33 When there is a current of 5.0 A in a copper wire, the average drift velocity of the free electrons is $8.0 \times 10^{-4}\,\text{m s}^{-1}$.

What is the average drift velocity in a different copper wire that has twice the diameter and a current of 10.0 A?

A $4.0 \times 10^{-4}\,\text{m s}^{-1}$

B $8.0 \times 10^{-4}\,\text{m s}^{-1}$

C $1.6 \times 10^{-3}\,\text{m s}^{-1}$

D $3.2 \times 10^{-3}\,\text{m s}^{-1}$