SUBELEMENT T6

Electrical components

[4 Exam Questions]

T6A01
WHAT ELECTRICAL COMPONENT OPPOSES THE FLOW OF CURRENT IN A DC CIRCUIT?

A. Inductor

B. Resistor

C. Voltmeter

D. Transformer

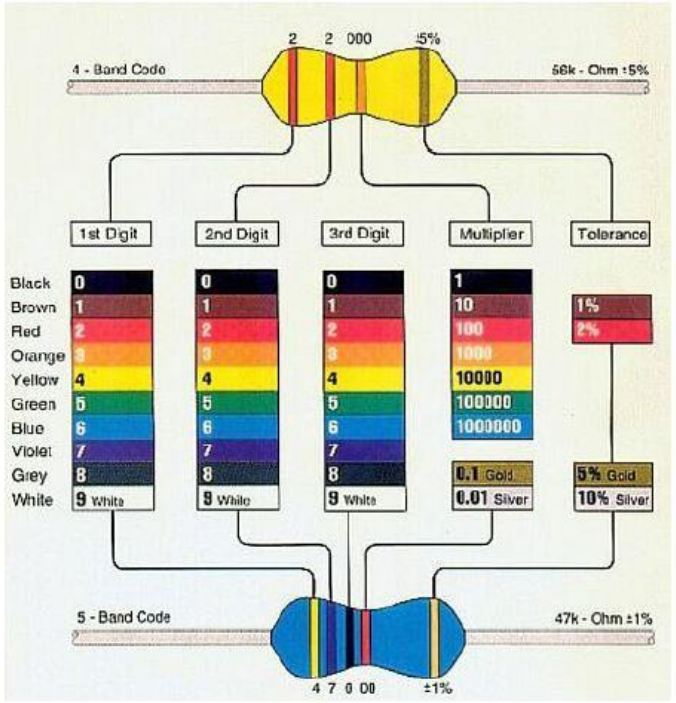
PREPPERNET

It may help to remember RESISTor as a synonym for oppose, as in oppose the flow of current

Resistor Symbol

PREPPERNET

Resistors



Resistor

Resistors oppose the flow of current in a DC (or AC) circuit). Their values are represented with the colored strips or numbers and will vary slightly with temperature.

A variable resistor is called a potentiometer and is often used for volume controls

T6A02

WHAT TYPE OF COMPONENT IS OFTEN USED AS AN ADJUSTABLE VOLUME CONTROL?

A. Fixed resistor

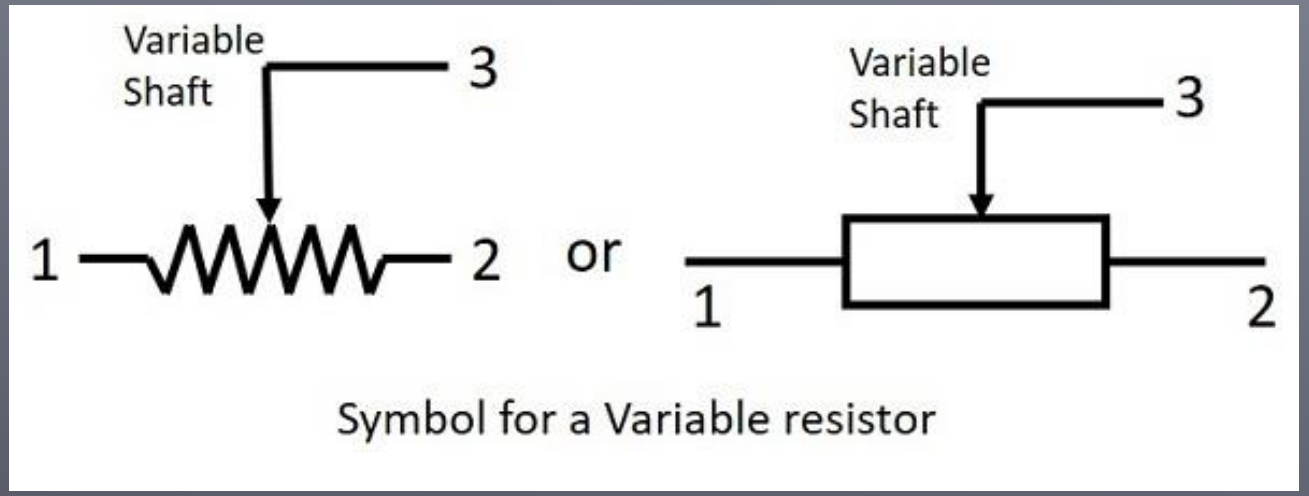
B. Power resistor

C. Potentiometer

D. Transformer

PREPPERNET

A potentiometer (pot) can be configured as a user controlled variable resistor. This change in resistance in turn controls the volume.



Symbol for a Variable resistor

PREPPERNET

T6A03
WHAT ELECTRICAL PARAMETER IS CONTROLLED BY A POTENTIOMETER?

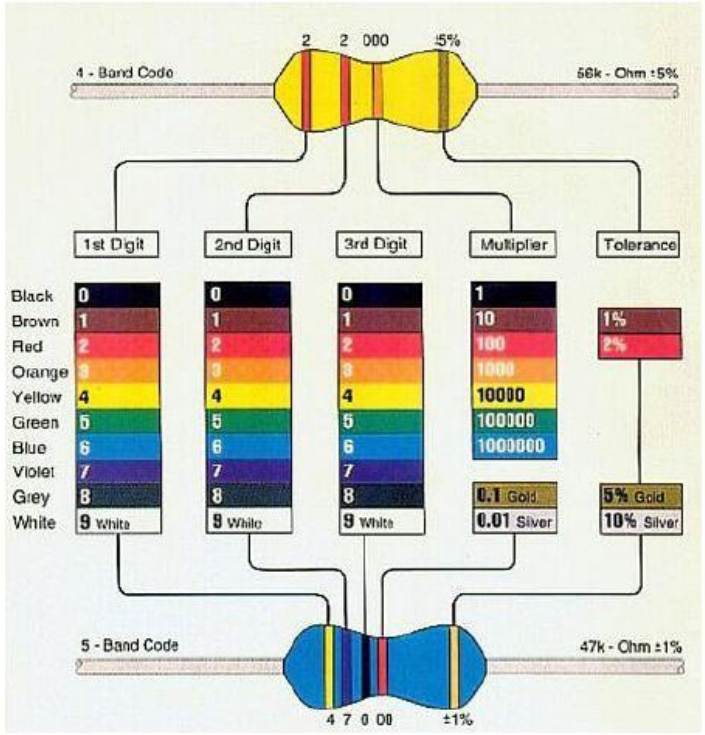
A. Inductance

B. Resistance

C. Capacitance

D. Field strength

Resistors



Resistor

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A variable resistor is called a potentiometer and is often used for volume controls

T6A04
WHAT ELECTRICAL COMPONENT STORES ENERGY IN AN ELECTRIC FIELD?

A. Resistor

B. Capacitor

C. Inductor

D. Diode

PREPPERNET

There are two questions in the pool that are very similar; one asks about a component storing energy in an electric field, the other in a magnetic field. The electric field is a capacitor; it consists of at least two conductors separated by an insulator (or dielectric).

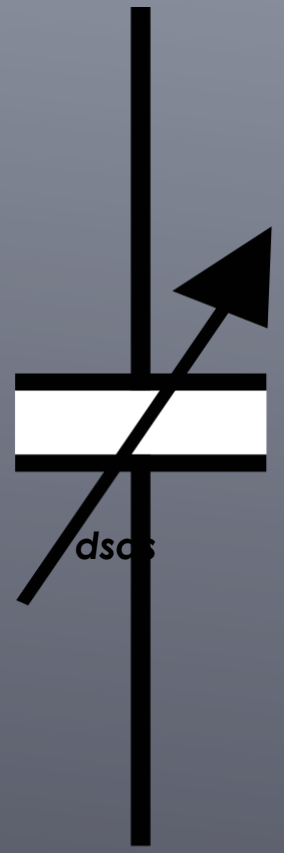
Capacitors thus store energy in the electric field, and once they have charged up they no longer allow current to pass through.

Think "MICE:" "(M)agnetic field, (I)nductor. (C)apacitor, (E)lectric field.

PREPPERNET

Fixed Capacitor

Polarized Capacitor



Variable Capacitor

PREPPERNET

T6A05
WHAT TYPE OF ELECTRICAL COMPONENT CONSISTS OF TWO OR MORE CONDUCTIVE SURFACES SEPARATED BY AN INSULATOR?

A. Resistor

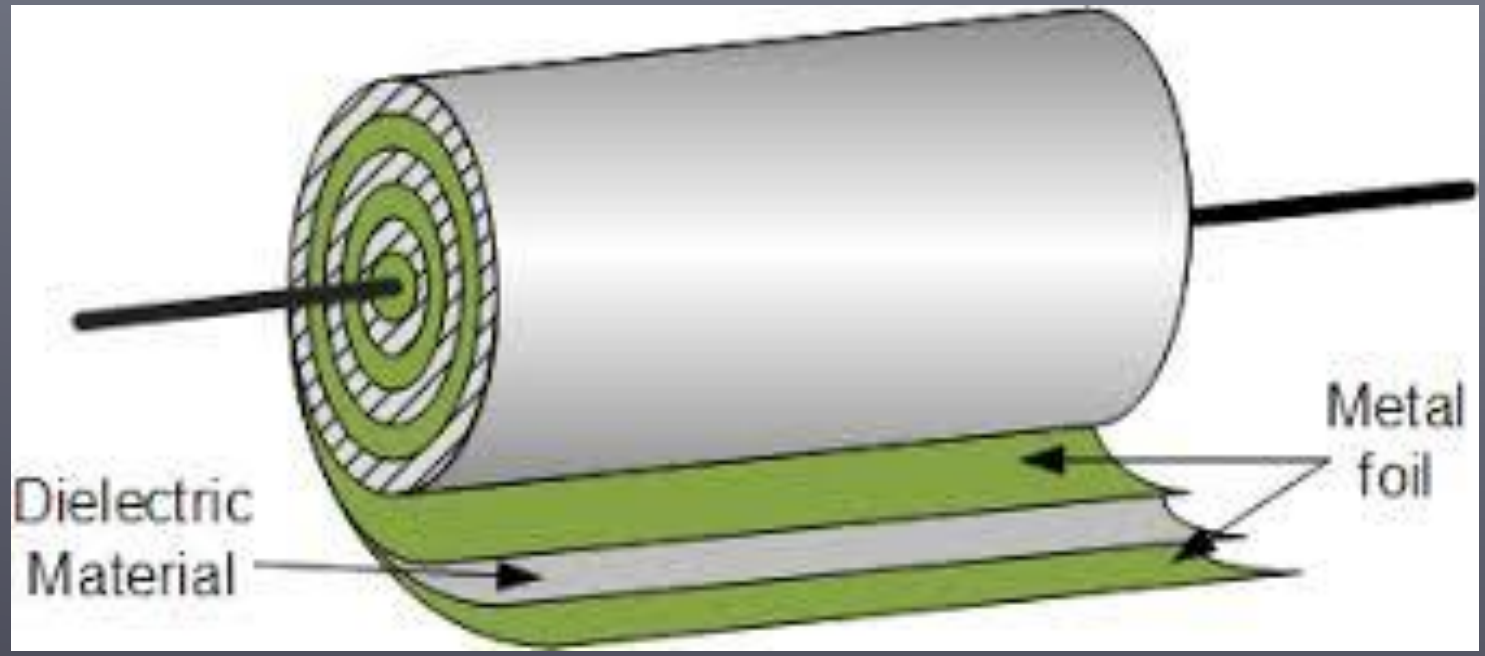
B. Potentiometer

C. Oscillator

D. Capacitor

PREPPERNET

A Capacitor is an electrical component that stores energy in an electric field. It consists of at least two conductors separated by an insulator (or dielectric).



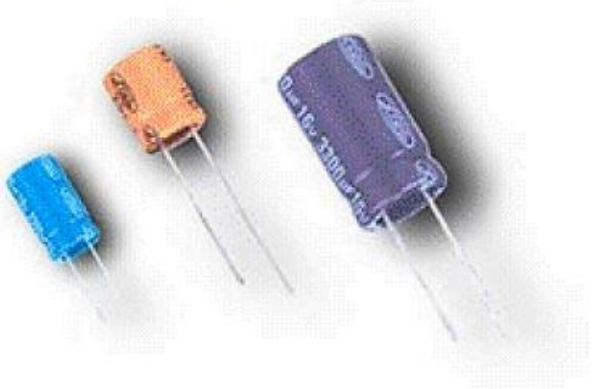
PREPPERNET

Capacitors

Capacitor

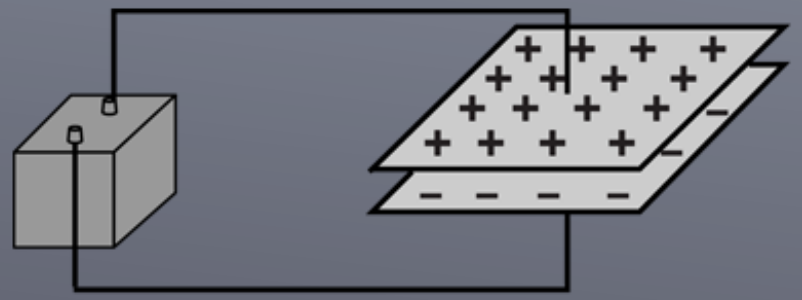
Air
Variable
Capacitor

Ceramic capacitors
(cheap)



Electrolytic capacitors
(polarized, high capacity)

Capacitors are conductive plates separated by an insulator and stores energy in an electric field (electrostatically)



Capacitor

PREPPERNET

T6A06
WHAT TYPE OF ELECTRICAL COMPONENT STORES ENERGY IN A MAGNETIC FIELD?

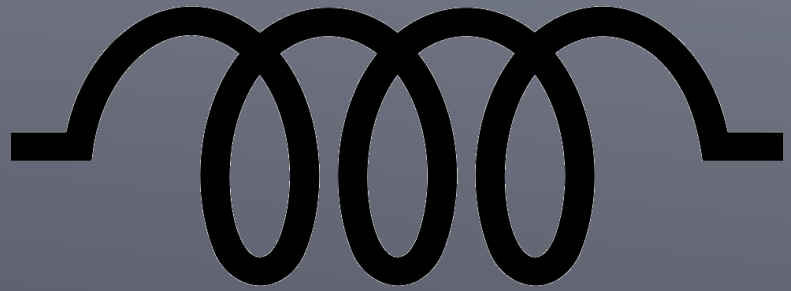
A. Resistor

B. Capacitor

C. Inductor

D. Diode

There are two questions in the pool that are very similar; one asks about a component storing energy in an electric field, the other in a magnetic field. The magnetic field is an inductor; it generally consists of a coil of wire.



The Inductor symbol looks very much like its construction.

PREPPERNET

Inductors

Inductors are generally coils of wire that store energy in a magnetic field

T6A07
WHAT ELECTRICAL COMPONENT USUALLY IS CONSTRUCTED AS A COIL OF WIRE?

A. Switch

B. Capacitor

C. Diode

D. Inductor

The characteristics of the inductor vary drastically depending on whether or not the wire has a ferrite (susceptible to magnetism) core inside; if it does, the ferrite core becomes itself a magnet. This is how electromagnets are made, such as in the classic electronics experiment of wrapping insulated wire around a nail and turning it into an electromagnet.

PREPPERNET

T6A08
WHAT ELECTRICAL COMPONENT IS USED TO CONNECT OR DISCONNECT ELECTRICAL CIRCUITS?

A. Magnetron

B. Switch

C. Thermistor

D. All of these choices are correct

PREPPERNET

Possibly the most common example of this is a light switch in your house;

When it is on, it connects the electrical circuit that the light in your room is on.

When you turn it off, it disconnects the circuit.

There are many different kinds of switches, but they still all just connect (turn on) or disconnect (turn off) a circuit.

These are <u>not</u> capable of connecting or disconnecting a circuit:

A Magnetron is usually a high powered vacuum tube that generate microwaves.

A Thermistor is a type of resistor whose resistance varies significantly with temperature.

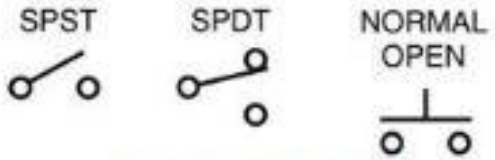
PREPPERNET

T6A08 A switch is an electrical component that is used to connect or disconnect electrical circuits.

Toggle Switch

Slide Switch

Rocker Switch



Schematic Symbol

T6A09
WHAT ELECTRICAL COMPONENT IS USED TO PROTECT OTHER CIRCUIT COMPONENTS FROM CURRENT OVERLOADS?

A. Fuse

B. Capacitor

C. Inductor

D. All of these choices are correct

PREPPERNET

A fuse acts like a wire until excessive current flows through it. Fuses are rated in amps.

It is very important to replace blown fuses with the same rating and same type (such as fast blow vs slow blow). Otherwise the protected circuit may fail catastrophically including igniting a fire.

PREPPERNET

T6A10
WHICH OF THE FOLLOWING BATTERY TYPES IS RECHARGEABLE?

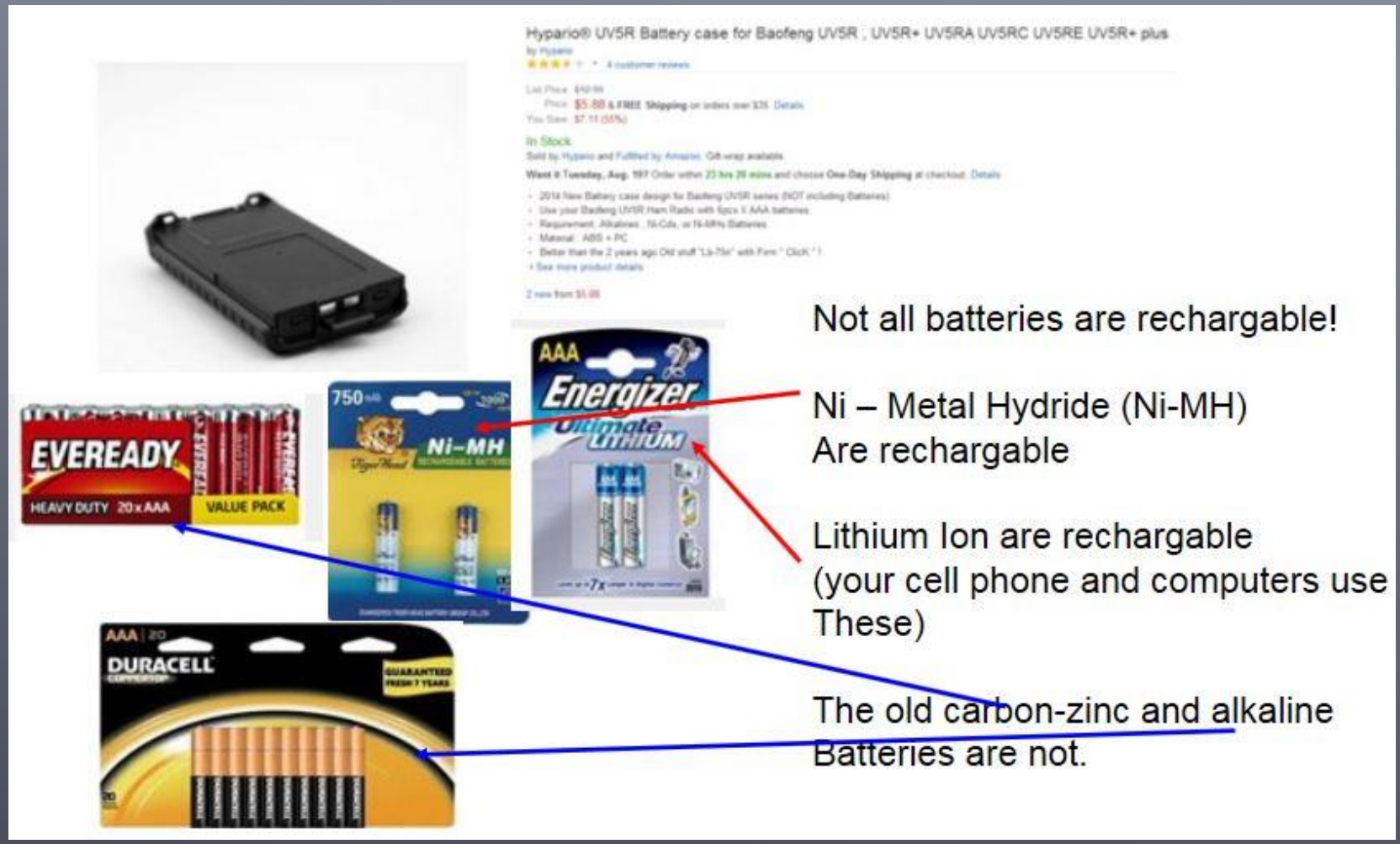
A. Nickel-metal hydride

B. Lithium-ion

C. Lead-acid gel-cell

D. All of these choices are correct

PREPPERNET



Yes, all of these are rechargeable.

A zinc-carbon battery is not. You just have to remember this.

PREPPERNET

T6A11
WHICH OF THE FOLLOWING BATTERY TYPES IS NOT RECHARGEABLE?

A. Nickel-cadmium

B. Carbon-zinc

C. Lead-acid

D. Lithium-ion

The chemical reactions of Carbon-zinc type batteries are not reversable, unlike Nickel-cadmium, lead-acid, and Lithium-ion type batteries.

A way to remember this if you have trouble is…

you Can't Zap a Carbon-Zinc battery with an electric charge to recharge it!

PREPPERNET

T6B01

WHAT CLASS OF ELECTRONIC COMPONENTS USES A VOLTAGE OR CURRENT SIGNAL TO CONTROL CURRENT FLOW?

A. Capacitors

B. Inductors

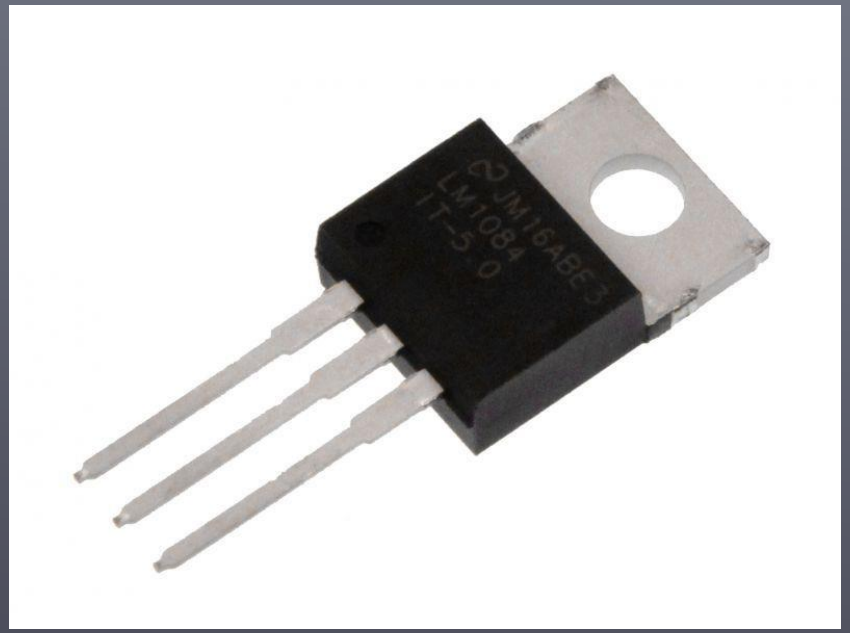
C. Resistors

D. Transistors

PREPPERNET

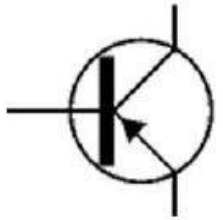
A transistor is an electronic switch that enables the current flow between two terminals if a voltage/current is present on a third.

Think of it as a push button switch. Push the button (apply current on the third pin) and current can flow between the other two. (very simplified)



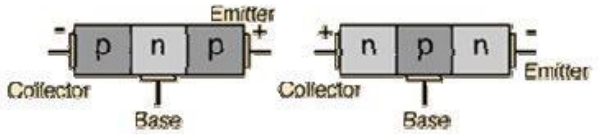
PREPPERNET

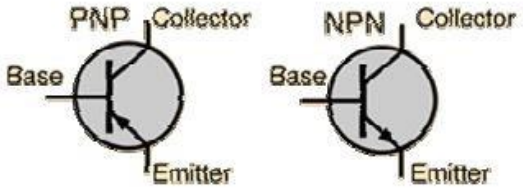
Transistors

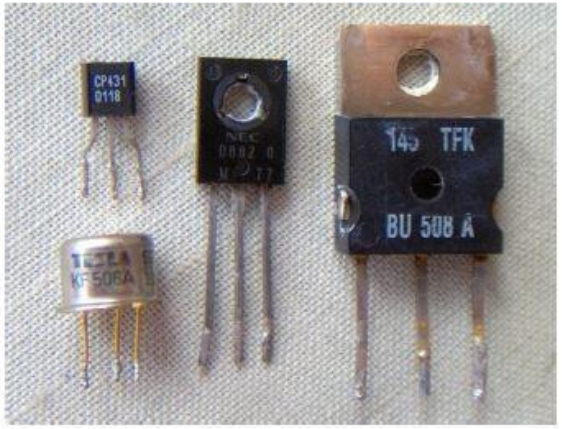


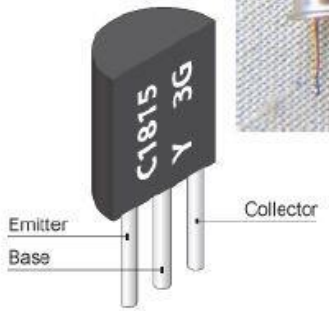
Transistor

Can be used as an electronic switch or amplifier
Comprised of three layers of semiconductor (PNP, NPN)
Generally have three electrodes (*emitter, base, collector*)
Field Effect Transistors (FET) have *source, drain and gate* instead









A **Transistor** is an **semiconductor** which is a fundamental component in almost all electronic devices. Transistors are often said to be the most significant invention of the 20th Century. Transistors have many uses including switching, voltage/current regulation, and amplification - all of which are useful in **renewable energy** applications.

PREPPERNET

T6B02
WHAT ELECTRONIC COMPONENT ALLOWS CURRENT TO FLOW IN ONLY ONE DIRECTION?

A. Resistor

B. Fuse

C. Diode

D. Driven element

PREPPERNET

A Diode is an electronic component that only allows current to flow one direction across it; the most commonly known type of diode these days is an LED (Light Emitting Diode).

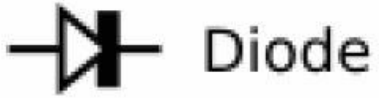
A resistor allows current to flow both directions but resists the flow of current.

A Fuse is something that generally allows current to flow in either direction but when too much current (or at too high of a voltage) flows across it the fuse "blows" (is destroyed) and the flow of current stops.

A driven element is the part of an antenna that a transmitter causes to emit RF energy.

PREPPERNET

Diode

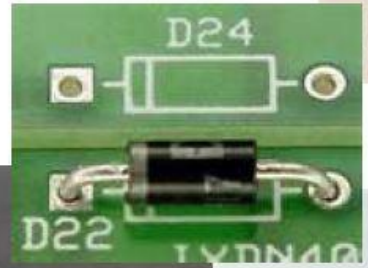


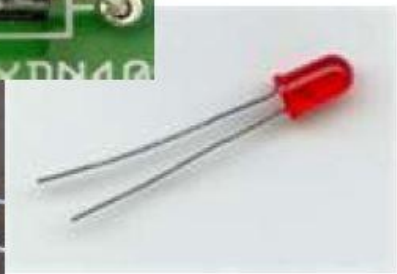
Electronic one-way “valve”, used e.g. in rectifiers

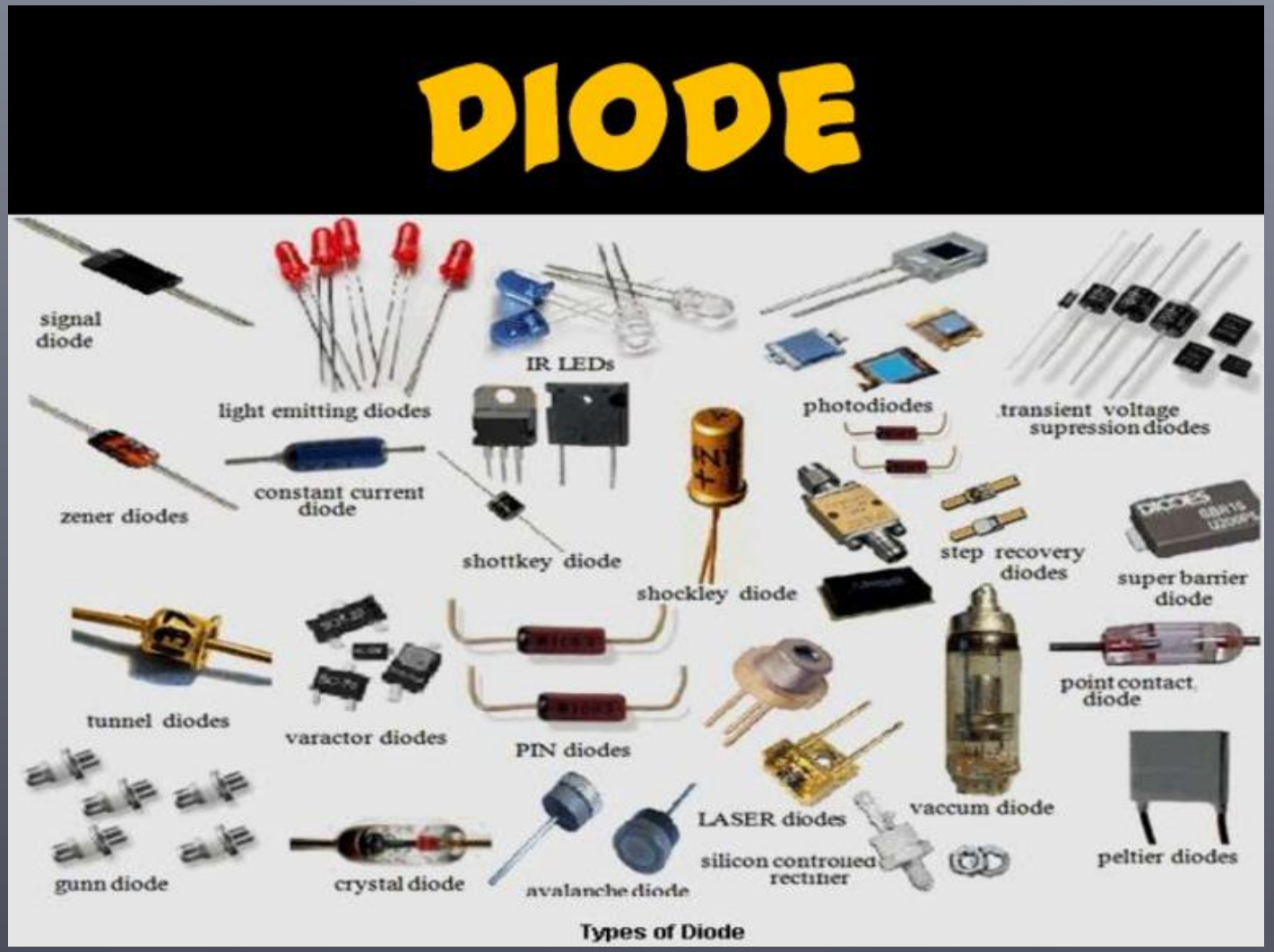
Mostly made of Si, Ga

Different types: PN diodes, Schottky

Electrodes are called anode and cathode with the cathode indicated by a stripe






DIODE
signal diode
IR LEDs
light emitting diodes
photodiodes
transient voltage supression diodes
zener diodes
constant current diode
shottkey diode
shockley diode
step recovery diodes
super barrier diode
tunnel diodes
varactor diodes
PIN diodes
point contact diode
LASER diodes
vaccum diode
gunn diode
crystal diode
avalanche diode
silicon controlled rectifier
peltier diodes
Types of Diode

PREPPERNET

T6B03
WHICH OF THESE COMPONENTS CAN BE USED AS AN ELECTRONIC SWITCH OR AMPLIFIER?

A. Oscillator

B. Potentiometer

C. Transistor

D. Voltmeter

A transistor has three terminals; on the most common type of transistor (a bipolor transistor) these are Base, Collector, and Emitter. Current applied to the Base controls current flow between the collector and emitter, which allows it to work as an electronic switch. The amplifier capabilities are a little more complicated and have to do with the fact that the amount of current directed into the Base is directly proportional to the amount of current that can flow through the Collector and Emitter.

An Oscillator is something that produces a signal (such as an audio tone for CW).

A Potentiometer is a variable resistor

A Voltmeter is a tool that can be used to measure voltage.

None of these have the potential to be a switch of any kind.

PREPPERNET

While the specifics of how a bipolar junction transistor works is beyond the scope of this explanation, it may be helpful to remember that nearly any time you hear the term "semiconductor" in casual electronic jargon someone is talking about either a transistor specifically or about something made with many transistors (such as an integrated circuit).

PREPPERNET

T6B04

WHICH OF THE FOLLOWING COMPONENTS CAN CONSIST OF THREE LAYERS OF SEMICONDUCTOR MATERIAL?

A. Alternator

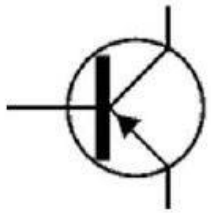
B. Transistor

C. Triode

D. Pentagrid converter

PREPPERNET

Transistors



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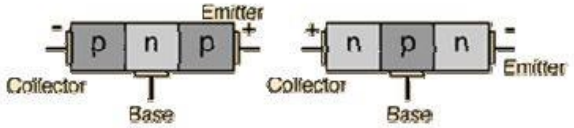
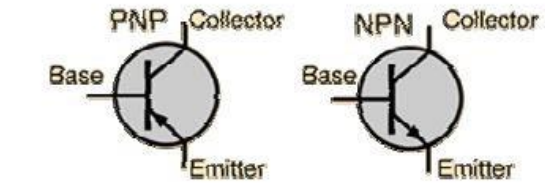
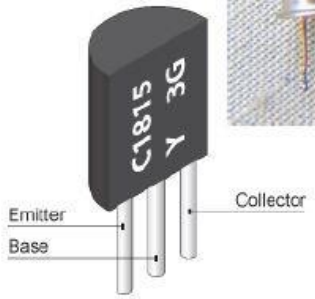
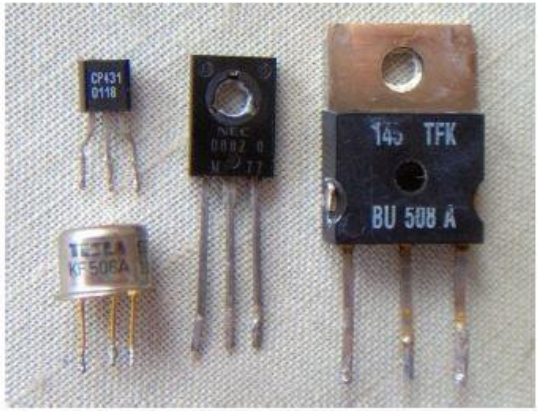








T6B05
WHICH OF THE FOLLOWING ELECTRONIC COMPONENTS CAN AMPLIFY SIGNALS?

A. Transistor

B. Variable resistor

C. Electrolytic capacitor

D. Multi-cell battery

PREPPERNET

A transistor is a semiconductor device used to amplify and switch electronic signals and power. It is composed of a semiconductor material with at least three terminals for connection to an external circuit. A voltage or current applied to one pair of the transistor's terminals changes the current flowing through another pair of terminals.

Because the controlled (output) power can be higher than the controlling (input) power, a transistor can amplify a signal.

PREPPERNET

T6B06

HOW IS THE CATHODE LEAD OF A SEMICONDUCTOR DIODE OFTEN MARKED ON THE PACKAGE?

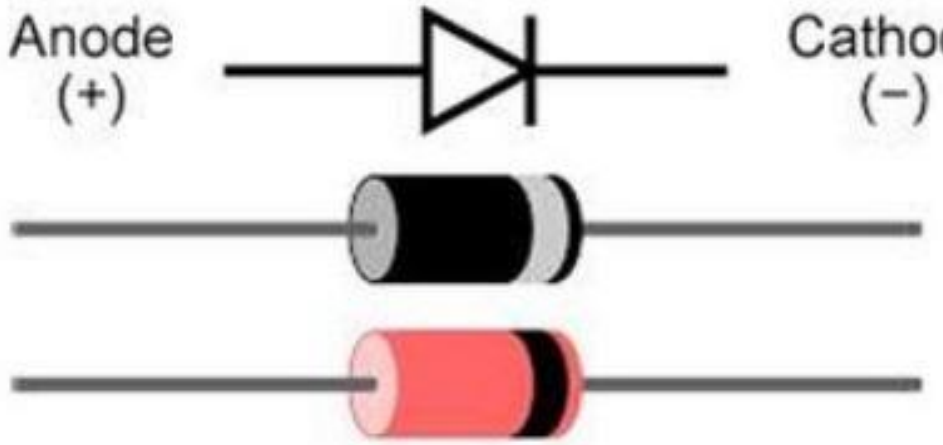
A. With the word "cathode"

B. With a stripe

C. With the letter C

D. With the letter K

Electrical components can be small. Sometimes too small to be able to read letters or words. Might also think of a "striped cat"



You can flow positive to negative

But you have to use electron terms

Anode + Cathode –
(note they are in alphabetical order)

PREPPERNET

Stripe on the Cowthode Side

PREPPERNET

T6B07
WHAT DOES THE ABBREVIATION LED STAND FOR?

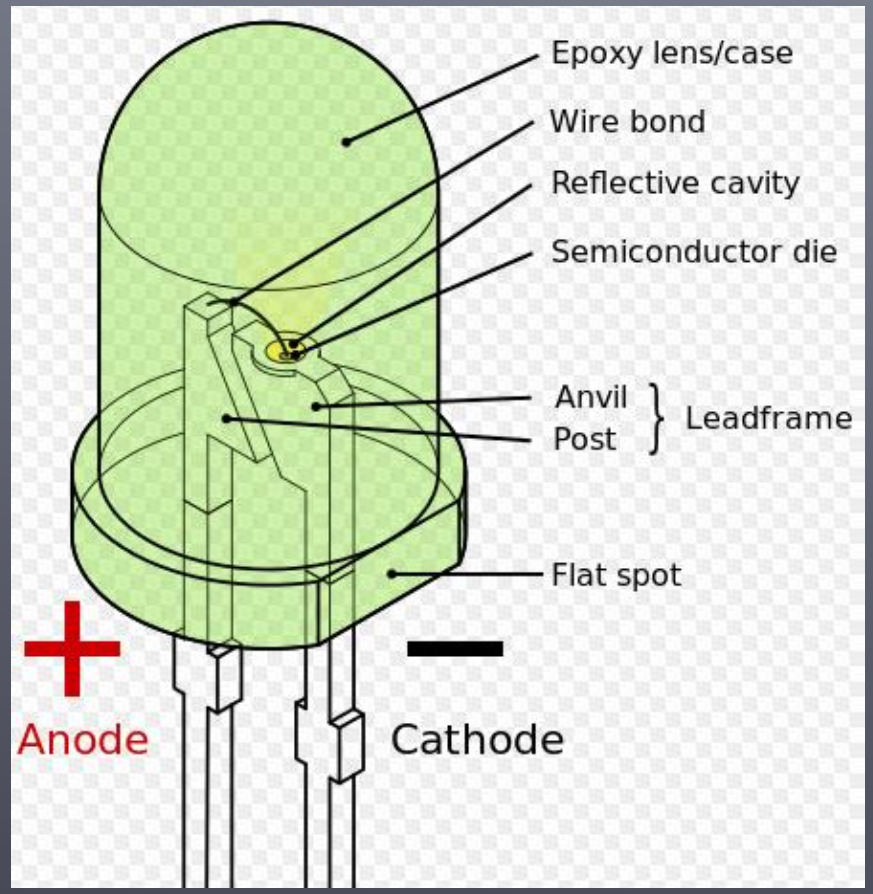
A. Low Emission Diode

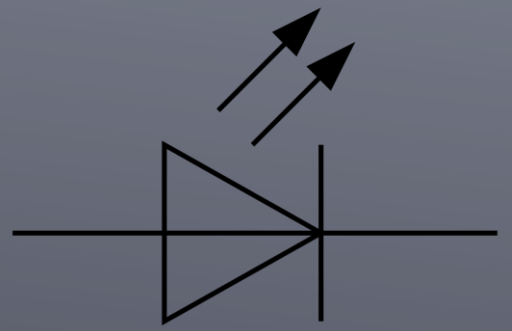
B. Light Emitting Diode

C. Liquid Emission Detector

D. Long Echo Delay

(L)ight
(E)mitting
(D)iode





PREPPERNET

T6B08
WHAT DOES THE ABBREVIATION FET STAND FOR?

A. Field Effect Transistor

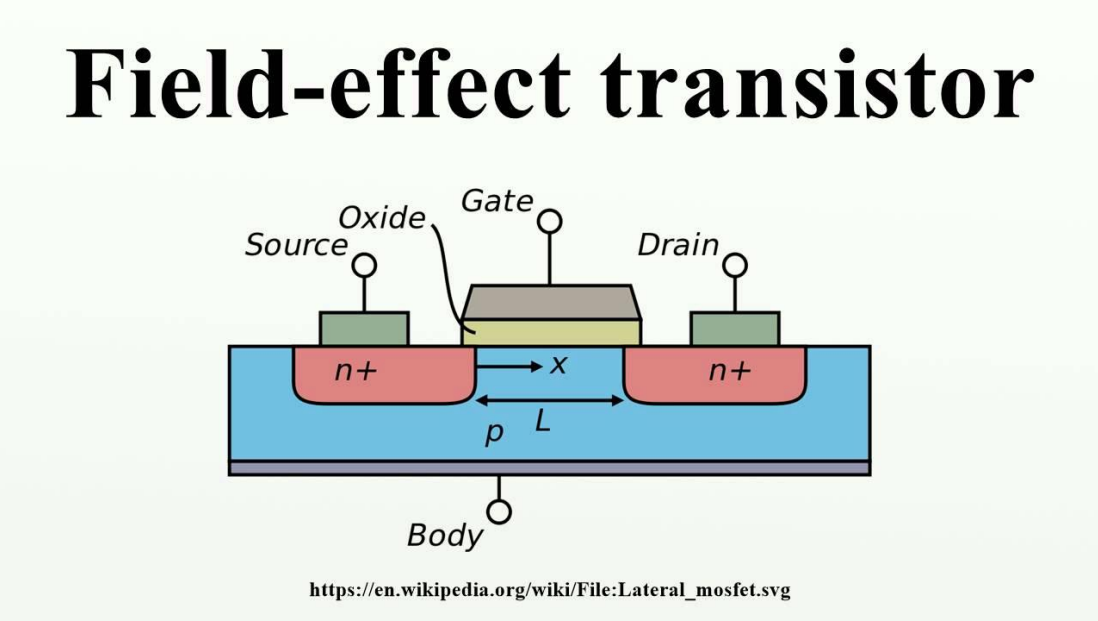
B. Fast Electron Transistor

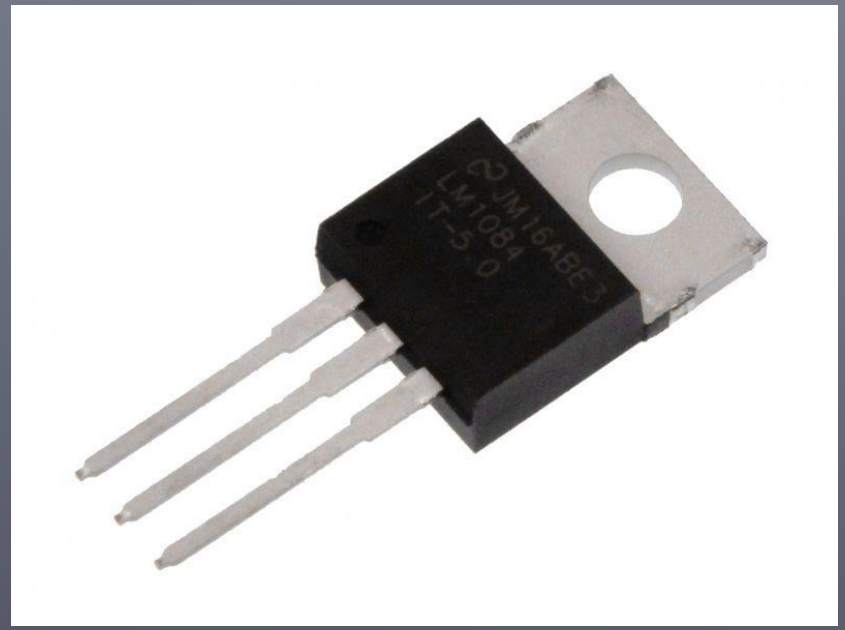
C. Free Electron Transmitter

D. Frequency Emission Transmitter

PREPPERNET

A Field Effect Transistor controls voltage and current like a regular transistor but can operate on a much smaller signal, which makes it ideal for radio receivers. It operates using an electric field to control the shape of the channel in the semi-conductor material.





PREPPERNET

T6B09
WHAT ARE THE NAMES OF THE TWO ELECTRODES OF A DIODE?

A. Plus and minus

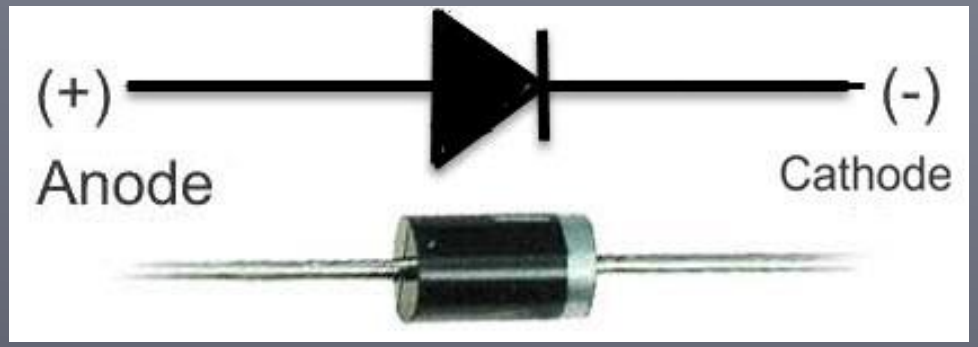
B. Source and drain

C. Anode and cathode

D. Gate and base

Electrodes are referred to as either Anodes or Cathodes regardless of whether they are on a diode or other component.

Current flows into an Anode and out of a Cathode.



Plus and Minus indicate a positive or negative voltage on a power source but are not strictly speaking names for electrodes.

Source, Gate and Drain are terminals on a Field Effect Transistor (FET).

Base, Collector and Emitter are terminals on a bipolar transistor.

PREPPERNET

T6B10
WHICH OF THE FOLLOWING COULD BE THE PRIMARY GAIN-PRODUCING COMPONENT IN AN RF POWER AMPLIFIER?

A. Transformer

B. Transistor

C. Reactor

D. Resistor

PREPPERNET

Transistor is the only component in this list that has gain.

A transformer may have a high secondary voltage ratio and be used for increasing voltage, or it may have a high secondary current ratio and be used for increasing current, but these increases and decreases are called transformation or conversion not gain.

So the only option that makes sense in this list is Transistor.

T6B11

WHAT IS THE TERM THAT DESCRIBES A DEVICE'S ABILITY TO AMPLIFY A SIGNAL?

A. Gain

B. Forward resistance

C. Forward voltage drop

D. On resistance

PREPPERNET

Gain is defined as being the ratio of the output power to the input power, or in other words it refers to how much power is GAINed when passing through the transistor.

Just remember that you gain a lot through amplification.

PREPPERNET

T6C01
WHAT IS THE NAME OF AN ELECTRICAL WIRING DIAGRAM THAT USES STANDARD COMPONENT SYMBOLS?

A. Bill of materials

B. Connector pinout

C. Schematic

D. Flow chart

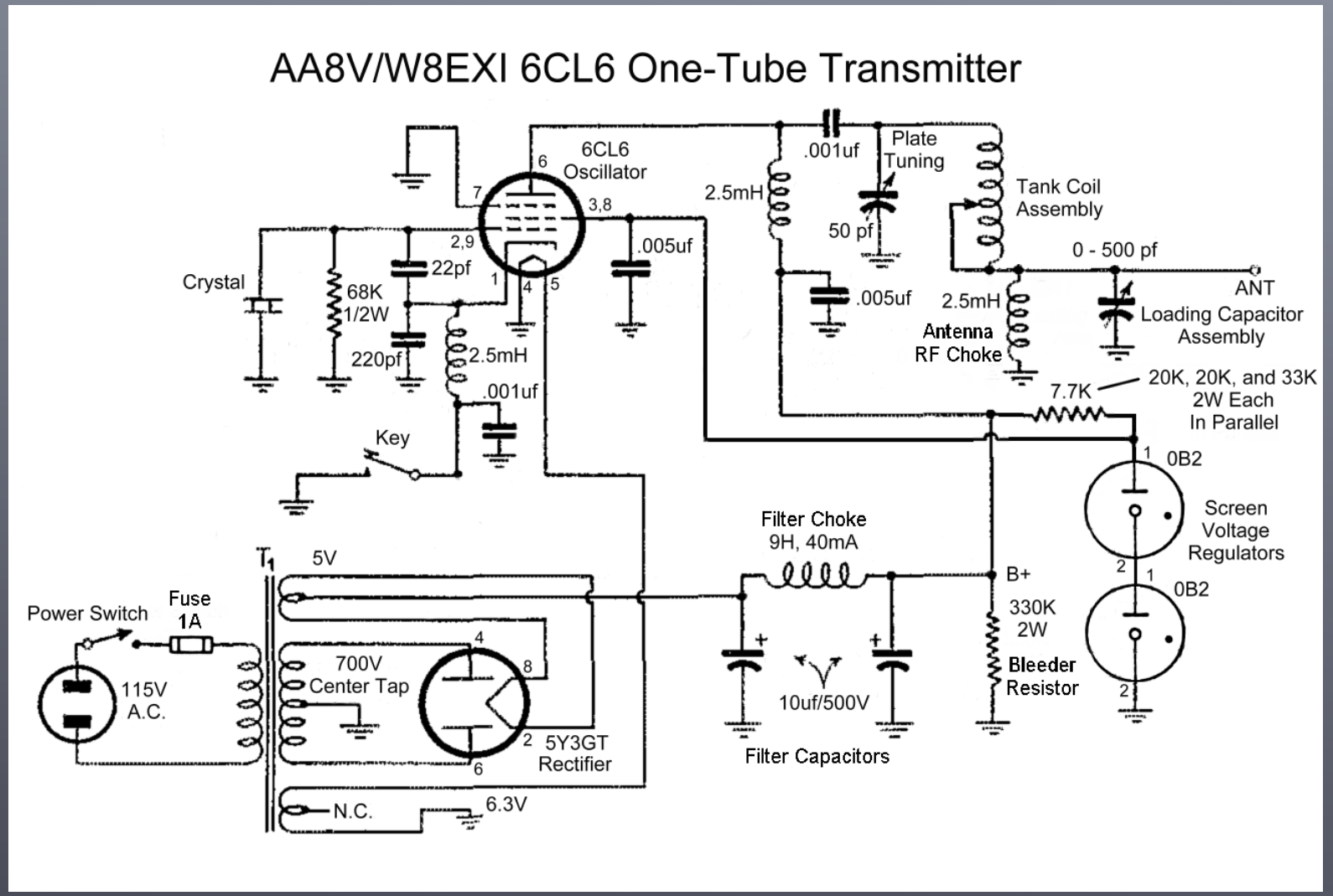
PREPPERNET

The name of an electrical wiring diagram that uses standard component symbols is schematic or circuit diagram, but the exam is looking for the term schematic.

The other options are terms also often used in a set of build instructions for a device, but they are not the wiring diagram which is what the exam is asking about.

A schematic is the scheme (or plan) for an electrical circuit or device composed of electrical circuits.

AA8V/W8EXI 6CL6 One-Tube Transmitter



T6C02
WHAT IS COMPONENT 1 IN FIGURE T1?

A. Resistor

B. Transistor

C. Battery

D. Connector

PREPPERNET

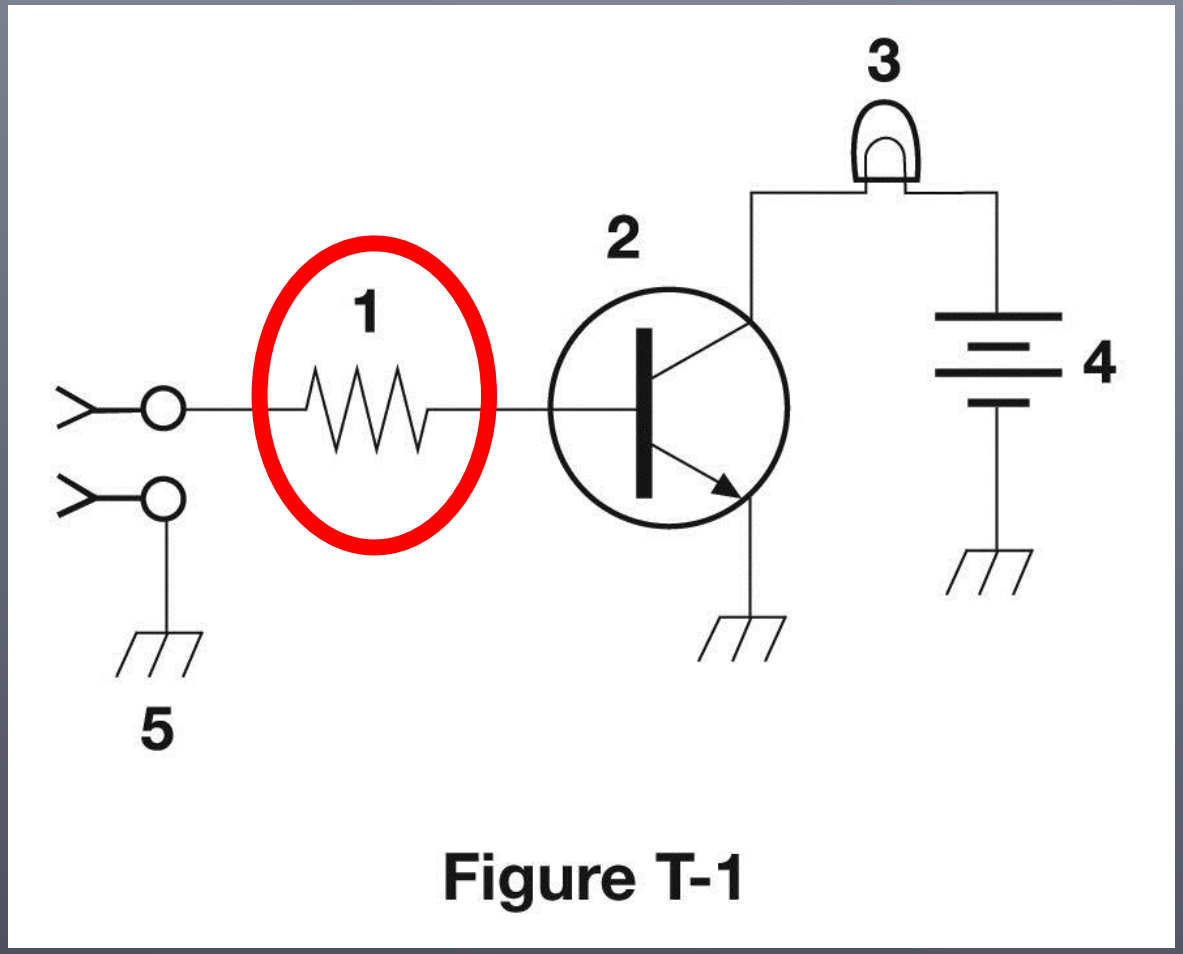


Figure T-1

Component 1 is a Resistor.

The easiest way to remember this is that the symbol resembles some sort of resistance taking place in the electrical path.

PREPPERNET

T6C03
WHAT IS COMPONENT 2 IN FIGURE T1?

A. Resistor

B. Transistor

C. Indicator lamp

D. Connector

PREPPERNET

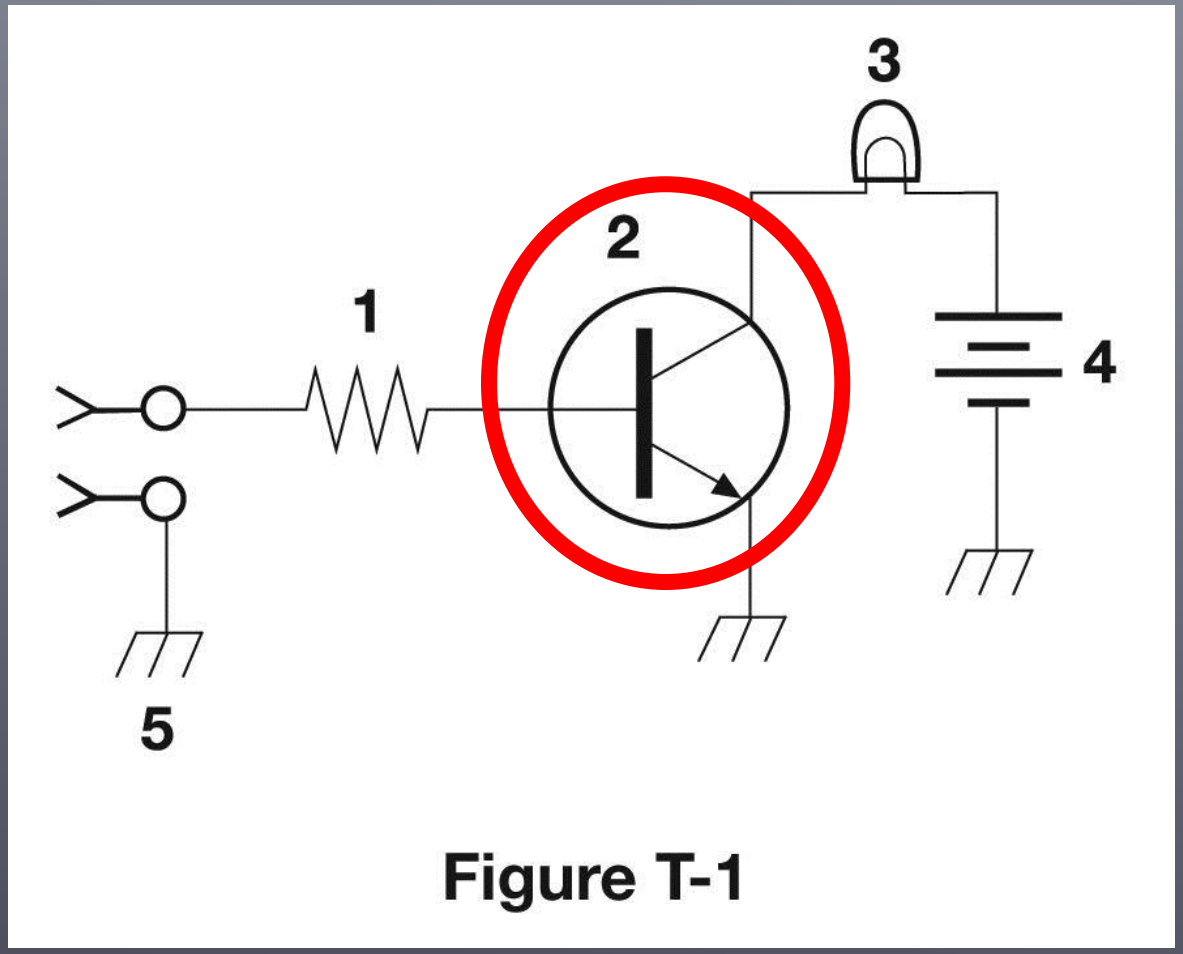


Figure T-1

Component 2 is a transistor.

A transistor is a control element and has three terminals.

The one on the left is called the base.

The upper right terminal is the collector and has current flowing into.

The lower right terminal has an arrow that indicates the direction the current will flow from both the base and the collector.

PREPPERNET

T6C04
WHAT IS COMPONENT 3 IN FIGURE T1?

A. Resistor

B. Transistor

C. Lamp

D. Ground symbol

PREPPERNET

Component 3 is a lamp.

You can remember this because the symbol resembles a bulb with some sort of filament inside the bulb.

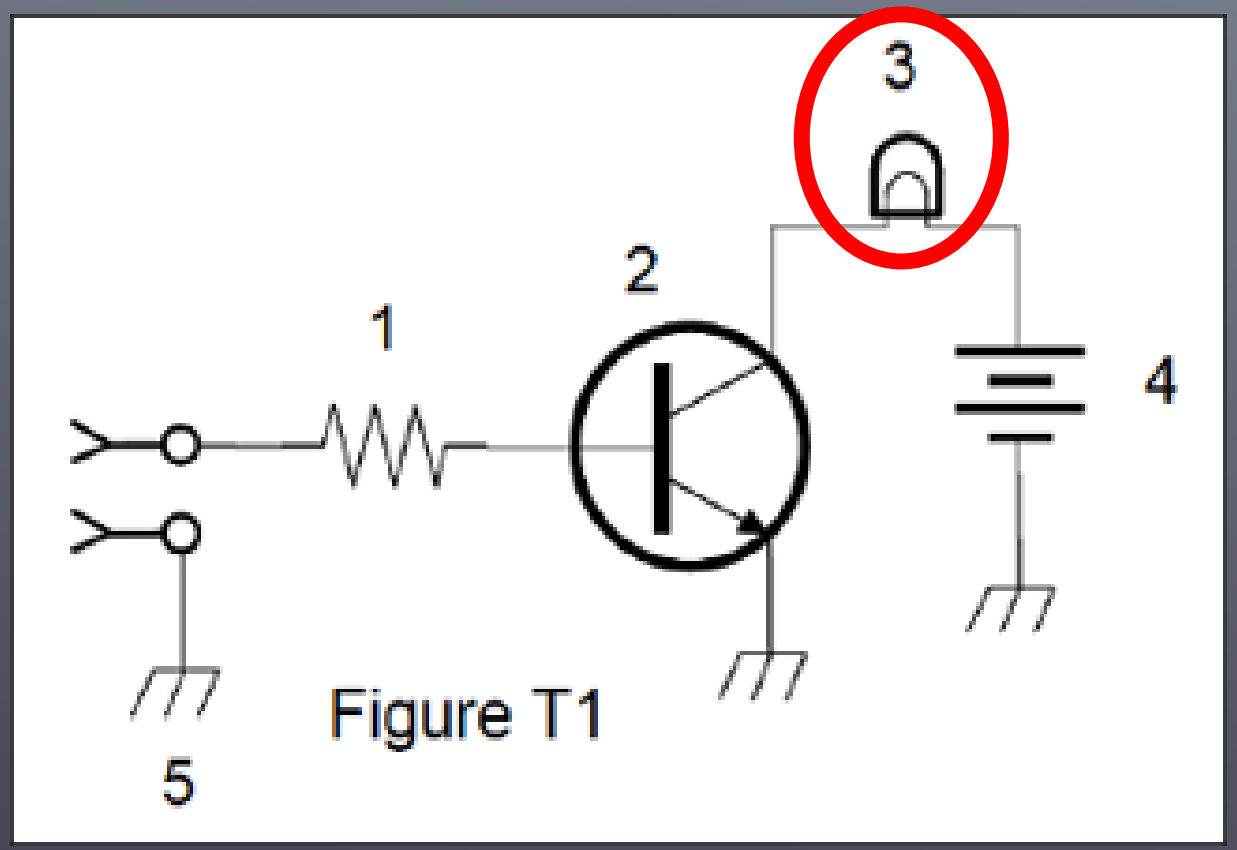


Figure T1

PREPPERNET

T6C05
WHAT IS COMPONENT 4 IN FIGURE T1?

A. Resistor

B. Transistor

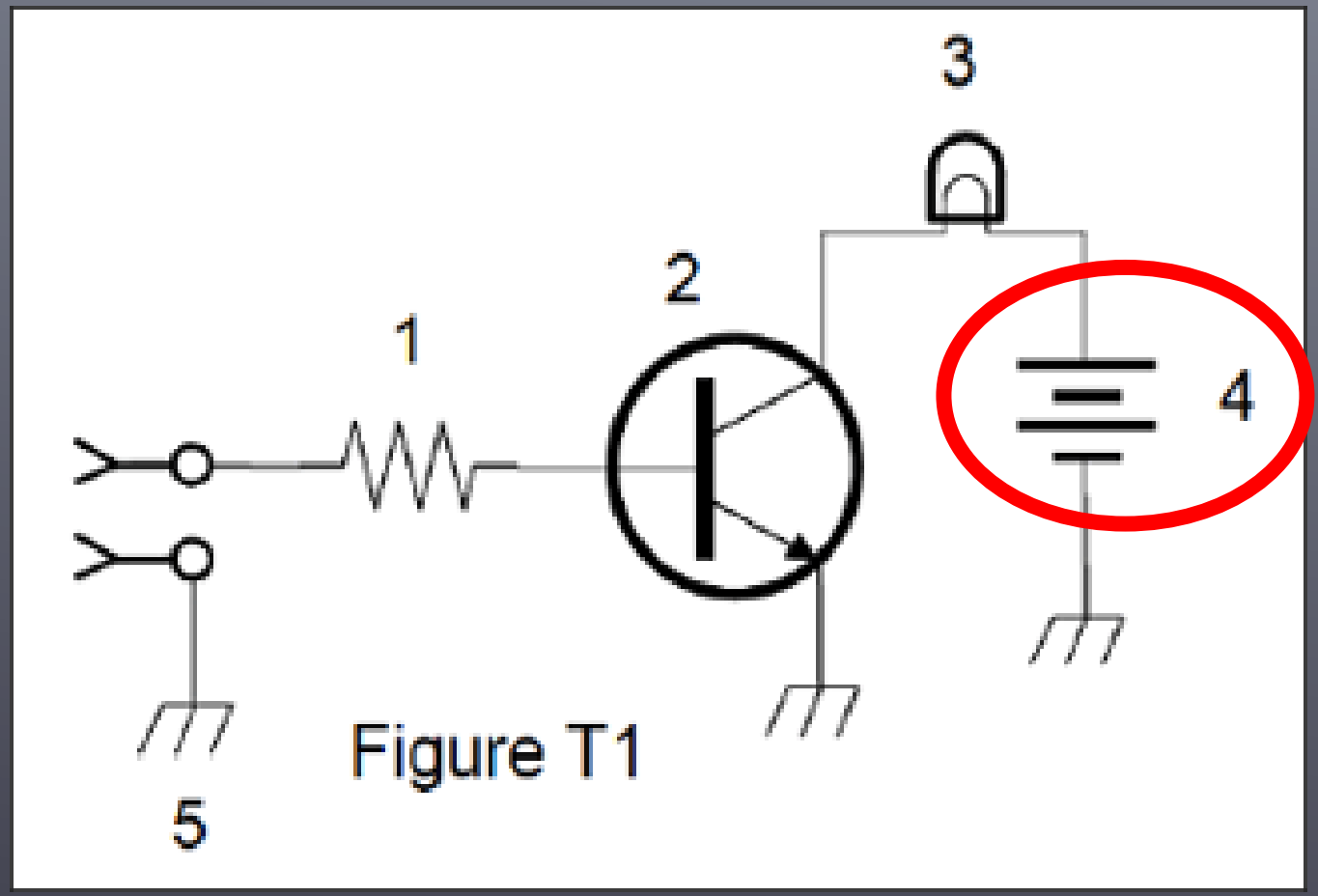
C. Battery

D. Ground symbol

PREPPERNET

Component 4 is a Battery.

This is easy to remember because a battery is a series of stacked plates (cells) inside a container.



PREPPERNET

T6C06
WHAT IS COMPONENT 6 IN FIGURE T2?

A. Resistor

B. Capacitor

C. Regulator IC

D. Transistor

PREPPERNET

Component 6 is a Capacitor.

The schematic symbol looks like the 2 conductive surfaces separated by an insulator.

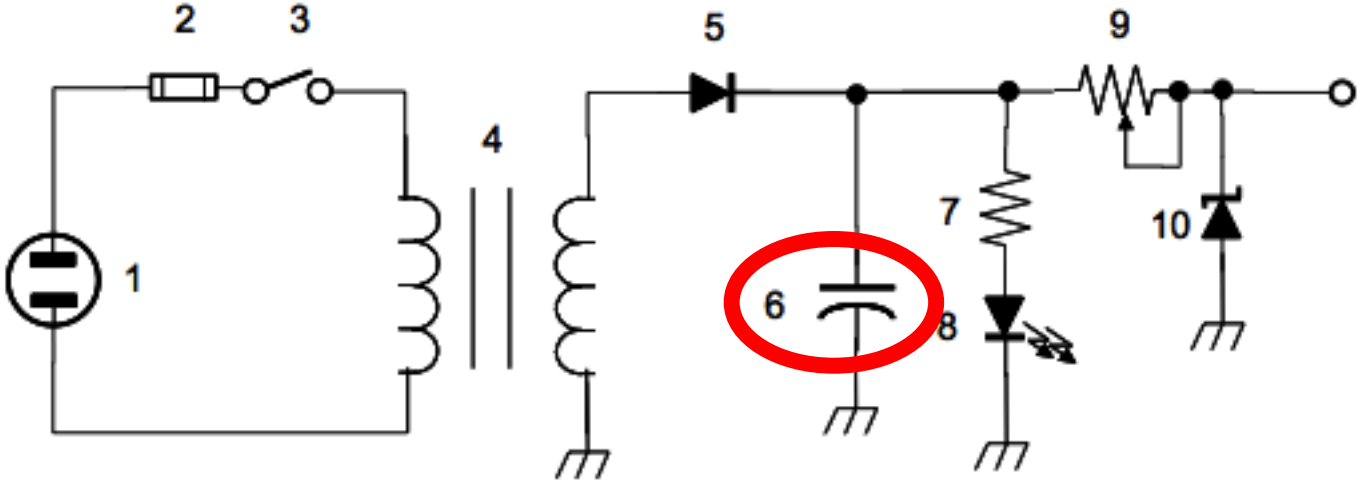
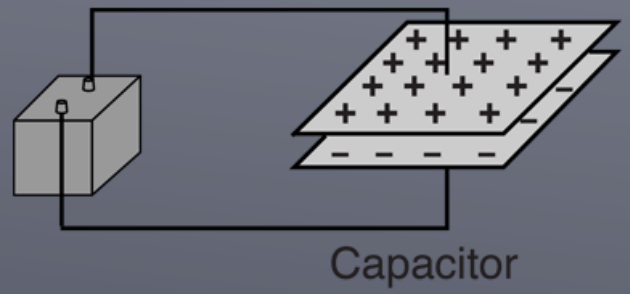


Figure T2



PREPPERNET

T6C07
WHAT IS COMPONENT 8 IN FIGURE T2?

A. Resistor

B. Inductor

C. Regulator IC

D. Light emitting diode

PREPPERNET

Component 8 is a Light Emitting Diode (LED).

The schematic symbol looks like a diode symbol (like symbol 5) which rays directed away from the diode.

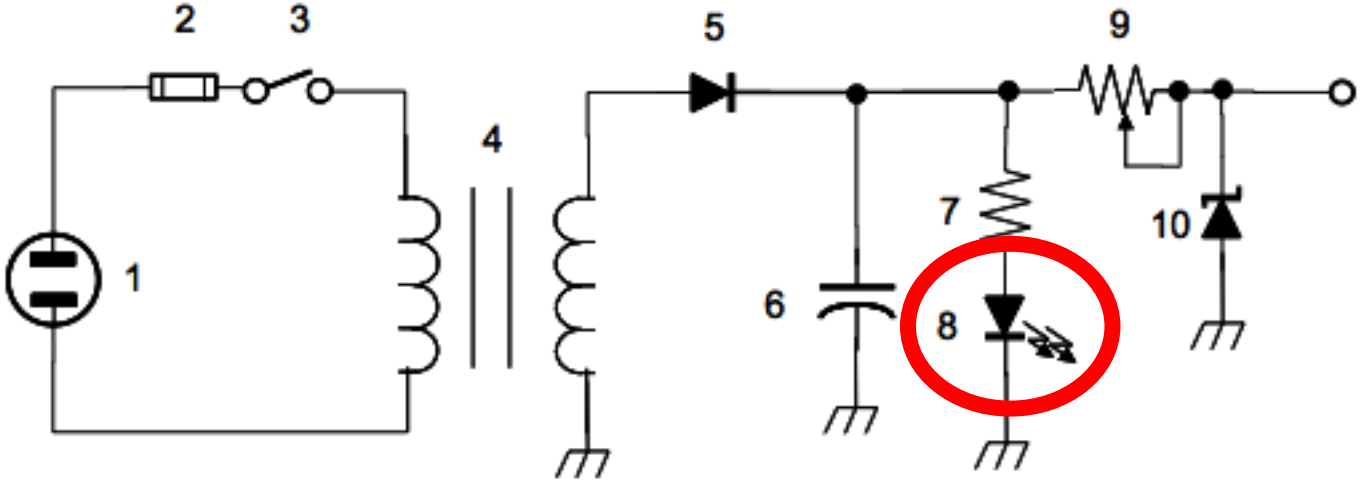


Figure T2

PREPPERNET

T6C08
WHAT IS COMPONENT 9 IN FIGURE T2?

A. Variable capacitor

B. Variable inductor

C. Variable resistor

D. Variable transformer

PREPPERNET

Component 9 is a Variable Resistor

It looks a resistor symbol (like symbol 7) with the output directed back into the resistor indicating user input…like a potentiometer

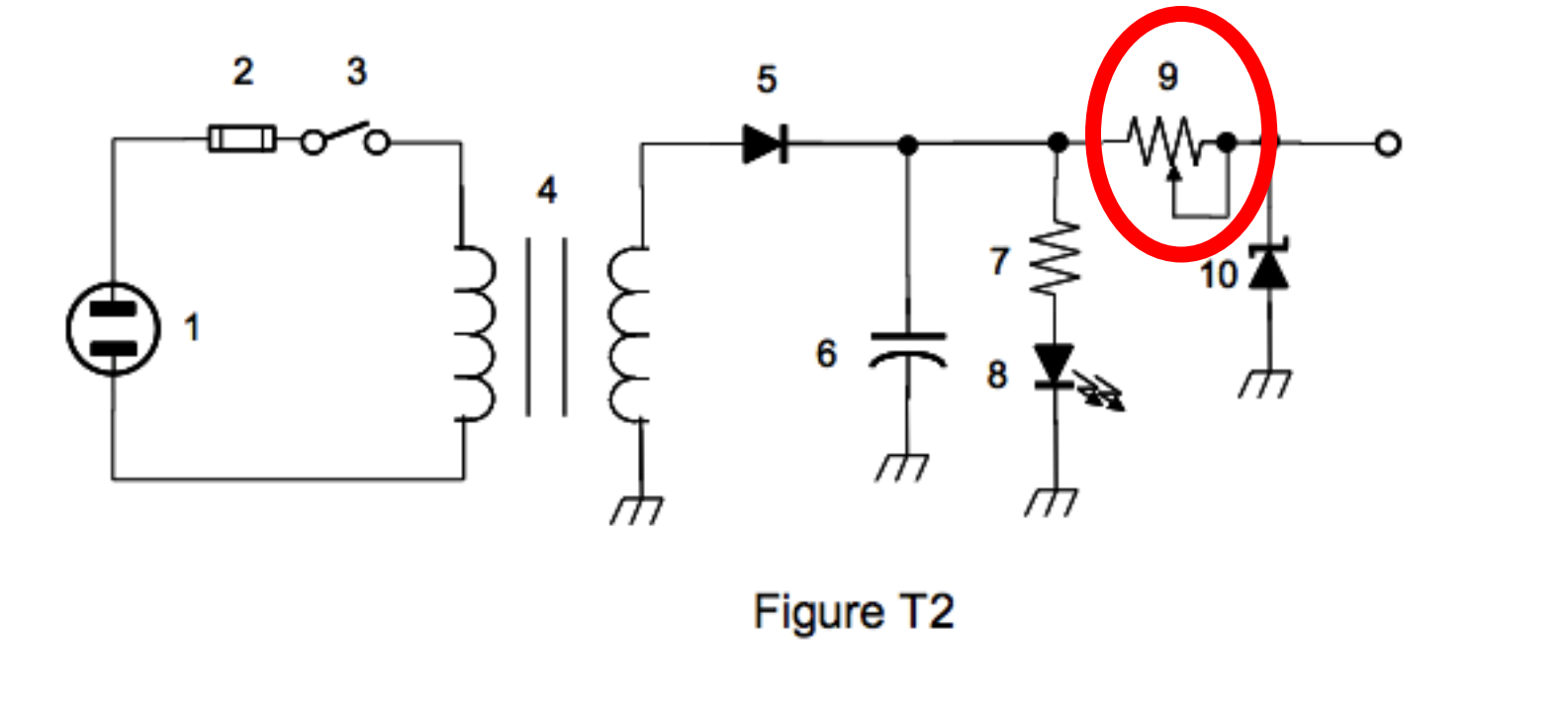


Figure T2

PREPPERNET

T6C09
WHAT IS COMPONENT 4 IN FIGURE T2?

A. Variable inductor

B. Double-pole switch

C. Potentiometer

D. Transformer

Component 4 is a Transformer

If you can commit the image of a transformer to memory, the symbol looks like 2 sets of wires, each wrapped around a solid core (magnet).

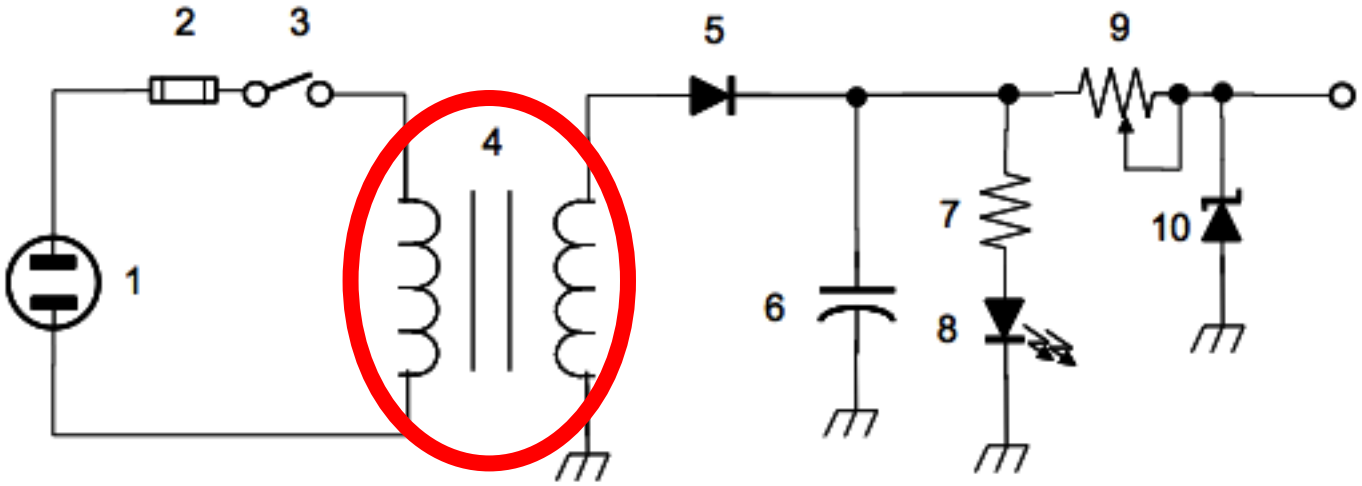
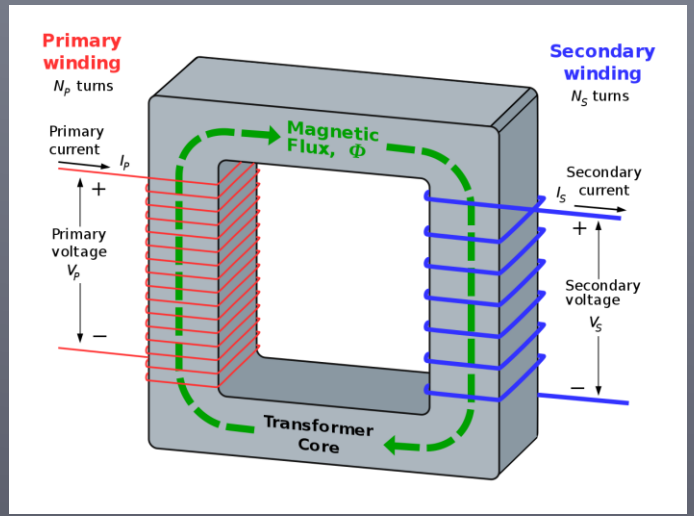


Figure T2



PREPPERNET

T6C10
WHAT IS COMPONENT 3 IN FIGURE T3?

A. Connector

B. Meter

C. Variable capacitor

D. Variable inductor

Component 3 is a Variable inductor

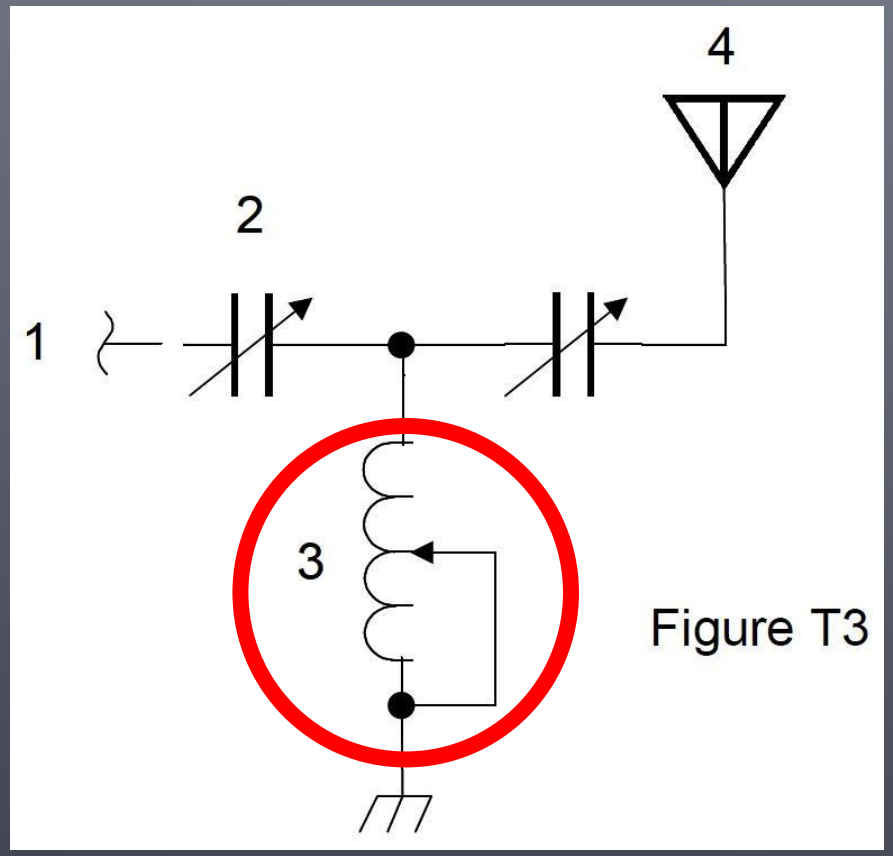
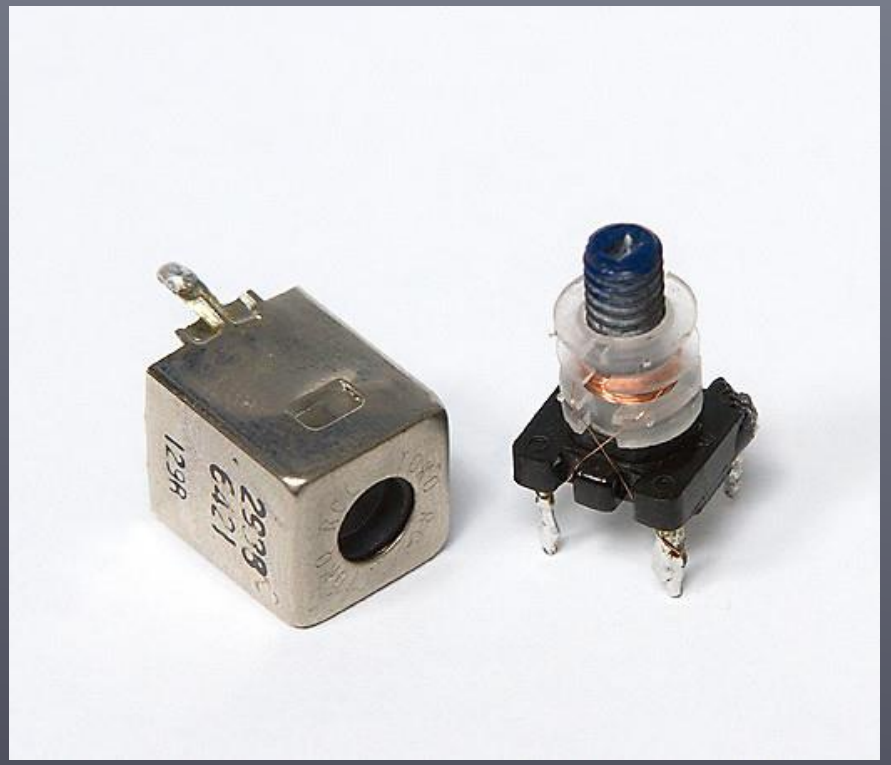


Figure T3



PREPPERNET

T6C11
WHAT IS COMPONENT 4 IN FIGURE T3?

A. Antenna

B. Transmitter

C. Dummy load

D. Ground

PREPPERNET

Component 4 is an Antenna

You can think of old-school "rabbit ears" on a television set.

Also, the symbol of an antenna looks like a dish that brings everything to one point.

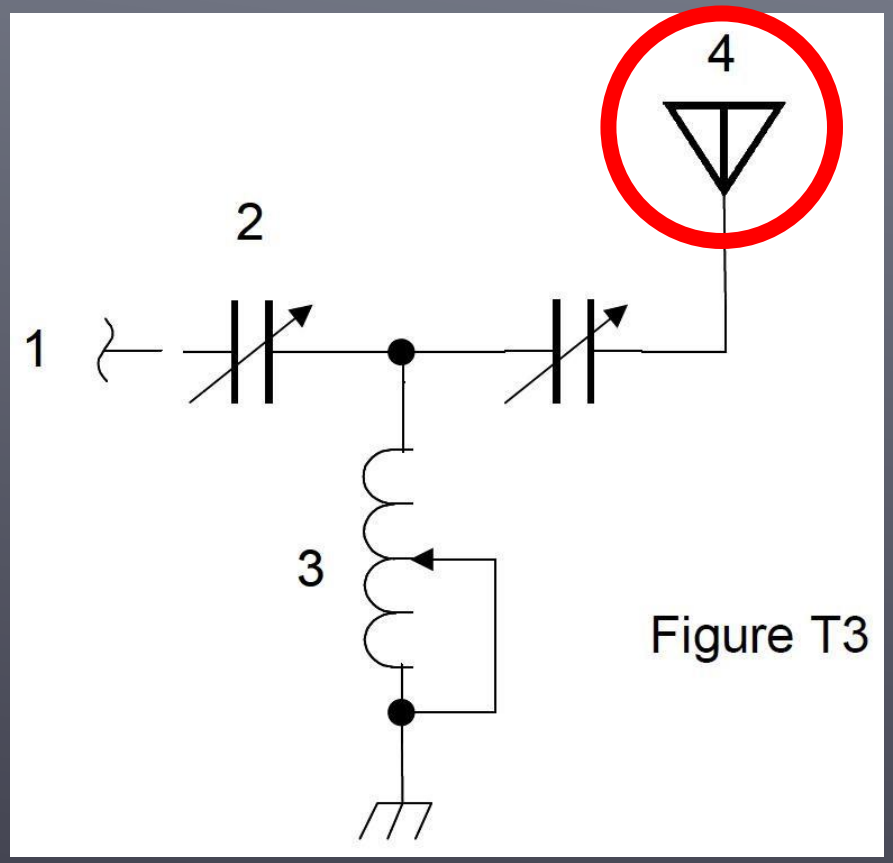


Figure T3

PREPPERNET

T6C12
WHAT DO THE SYMBOLS ON AN ELECTRICAL SCHEMATIC REPRESENT?

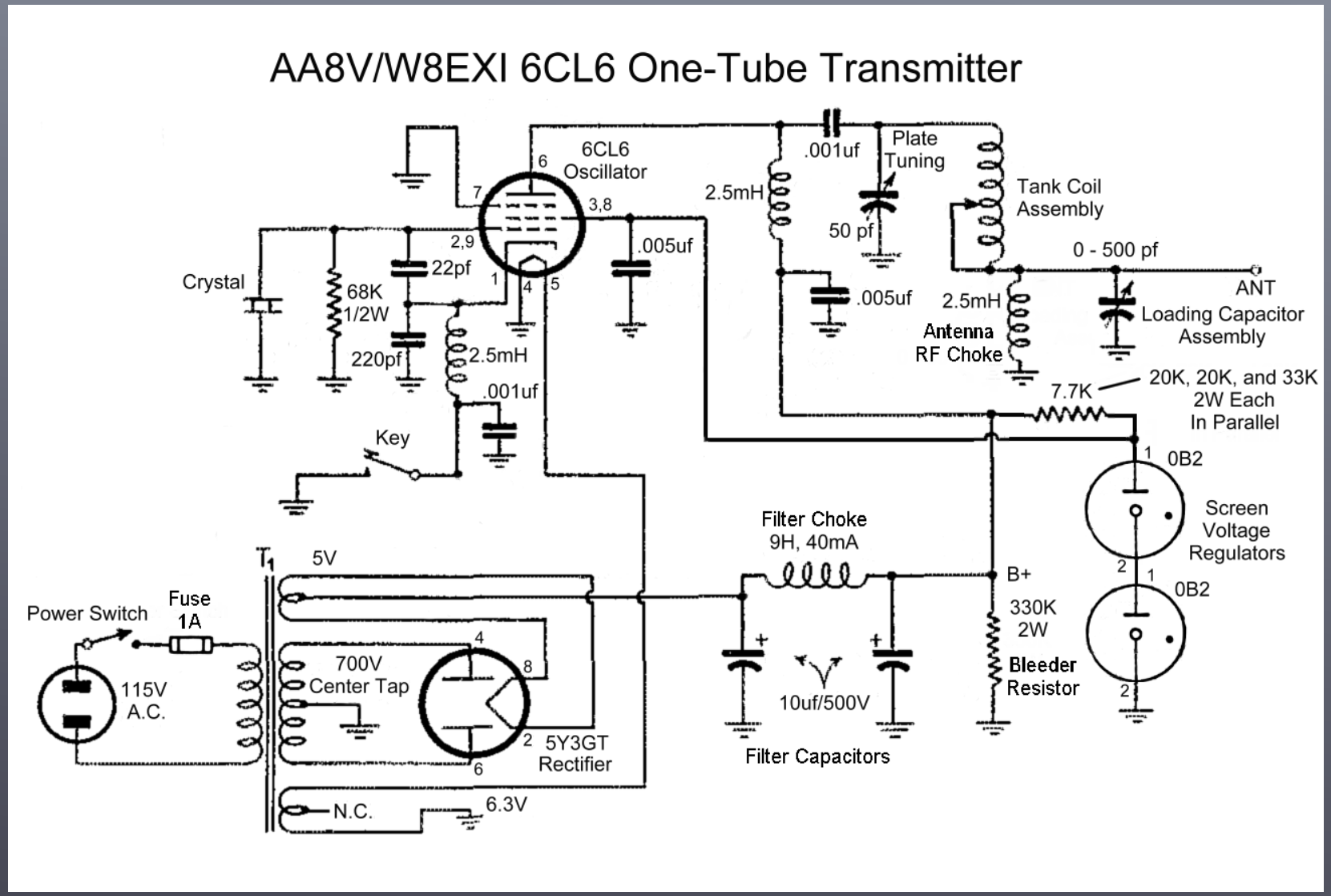
A. Electrical components

B. Logic states

C. Digital codes

D. Traffic nodes

PREPPERNET



An electrical schematic defines the electrical components in a device…the rating of the component.

PREPPERNET

T6C13
WHICH OF THE FOLLOWING IS ACCURATELY REPRESENTED IN ELECTRICAL SCHEMATICS?

A. Wire lengths

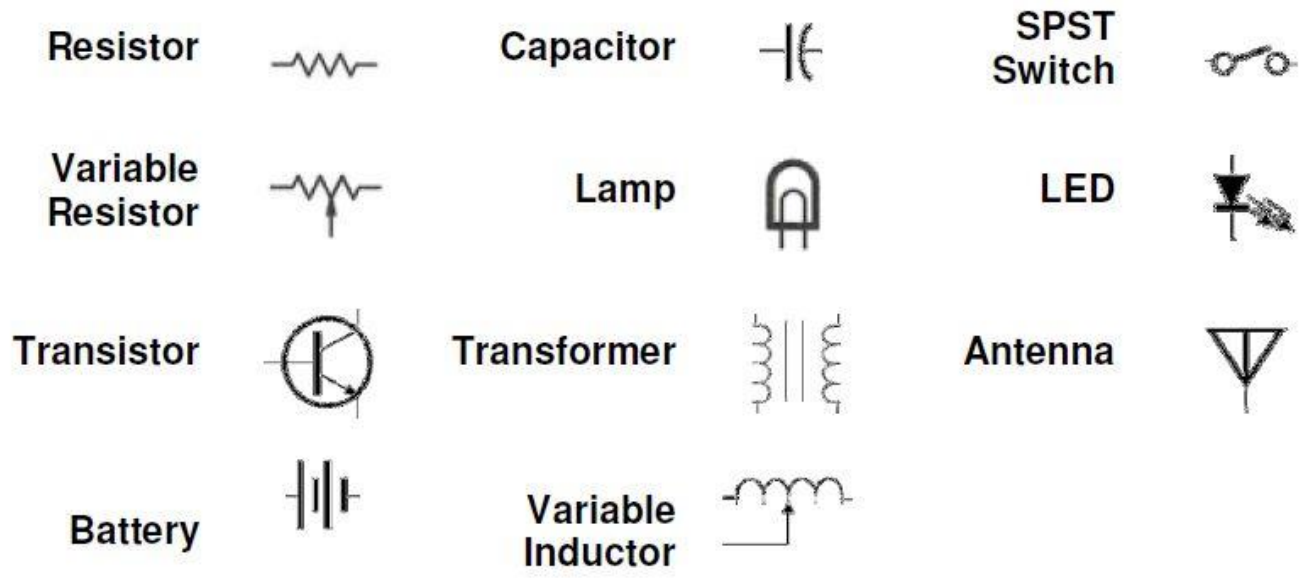
B. Physical appearance of components

C. The way components are interconnected

D. All of these choices are correct

PREPPERNET

Schematic Symbols



An electrical schematic diagram simply tells you HOW the various components are connected.

The diagram is NOT an accurate representation of WHERE the electrical components are in the device

PREPPERNET

T6D01
WHICH OF THE FOLLOWING DEVICES OR CIRCUITS CHANGES AN ALTERNATING CURRENT INTO A VARYING DIRECT CURRENT SIGNAL?

A. Transformer

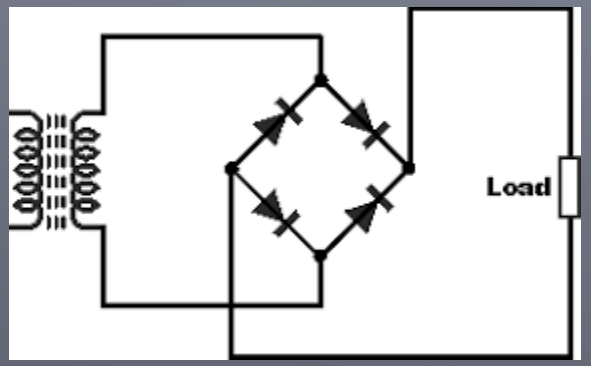
B. Rectifier

C. Amplifier

D. Reflector

PREPPERNET

A Rectifier is a component that uses diodes to direct all current down a specific path.

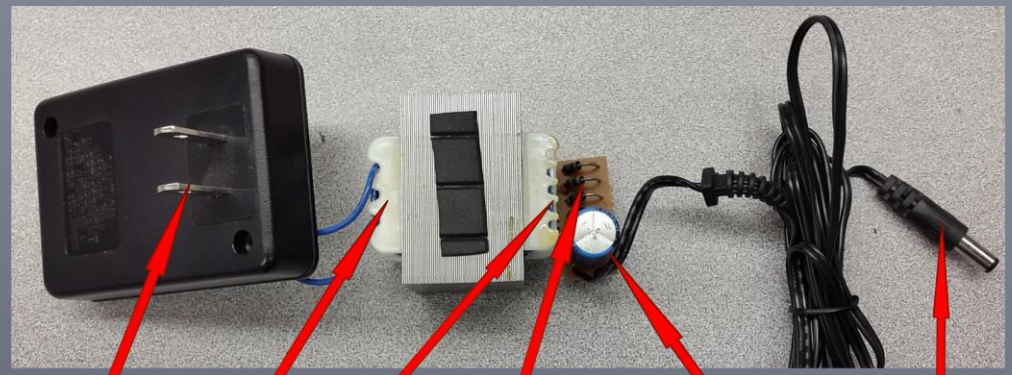


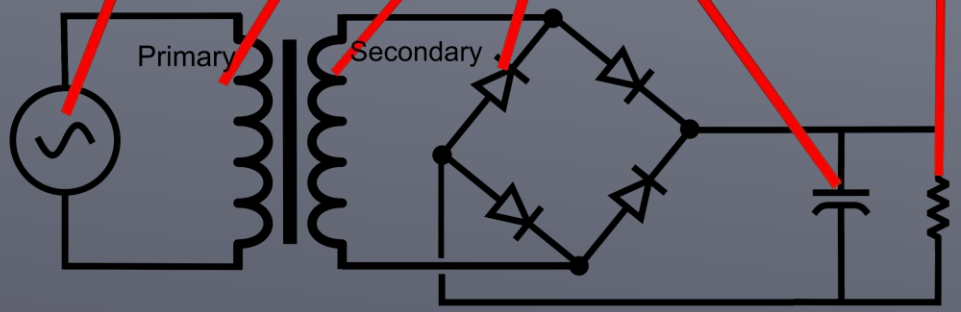
A transformer is a component that changes the voltage scale of a signal; it may convert from 5v to 10v, or from 110 to 12, etc.

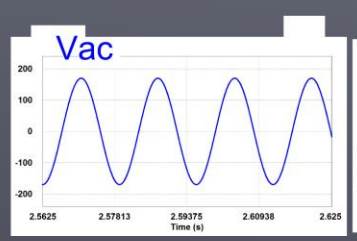
An amplifier is a component that amplifies (increases the magnitude of) a signal.

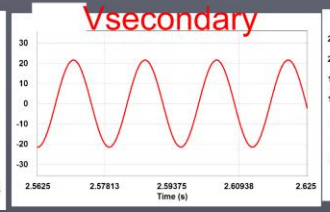
A reflector is actually a part of an antenna, not a specific electrical component.

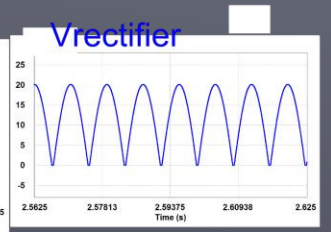
PREPPERNET

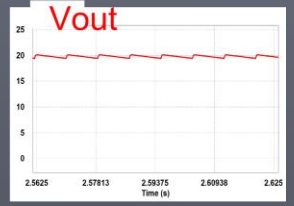



Primary
Secondary
AC Source
Transformer
Rectifier
Capacitor
Load


Vac
200
100
0
-100
-200
2.5625
2.57813
2.59375
2.60938
2.625
Time (s)


Vsecondary
30
20
10
0
-10
-20
-30
2.5625
2.57813
2.59375
2.60938
2.625
Time (s)


Vrectifier
25
20
15
10
5
0
-5
2.5625
2.57813
2.59375
2.60938
2.625
Time (s)


Vout
25
20
15
10
5
0
2.5625
2.57813
2.59375
2.60938
2.625
Time (s)

PREPPERNET

T6D02
WHAT IS A RELAY?

A. Transformer

B. Rectifier

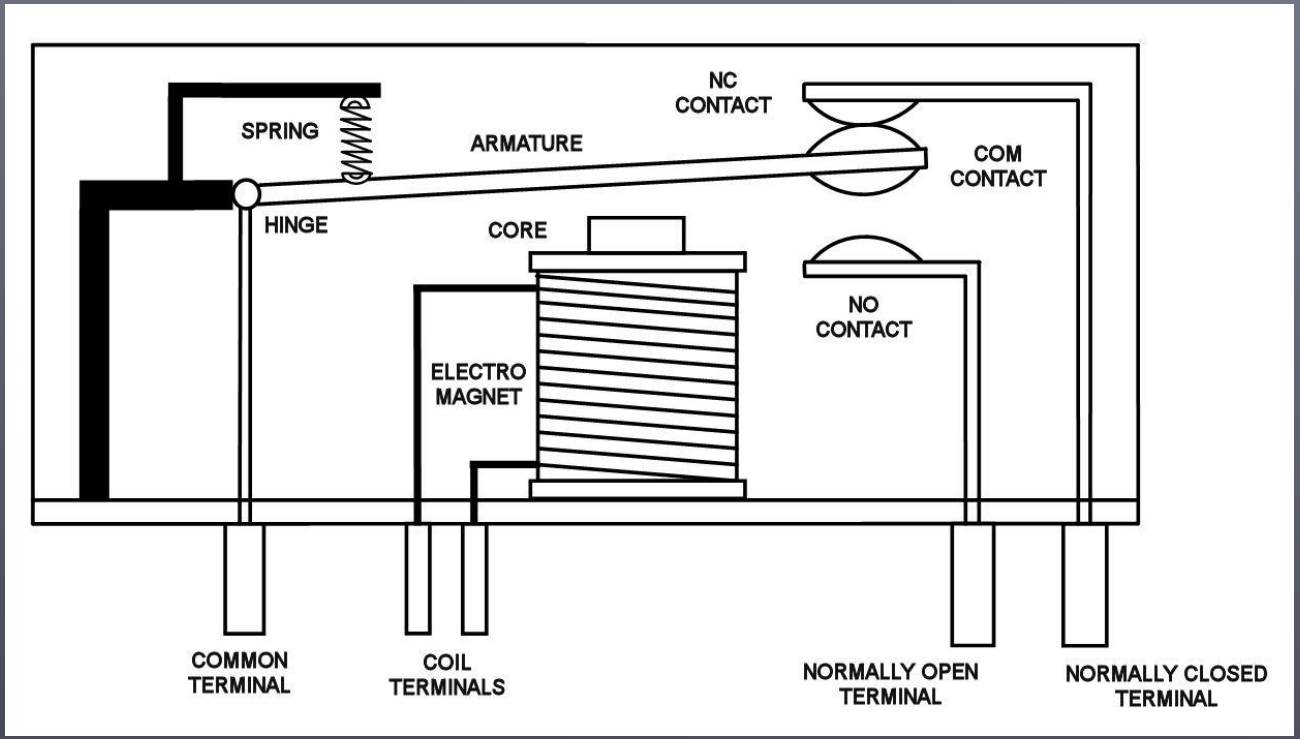
C. Amplifier

D. Reflector

PREPPERNET

Relays are used extensively in vehicles; whenever you flip a switch that causes something to happen it will most likely control a relay.

A relay allows a fairly low power energy source to drive an electromagnet that closes a switch designed to handle a much higher energy source; for example, a relay may only need 100mA to drive a relay that can handle 10A. This is just an example, of course; actual values will vary.



PREPPERNET

T6D03
WHAT TYPE OF SWITCH IS REPRESENTED BY COMPONENT 3 IN FIGURE T2?

A. Single-pole single-throw

B. Single-pole double-throw

C. Double-pole single-throw

D. Double-pole double-throw

PREPPERNET

Component 3 is a Switch

Just remember that a switch is just 2 contact points that become connected when a pole bridges the gap between the two contacts.

In this example, there is only a single pole shown and a single contact (throw) to be made.

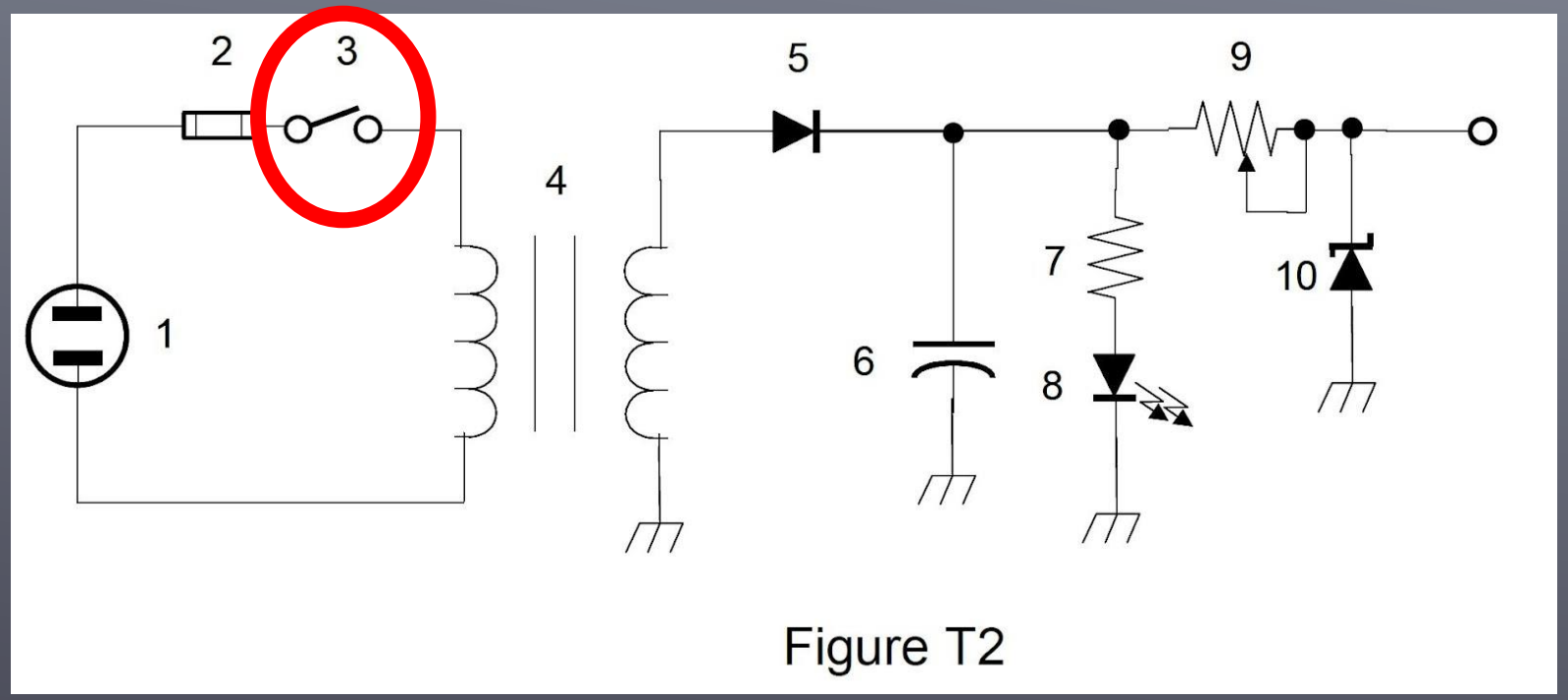
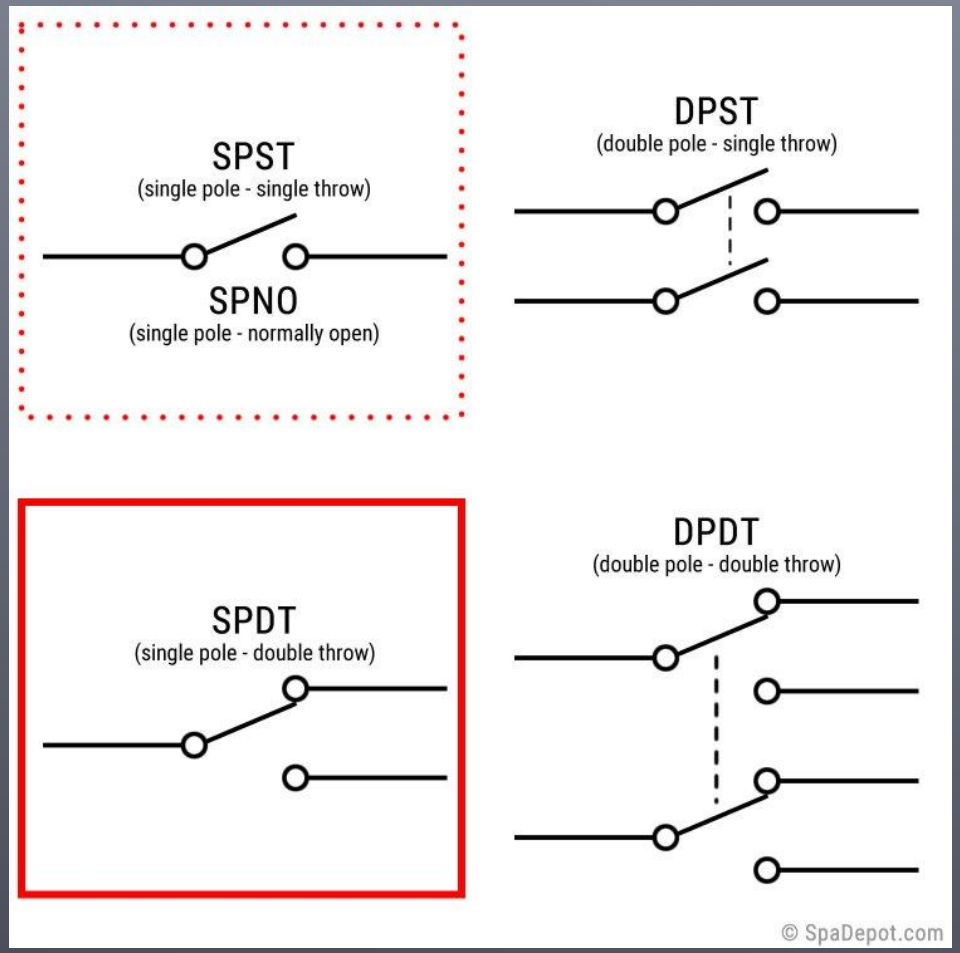


Figure T2

PREPPERNET



Single-pole means that there is a single set of contacts that are connected or disconnected with the switch. Note on the diagram that there is only a single line into the switch and a single line out.

Double-pole would mean that the switch could connect or disconnect two wires at once and there would be two contacts going into the switch on the diagram.

Single-throw means that there is only one "choice" for each of those contacts; with a double-throw the switch would connect the input to one of two outputs. Triple-throw would be one of three outputs, etc

PREPPERNET

T6D04

WHICH OF THE FOLLOWING DISPLAYS AN ELECTRICAL QUANTITY AS A NUMERIC VALUE?

A. Potentiometer

B. Transistor

C. Meter

D. Relay

A Meter (in this case) is a device that measures something and displays the results on some form of numeric scale.

A Signal Strength Meter is the type mentioned here, but other common types of meters include voltmeters, ohmmeters, ammeters, and thermometers.

A Potentiometer is a variable resistor,

A Transistor is an electrical gate that controls the flow of current along a path

A Relay is an electrically controlled switch.

All three of the distractors are electrical components that affect the flow of electrons in a circuit.

PREPPERNET


2
4
6
8
A
10
65C5
2.5
NO.


-0.00
BACK LIGHT
OFF
10ADC


5
10
V
0
15
65C5
2.5
NO.

PREPPERNET

T6D05

WHAT TYPE OF CIRCUIT CONTROLS THE AMOUNT OF VOLTAGE FROM A POWER SUPPLY?

A. Regulator

B. Oscillator

C. Filter

D. Phase inverter

A regulator, more commonly referred to as a Voltage Regulator, regulates the voltage down to a particular point.

The amount of current and what voltage the regulator targets depends on the type of regulator and sometimes depends on other components in the circuit.

The distractors don't regulate things:

oscillator - generates an electrical signal

filter - does signals processing, removing and/or enhancing frequency components in a signal

phase inverter - splits a signal to produce two outputs: one which is identical to the input, and one which is a mirror image (phase-inverted or flipped phase)

T6D06

WHAT COMPONENT IS COMMONLY USED TO CHANGE 120V AC HOUSE CURRENT TO A LOWER AC VOLTAGE FOR OTHER USES?

A. Variable capacitor

B. Transformer

C. Transistor

D. Diode

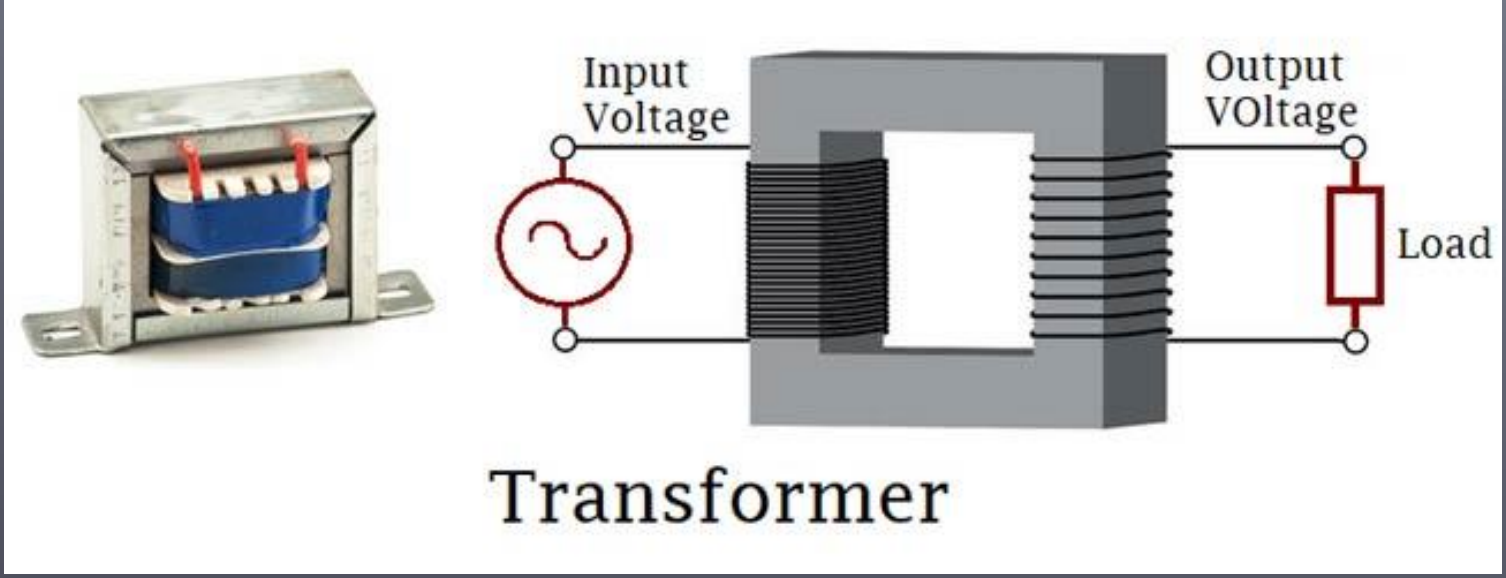
PREPPERNET

A "Transformer" is made up of two inductive coils wound around a ferrite core.

The "Primary" coil is connected to the voltage source

the "Secondary" coil is connected to the circuit you are powering.

The ratio of the number of turns on the primary coil to the secondary coil determines what the output voltage is.



PREPPERNET

T6D07

WHICH OF THE FOLLOWING IS COMMONLY USED AS A VISUAL INDICATOR?

A. LED

B. FET

C. Zener diode

D. Bipolar transistor

PREPPERNET

LED is an acronym for Light Emitting Diode. As the name suggests, this is a Diode (which only allows current in one direction) which produces light, making it a good choice for a visual indicator.

LEDs tend to have much lower power consumption than traditional "incandescent" or "fluorescent" bulbs used in your house.

PREPPERNET

T6D08
WHICH OF THE FOLLOWING IS COMBINED WITH AN INDUCTOR TO MAKE A TUNED CIRCUIT?

A. Resistor

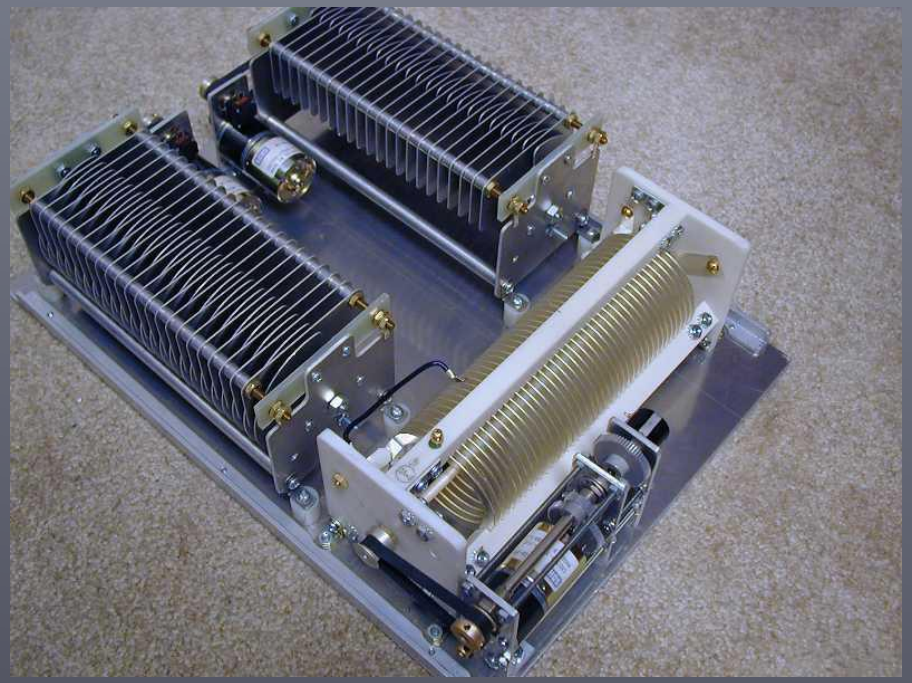
B. Zener diode

C. Potentiometer

D. Capacitor

A "tuned circuit" is a common name for a resonant circuit made using a capacitor and an inductor.

This type of circuit is also known as an "LC circuit".



Just remember…

"C, I Tuned it." Capacitor + Inductor = Tuned Circuit.

PREPPERNET

T6D09

WHAT IS THE NAME OF A DEVICE THAT COMBINES SEVERAL SEMICONDUCTORS AND OTHER COMPONENTS INTO ONE PACKAGE?

A. Transducer

B. Multi-pole relay

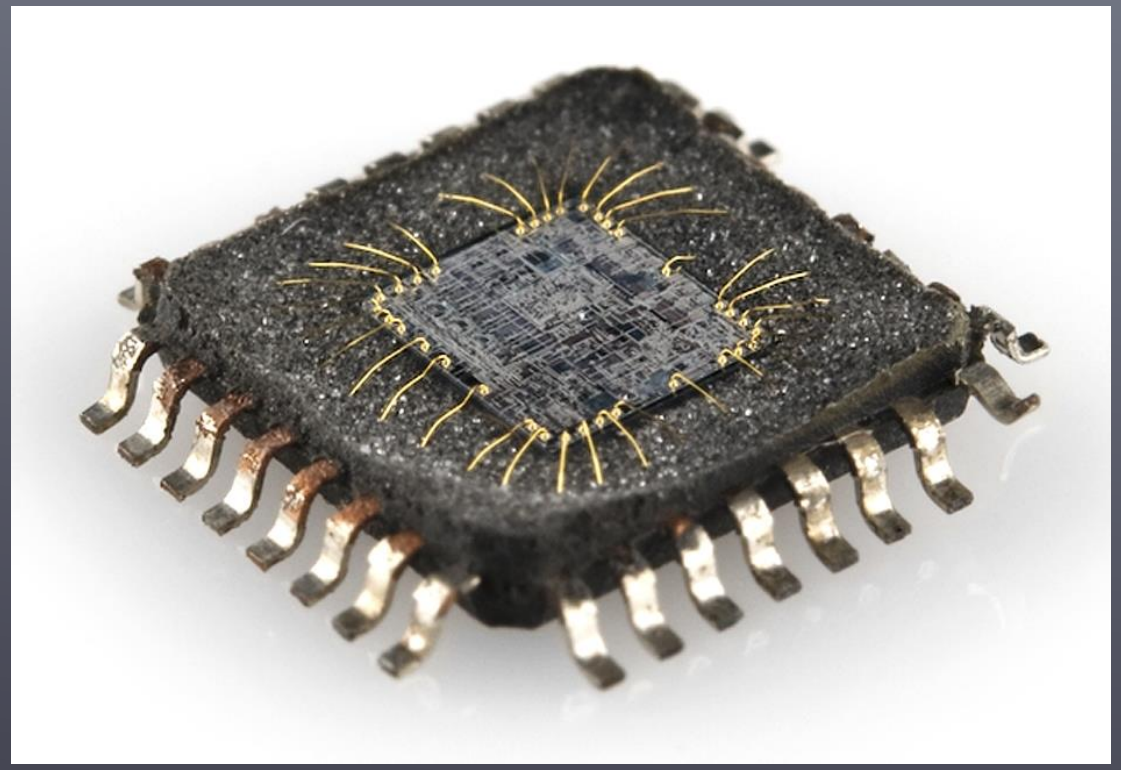
C. Integrated circuit

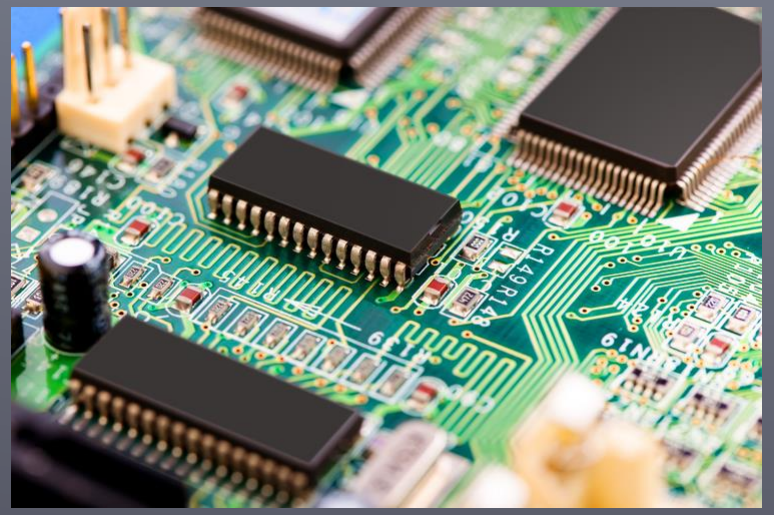
D. Transformer

PREPPERNET

An integrated circuit, also known as an IC, is basically a microchip. These microchips have various components inside them, which means they contain one or more circuits inside, all integrated into a single package.

A commonly known example of a complex integrated circuits would be the CPU of a computer, but these days just about any circuit board you look at will have "chips" on it, and those chips are all integrated circuits.





PREPPERNET

T6D10
WHAT IS THE FUNCTION OF COMPONENT 2 IN FIGURE T1?

A. Give off light when current flows through it

B. Supply electrical energy

C. Control the flow of current

D. Convert electrical energy into radio waves

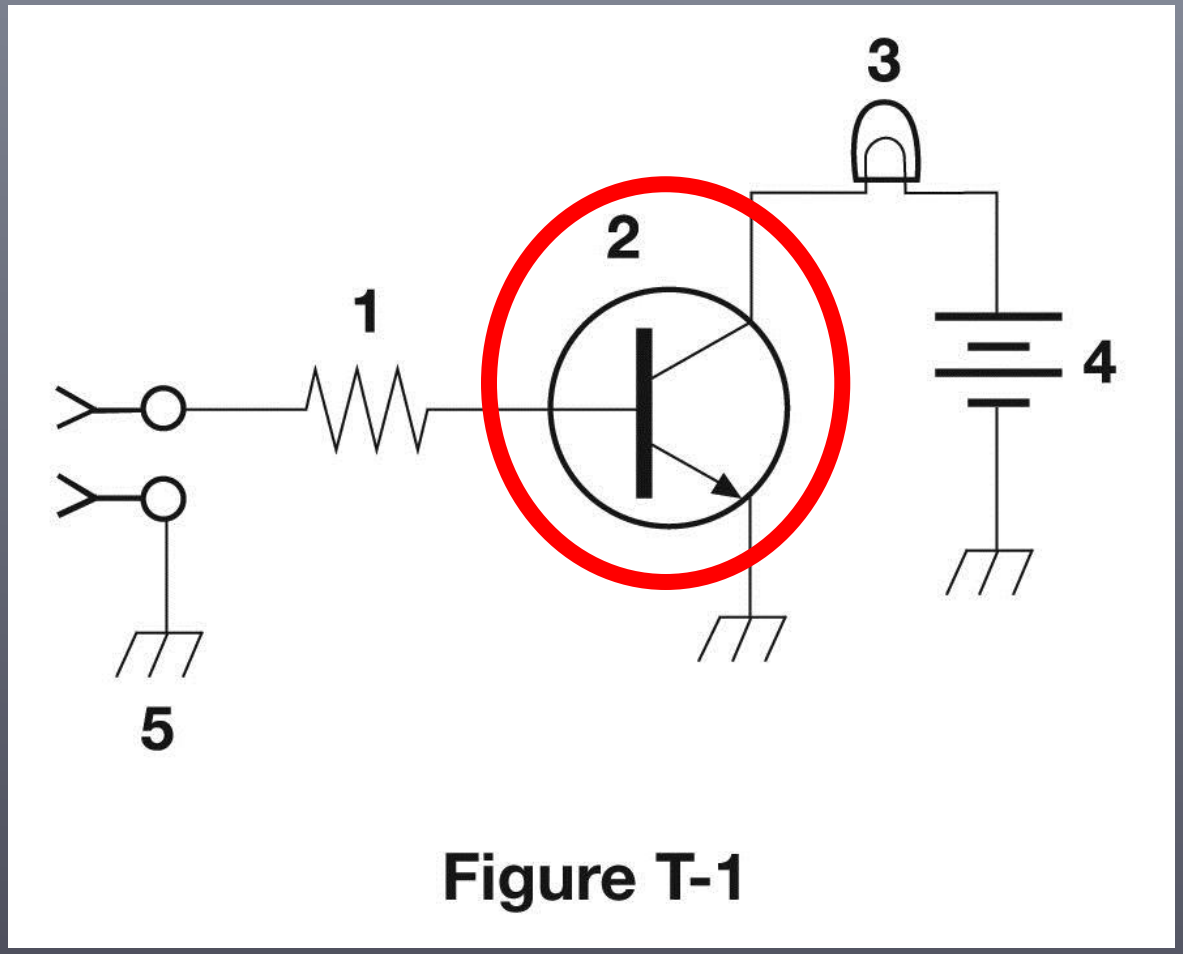


Figure T-1

Component 2 is a Transistor.

A transistor is <u>a control element</u> and has three terminals.

The one on the left is called the base.

The upper right terminal is the collector and has current flowing into.

The lower right terminal has an arrow that indicates the direction the current will flow from both the base and the collector.

PREPPERNET

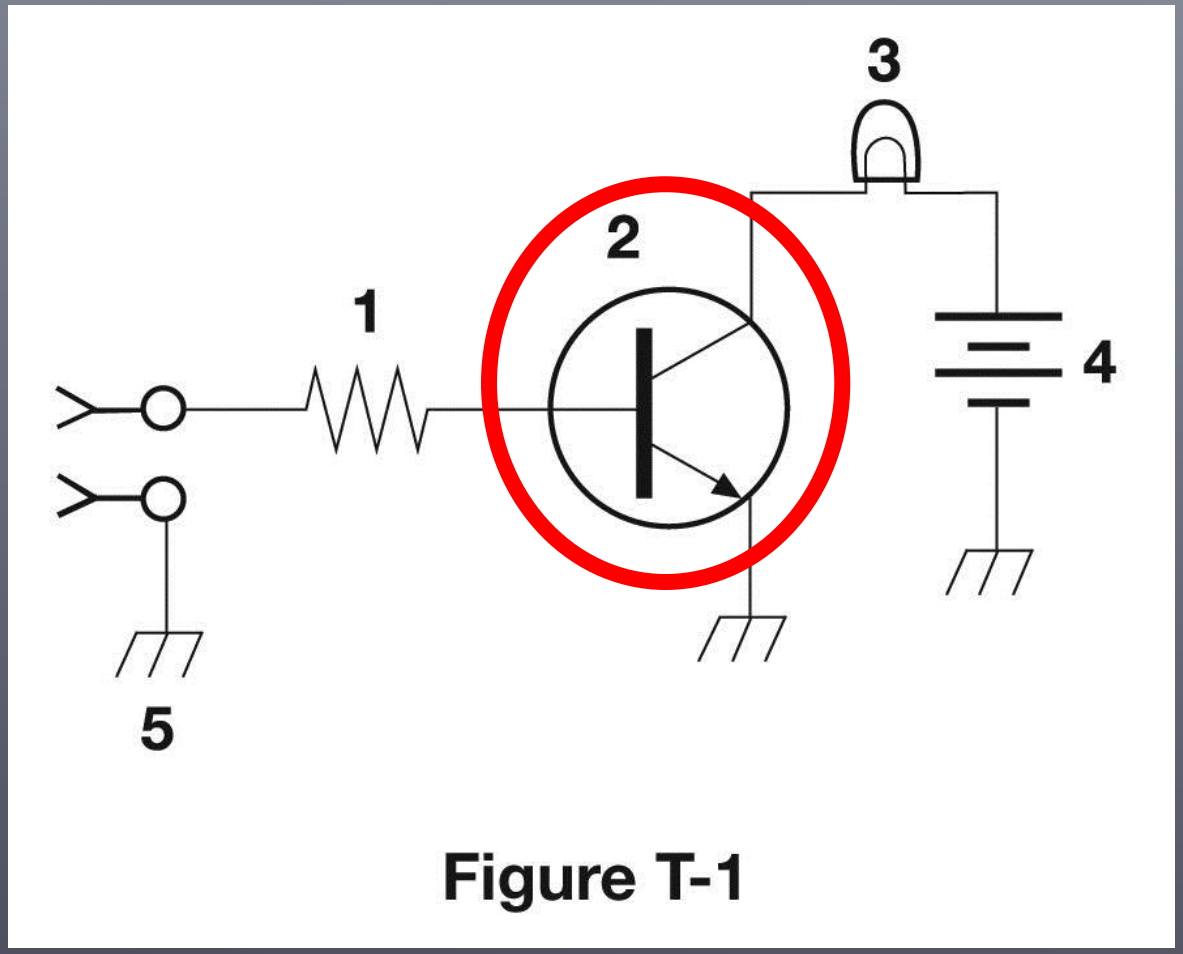


Figure T-1

Component 2 is a Transistor.

It is the only symbol in this diagram that shows a signal that can have multiple current flow possibilities.

PREPPERNET

T6D11
WHICH OF THE FOLLOWING IS A RESONANT OR TUNED CIRCUIT?

A. An inductor and a capacitor connected in series or parallel to form a filter

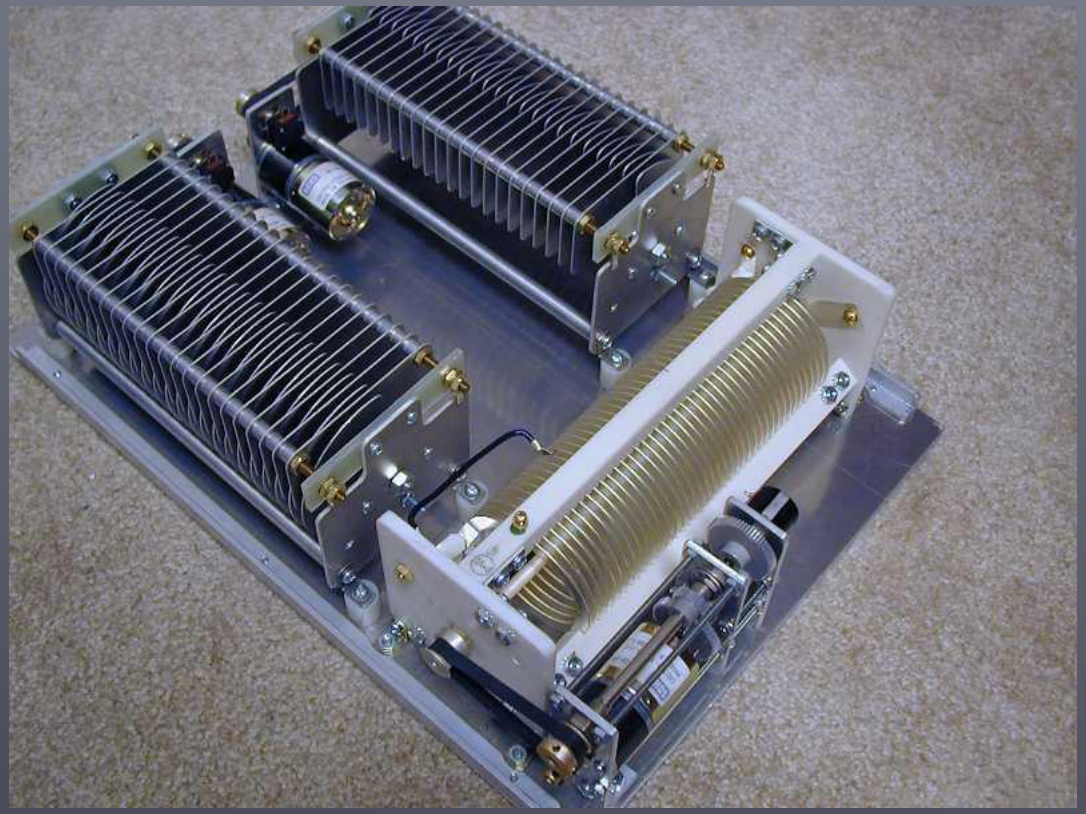
B. A type of voltage regulator

C. A resistor circuit used for reducing standing wave ratio

D. A circuit designed to provide high-fidelity audio

A "tuned circuit" is a common name for a resonant circuit made using a capacitor and an inductor.

Resonance occurs when the effects of capacitance and inductance in a circuit are the same (and opposite), for a given frequency.



PREPPERNET

T6D12
WHICH OF THE FOLLOWING IS A COMMON REASON TO USE SHIELDED WIRE?

A. To decrease the resistance of DC power connections

B. To increase the current carrying capability of the wire

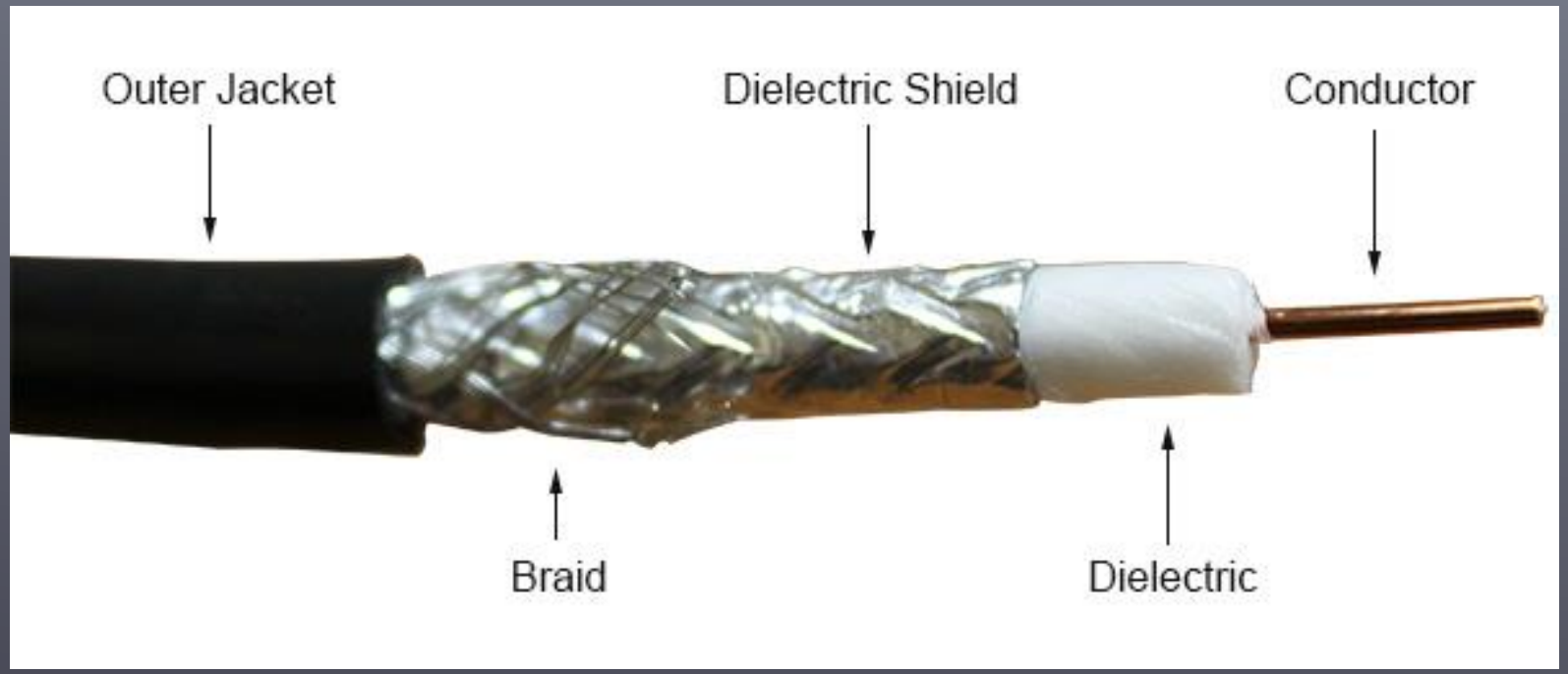
C. To prevent coupling of unwanted signals to or from the wire

D. To couple the wire to other signals

PREPPERNET

Shielded wire prevents radio frequency energy from being radiated from the wire, or at least attenuates the RF energy.

By using shielded wire, you prevent the RF energy transferring to an adjacent wire, or RF energy on the adjacent wire transferring to the wire with the shielding.



PREPPERNET

END OF SUBELEMENT T6