Properties of a *Switching Algebra*

P1 commutative:

    (a) $a + b = b + a$

    (b) $ab = ba$

P2 associative:

    (a) $a + (b + c) = (a + b) + c$

    (b) $a(bc) = (ab)c$

P3 identity:

    (a) $a + 0 = a$

    (b) $a \cdot 1 = a$

P4 null:

    (a) $a + 1 = 1$

    (b) $a \cdot 0 = 0$

P5 complement:

    (a) $a + a' = 1$

    (b) $a \cdot a' = 0$

P6 idempotency:

    (a) $a + a = a$

    (b) $a \cdot a = a$

P7 involution: $(a')' = a$

P8 distributive:

    (a) $a(b + c) = ab + ac$

    (b) $a + bc = (a + b)(a + c)$

P9 adjacency:

    (a) $ab + ab' = a$

    (b) $(a + b)(a + b') = a$

P10 simplification:

    (a) $a + a'b = a + b$

    (b) $a(a' + b) = ab$

P11 DeMorgan's Theorem:

    (a) $(a + b)' = a'b'$

    (b) $(ab)' = a' + b'$

P12 absorption:

    (a) $a + ab = a$

    (b) $a(a + b) = a$

P13 consensus: $at_1 \not\subset a't_2 = t_1t_2$

    (a) $at_1 + a't_2 + t_1t_2 = at_1 + a't_2$

    (b) $(a + t_1)(a' + t_2)(t_1 + t_2) = (a + t_1)(a' + t_2)$

P14 conversion:
    $ab + a'c = (a + c)(a' + b)$