Transistor-Level Circuit Design

For each expression below, create a switch level implementation using NFETs and PFETs. Here you can assume you have the complements of each input. Your design should contain no shorts or floats. Use as few transistors as you can, but do not simplify the expression.

\[
Out = B(A + C) \quad Out = \overline{A}B + C \quad Out = A \oplus B
\]

\[
Out = \overline{A}\overline{B}(\overline{C} + D) \quad Out = \overline{A}(\overline{B} + (C \cdot D)) \quad Out = \overline{A}B + \overline{C}D
\]

\[
Out = \overline{A}(\overline{B} + \overline{C}) \quad Out = \overline{A}(\overline{B} \cdot C + \overline{D}) \quad Out = \overline{A}(B + \overline{C}(\overline{D} + F))
\]

\[
Out_1 = A\overline{B} + \overline{A}\overline{B}\overline{C} \quad Out_2 = \overline{A}(B \overline{C} + \overline{D}E) \quad Out_3 = \overline{A}B + C + \overline{D}E
\]