

24. We divide Eq. 19-9 by the time increment  $\Delta t$  and equate it to the (constant) speed  $v = 100 \times 10^{-9}$  m/s.

$$v = \alpha L_0 \frac{\Delta T}{\Delta t}$$

where  $L_0 = 0.0200$  m and  $\alpha = 23 \times 10^{-6}/\text{C}^\circ$ . Thus, we obtain

$$\frac{\Delta T}{\Delta t} = 0.217 \frac{\text{C}^\circ}{\text{s}} = 0.217 \frac{\text{K}}{\text{s}} .$$