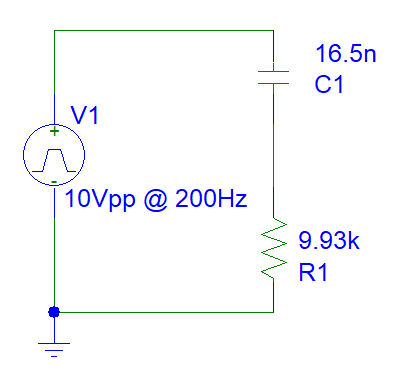
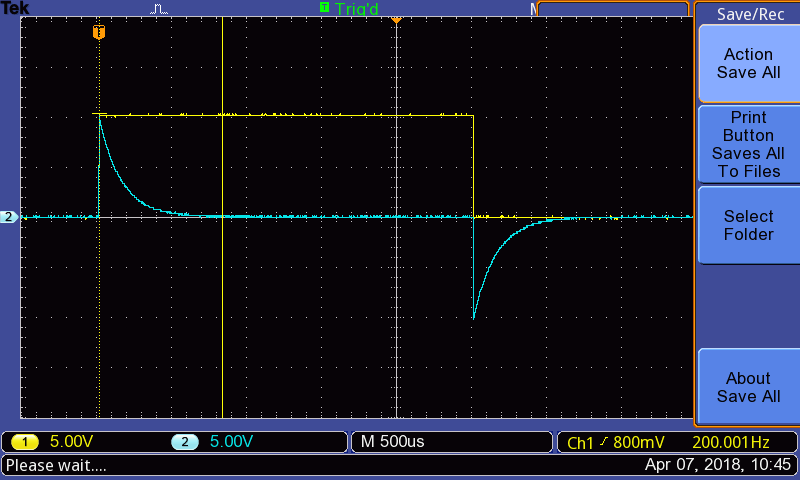


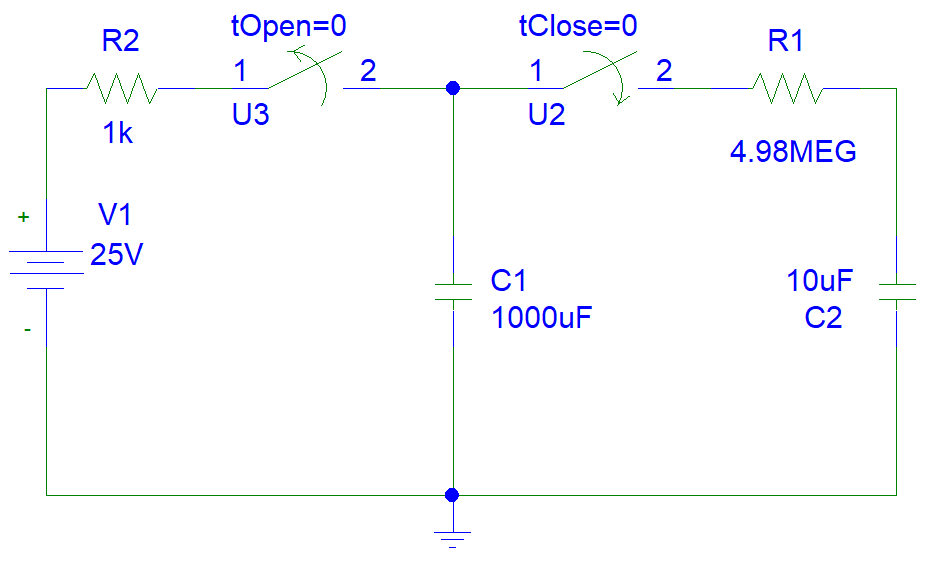
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| --- | --- | --- |
|  | | |
|  |  |  |
|  |  | I.C. |
|  |  | K.C.L. |
|  |  |  |
|  |  |  |
|  |  | **(EQ 1.1)** |
|  |  |  |
|  |  | **(EQ 1.2)** |
|  |  | Because right side is constant |
|  |  | Substitute into (EQ 1.1), and solve for k2 |
|  |  |  |
|  |  | Assumed solution |
|  |  | Substitute into (EQ 1.1), and solve for s |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | Substitute into (EQ 1.2) |
|  |  | Solve for k1 at t=0 |
|  |  |  |
|  |  |  |
|  |  | **(EQ 1.3)** |
|  |  |  |
|  |  | I.C. |
|  |  |  |
|  |  | Source-less CKT |
|  |  | Solve for k1 at t=2.5ms |
|  |  |  |
|  |  |  |
|  |  | **(E.Q. 1.4)** |







|  |  |  |
| --- | --- | --- |
|  | | |
|  |  |  |
|  |  | I.C. (Vc cannot change instantaneously.) |
|  |  | **(EQ 2.1)** |
|  |  |  |
| .  .  . |  | Follow procedure from Equation 1 to arrive at (EQ 1.3), then substitute in (EQ 2.1) |
|  |  |  |
|  |  | **(EQ 2.2)** |
|  |  |  |
| **.**  **.**  **.** |  | Follow procedure from Equation 1 to arrive at (EQ 1.4), then substitute in (EQ 2.1) |
|  |  |  |
|  |  | **(EQ 2.3)** |

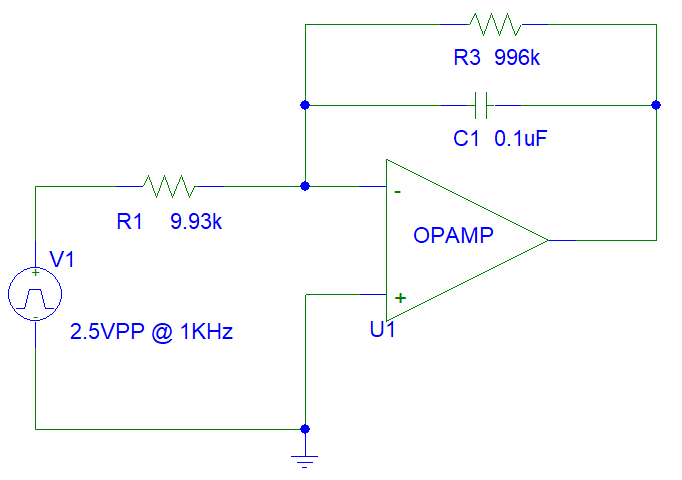




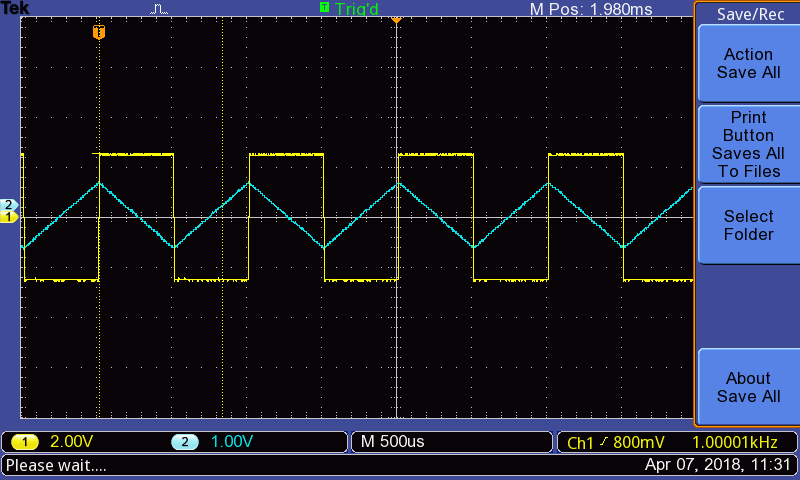
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|  | | |
|  |  |  |
|  |  | K.V.L. |
|  |  | Substitute voltages with capacitor-current relationship equations. Take the derivative of the entire equation. |
|  |  |  |
|  |  |  |
|  |  | **(EQ 3.1)** |
|  |  |  |
|  |  | **(EQ 3.2)** |
|  |  |  |
|  |  | Right side is constant and 0 |
|  |  |  |
|  |  |  |
|  |  | Substitute into EQ 3.1 |
|  |  | Solve for s |
|  |  |  |
|  |  | Substitute into EQ 3.2 |
|  |  |  |
|  | | |
|  |  |  |
|  |  | Solve for k |
|  |  |  |
|  |  | **(EQ 3.3)** |

**Calculation 3.1**

|  |  |  |
| --- | --- | --- |
|  |  | Substitute measured values into (EQ 3.3) |
|  |  | Simplify. Compare to |







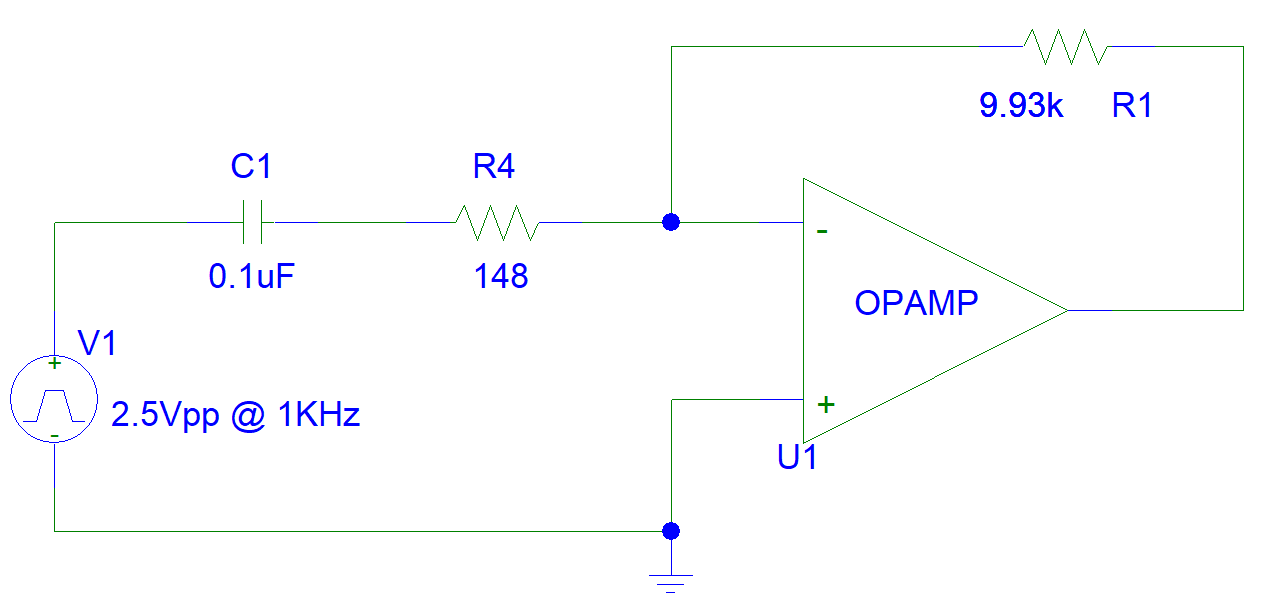
|  |  |  |
| --- | --- | --- |
|  | | |
|  | | |
|  | | |
|  |  | I.C. (Vc cannot change instantaneously) |
|  |  | Principles of Short and Open for OpAmps |
|  |  |  |
|  |  | K.C.L. @ OpAmp (-) |
|  |  |  |
|  |  |  |
|  |  | **(EQ 4.1)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | **(EQ 4.2)**  **Negate b/c inverse op-amp** |
|  |  |  |
|  |  | I.C. |
|  |  |  |
|  |  | **(EQ 4.1)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | **(EQ 4.3)**  **Negate b/c inverse op-amp** |

**Calculation 4.1**

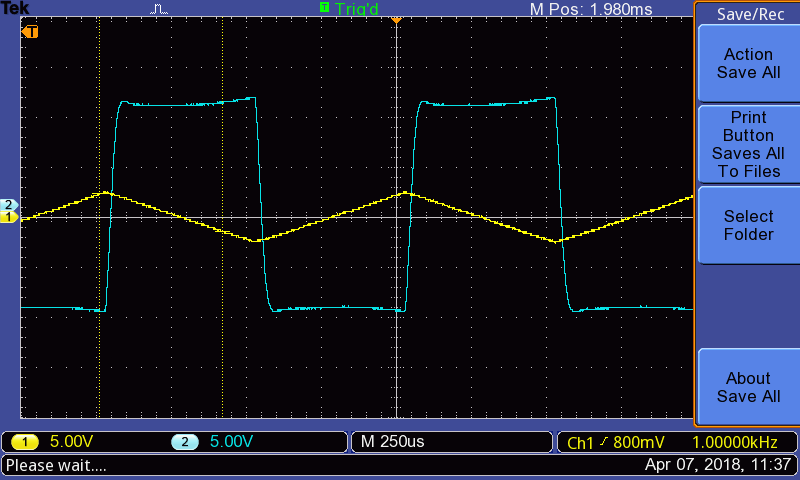
|  |  |  |
| --- | --- | --- |
|  |  | Substitute measured values into (EQ 4.2) |
|  |  | Simplify. |
|  |  | I.C. for (Calculation 4.2) |

**Calculation 4.2**

|  |  |  |
| --- | --- | --- |
|  |  | Substitute measured values into (EQ 4.3)  And use I.C. found in (Calculation 4.1) |
|  |  | Simplify. |







|  |  |  |
| --- | --- | --- |
|  | | |
|  | | |
|  | | |
|  |  | I.C. (Vc cannot change instantaneously.) |
|  |  |  |
|  |  | Principles of Short and Open for OpAmps |
|  |  | **(EQ 5.1)** |
|  |  | **(EQ 5.2)** |
|  |  |  |
|  |  | K.C.L. @ OpAmp (-) |
|  |  |  |
|  |  | Take the derivative. |
|  |  |  |
|  |  | **(EQ 5.3)** |
|  |  |  |
|  |  | **(EQ 5.4)** |
|  |  |  |
|  |  | K.C.L. @ OpAmp (-) |
|  |  |  |
|  |  |  |
|  |  | Take the derivative. |
|  |  |  |
|  |  | **(EQ 5.5)** |

**Calculation 4.1**

|  |  |  |
| --- | --- | --- |
|  |  | Substitute measured values into (EQ 4.2) |
|  |  | Simplify. |

**Calculation 4.2**

|  |  |  |
| --- | --- | --- |
|  |  | Substitute measured values into (EQ 4.2) |
|  |  | Simplify. |