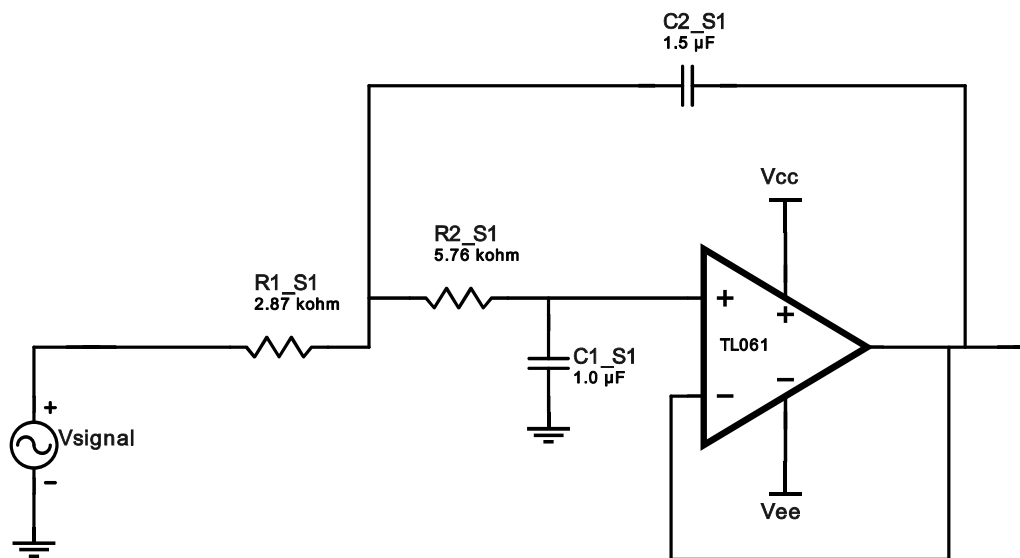


## Filter Design Report

Design : Lowpass Filter - 2nd order Bessel  
Design ID: 12

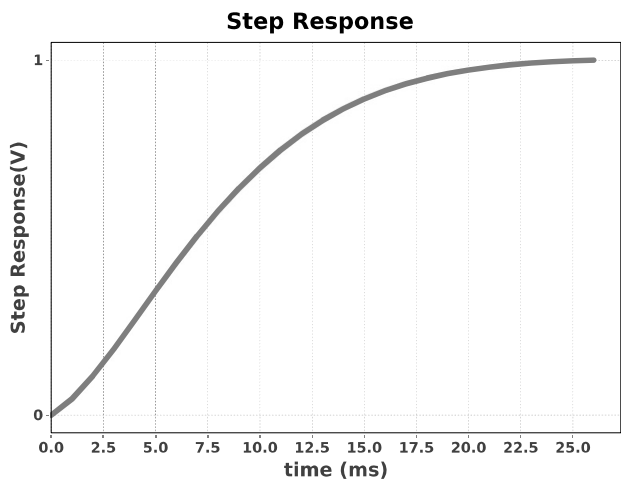
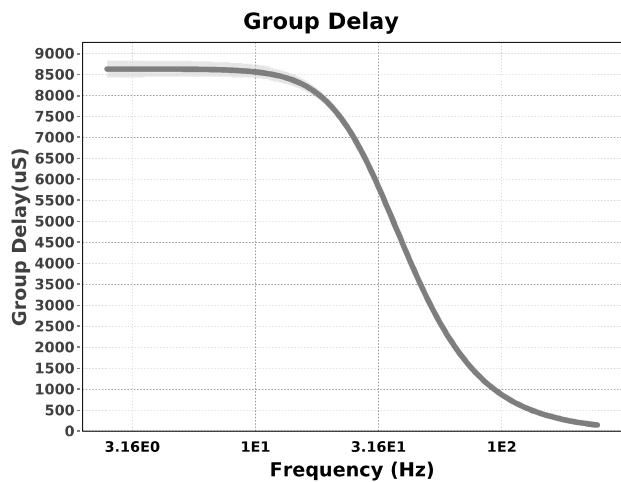
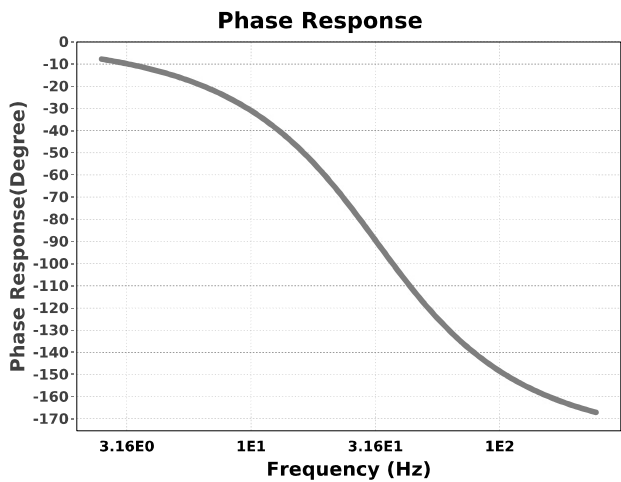
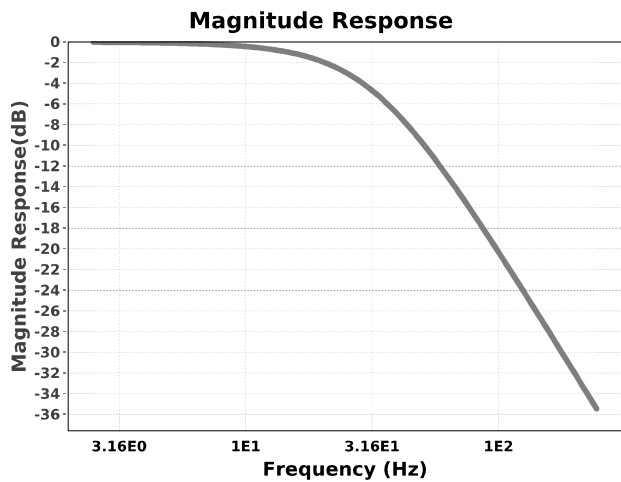


## Electrical BOM

| #  | Name  | Manufacturer           | Part Number | Properties                                | Qty |
|----|-------|------------------------|-------------|---|-----|
| 1. | A1_S1 | Texas Instruments Inc. | TL061       | GbwTyp= 1MHz<br>VccMax= 30V<br>VccMin= 7V | 1   |
| 2. | C1_S1 | Generic                | Ideal       | Cap= 1.0 uF<br>Tolerance= 2.0 %           | 1   |
| 3. | C2_S1 | Generic                | Ideal       | Cap= 1.5 uF<br>Tolerance= 2.0 %           | 1   |
| 4. | R1_S1 | Generic                | Ideal       | Res= 2870.0ohm<br>Tolerance= 1%           | 1   |
| 5. | R2_S1 | Generic                | Ideal       | Res= 5760.0ohm<br>Tolerance= 1%           | 1   |

Sensitivity Analysis

| #  | Name | Series | Tolerance |
|----|------|--------|-----------|
| 1. | Cap  | E48    | 2%        |
| 2. | Res  | E96    | 1%        |



## Design Inputs

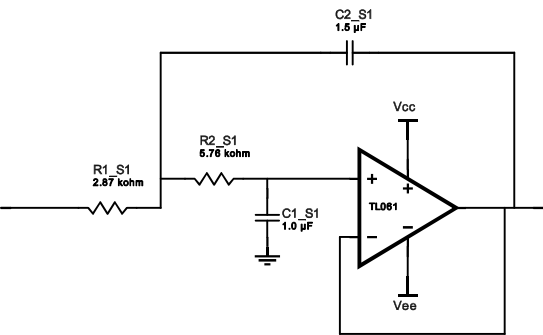
| #   | Name                | Value      | Description                                       |
|-----|---------------------|------------|---|
| 1.  | FilterType          | lowpass    |   |
| 2.  | FilterResponse      | Bessel     |   |
| 3.  | FilterOrder         | 2.0        |   |
| 4.  | FilterTopology      | Sallen-Key |   |
| 5.  | NumberOfStages      | 1.0        |   |
| 6.  | PassbandFrequency   | 25.0       |   |
| 7.  | StopbandAttenuation | -39.015    |   |
| 8.  | StopbandFrequency   | 300.0      |   |
| 9.  | Gain                | 1.0        |   |
| 10. | DualSupply          | +/-5.00 V  | Power supply(s) to active chips                   |
| 11. | ResistorTolerance   | E96        | Resistor series - 1% Passive resistor tolerance   |
| 12. | CapacitorTolerance  | E48        | Capacitor series - 2% Passive capacitor tolerance |

## Design Assistance

1. **TL061** Product Folder : <http://www.ti.com/product/TL061> : contains the data sheet and other resources.

Filter Stage :1

Cutoff Frequency        31.961 Hz  
Min GBW Reqd        1.838 kHz  
Stage Gain        1.0 V/V  
Stage Q        577.015 m  
Stage Topology        Sallen-Key



Electrical BOM

| #  | Name  | Manufacturer           | Part Number | Properties                                | Qty |
|----|-------|------------------------|-------------|---|-----|
| 1. | A1_S1 | Texas Instruments Inc. | TL061       | GbwTyp= 1MHz<br>VccMax= 30V<br>VccMin= 7V | 1   |
| 2. | C1_S1 | Generic                | Ideal       | Cap= 1.0 uF<br>Tolerance= 2.0 %           | 1   |
| 3. | C2_S1 | Generic                | Ideal       | Cap= 1.5 uF<br>Tolerance= 2.0 %           | 1   |
| 4. | R1_S1 | Generic                | Ideal       | Res= 2870.0ohm<br>Tolerance= 1%           | 1   |
| 5. | R2_S1 | Generic                | Ideal       | Res= 5760.0ohm<br>Tolerance= 1%           | 1   |

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