation (Ta=25°C): 2W.
- Junction Temperature (TJ): 150 °C.
- Storage Temperature : - 65 ~ 150 °C.
- DC Current Gain (hFE): Max 15 - 75.

2 x 5 watt Amplifier menggunakan IC Ba5406

This is a 5watt stereo power amplifier used IC BA5406. IC BA5406 contains two sets of AF power amplifiers. It delivers 5W x 2 into 3 ohm loads with a 12V supply. It has minimal power-on pop noise and has immunity to supply voltage drop. It also has minimal RF radiation.

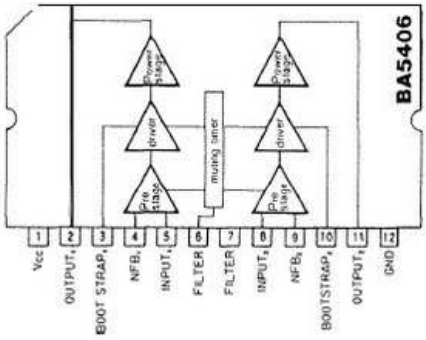
Recommended supply voltage: 5-15V. Ideally the power supply should be able to deliver over 2.5 Amps. This means that a typical 'cheap' plugin power supply (wall wart) will not be good enough. The power supply leads should be as short as possible. Quiescent current 20-70mA, typically 40mA.



Skema rangkaian 2 x 5 watt Amplifier

IC BA5406 Description

The BA5406 is a monolithic dual OTL power amplifier containing two sets of high-power AF power amplifiers. The device delivers 5 watts x 2 into 30 loads with a 12V supply, or 2.8 watts x 2 into 30 loads with a 9V supply. The BA5406 features minimal power-on pop noise and immunity to supply voltage drop. With its minimal RF radiation, the device is ideally suited for use in stereo radio cassette recorders.



Layout IC power BA5406

Features IC BA5406

Minimal power-on pop noise.
Immunity to supply voltage drop (operates down to Vcc=4.5V typ.).
Excellent channel balance.
Low distortion (THD=0.3% at PO=O.5W).
12.pin SIP package for mounting ease and saved space on a PC board.
Ripple filter input (pin 6) can also be used as a muting control input.
Symmetrical pin configuration facilitates art work.
Low thermal resistance of the package makes heat-sink design easy.
Built-in high-frequency phase compensation capacitor.
Minimal RF radiation allows for free system layout.

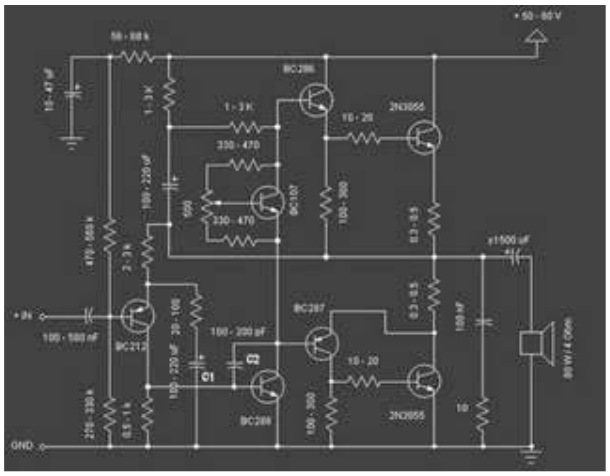
75 watt 2N3055 Power Amplifier

Amplifier power is a circuit of electronics that is used to strengthen the power (or energy in general). In the field of audio, amplifier will amplify the sound signal (which has been expressed in the form of electric current) on the input it into electric current is stronger at the output. The amount of strengthening is often known by the term gain. Value of the gain is expressed as a function of frequency is called the transfer function.

So the gain is the result of the power output (Pout) and power at the input to its function in the form of frequency. The size of the gain, (G) is usually the Decibel (dB).

2N3055 Power Amplifier

Skema 2N3055 Power Amplifier . The optimal supply voltage is around 30V, but this amp work from 24 to 32V. The maximal input voltage is around 0.8 - 1V. As you can see, in this design the components have a big tolerance, so you can build it almost of the components, which you find at home. The and transistors can be any NPN type power transistor, but do not use Darlington types. The output power is around 150 Watt.



Skema Rangkaian 2N3055 Power Amplifier

capacitor C1 regulates the low frequencies (bass), as the capacitance grows, the low frequncies are getting louder.

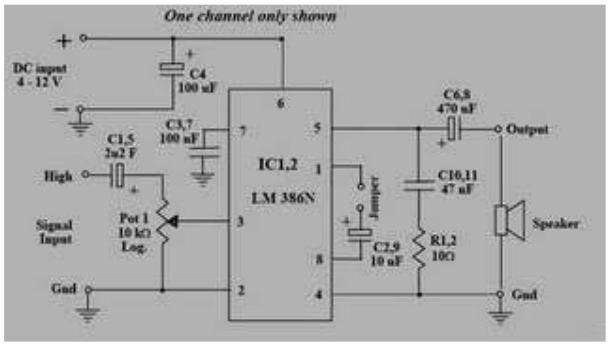
Capacitor C2 regulates the higher frequencies (treble), as the capacitance grows, the higher frequencies are getting quiter.

This is a class B amplifier, this means, that a current must flow through the end transistors, even if there is no signal on the input. This current can be regulated with the 500Ω trimmer resistor. As this current incrases, the sound of the amplifier gets better, but the end transistors are more heating. But if this current decrases, the transistors are not heating so much, but the sound gets worse.

1 watt Amplifier Stereo

This is a circuit of 1 watt amplifier stereo using two IC LM386N. This circuit belongs to kitsrus.com and the kit is available there or at electronickits.com. This circuit only need 10mA current with best voltage supply is 6-12VDC. No heatsink required for normal usage.

the amplifier circuit only a few external components, the IC contains most of the necessary circuitry. C1, C5 are the input coupling capacitors, which block any DC that might be present on the inputs. C2, C9 maintain DC bias levels in the gain adjustment (feed back) circuit. C4 provides power supply decoupling, and C6, C8 are the output coupling capacitors. C10, R1 and C11, R2 act as zobel networks providing a high frequency load to maintain stability where loud speaker inductive reactance may become excessive. The pot provides adjustable input level attenuation.



Skema rangkaian 1 watt Amplifier stereo

Layout 1 watt Amplifier stereo

List Components :

Capacitors :
C1, C5 2.2 uF / 50Vecap
C2, C9 10 uF / 25V ecap
C3, C7 100 nF mono (104)
C4 100 uF / 16V ecap

C6, C8 470 uF / 16V ecap
C10, C11 47 nF mylar (473)

Resistors :
R1, R2 10 ohm (brown, black, black)
Pot 1 10k ohm dual gang log pot. (A)

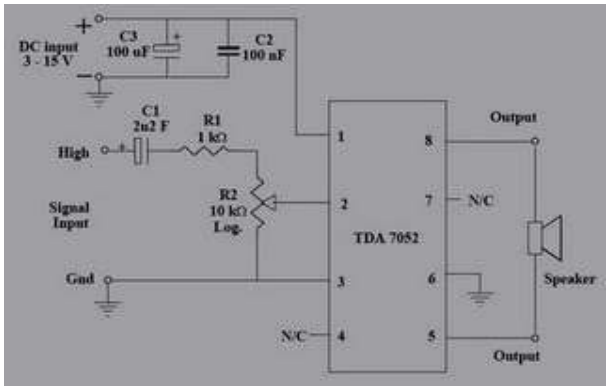
Misc. :
Kit 115V2 Printed Circuit Board
IC 1, 2 LM386N Integrated Circuit
8 pin IC socket
2 pin header and jumper 2 sets

Specifications :

- D.C. input : 4 – 12 V at 200 – 500 mA max.
- Idle current : ~ 10 mA
- Power output : > 1 Watt max. @ 8 ohms, 12V DC, ~ 0.4 Watt RMS cont. per channel
- Freq. Resp. : ~ 40 Hz to 100 kHz, 8 ohm, < g="20"> 80 dB, (>90dBA) G = 20, > 60 dB, (>70 dBA) G = 200
- Sensitivity : > 100 mV, G=20, > 10 mV, G=200
- Input Z : ~ 10 k ohm.

Mini Amplifier Mono - IC TDA7052

This is an audio amplifier circuit which use IC TDA 7052 .There are only 5 external components. C1 is the input coupling capacitor, which blocks any DC that might be present on the input. C2 and C3 provide power supply decoupling, and R2 provides adjustable input level. This can be used as a volume control. The ideal supply voltage of this circuit is about 6-12V and no heatsink required.



Skema rangkaian Mini Amplifier - IC TDA7052

Layout Mini Amplifier - IC TDA7052

List Components :

* C1 : 2.2uF electrolytic capacitor
* C2 : 100nF ceramic
* C3 : 100uF electrolytic
* R1 : 1K ohm resistor
* R2 : 10K ohm potentiometer
* Spindle for potentiometer
* TDA7052 Integrated Circuit

Specifications IC TDA7052 :

D.C. input : 3 – 15 V at <> 1 Watt @ 8 ohms maximum.
> 0.25 Watt RMS continuous
Freq. Resp. > 20 Hz – 20 kHz
~ 10 – 50 kHz, – 3dB
THD <> 70 dBA
Gain ~ 30 dB maximum.
Input Z ~ 10 k ohm.

68 Watt Audio Amplifier LM3886

Amplifier power is a circuit of electronics that is used to strengthen the power (or energy in general). In the field of audio, amplifier will amplify the sound signal (which has been expressed in the form of electric current) on the input it into electric current is stronger at the output. The amount of strengthening is often known by the term gain. Value of the gain is expressed as a function of frequency is called the transfer function.

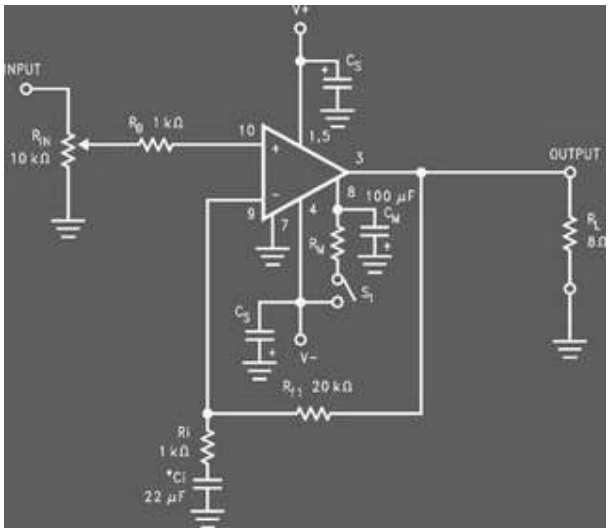
So the gain is the result of the power output (Pout) and power at the input to its function in the form of frequency. The size of the gain, (G) is usually the Decibel (dB).

68 Watt Audio Amplifier LM3886

LM3886 is a high-performance audio power amplifier capable of delivering 68W of continuous average power to a 4 load and 38W into 8 with 0.1% THD+N from 20Hz-20kHz.

The performance of the LM3886, utilizing its Self Peak Instantaneous Temperature (°Ke) (SPiKe™) protection circuitry, puts it in a class above discrete and hybrid amplifiers by providing an inherently, dynamically protected Safe Operating Area (SOA). SPiKe protection means that these parts are completely safeguarded at the output against overvoltage, undervoltage, overloads, including shorts to the supplies, thermal runaway, and instantaneous temperature peaks.

The LM3886 maintains an excellent signal-to-noise ratio of greater than 92dB with a typical low noise floor of 2.0µV. It exhibits extremely low THD+N values of 0.03% at the rated output into the rated load over the audio spectrum, and provides excellent linearity with an IMD (SMPTE) typical rating of 0.004%.



Skema rangkaian LM3886 68 Watt power amplifier

Layout IC Power LM3886

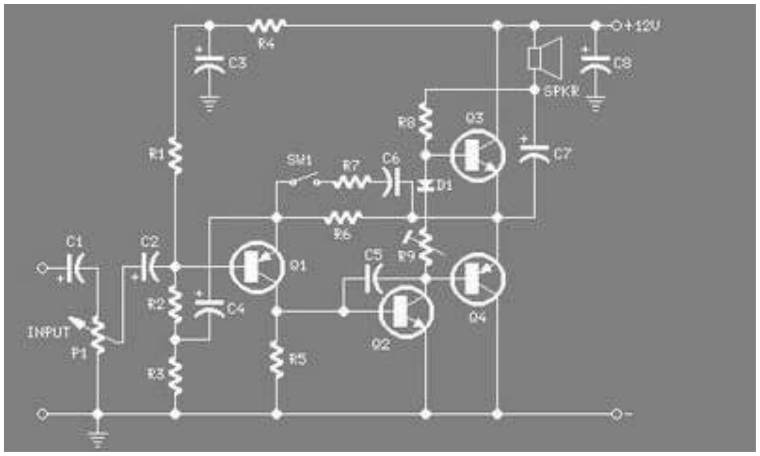
Notice:

- 68W cont. avg. output power into 4 at VCC = ±28V
- 38W cont. avg. output power into 8 at VCC = ±28V
- 50W cont. avg. output power into 8 at VCC = ±35V
- 135W instantaneous peak output power capability
- Signal-to-Noise Ratio >= 92dB
- An input mute function
- Output protection from a short to ground or to the supplies via internal current limiting circuitry
- Output over-voltage protection against transients from inductive loads
- Supply under-voltage protection, not allowing internal biasing to occur when |VEE| + |VCC| <= 12V, thus eliminating turn-on and turn-off transients
- 11-lead TO-220 package
- Wide supply range 20V - 94V.

AMPLIFIER SEDERHANA - 4 TRANSISTOR

This Rangkaian audio Ampilifier is designed to be packed into a mini-speaker box 2, 4 and 8 ohms. This circuit is also equipped with a switch-Bass Booster. can be connected to the output line walkman, mini disc, iPod, CD Player, Computer and other similar devices is its headphone output line.

This circuit of the design without using the IC by using methods that seem somewhat out of date. ampilfier the supply voltage 12v. SW1 switch will produce bass-booster, but at the same time the volume should be increased to compensate for lost power at high frequency.



Skema rangkaian audio amplifier sederhana

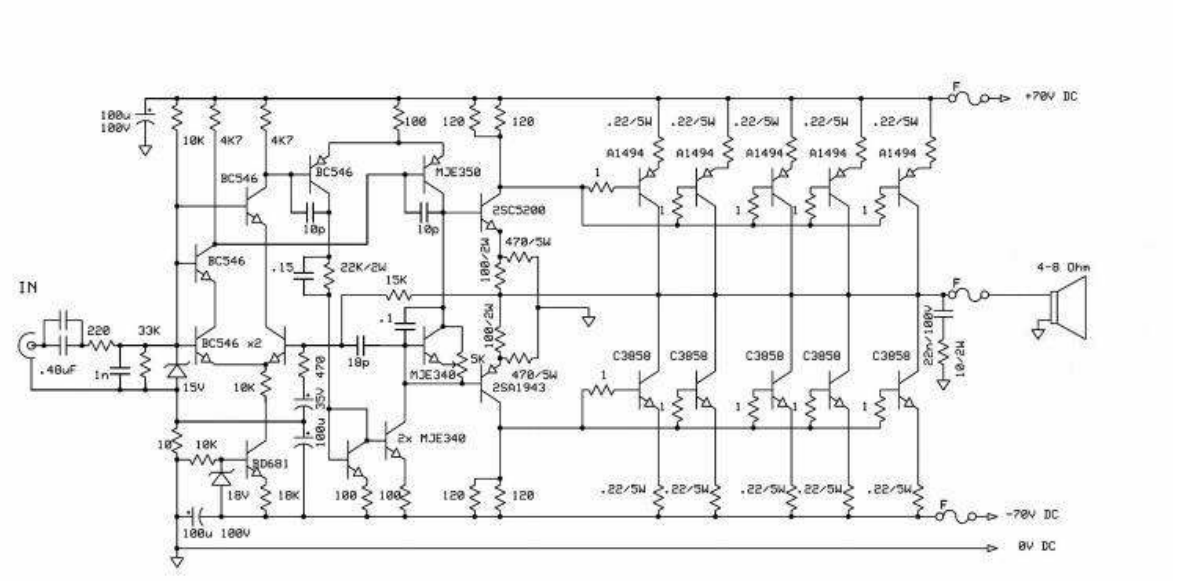
In use later, R9 should be set carefully in order to reduce distortions in the sound that emerged. and of course have to make 2 pieces in the circuit to generate a stereo output from this circuit.

List Component Of Audio Amplifier:
-P1: 10K Log.Potentiometer
-R1,R2: 33K 1/4W Resistors
-R3: 33R 1/4W Resistor
-R4: 15K 1/4W Resistor
-R5,R6: 1K 1/4W Resistors
-R7: 680R 1/4W Resistor
-R8: 120R 1/2W Resistor
-R9: 100R 1/2W Trimmer Cermet
-C1,C2: 10µF 63V Electrolytic Capacitors
-C3: 100µF 25V Electrolytic Capacitor
-C4,C7: 470µF 25V Electrolytic Capacitors
-C5: 47pF 63V Ceramic Capacitor
-C6: 220nF 63V Polyester Capacitor\
-C8: 1000µF 25V Electrolytic Capacitor
-D1: 1N4148 75V 150mA Diode
-Q1: BC560C 45V 100mA PNP Low noise High gain Transistor
-Q2: BC337 45V 800mA NPN Transistor
-Q3: TIP31A 60V 4A NPN Transistor
-Q4: TIP32A 60V 4A PNP Transistor
-SW1: SPST switch
-SPKR: 3-5 Watt Loudspeaker, 8, 4 or 2 Ohm impedance

1000 watt Power Amplifier - Sanken

This is a scheme set 1000watt power amplifier. Currently I do not have a picture to the circuit board, but because the amplifier circuit is quite simple, you can design it yourself PCB easily. Or you can order it at the store PCB audio kit in the center of electronic singosaren oriental, solo.

The assemble cables for DC power supply and output transistors must be large, use size 1.5-3mm for large current passed. The supply used transformer with 20A/45Ct and at least 4x10000uf/80 volt capasitor. this circuit is able to supply power 10000watt therefore the power transistor will be very hot, give good cooling fan on the power transisitor



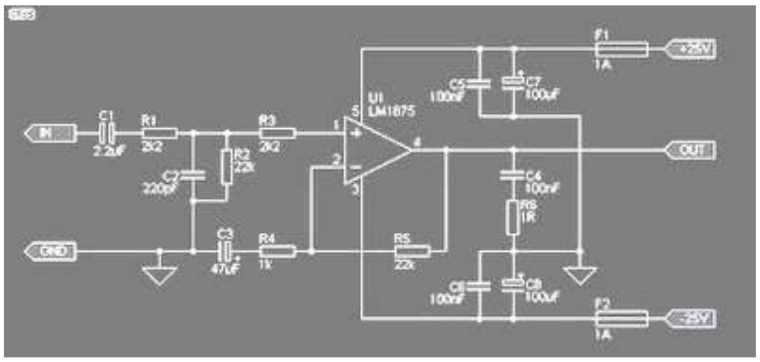
Skema Rangkaian Power Amplifier 1000 watt

Transitor alternative to replacement of the 2SA1494 is 2SA1216 From SANKEN. The transistor has a 200-350 watt power dissipation of each pair so that for long-term operation of more durable. Keep in mind, usually sold a pair of power transistors with its complement, so you can not buy 2SC2922 alone without 2SA1216 or 2SA1494 without 2SC3858. The price range for transitor tsb is 30-40 thousand Rupiah / pair.

AUDIO AMPLIFIER 20 WATT - IC LM 1875

By using IC LM 1875 made by National Semiconductor, we can make a simple Power Amplifer, but it produces a reliable voice.

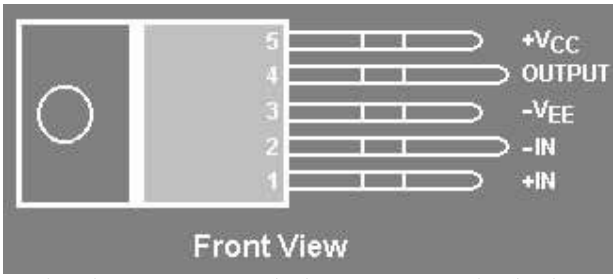
This power amplifier circuit can result in strengthening the voltage up to 27dB for each channel. Strengthening the voltage can be changed by changing the feedback resistor R5 (in this circuit uses R 22K). But the tension reinforcement shall not be less than 20 dB because it can cause oscillation.



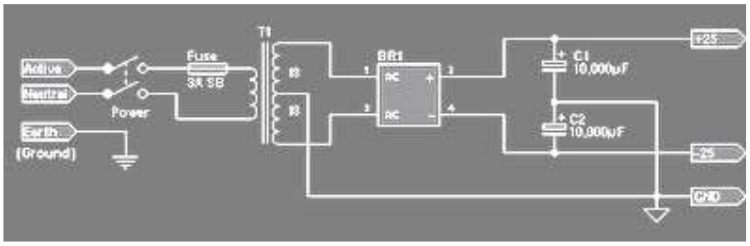
Skema rangkaian 20 watt power amplifier

IC LM1875 is a monolithic power amplifier offering very low distortion and high quality performance for consumer audio applications.
IC LM1875 delivers 20 watts into a 4 Ohm or 8 Ohm load on ±25V supplies. Using an 8 Ohm load and ±30V supplies, over 30 watts of power may be delivered. The amplifier is designed to operate with a minimum of external components. Device overload protection consists of both internal current limit and thermal shutdown.
IC LM1875 design takes advantage of advanced circuit techniques and processing to achieve extremely low distortion levels even at high output power levels. Other outstanding features include high gain, fast slew rate and a wide power bandwidth, large output voltage swing, high current capability, and a very wide supply range. The amplifier is internally compensated and stable for gains of 10 or greater.

Pin configuration of the LM 1785 can be seen in the image below:



As for the circuit's power supply it can you see in the image below:



STK4050II-200 Watt Audio Amplifier

Amplifier power is a circuit of electronics that is used to strengthen the power (or energy in general). In the field of audio, amplifier will amplify the sound signal (which has been expressed in the form of electric current) on the input it into electric current is stronger at the output. The amount of strengthening is often known by the term gain. Value of the gain is expressed as a function of frequency is called the transfer function.

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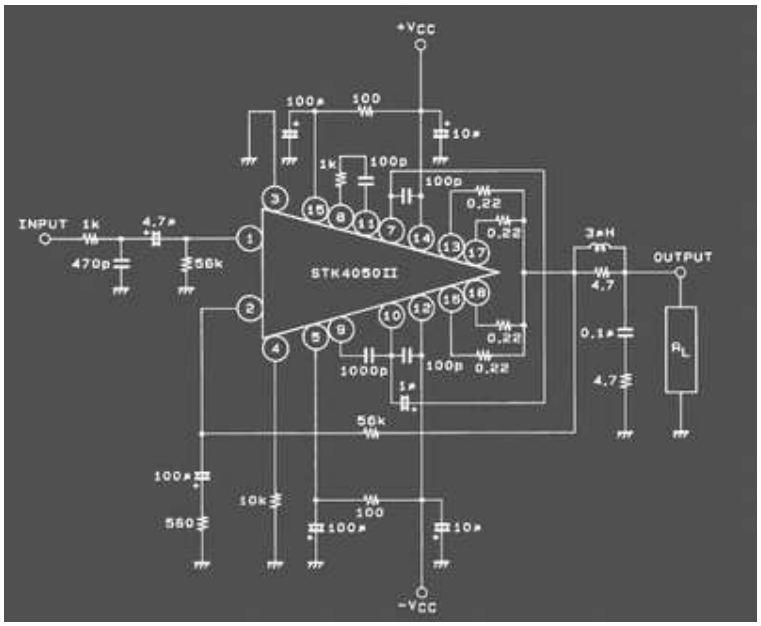
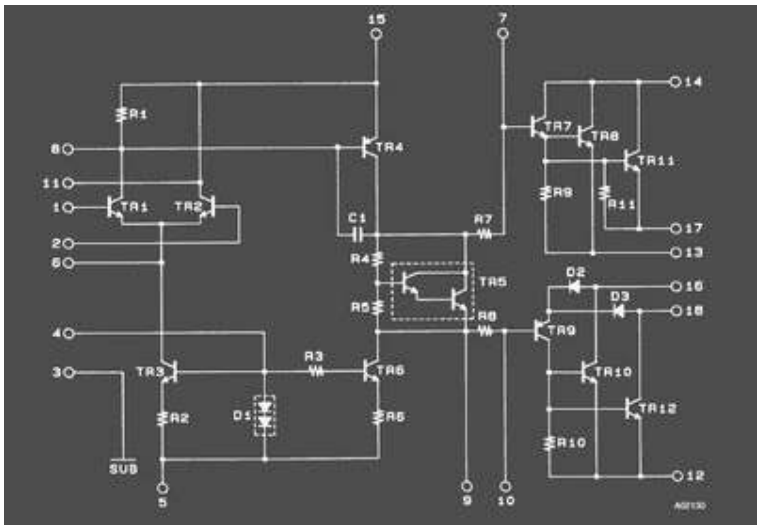


Skema Rangkaian Power Amplifier 200 watt



Equivalent Circuit of IC STK4050 II

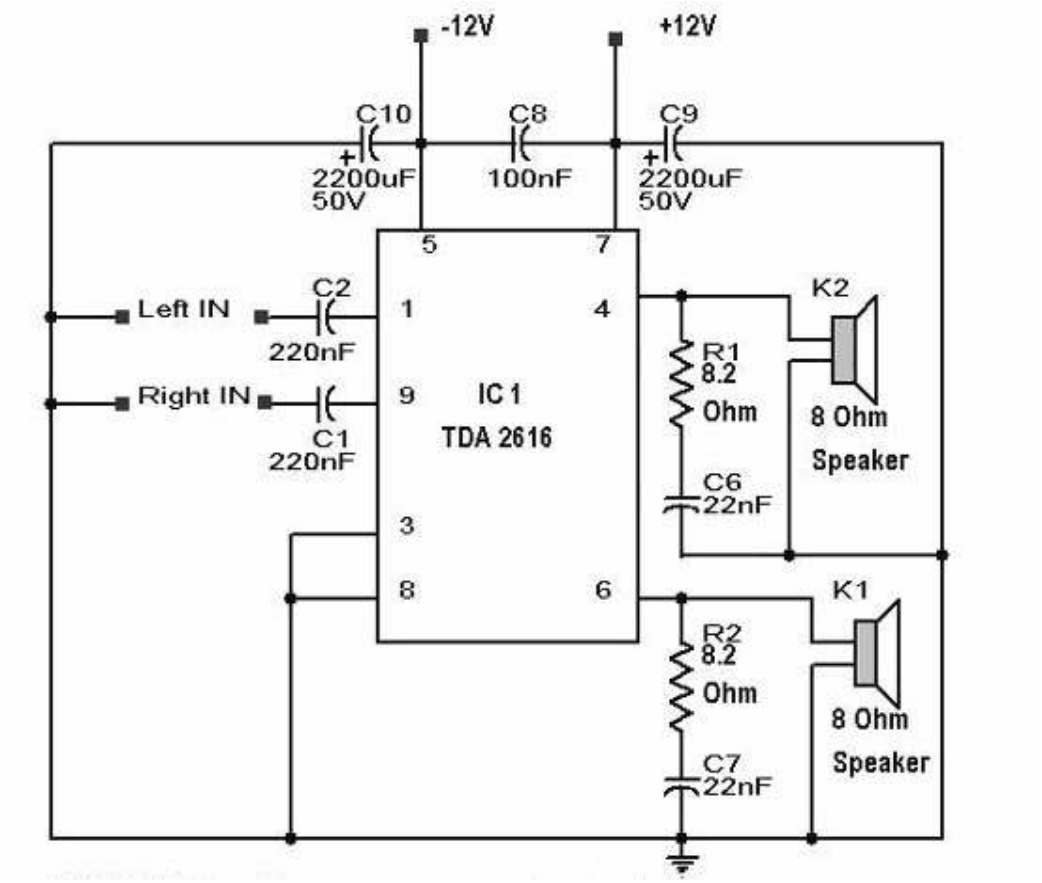
Features IC STK4050II

Compact package for thin-type audio sets
Member of pin-compatible series with outputs of 20 to 200W
Easy heatsink design to disperse heat generated in thintype stereo sets
Constant-current circuit to reduce supply switch-on and switch-off shock noise
External supply switch-on and switch-off shock noise muting, load short-circuit protection, thermal shutdown and other circuits can be tailored-designed
Application Circuit Power Amplifier IC STK4050 II

Note:
To use the results of the max capacitor 10000Uf/80 Vot, with a pure tranformator 5 / 42 volt provide a good cooling plate, the ic STK4050 II

Amplifier Hifi 12 watt Stereo - IC TDA 2616.

This is the circuit of a 12 watt Stereo HiFi amplifier circuit using IC TDA 2616. A quiet simple and robust circuit using very less components. This makes the circuit ideal for a portable power amplifier. The circuit delivers 12 W power on 8 Ohm speaker for each channel at +/- 12 V dual supply.



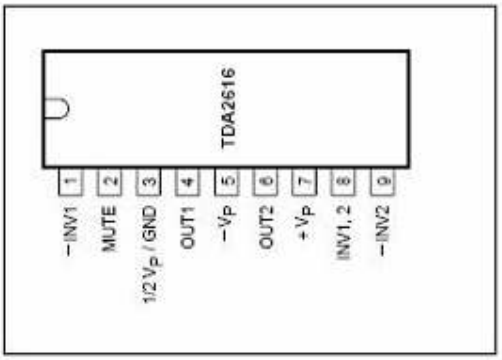
Rangkaian Amplifier Hifi 12 watt Stereo

For asymmetrical power supplies (with the load short-circuited), the maximum unloaded supply voltage is limited to VP = 28 V and with an internal supply resistance of RS ³ 4 W, the maximum unloaded supply voltage is limited to 32 V (with the load short-circuited). For symmetrical power supplies the circuit is short-circuit-proof up to VP = ±21 V.

The TDA2616 is a stereo power amplifier IC comes in a 9-lead single-in-line (SIL9) plastic power package (SOT131). This IC is specially designed for mains fed amplifier circuits, such as stereo radio,tape and television .The IC has good gain balance of both channels and Hi-fi in accordance with IEC 268 and DIN 45500 standards.Also the IC TDA 2616 has special inbuilt circuit for the suppression of noise signals at the inputs, during switch-on and switch-off.This prevents click sounds during power on and power off.

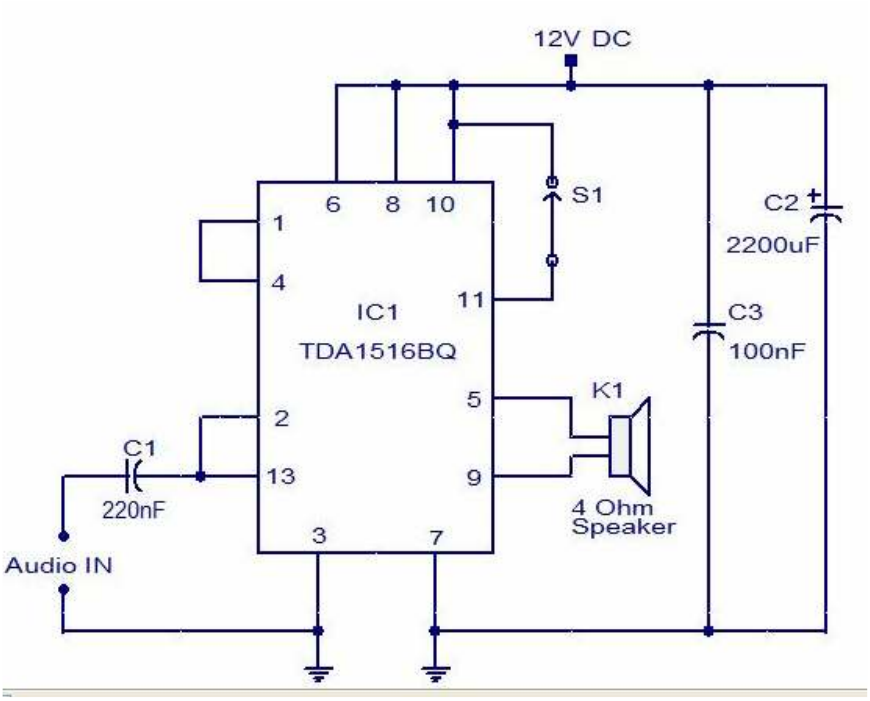
IC TDA 2616 Pin assignment & layout.

SYMBOL	PIN	DESCRIPTION
–INV1	1	non-inverting input 1
MUTE	2	mute input
1/2V_P/GND	3	1/2 supply voltage or ground
OUT1	4	output 1
$-V_P$	5	supply voltage (negative)
OUT2	6	output 2
$+V_P$	7	supply voltage (positive)
INV1, 2	8	inverting inputs 1 and 2
–INV2	9	non-inverting input 2



Amplifier BTL 24 watt Menggunakan IC TDA1516

This is the circuit diagram of a simple 24W mono amplifier using IC TDA1516.The TDA1516 is an integrated class B power amplifier in a 13 pin SIL package. The IC has many useful features such as short circuit protection, load dump protection, thermal protection, reverse polarity protection etc. Here the IC is wired in BTL mode to deliver 24W of power into a 4 ohm speaker. This amplifier can be operated from a 12V DC supply and this makes it suitable for car audio applications.



Rangkaian Amplifier BTL 24 watt

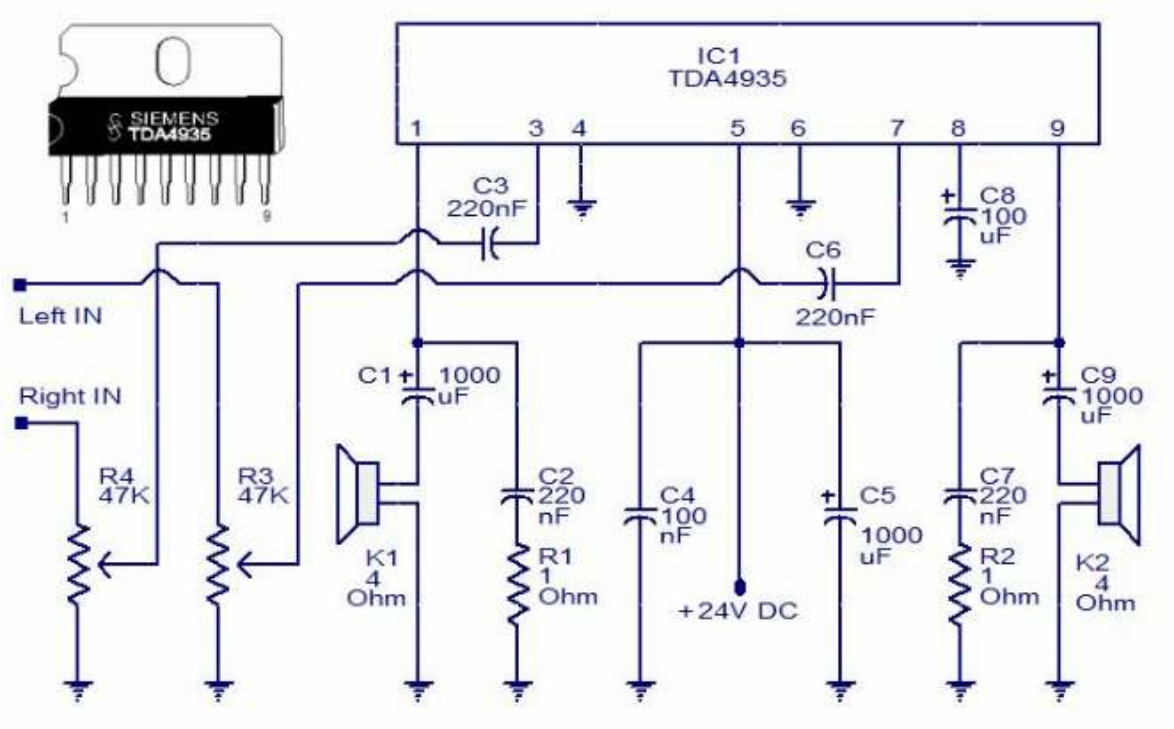
IC TDA1516

The TDA1516BQ contains two identical amplifiers with differential input stages. This device can be used for stereo or bridge applications. The gain of each amplifier is fixed at 20 dB. A special feature of this device is the mute/stand-by switch which has the following features: · low stand-by current (< 100 mA) · low mute/stand-by switching current (low cost supply switch) · mute condition.

Pin **IC TDA1516**
1 -INV1 non-inverting input 1 8 BS2 bootstrap 2
2 INV inverting input 9 OUT2 output 2
3 GND1 ground (signal) 10 VP supply voltage
4 Vref reference voltage 11 M/SS mute/stand-by switch
5 OUT1 output 1 12 RR supply voltage ripple rejection
6 BS1 bootstrap 1 13 -INV2 non-inverting input 2

15 Watt Stereo Power Amplifier using TDA4935

TDA4935 is bipolar stereo amplifier IC that can be wired as a 2X15W stereo amplifier or a 30W mono BTL amplifier. The IC also features built in circuitry for over load protection and over temperature shut down. Here the IC is wired in stereo mode in order to deliver 15W power on each speaker. The circuit does not require a dual power supply and it can be powered from anything between 8 to 24V.Here I am using 24V for getting maximum output power.



The circuit can be powered from anything between 8 to24V.
Use 20W, 4 Ohm speakers for K1 and K2.
All electrolytic capacitors must be rated at least 25V.

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