

# **TEMA PROIECT BTME2**

## **PROIECT NR. 2**

**BLAGA EDUARD GABRIEL**

**GRUPA 5413**

# CAPITOLUL 1 - SCHEMATIC

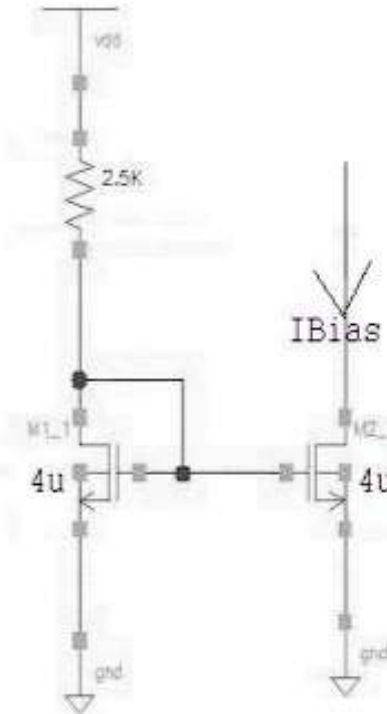
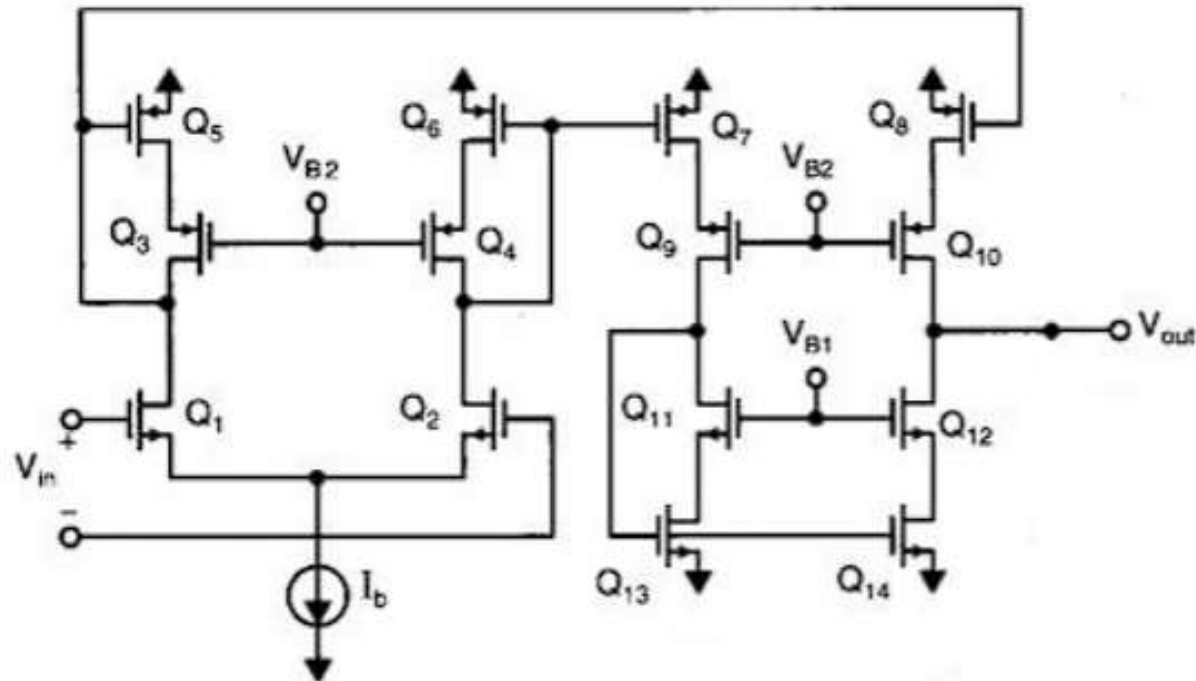
- STABILIREA GRUPARILOR TRANZISTOARELOR
- REALIZAREA MATCHINGULUI
- REALIZAREA SCHEMATICELOR



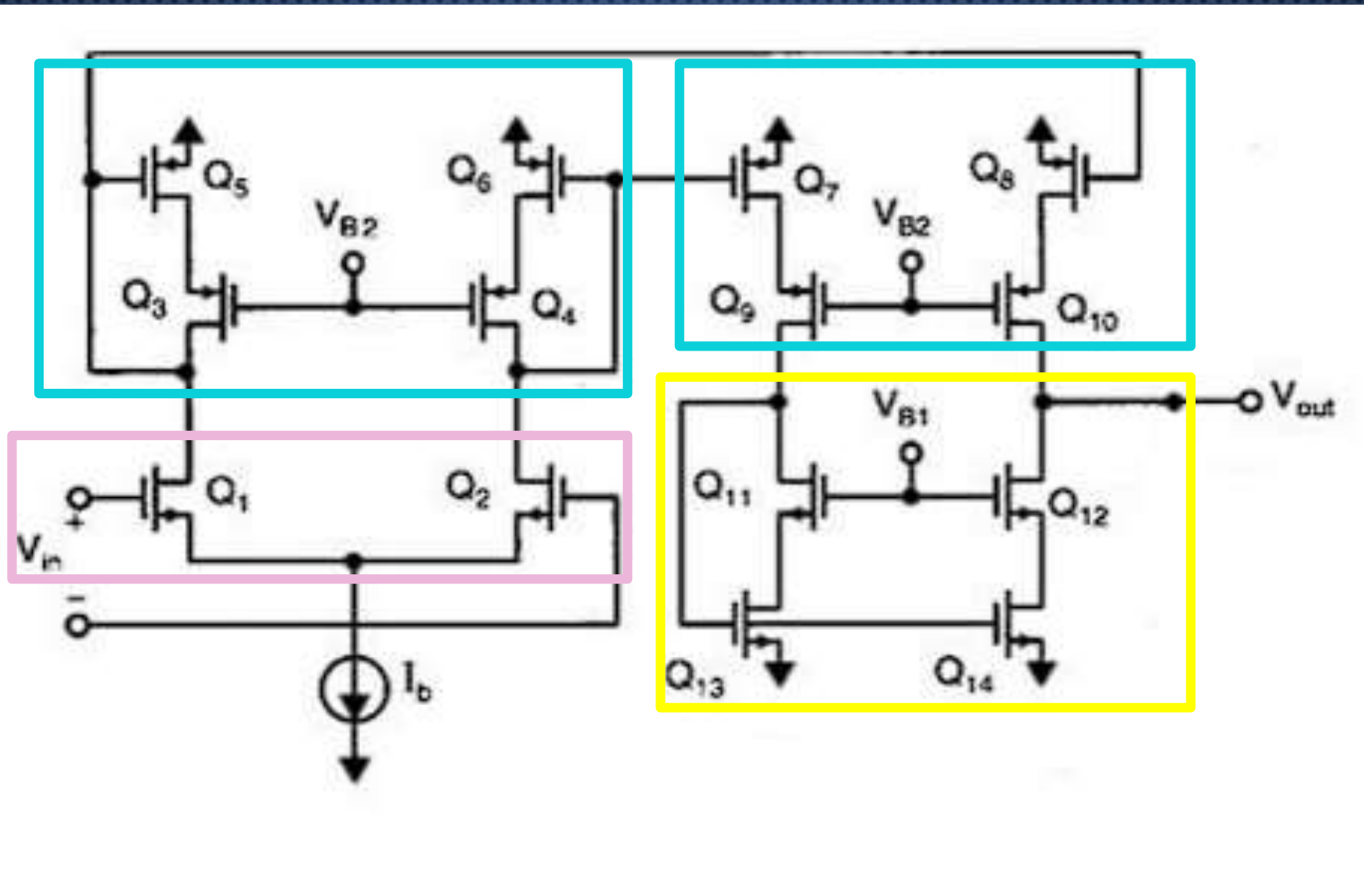
# SCHEMA CIRCUITULUI

## Proiect 2.

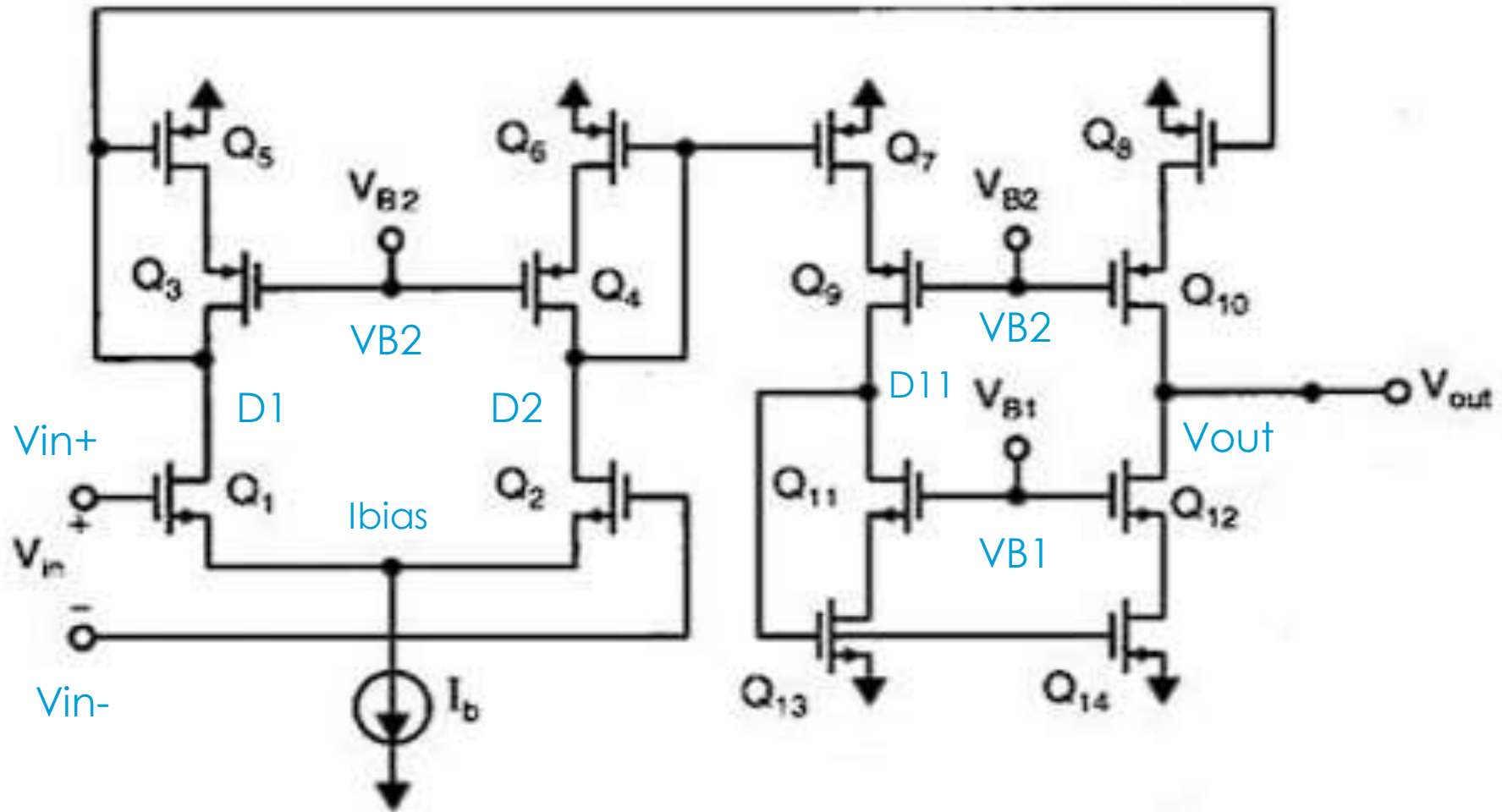
$L=0.9\mu$  și  $w_1=w_2=16\mu$ ,  $w_3=w_4=12\mu$ ,  $w_5=w_6=w_7=w_8=10\mu$ ,  $w_9=w_{10}=8\mu$ ,  $w_{11}=w_{12}=w_{13}=w_{14}=6\mu$   $I_{bias}$  ca în figură:



# STABILIREA GRUPARILOR



# CONEXIUNI INTERNE





# STABILIREA GRUPARILOR PENTRU LAYOUT

## 1. Bloc sarcina p

Blocul 1 format din Q3, Q4, Q5 si Q6 :  $12u + 12u + 10u + 10u = 44u$ ;  $+4Du(\text{Colturi}) + 4Du(\text{interior}) = 52u$

Blocul 2 format din Q7, Q8, Q9 si Q10 :  $10u + 10u + 8u + 8u = 36u$  ;  $+4Du(\text{Colturi}) + 4Du(\text{interior}) = 44u$

## 2. Etaj Diferential

Este format din Q1 si Q2 :  $16u + 16u = 32u$ ;  $+4Du(\text{Colturi}) = 36u$

## 3. Oglinda n

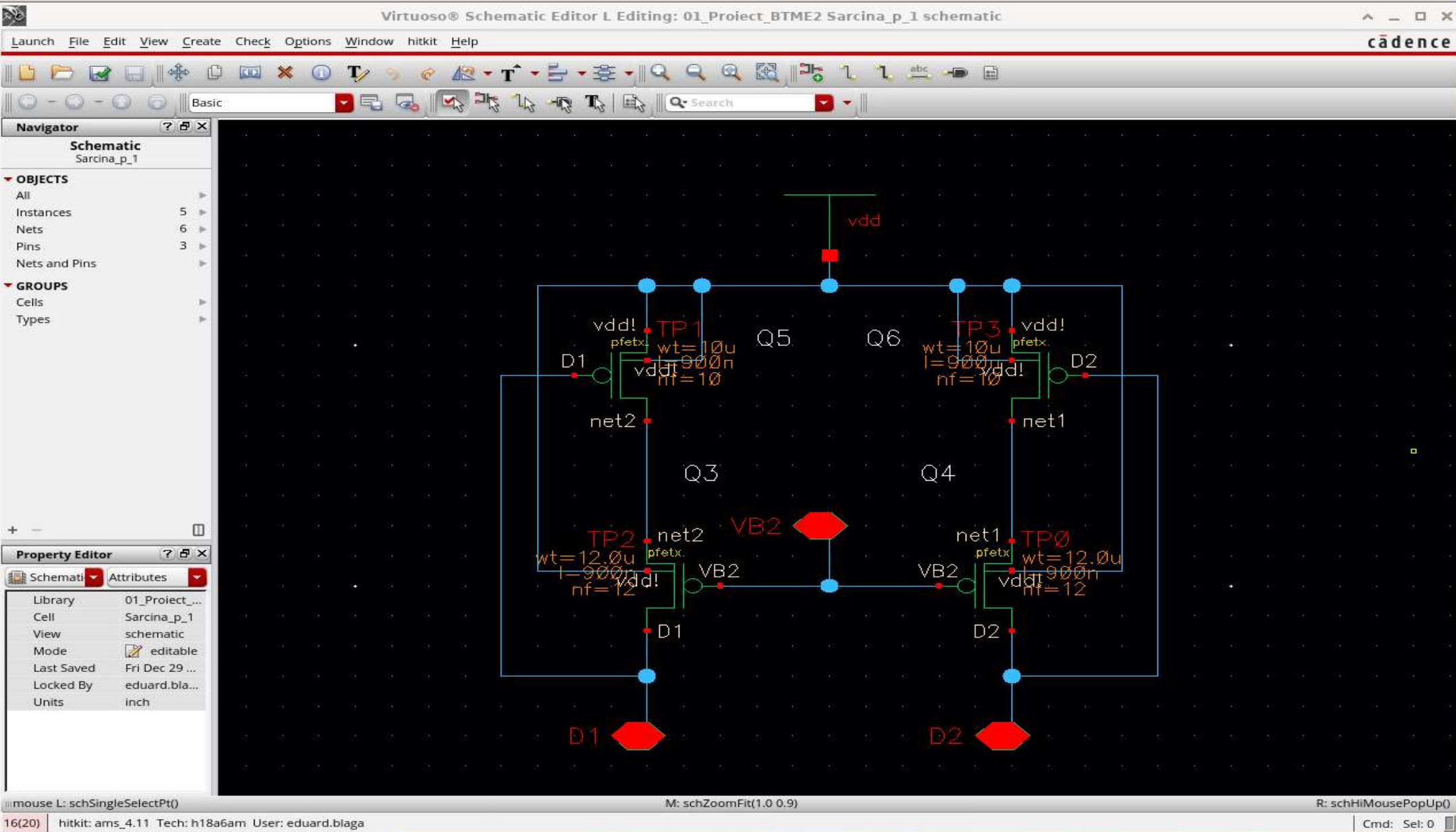
Este formata din Q11, Q12, Q13 si Q14 :  $6u + 6u + 6u + 6u = 24u$ ;  $+4Du(\text{Colturi}) + 8Du(\text{Interior}) = 36u$

## 4. Sursa current Ibias

Este formata din M1 si M0 :  $4u + 4u = 8u$ ;  $+4Du(\text{Colturi}) = 12u$

# SARCINA P – BLOC 1 - SCHEMATIC

Fri 29 Dec, 15:27 Eduard-Gabriel BLAGA



# MATCHING – SARCINA P – BLOC 1

De

$Du$   $M_3 M_3 M_3$   $M_5 M_5 M_5$   $M_6 M_6 M_6$   $M_4 M_4 M_4$   $M_4 M_4 M_4$   $M_6 M_6 M_6$   $M_5 M_5 M_5$   $M_3 M_3 M_3$   $Du$

D1

 $V_{B2}$  $\Delta_2$ 

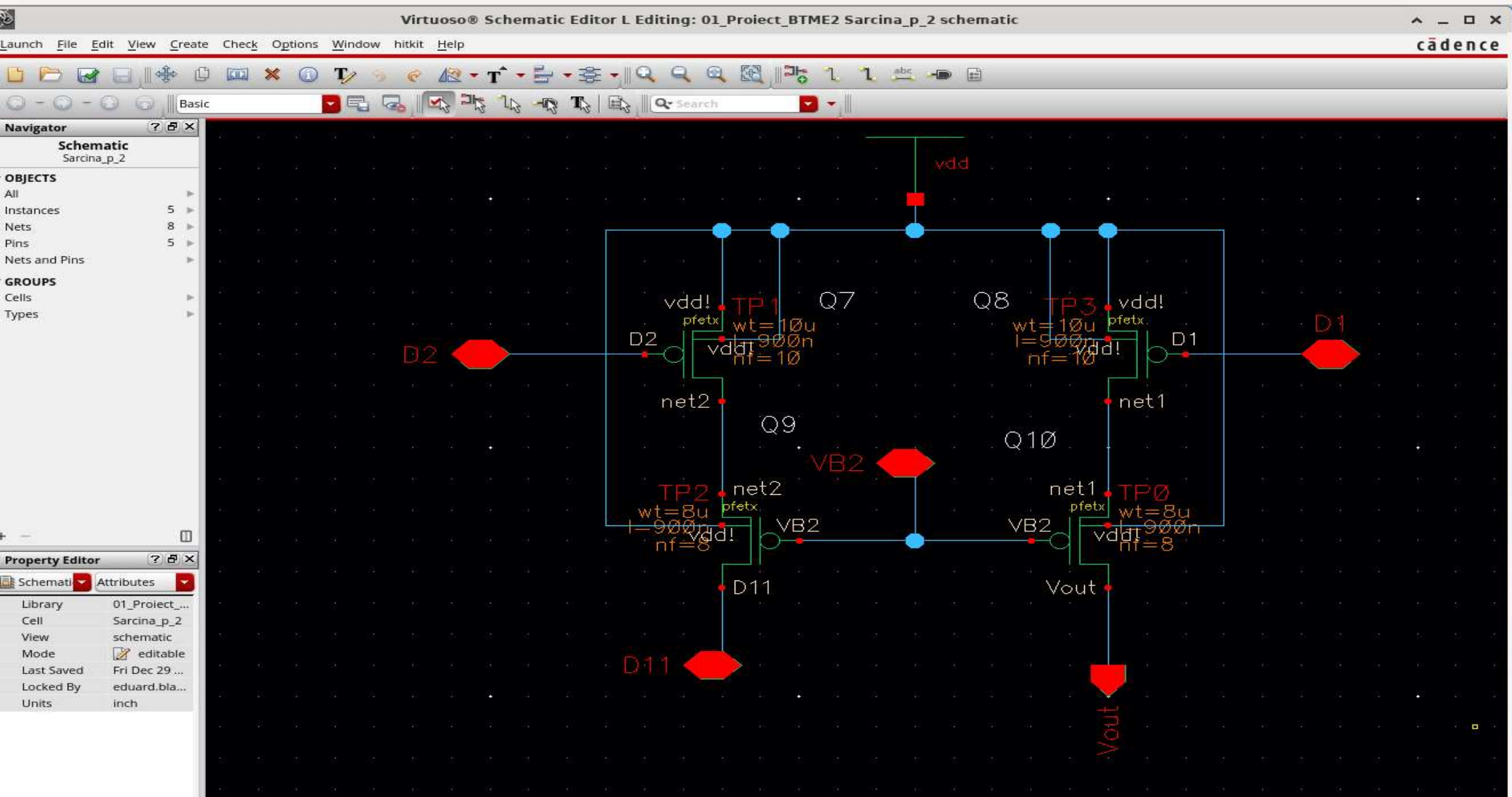
$\Delta u$   $M_3 M_3 M_3$   $M_5 M_5 M_5$   $M_6 M_6 M_6$   $M_4 M_4 M_4$  |  $M_4 M_4 M_4$   $M_6 M_6 M_6$   $M_5 M_5 M_5$   $M_3 M_3 M_3$   $\Delta u$

$$\Delta u$$





# SARCINA P – BLOC 2 - SCHEMATIC

Fri 29 Dec, 15:29 Eduard-Gabriel BLAGA

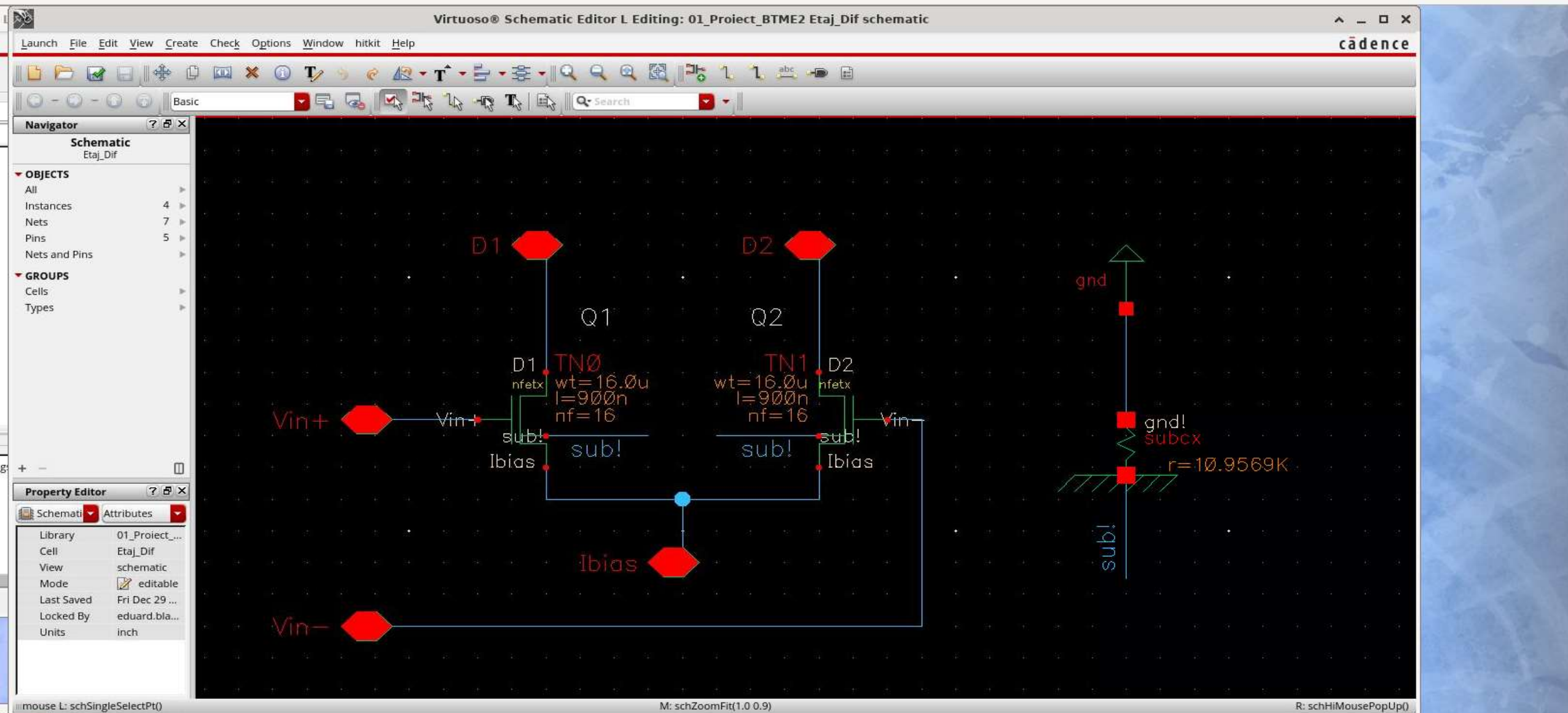


# MATCHING – SARCINA P – BLOC 2

	$D_u$ $M_9 M_9$ $M_7 M_7 M_7$ $M_8 M_8 M_8$ $M_{10} M_{10}$	$D_u$  $M_{10} M_{10}$ $M_8 M_8 M_8$ $M_7 M_7 M_7$ $M_9 M_9$ $D_u$
$D_2$		
$D_{11}$		
$V_{B2}$		
$V_{out}$		
$D_1$	$D_u$ $M_9 M_9$ $M_7 M_7 M_7$ $M_8 M_8 M_8$ $M_{10} M_{10}$  $D_u$	$M_{10} M_{10}$ $M_8 M_8 M_8$ $M_7 M_7 M_7$ $M_9 M_9$ $D_u$

# DIFFERENTIAL - SCHEMATIC

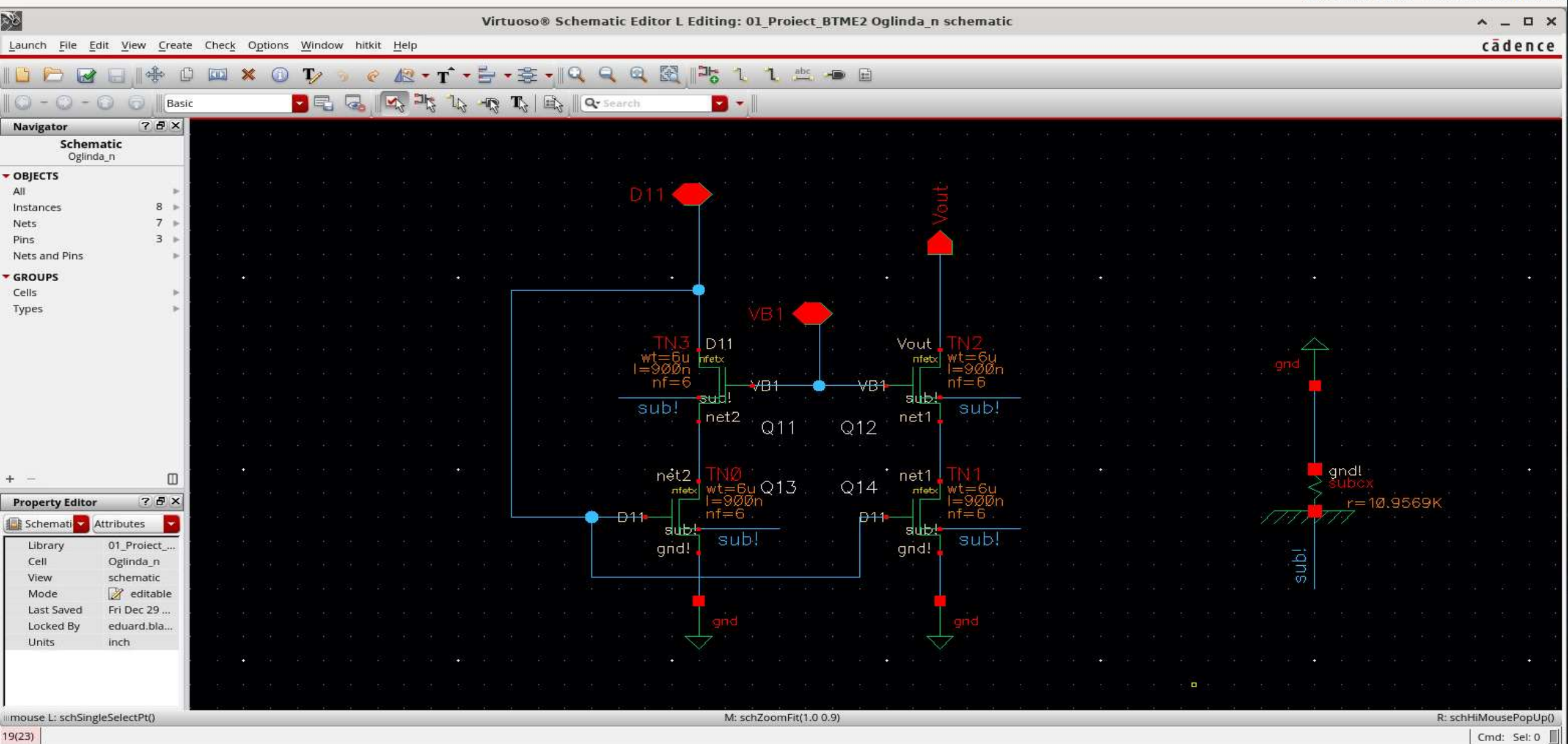
Fri 29 Dec, 15:29 Eduard-Gabriel BLAGA



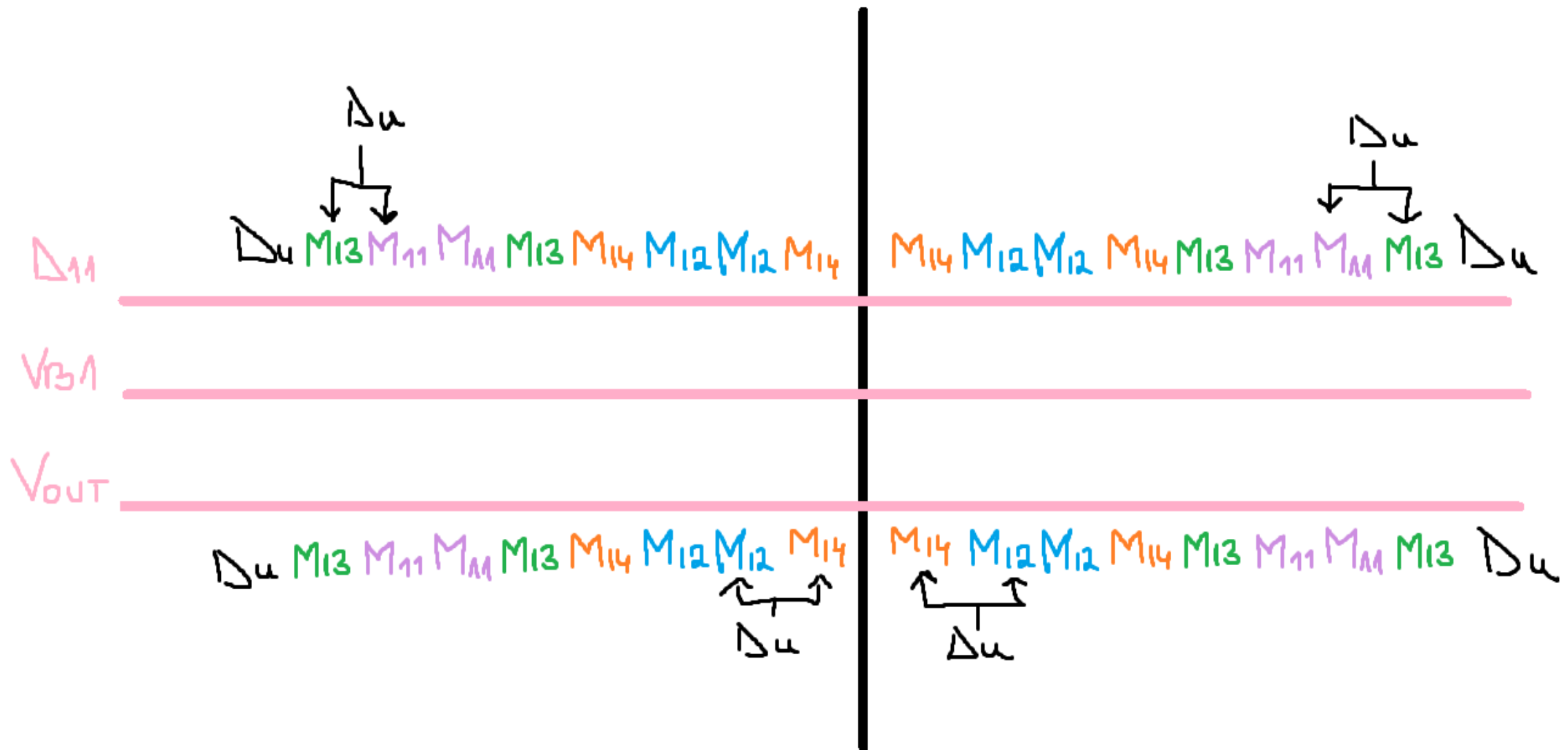


# MATCHING – DIFFERENTIAL

$\Delta_1$	$\Delta_u$ $M_1M_1$ $M_2M_2$ $M_1M_1$ $M_2M_2$	$M_2M_2$ $M_1M_1$ $M_2M_2$ $M_1M_1$ $\Delta_u$
$V_{in+}$		
$I_{bias}$		
$V_{in-}$		
$\Delta_2$	$\Delta_u$ $M_1M_1$ $M_2M_2$ $M_1M_1$ $M_2M_2$	$M_2M_2$ $M_1M_1$ $M_2M_2$ $M_1M_1$ $\Delta_u$



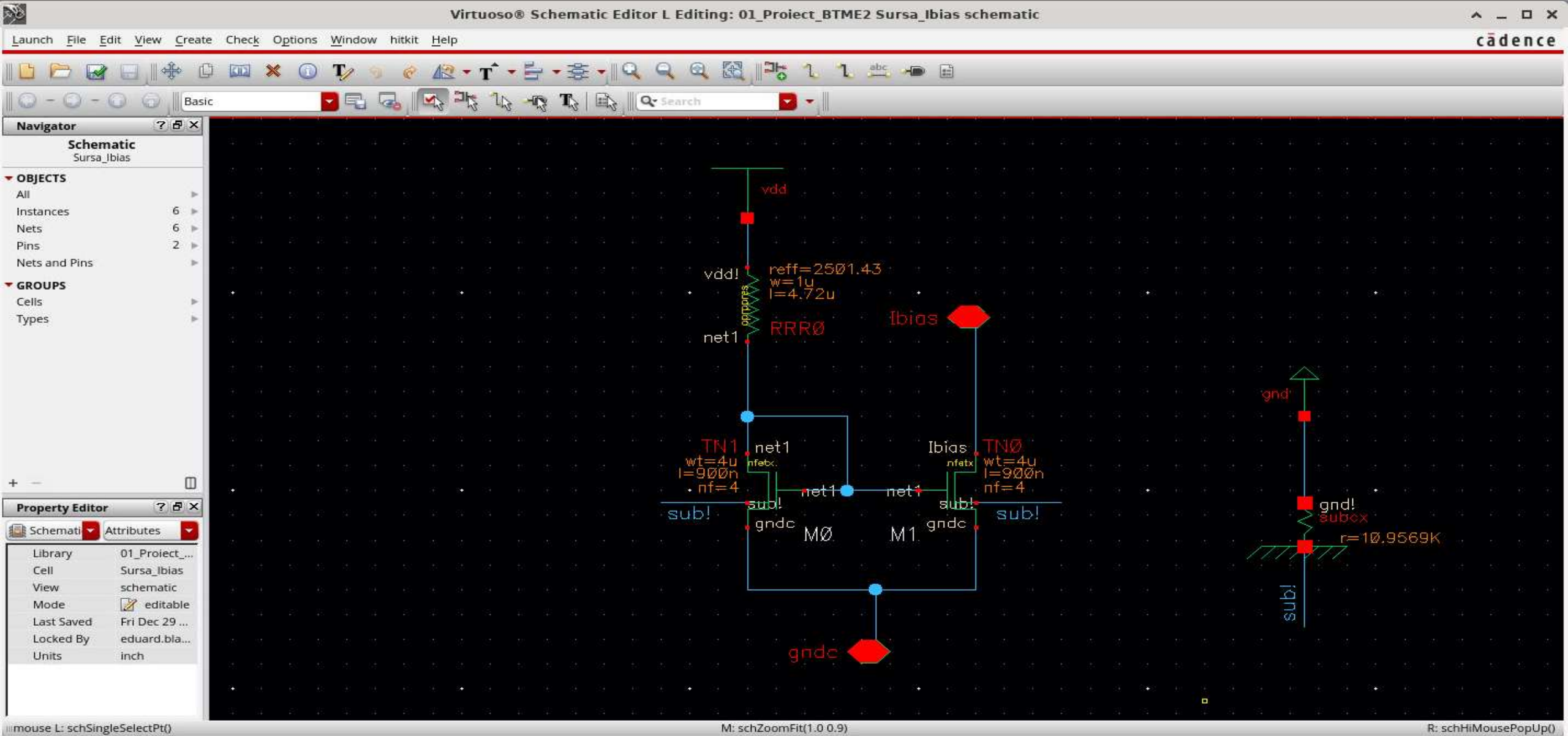
# MATCHING – OGLINDA N



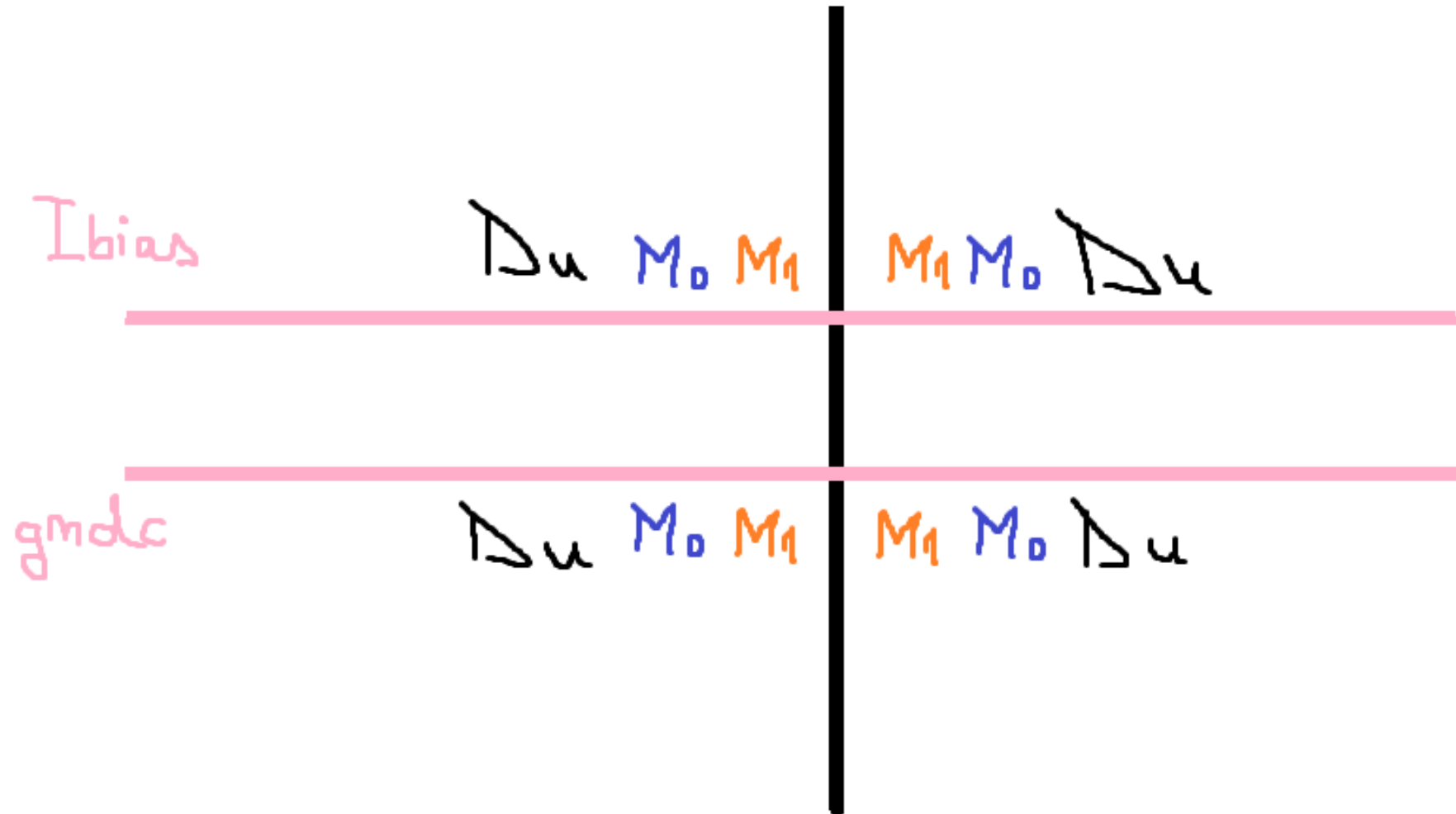


# SARCINA IBIAS - SCHEMATIC

Fri 29 Dec, 15:30 Eduard-Gabriel BLAGA



# MATCHING – SURSA IBIAS





# **CAPITOLUL 2**

## **LAYOUT**



Fri 29 Dec, 15:39 Eduard-Gabriel BLAGA


 $\wedge \quad - \quad \square \quad \times$ 

cā dence

Classic

» (F)Select:0 Sel(N):0 Sel(I):0 Sel(O):0 X 36.340 Y -4.900 dX 36.340 dY -4.900 Dist:36.669 Cmd:

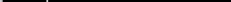
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3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100



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Field!

Def 03 03 03 05 05 05 06 06 06 07 07 07 07 07 07 07 06 Def Def 05 05 05 03 03 03 Def

[illegible]

A long, narrow strip of a colorful, patterned textile, likely a rug or tapestry, featuring various geometric and floral motifs in red, green, yellow, and blue. The pattern is dense and intricate, with repeating elements and a central band of different designs. The colors are vibrant and the texture appears to be woven.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	5
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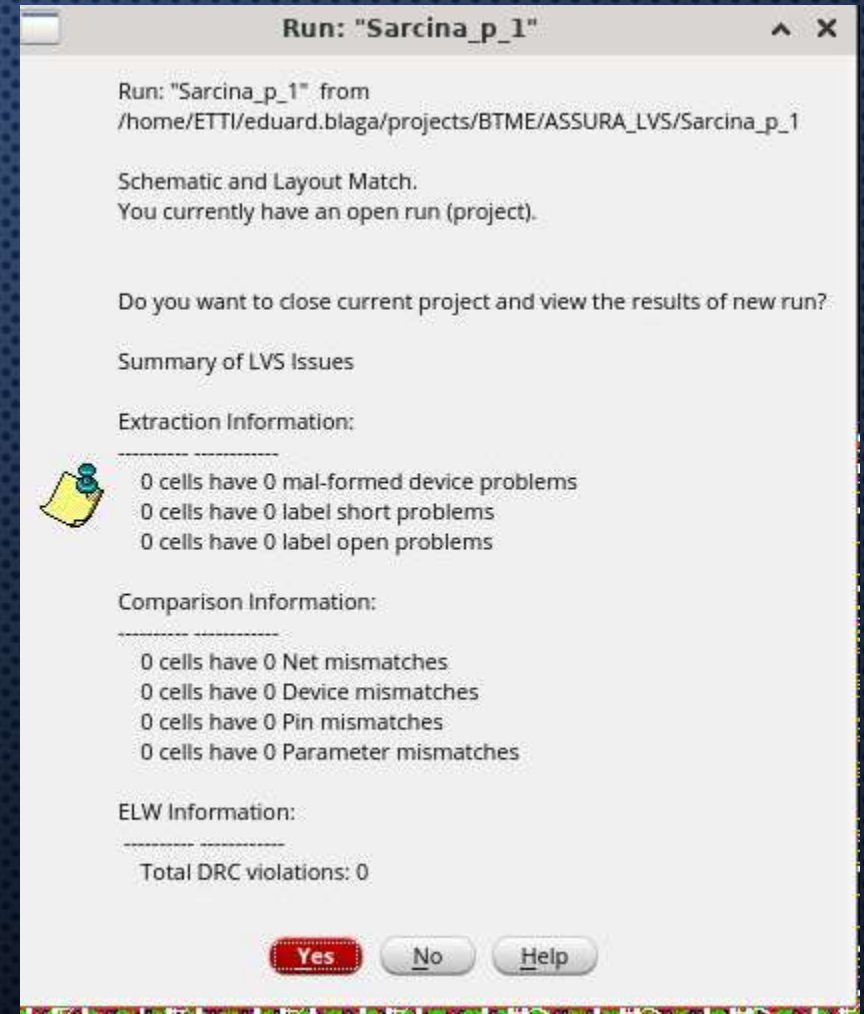
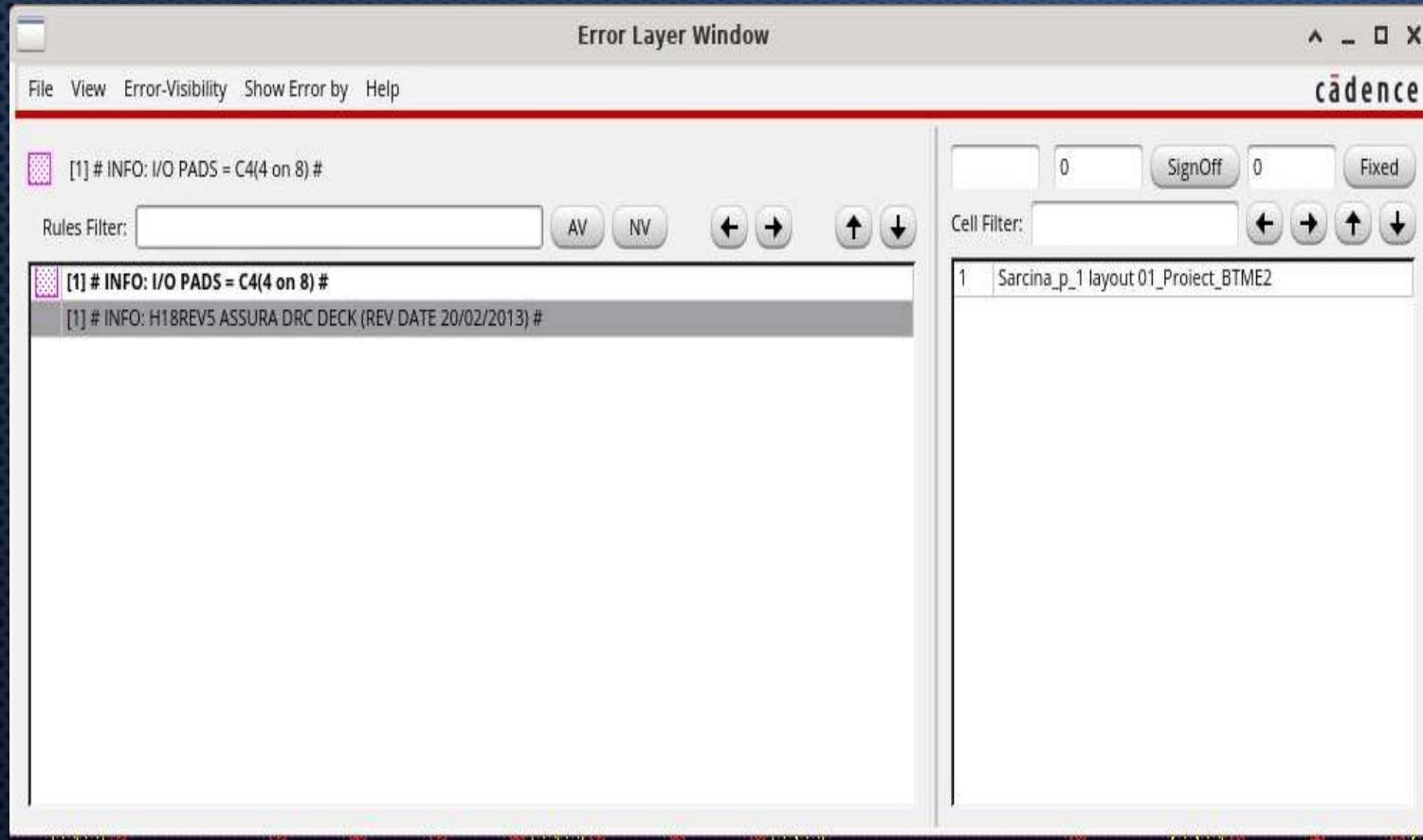
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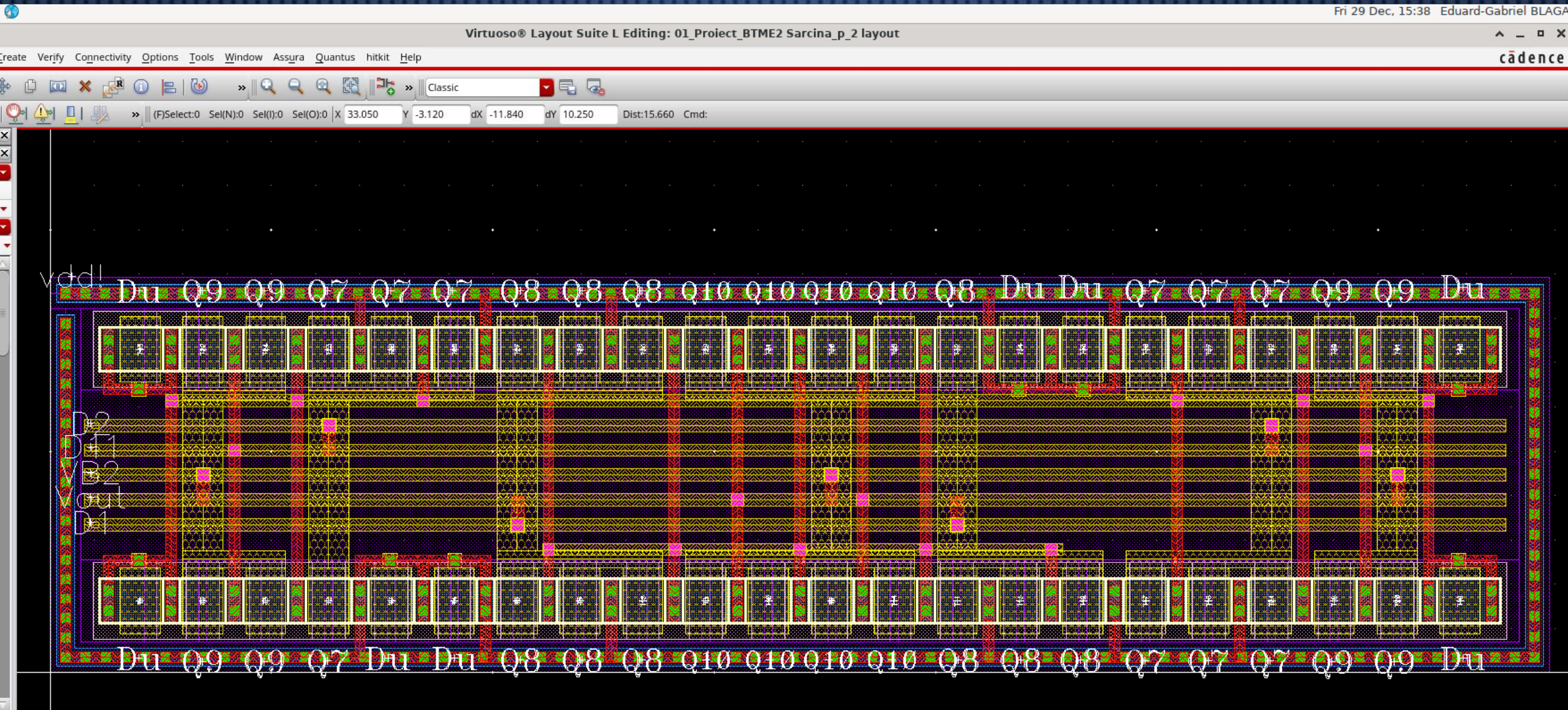


# VERIFICARE DRC SI LVS



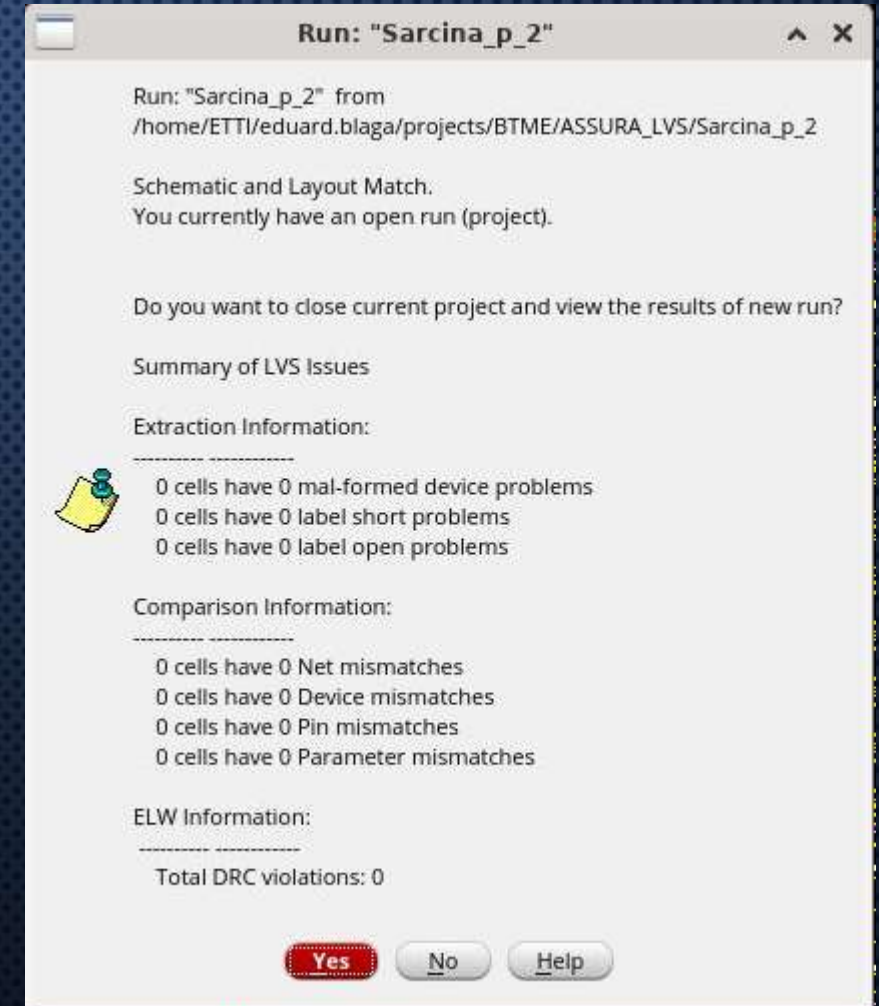
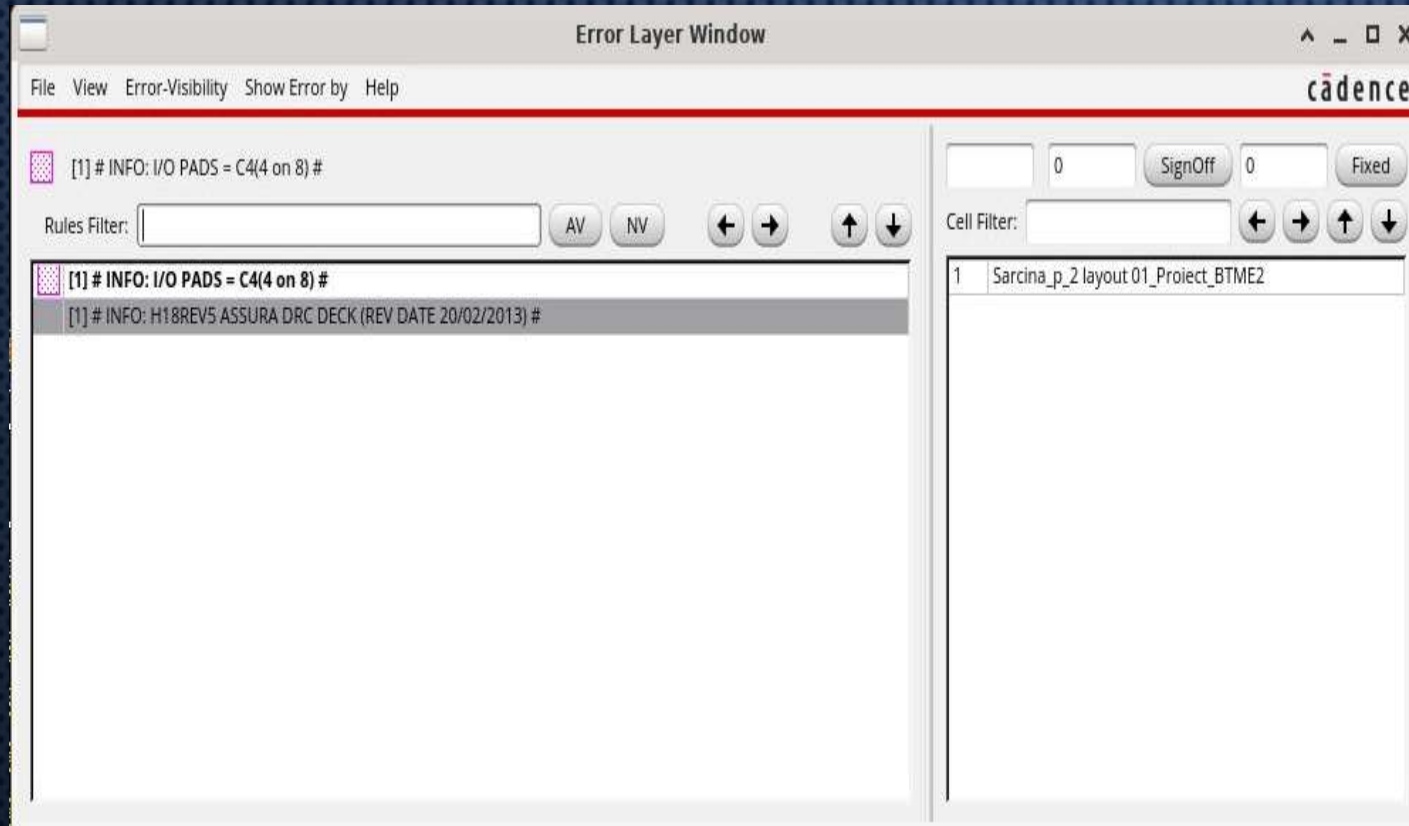


# SARCINA P – BLOC 2 - LAYOUT





# VERIFICARE DRC SI LVS



## Fri 29 Dec, 15:42 Eduard-Gabriel BLAGA

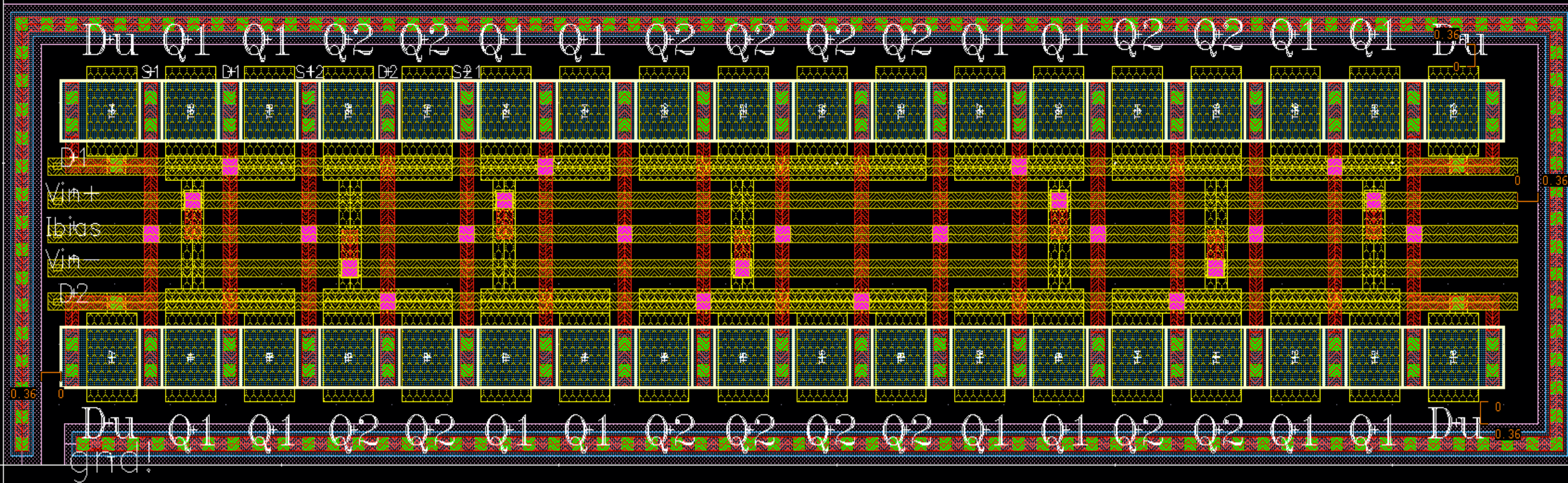
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File Edit View Options Tools Window Assura Quantus hitkit Help

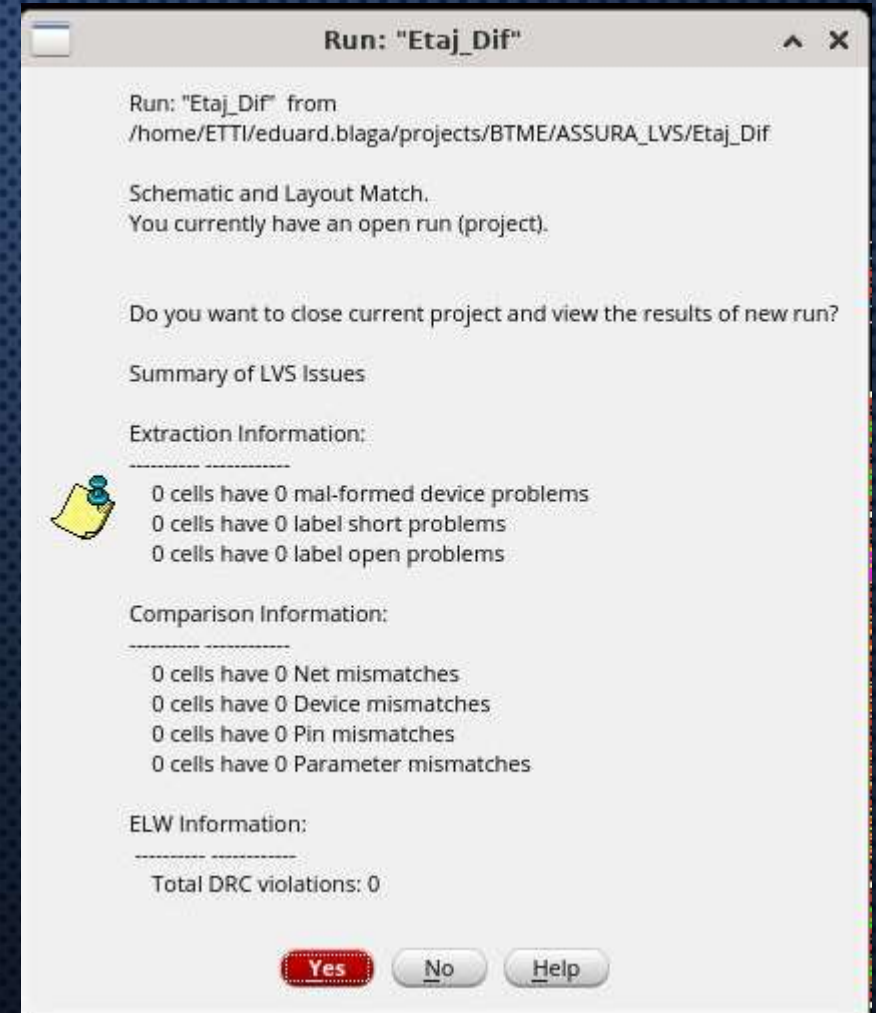
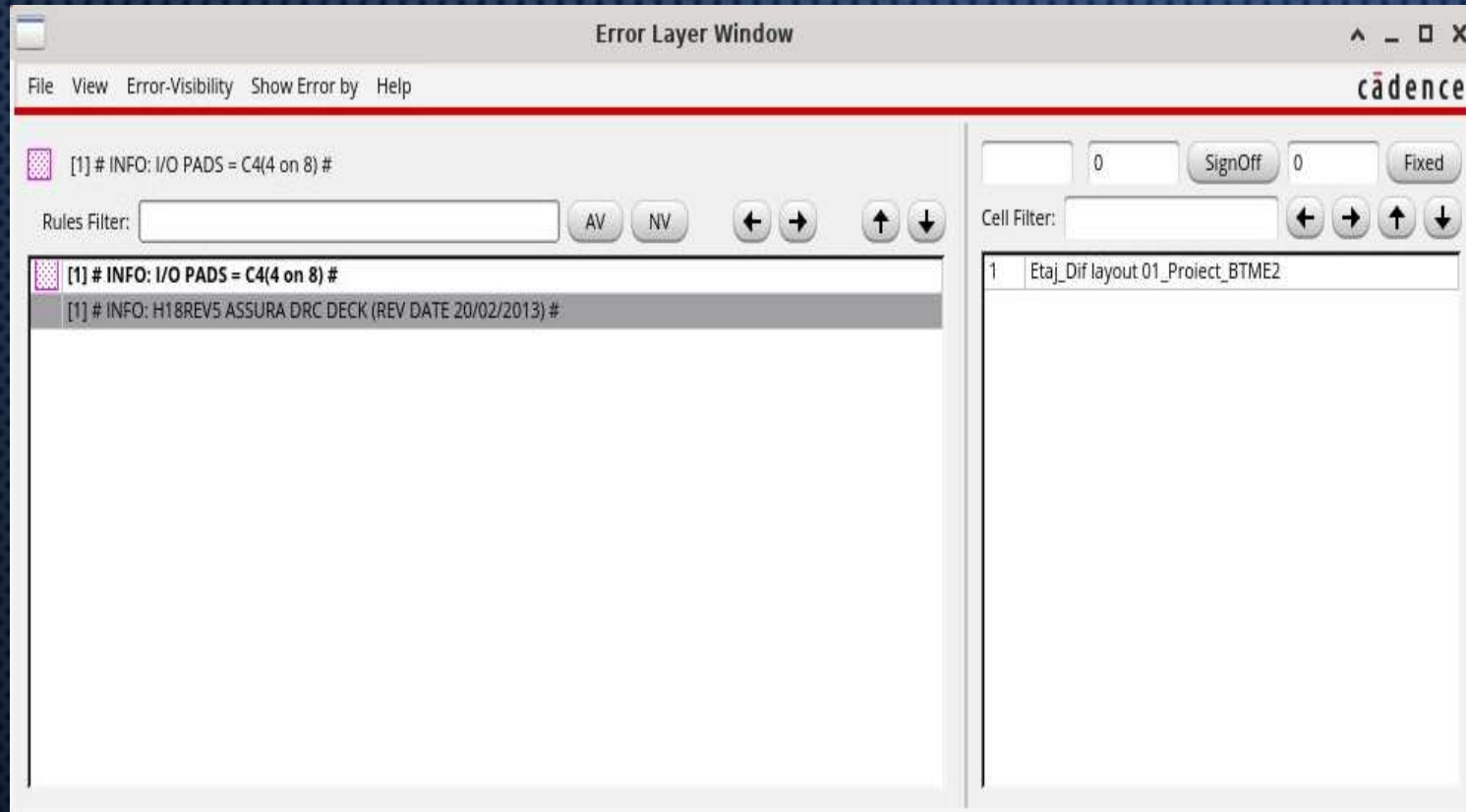
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(F)Select:0 Sel(N):0 Sel(I):0 Sel(O):0 X 27.550 Y -2.510 dX 39.650 dY -0.930 Dist:39.661 Cmd:





# VERIFICARE DRC SI LVS

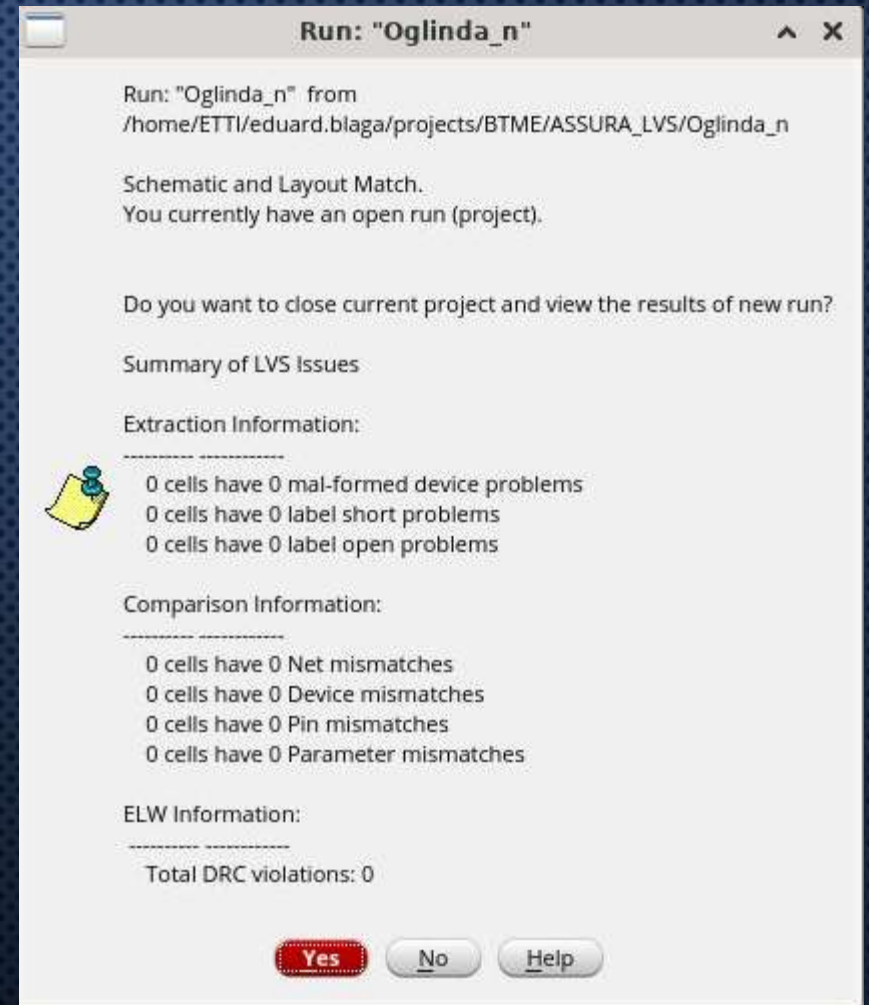
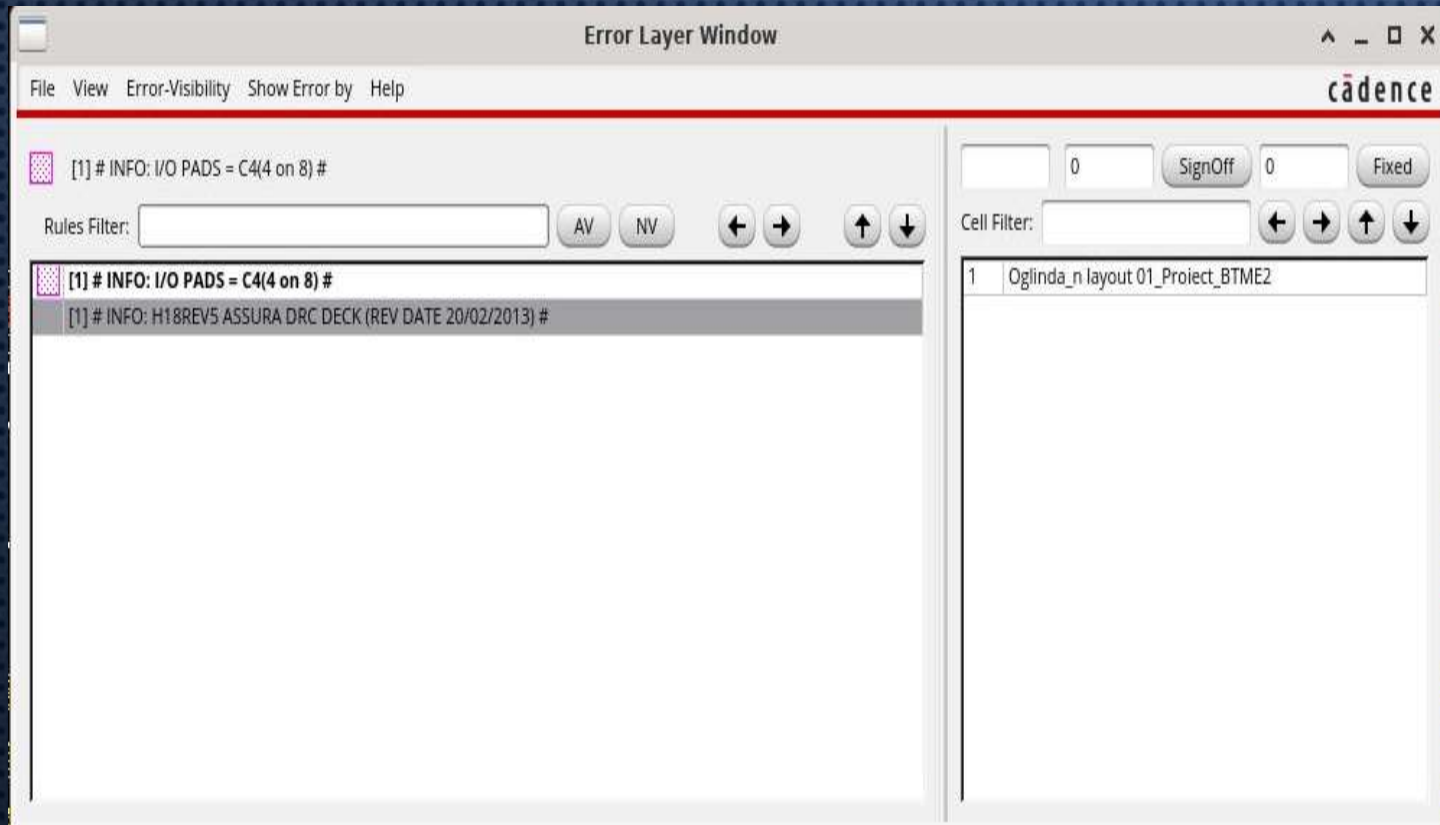








# VERIFICARE DRC SI LVS



**Edit Object Properties**

Apply To:

Show: ☐ system ☒ user ☒ CDF

Property	Value	Display
Library Name	cmhv7sf	off
Cell Name	oprppres	value
View Name	symbol	off
Instance Name	RRR0	off

**CDF Parameter**

CDF Parameter	Value	Display
Specify res by geometry?	<input checked="" type="checkbox"/>	off
Backplate	sub	off
Backplate node	sub!	off
Resistance (total)	2501.43 Ohms	off
Resistance	833.8100000000001 Ohms	off
Width	1u M	off
Length	4.72u M	off
Number of Series Bars	3	off
Parallel Bars	1	off
Multiplicity	1	off
Resistor Bar Spacing (microns)	0.76	off
Sub Resistance	50 Ohms	off
Temperature Delta	0	off
Subcircuit name	oprppres	off

PENTRU A OBTINE UN LAYOUT MAI COMPACT IN CADRUL SURSEI IBIAS, AM INSERAT 3 REZISTENTE OPRPPRES CONECTATE CU METAL M1. PENTRU A OBTINE ACEEASI VALOARE SI IN LAYOUTSI IN SCHEMATIC, MODIFICAM PARAMETRUL REZISTENTEI DIN SCHEMATIC CA IN IMAGINE. LA FINAL, IN PARTEA DE LAYOUT VA TREBUI SA UMPLM SPATIUL GOL DINTRE REZISTENTE CU UN STRAT DE OP (DRW)

**Edit Instance Properties**

Instances (1)  
l6-oprppres

Attribute Connectivity Parameter Property ROD

Specify res by geometry? ☒

Backplate: sub

Backplate node: sub!

Resistance (total): 833.81

Resistance: 833.8100000000001

Width: 1u

Length: 4.72u

Number of Series Bars: 1

Parallel Bars: 1

Multiplicity: 1

Temperature Delta: 0

Subcircuit name: oprppres

☐ Display CDF Parameter Name



# SURSA IBIAS - LAYOUT

Fri 29 Dec, 15:49 Eduard-Gabriel BLAGA

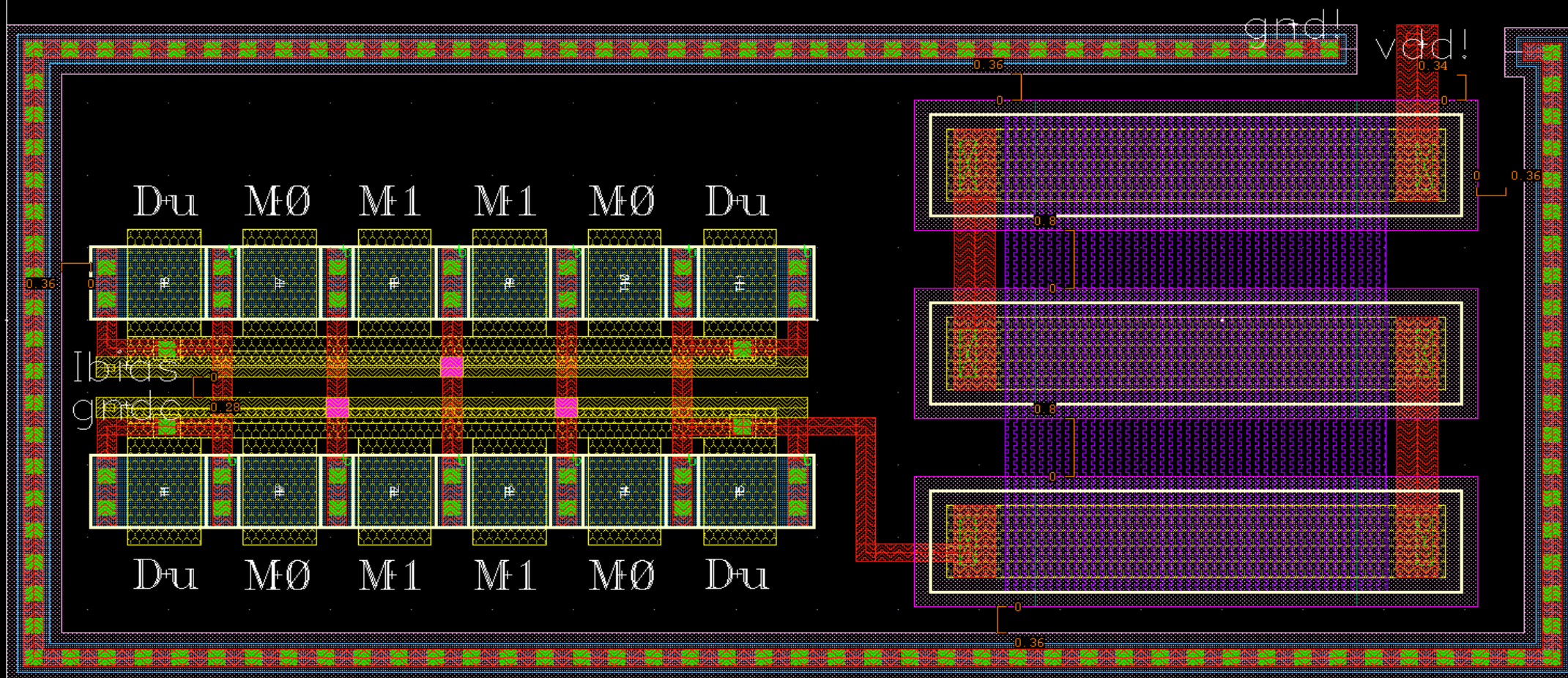
Virtuoso® Layout Suite L Editing: 01\_Project\_BTME2 Sursa\_Ibias layout

File Edit Verify Connectivity Options Tools Window Assura Quantus hitkit Help

^ \_ □ ×

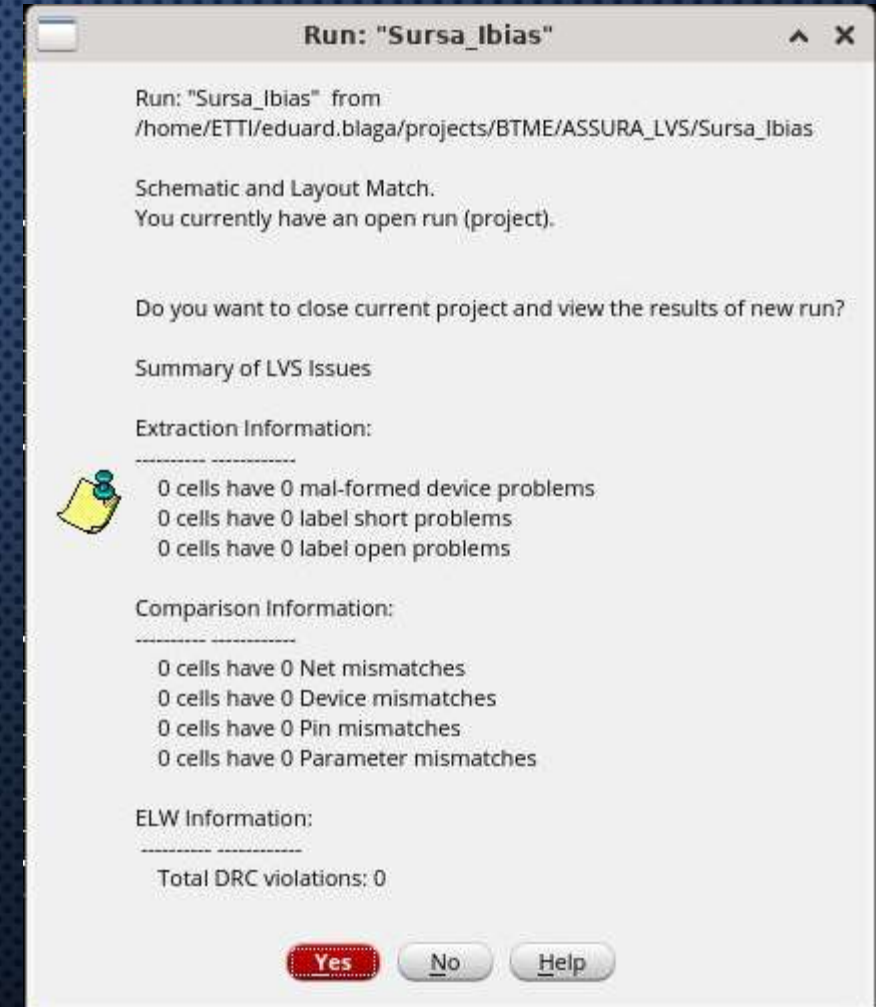
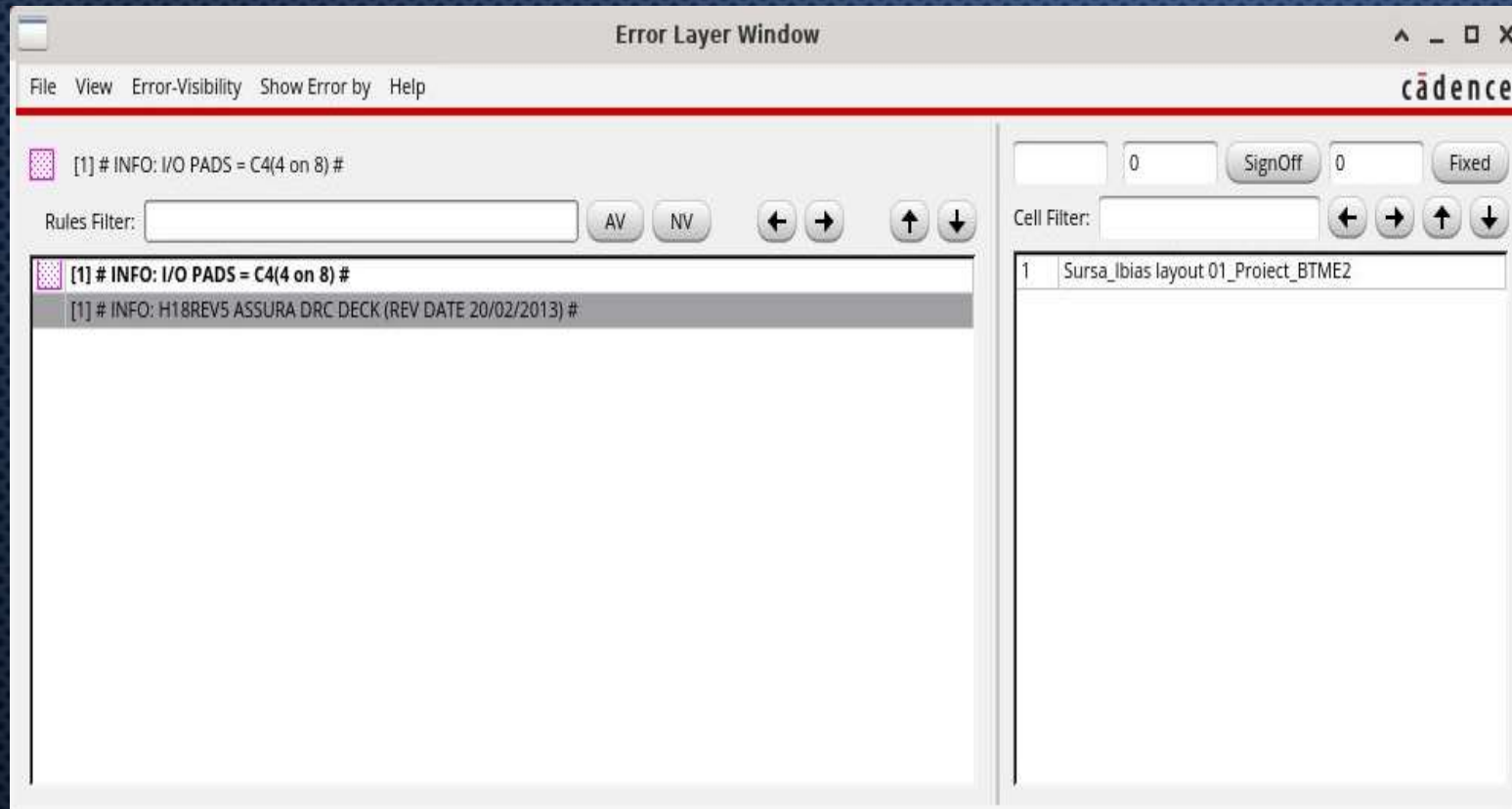
cadence

» (F)Select:0 Sel(N):0 Sel(I):0 Sel(O):0 X 20.500 Y -0.420 dX 23.920 dY 10.310 Dist:26.047 Cmd:





# VERIFICARE DRC SI LVS



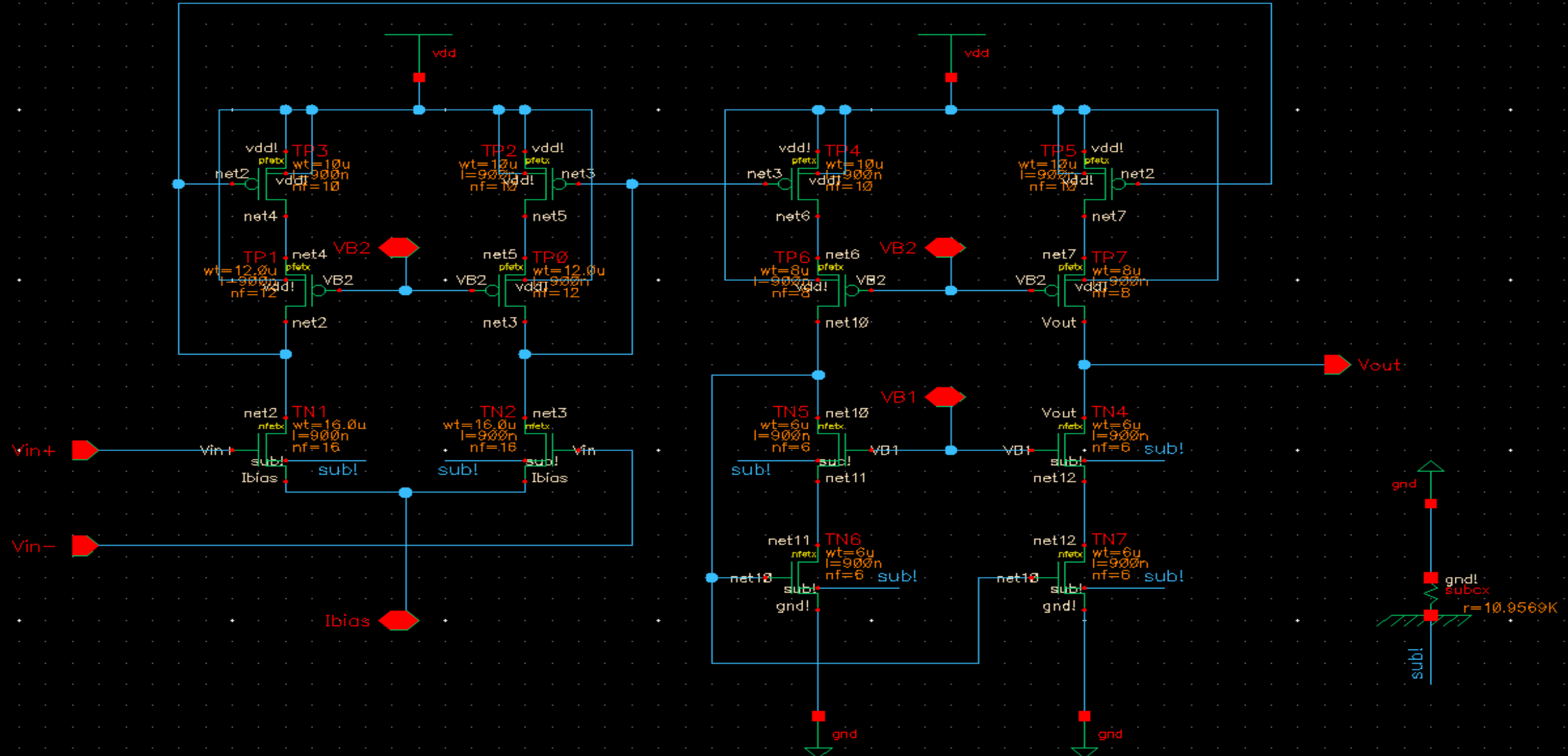


# **CAPITOLUL 3**

## **CIRCUITUL FINAL**



# SCHEMATICUL CIRCUITULUI



# LAYOUT-UL CIRCUITULUI

Sat 30 Dec, 12:54 Eduard-Gabriel BLAGA

Virtuoso® Layout Suite L Editing: 01\_Proiect\_BTME2 circuit\_2 layout

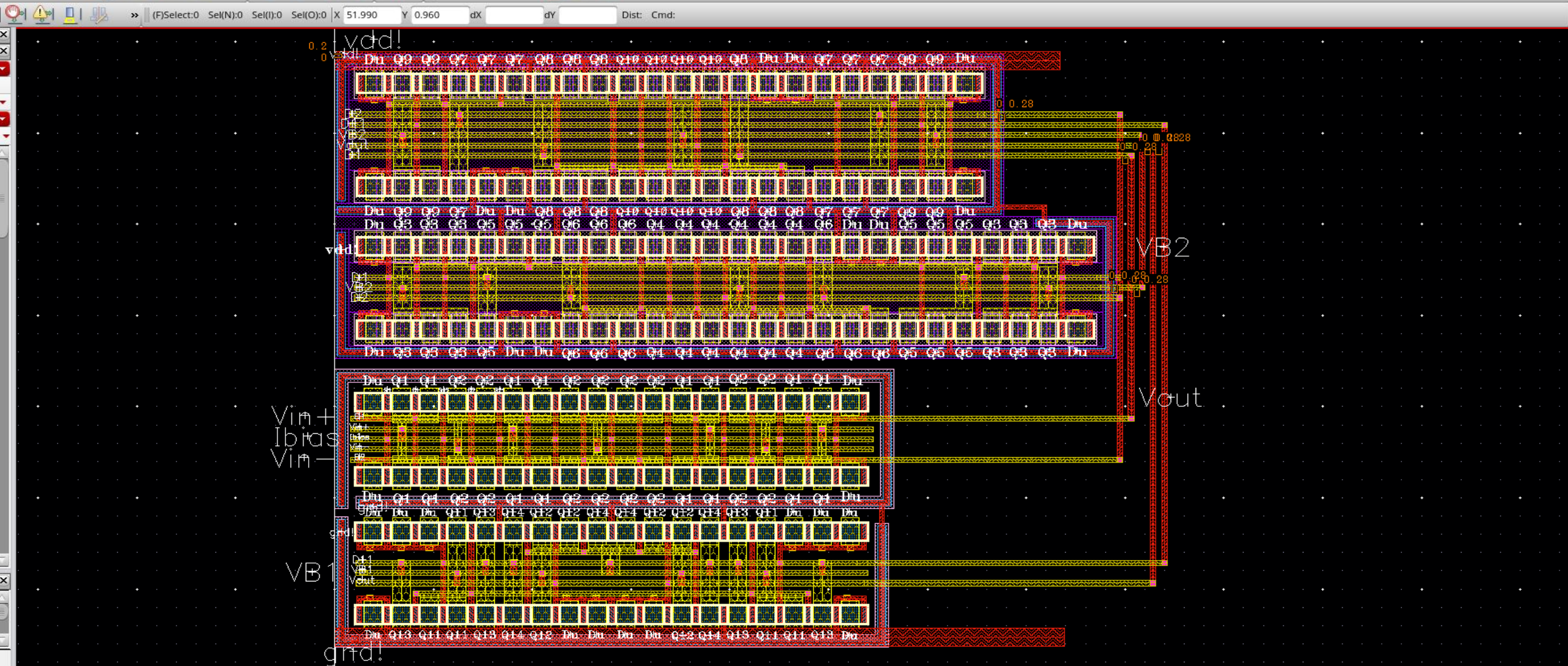
^ \_ □ ×

Create Verify Connectivity Options Tools Window Assura Quantus hitkit Help

cadence

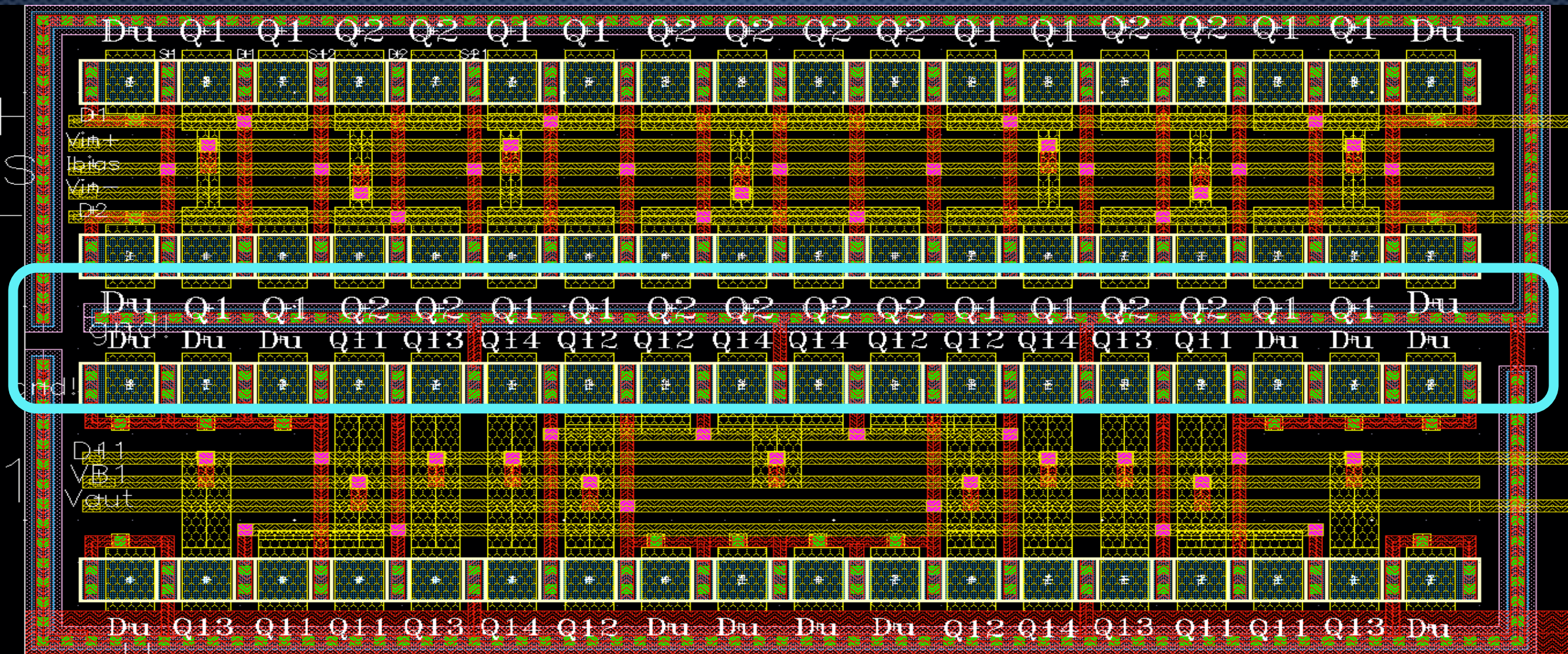
» (F)Select:0 Sel(N):0 Sel(I):0 Sel(O):0 X 51.990 Y 0.960 dX dY

Dist: Cmd:



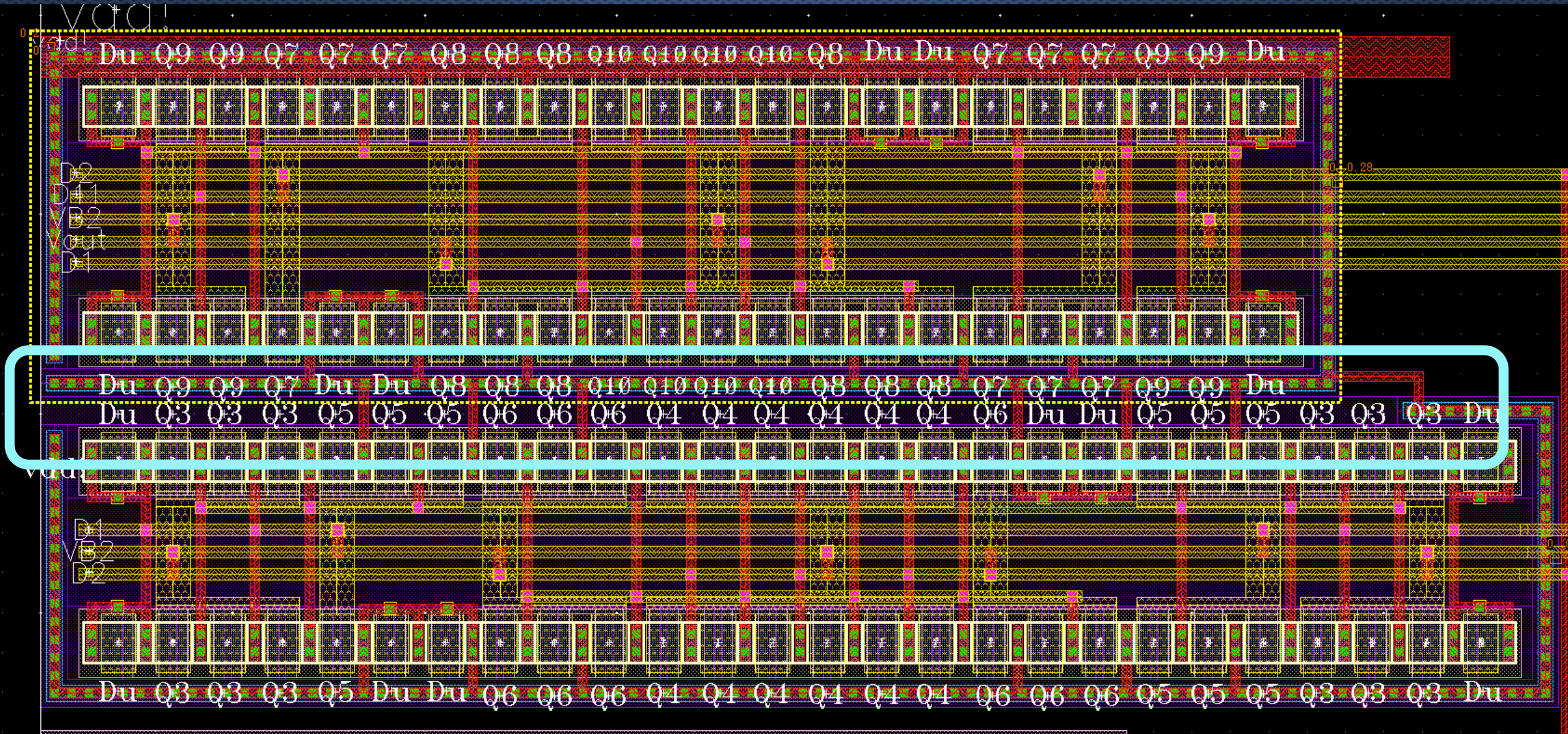


PENTRU CA CIRCUITUL SA TREACA DE SIMULAREA LVS TREBUIE SA MODIFICAM LAYOUTURILE INITIALE IN CAZUL BLOCURILOR CU ACELEASI LINII DE GND SI VDD, ASTFEL INCAT SA LE INTERCONECTAM LA ACEEASI LINIE





PENTRU CA CIRCUITUL SA NU DEA EROARE LA SIMULAREA LVS TREBUIE SA  
MODIFICAM LAYOUTURILE INITIALE IN CAZUL BLOCURILOR CU ACELEASI  
LINII DE GND SI VDD, ASTFEL INCAT SA LE INTERCONECTAM LA ACEEASI LINIE









# VERIFICARE DRC SI LVS

