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.

$Out = B(A + C)$ $Out = \overline{A}B + C$ $Out = A \oplus B$

$Out = \overline{A}\,\overline{B}\,(\overline{C} + D)$ $Out = \overline{A}\,(\overline{B} + (C\,D))$ $Out = \overline{A}\,B + \overline{C}\,D$

$Out = \overline{A}\,(\overline{B} + \overline{C})$ $Out = \overline{A}\,(\overline{B}\,C + \overline{D})$ $Out = \overline{A}(B + \overline{C}(\overline{D} + F))$

$Out_1 = A\,\overline{B} + \overline{A}\,B\,\overline{C}$ $Out_2 = \overline{A}\,(B\,\overline{C} + \overline{D}\,E)$ $Out_3 = \overline{\overline{A}\,B + C + \overline{D}\,E}$