

PARAMETER	VALUE / SPEC / DESCRIPTION
Circuit design	Must be programmable via current/voltage/external R or C
Transconductance gain (Gm)	75... 140 mA/V
Linear input voltage range	± 200 mV
Output current range	± 15 mA
SlewRate	Min. 900 V/us
Rise/fall time	Max. 4.4 ns
Input referred noise	@ few kHz < 3 nV/ $\sqrt{\text{Hz}}$
Bandwidth	70 MHz (it could be less since we are targeting low freq. app)
Input impedance	Not less than $0.5 \text{ M}\Omega // 2 \text{ pF}$
Output impedance	Not less than $55 \text{ k}\Omega // 2 \text{ pF}$
HD2	Less than -75 dBc
HD3	Less than -80 dBc
Open loop voltage gain @ small RL	Not less than + 5 V/V
PSRR	± 20 uA/V

Remarks:

- Supply voltage: 5 V.
- Max. RL = 1 k Ω . However, for 5 V supply to produce ± 15 mA current, RL has to be lower.
- Technology to be used: XT018 from XFAB. Design must be radiation hard. Hence, SOI technology is preferred.

Initial remarks for design considerations:

- Concentrate more on the Gm and output resistance values. The capacitive terms provided in the input and output impedance can be neglected for the time being.
- The initial focus could be on realizing lower bandwidth, say 10 MHz. The final requirement can be discussed later.
- Please note the programmability of the circuit (for Gm control).
- The application document of OPA860 from Texas Instruments could be used as a useful initial reference point.

