2 At temperatures close to 0 K, the specific heat capacity c of a particular solid is given by $c = bT^3$, where T is the thermodynamic temperature and b is a constant characteristic of the solid.
The SI unit of specific heat capacity is $\mathrm{J\,kg^{-1}\,K^{-1}}$.

What is the unit of constant b, expressed in SI base units?

A $\mathrm{m^2\,s^{-2}\,K^{-3}}$

B $\mathrm{m^2\,s^{-2}\,K^{-4}}$

C $\mathrm{kg\,m^2\,s^{-2}\,K^{-3}}$

D $\mathrm{kg\,m^2\,s^{-2}\,K^{-4}}$