Analog Electronic Circuits – 2015-2016
Design Project Report

1. Group data

Group number	8
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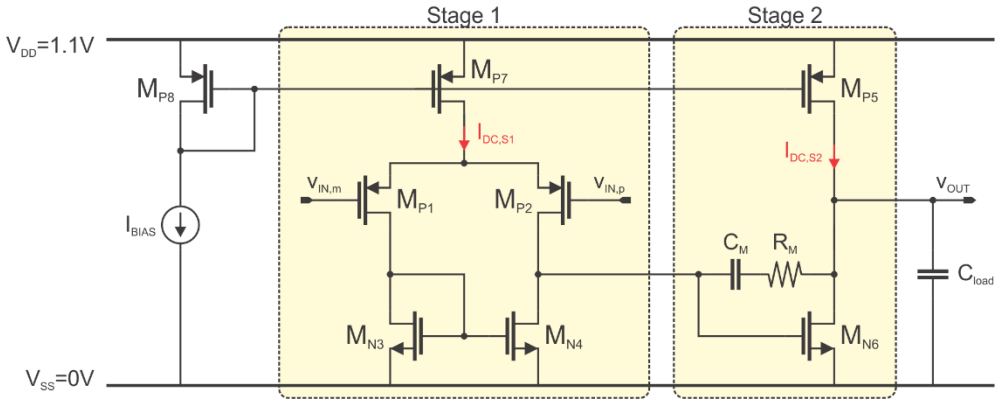
2. Circuit Schematic



3. Performance summary

Metric	Units	Specification	Matlab	Spectre
C_{load}	pF	50		
DC gain	dB	48	52.53	51.86
f_{GBW}	MHz	70	82.72	84.69
Phase margin	°	>60	83.78	90.78
Output swing	V	>0.8	0.871	0.866
Dominant pole	kHz		195.4	191
Input common mode range	V			0.724
Current consumption ($I_{DC,S1}$+ $I_{DC,S2}$)	A		1.89m	2.02m
FoM ($f_{GBW}.C_{load}$/($I_{DC,S1}$+ $I_{DC,S2}$))	MHz.pF/mA	Maximize	2184.4	2094
(input-referred noise)	V_{rms}	Minimize		1.3m

4. Device sizes and bias point parameters

Device	W [µm]	L [nm]	I_{ds} [µA]	$V_{overdrive}$ [V]	g_m [S]	g_{ds} [S]	g_m/g_{ds} [-]	$V_{ds,sat}$ [V]	V_{ds} [V]
M_{p1}	497	212	241	0.05	5.4m	119u	43.8	-0.055	-0.508
M_{p2}	497	212	241	0.05	5.4m	119u	43.8	-0.055	-0.508
M_{n3}	75.1	400	241	0.128	4.53m	162u	28.7	0.073	0.252
M_{n4}	75.1	400	241	0.128	4.53m	162u	28.7	0.073	0.252
M_{p5}	229	500	1540	-0.2	12.5m	364u	23.8	-0.182	-0.681
M_{n6}	493	132	1540	0.01	35m	1339u	33.6	0.05	0.418
M_{p7}	80.4	500	482	-0.2	3.9m	246u	15	-0.184	-0.338
M_{p8}	0.767	500	4.51	-0.194	38u	1.64u	23.16	-0.176	-0.434