8. A strip of steel is 8 in long, 0.25 in thick, and 1.5 in wide as shown in the figure. It is subjected to a torque $T \sim N(120, 12^2)$ lbf·in. The allowable shear stress of the steel is $\tau_a \sim (8, 0.8^2)$ kpsi. Determine the probability of failure using the FOSM.

Answer: $p_f = 1.380(10^{-6})$