

Unit 1.3 Electronic Principles: DC Power Calculation

Power is the rate at which electrical energy is generated or consumed. The formula used to calculate electrical power in a DC circuit is power (P) equals voltage (E) multiplied by current (I) (T5C08) $P = E \times I$

138 watts is the power being used in a circuit when the applied voltage is 13.8 volts DC and the current is 10 amperes. (T5C09) $P = E \times I$ or $13.8 \text{ V} \times 10 \text{ A} = 138 \text{ W}$

When the applied voltage in a circuit is 12 volts DC and the current is 2.5 amperes, the power being used is 30 watts. (T5C10) $P = E \times I$ or $12 \text{ V} \times 2.5 \text{ A} = 30 \text{ W}$

Just as with Ohm's Law, you can use algebra to come up with other forms of this equation to calculate the voltage if you know the power and the current, or to calculate the current if you know the power and the voltage. The formula to calculate the current, if you know the power and the voltage is $I = P \div E$

For example, 10 amperes are flowing in a circuit when the applied voltage is 12 volts DC and the load is 120 watts. (T5C11) $I = P \div E$ or $120 \text{ W} \div 12 \text{ V} = 10 \text{ A}$

QUESTION POOL: (4)

T5C08	T5C09	T5C10	T5C11	
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