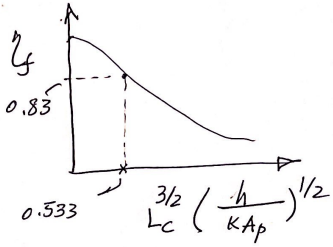
Next use fig 3.19

$L_c = L + t/2 = 0.05 + 0.00125 = 0.05125\ m$

$A_p = L_c \times t = 0.05125 \times 0.005 = 0.0002625\ m$

$$L_c^{3/2}\left(\frac{h}{kA_p}\right)^{1/2} = 0.533$$



$$\eta_f = \frac{q_f}{h A_f (T_b - T_\infty)}$$

Fig 3.19

$$q_f = \eta_f \times h A_f (T_b - T_\infty)$$

$$= 0.83 \times (100)\left[2 \times 0.2 \times 0.0525 + 2(0.005)(0.05125)\right] \times (100 - 20)$$

$$= 143\ W$$

Next we can use table 3.5 $\quad \begin{cases} m = 15.1 \\ L_c = 0.05125 \end{cases}$

$$\eta_f = \frac{\tanh mL_c}{mL_c} = \frac{\tanh(15.1 \times 0.05125)}{15.1 \times 0.05125} = 0.825$$

$$q_f = \eta_f \times h A_f (T_b - T_\infty)$$

$$= 143\ W$$