

Answer on question #59046, Physics / Electric Circuits

Question A current flows in a wire of circular cross-section with the free electrons travelling with a mean drift velocity v . If an equal current flows in a wire of the same material but of twice the radius, what is the new mean drift velocity? $v/4$ $v/2$ $2v$ $4v$

Solution Current is proportional to drift velocity and reverse proportional to square of radius. If you increase radius twice, to keep current the same you have to decrease velocity in 4 times, answer is $v/4$.