

Basic Electronics



SOME BASIC MATH

Oh no!!!!!!



(T5B12) Which is equal to 28400 kHz?

ANSWER:



(T5B13) Which is equal to 2425 MHz?

ANSWER:



(T5B02) Which is equal to 1,500,000 hertz?

ANSWER:



(T5B07) Which is equal to 3.525 MHz?

ANSWER:

(T5B01) How many milliamperes is 1.5 amperes?

ANSWER:

(T5B03) WHICH IS equal to one kilovolt?

ANSWER:

(T5B04) WHICH IS equal to one microvolt?

ANSWER:

(T5B05) Which IS EQUAL to 500 milliwatts?

ANSWER:

(T5B06) Which is equal to 3000 milliamperes?

ANSWER:

(T5B08) WHICH IS equal to 1,000,000 picofarads?

ANSWER:

(T5C07) What is the abbreviation for megahertz?

ANSWER:

(T5D01) What formula is used to calculate current in a circuit?

ANSWER:

(T5D02) What formula is used to calculate voltage in a circuit?

ANSWER:

(T5D03) What formula is used to calculate resistance in a circuit?

ANSWER:

(T5D04) What is the resistance of a circuit in which a current of 3 amperes flows when connected to 90 volts?

ANSWER:

(T5D05) What is the resistance of a circuit for which the applied voltage is 12 volts and the current flow is 1.5 amperes?

ANSWER:

(T5D06) What is the resistance of a circuit that draws 4 amperes from a 12-volt source?

ANSWER:

(T5D07) What is the current in a circuit with an applied voltage of 120 volts and a resistance of 80 ohms?

ANSWER:

(T5D08) What is the current through a 100-ohm resistor connected across 200 volts?

ANSWER:

(T5D09) What is the current through a 24-ohm resistor connected across 240 volts?

ANSWER:

(T5D10) What is the voltage across a 2-ohm resistor if a current of 0.5 amperes flows through it?

ANSWER:

(T5D11) What is the voltage across a 10-ohm resistor if a current of 1 ampere flows through it?

ANSWER:

(T5D12) What is the voltage across a 10-ohm resistor if a current of 2 amperes flows through it?

ANSWER:

(T5C09) How much power is delivered by a voltage of 13.8 volts DC and a current of 10 amperes?

ANSWER:

(T5C10) How much power is delivered by a voltage of 12 volts DC and a current of 2.5 amperes?

ANSWER:

(T5C11) How much current is required to deliver 120 watts at a voltage of 12 volts DC?

ANSWER:

Electrical fundamentals

(T3B02) What property of a radio wave defines its polarization?

ANSWER:

(T5A01) Electrical current is measured in which of the following units?

ANSWER:

(T5A02) Electrical power is measured in which of the following units?

ANSWER:

(T5A03) What is the name for the flow of electrons in an electric circuit?

ANSWER:

(T5A04) What are the units of electrical resistance?

ANSWER:

(T5A05) What is the electrical term for the force that causes electron flow?

ANSWER:

T5A06 -- What is the unit of frequency?

ANSWER:

(T5A07) Why are metals generally good conductors of electricity?

ANSWER:

(T5A08) Which of the following is a good electrical insulator?

ANSWER:

(T5A09) Which of the following describes alternating current?

ANSWER:

(T5A10) Which term describes the rate at which electrical energy is used?

ANSWER:

(T5A11) What type of current flow is opposed by resistance?

ANSWER:

(T5A12) What describes the number of times per second that an alternating current makes a complete cycle?

ANSWER:

(T5D13) In which type of circuit is DC current the same through all components?

ANSWER:

(T5D14) In which type of circuit is voltage the same across all components?

ANSWER:

(T5C08) What is the formula used to calculate electrical power (P) in a DC circuit?

ANSWER:

(T7D01) Which instrument would you use to measure electric potential?

ANSWER:

(T7D02) How is a voltmeter connected to a component to measure applied voltage?

ANSWER:

(T7D03) When configured to measure current, how is a multimeter connected to a component?

ANSWER:

(T7D04) Which instrument is used to measure electric current?

ANSWER:

(T7D06) Which of the following CAN damage a multimeter?

ANSWER:

(T7D07) Which of the following measurements are made using a multimeter?

ANSWER:



(T7D10) What reading indicates that an ohmmeter is connected across a large, discharged capacitor?

ANSWER:



(T7D11) Which of the following precautions should be taken when measuring in-circuit resistance with an ohmmeter?

ANSWER:



(T5B10) Which decibel value most closely represents a power decrease from 12 watts to 3 watts?

ANSWER:



G5B01 -- What dB change represents a factor of two increase or decrease in power?

ANSWER:



G5B03 -- How many watts of electrical power are used if 400 VDC is supplied to an 800 ohm load?

ANSWER:

G5B04 -- How many watts of electrical power are used by a 12-VDC light bulb that draws 0.2 amperes?

ANSWER:

G5B10 -- What percentage of power loss would result from a transmission line loss of 1 dB?

ANSWER:

T5B09 -- Which decibel value most closely represents a power increase from 5 watts to 10 watts?

ANSWER:

(T5B11) -- Which decibel value represents a power increase from 20 watts to 200 watts?

ANSWER:

G5B13 -- What is the output PEP of an unmodulated carrier if an average reading wattmeter connected to the transmitter output indicates 1060 watts?

ANSWER:

G5B08 -- What is the peak-to-peak voltage of a sine wave with an RMS voltage of 120.0 volts?

ANSWER:

G5B12 -- What would be the RMS voltage across a 50-ohm dummy load dissipating 1200 watts?

ANSWER:

G5B14 -- What is the output PEP from a transmitter if an oscilloscope measures 500 volts peak-to-peak across a 50 ohm resistive load connected to the transmitter output?

ANSWER:

THE BASICS OF BASIC COMPONENTS

Schematics

(T5C01) What describes the ability to store energy in an electric field?

ANSWER:

(T5C02) What is the unit of capacitance?

ANSWER:

(T5C03) What DESCRIBES The ability to store energy in a magnetic field?

ANSWER:

(T5C04) What is the unit of inductance?

ANSWER:

(T6A01) What electrical component opposes the flow of current in a DC circuit?

ANSWER:

(T6A04) What electrical component stores energy in an electric field?

ANSWER:

(T6A06) What type of electrical component stores energy in a magnetic field?

ANSWER:

(T6A07) What electrical component is typically constructed as a coil of wire?

ANSWER:

(T6A08) What is the function of an SPDT switch?

ANSWER:

(T6A09) What electrical component is used to protect other circuit components from current overloads?

ANSWER:

(T6B01) Which is true about forward voltage drop in a diode?

ANSWER:

(T6B02) What electronic component allows current to flow in only one direction?

ANSWER:

(T6B03) Which of these components can be used as an electronic switch?

ANSWER:

(T6B04) Which of the following components can consist of three REGIONS of semiconductor material?

ANSWER:

(T6B05) What type of transistor has a gate, drain, and source?

ANSWER:

(T6B06) How is the cathode lead of a semiconductor diode often marked on the package?

ANSWER:

(T6B07) What causes a light-emitting diode (LED) to emit light?

ANSWER:

(T6B08) What does the abbreviation "FET" stand for?

ANSWER:

(T6B09) What are the names FOR THE electrodes of a diode?

ANSWER:

(T6B10) Which of the following can provide power gain?

ANSWER:

(T6B11) What is the term that describes a device's ability to amplify a signal?

ANSWER:

(T6B11) What is the term that describes a device's ability to amplify a signal?

ANSWER:

(T6B12) What are the names of the electrodes of a bipolar junction transistor?

ANSWER:

(T6C01) What is the name of an electrical wiring diagram that uses standard component symbols?

ANSWER:

(T6C12) Which of the following is accurately represented in electrical schematics?

ANSWER:

(T6C13) Which of the following is accurately represented in electrical schematics?

ANSWER:

(T6D01) Which of the following devices or circuits changes an alternating current into a varying direct current signal?

ANSWER:

(T6D02) What is a relay?

ANSWER:

(T6D04) Which of the following displays an electrical quantity as a numeric value?

ANSWER:

(T6D05) What type of circuit controls the amount of voltage from a power supply?

ANSWER:

(T6D06) What component changes 120V AC house current to a lower AC voltage for other uses?

ANSWER:

(T6D07) Which of the following is commonly used as a visual indicator?

ANSWER:

(T6D09) What is the name of the device that combines several semiconductors and other components into one package?

ANSWER:

A LITTLE MORE COMPONENT DETAIL

Basic component definitions

(T6A05) What type of electrical component consists of conductive surfaces separated by an insulator?

ANSWER:

G5B02 -- How does the total current relate to the individual currents in each branch of a purely resistive parallel circuit?

ANSWER:

G5C01 -- What causes a voltage to appear across the secondary winding of a transformer when an AC voltage source is connected across its primary winding?

ANSWER:

G5B05 -- How many watts are dissipated when a current of 7.0 milliamperes flows through a 1250 ohm resistance?

ANSWER:

G5C02 -- What happens if a signal is applied to the secondary winding of a 4:1 voltage step-down transformer instead of the primary winding?

ANSWER:

G5C16 -- Why is the conductor of the primary winding of many voltage step-up transformers larger in diameter than the conductor of the secondary winding?

ANSWER:

G5C03 -- Which of the following components increases the total resistance of a resistor?

ANSWER:

G5C04 -- What is the total resistance of three 100 ohm resistors in parallel?

ANSWER:

Revised 2022-08-04

G5C05 -- If three equal value resistors in series produce 450 ohms, what is the value of each resistor?

ANSWER:

G5C06 -- What is the RMS voltage across a 500-turn secondary winding in a transformer if the 2250-turn primary is connected to 120 VAC?

ANSWER:

G5C08 -- What is the equivalent capacitance of two 5.0 nanofarad capacitors and one 750 picofarad capacitor connected in parallel?

ANSWER:

G5C09 -- What is the capacitance of three 100 microfarad capacitors connected in series?

ANSWER:

G5C10 -- What is the inductance of three 10 millihenry inductors connected in parallel?

ANSWER:

Revised 2022-08-04

G5C11 -- What is the inductance of a 20 millihenry inductor connected in series with a 50 millihenry inductor?

ANSWER:

G5C12 -- What is the capacitance of a 20 microfarad capacitor connected in series with a 50 microfarad capacitor?

ANSWER:

G5C17 -- WHAT IS THE VALUE IN NANOFARADS (nF) OF A 22,000 PICO FARAD (pF) CAPACITOR?

ANSWER:

G5C18 -- WHAT IS THE VALUE IN MICROFARADS OF A 4700 NANOFARAD (nF) CAPACITOR?

ANSWER:

G5C13 -- Which of the following components should be added to a capacitor to increase the capacitance?

ANSWER:

G5C14 -- Which of the following components should be added to an inductor to increase the inductance?

ANSWER:

G5C15 -- What is the total resistance of a 10 ohm, a 20 ohm, and a 50 ohm resistor connected in parallel?

ANSWER:

G6A14 -- Which of the following is an advantage of ceramic capacitors as compared to other types of capacitors?

ANSWER:

G6A04 -- Which of the following is an advantage of an electrolytic capacitor?

ANSWER:

G6A06 -- Which of the following is a reason not to use wire-wound resistors in an RF circuit?

ANSWER:

G6B01-- What determines the performance of a ferrite core at different frequencies?

ANSWER:

G6A08 -- What is an advantage of using a ferrite core toroidal inductor?

ANSWER:

G6A11 -- What happens when an inductor is operated above its self-resonant frequency?

ANSWER:

G6A13 -- Why is the polarity of applied voltages important for polarized capacitors?

ANSWER:

(T6A02) What type of component is often used as an adjustable volume control?

ANSWER:

(T6A03) What electrical parameter is controlled by a potentiometer?

ANSWER:

G7A12 -- Which symbol in Figure G7-1 represents a solid core transformer?

ANSWER:

(T6C02) -- What is component 1 in figure T-1?

ANSWER:

(T6C03) -- What is component 2 in figure T-1?

ANSWER:

(T6D10) -- What is the function of component 2 in Figure T-1?

ANSWER:

(T6C04) -- What is component 3 in figure T-1?

ANSWER:

(T6C05) -- What is component 4 in figure T-1?

ANSWER:

(T6A12) -- What type of switch is represented by component 3 in figure T-2?

ANSWER:

(T6C06) -- What is component 6 in figure T-2?

ANSWER:

(T6C07) -- What is component 8 in figure T-2?

ANSWER:

(T6C08) -- What is component 9 in figure T-2?

ANSWER:

(T6C09) -- What is component 4 in figure T-2?

ANSWER:

(T6D03) -- Which of the following is a reason to use shielded wire?

ANSWER:

(T6C10) -- What is component 3 in figure T-3?

ANSWER:

(T6C11) -- What is component 4 in figure T-3?

ANSWER:

Reactance and Impedance

(T6D08) Which of the following is combined with an inductor to make a RESONANT circuit?

ANSWER:

T5C12 -- What is impedance?

ANSWER:

T5C13 -- What is the abbreviation for kilohertz?

ANSWER:

G5A01 -- What is impedance?

ANSWER:

Revised 2022-08-04

G5A02 -- What is reactance?

ANSWER:

G5A03 -- Which of the following causes opposition to the flow of alternating current in an inductor?

ANSWER:

G5A04 -- Which of the following causes opposition to the flow of alternating current in a capacitor?

ANSWER:

G5A05 -- How does an inductor react to AC?

ANSWER:

G5A06 -- How does a capacitor react to AC?

ANSWER:

G5A07 -- What happens when the impedance of an electrical load is equal to the output impedance of a power source, assuming both impedances are resistive?

ANSWER:

G5A09 -- What unit is used to measure reactance?

ANSWER:

G5A11 -- Which of the following describes one method of impedance matching between two AC circuits?

ANSWER:

G5A08 -- What is one reason to use an impedance matching transformer?

ANSWER:

G5A10 -- Which of the following devices can be used for impedance matching at radio frequencies?

ANSWER:

Revised 2022-08-04

G5C07 -- What is the turns ratio of a transformer used to match an audio amplifier having 600 ohm output impedance to a speaker having a 4 ohm impedance?

ANSWER:
