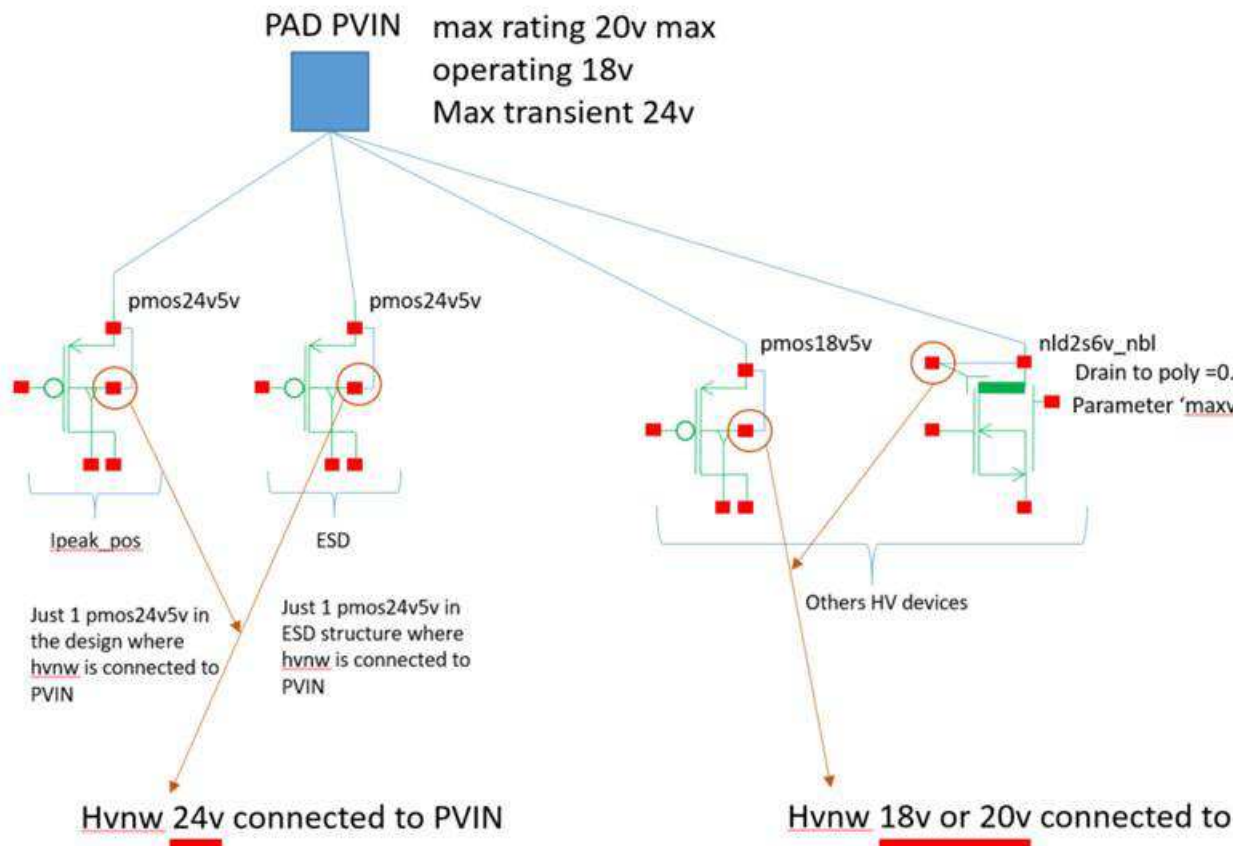


Patrice Delpy

From: Alexandre Apcher
Sent: Tuesday, December 15, 2020 2:37 PM
To: Warren Thompson; Michael Tedeschi; Anissa Karray-Kbaier; Mark Ward; Santosh Menon; Robert Muller; John Jensen; David Price; Tracy Myers; Richard De Souza; David Daniel; Chris Kendrick
Cc: Bertrand Clou; Berengere Le Men; Caroline Simon; Catherine Goyon; Tomas Pecenka; Fabien Foulon; Patrice Delpy; Caroline Rist; Edward Zanella; Dan Hegsted; Dan Mangel; Jonathan Buck; Yves Depret; Peter Dingenen; Sangmok Lee
Subject: RE: NCV92310 DRC violation

Hi All,

Thanks to hard work of Patrice Delpy, layout engineer in my team, we managed to correct the 7 last 'Hvpwgb_mw_un_24v' violations, so we will be able to tapeout in the next few hours ☺.
I summarized the configuration we have and the solution we implemented.



The combination of these 2 different hvnw connected to the same potential generate the violation and flag HVD layer around 18/20v devices

Solution: increase the W for HVD to 3.78um instead of 3.58um by default in pcell

In the future this configuration will happen again, is it possible to find a solution to prevent these violations appearing in the topcell only?

Thank you all for your help.

Best Regards

Alex

From: Warren Thompson <Warren.Thompson@onsemi.com>

Sent: Monday, December 14, 2020 5:28 PM

To: Alexandre Apcher <Alexandre.Apcher@onsemi.com>; Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangen <Dan.Mangen@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>; Sangmok Lee <Sangmok.Lee@onsemi.com>

Subject: RE: NCV92310 DRC violation

Hi Alex,

I would try to run at least the DRC rules from 8p1 which is what RDP will be running....Let us know if you need any help on this.

Thanks,

Warren

From: Alexandre Apcher

Sent: Monday, December 14, 2020 9:18 AM

To: Warren Thompson <Warren.Thompson@onsemi.com>; Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangen <Dan.Mangen@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>; Sangmok Lee <Sangmok.Lee@onsemi.com>

Subject: RE: NCV92310 DRC violation

Hi,

We used onc18gen2_1_8, the onc18gen2_1_8p1 PDK came too late from verification /simulation point of view in the project.

I will try a DRC run with the latest version.

Thanks

Best Regards

Alex

From: Warren Thompson <Warren.Thompson@onsemi.com>

Sent: Monday, December 14, 2020 5:15 PM

To: Alexandre Apcher <Alexandre.Apcher@onsemi.com>; Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangel <Dan.Mangel@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>; Sangmok Lee <Sangmok.Lee@onsemi.com>

Subject: RE: NCV92310 DRC violation

Hi Alex,

Jonathan just replied to your ticket. We need to confirm that you are using the latest PDK (onc18gen2_1_8p1). The rules from that PDK will be run during tape-in for RDP. As Jonathan just stated, in the 8p1, he is not seeing any DRC issues with the hvpwgb_mw_un_24v rule?

Thanks,
Warren

From: Alexandre Apcher

Sent: Monday, December 14, 2020 6:03 AM

To: Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangel <Dan.Mangel@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>; Sangmok Lee <Sangmok.Lee@onsemi.com>

Subject: RE: NCV92310 DRC violation

Hi all,

I opened a ticket (CRD_PDK_IN-4496) concerning the discussion below.

Our tapeout is tomorrow, our BU negotiated a priority P1 with Gresham for this product we cannot shift the tapeout after the 15th December, so can we tapeout the NCV92310 with this violation on the frontend layers?

Thank you for your help.

Best Regards

Alex

From: Michael Tedeschi <Michael.Tedeschi@onsemi.com>

Sent: Friday, December 11, 2020 9:55 PM

To: Alexandre Apcher <Alexandre.Apcher@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangen <Dan.Mangen@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>; Sangmok Lee <Sangmok.Lee@onsemi.com>

Subject: RE: NCV92310 DRC violation

Hi Alexandre,

Thank you for the additional feedback.

Could you please submit a PDK ticket here: https://jira.onsemi.com/projects/CRD_PDK_IN

Please include a brief description of what we just discussed and a onsend code or GDS example and we will assign someone to review it.

Thanks in Advance!,

-mt

From: Alexandre Apcher <Alexandre.Apcher@onsemi.com>

Sent: Friday, December 11, 2020 12:33 PM

To: Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangen <Dan.Mangen@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>

Subject: RE: NCV92310 DRC violation

Hi Mike,

Result in flat are the same that hierarchical except the number of violations 29 versus 11 in hierarchy.

Check hypwgb_mw_un_24vd 29

Thank you for your support
Best Regards
Alex

From: Michael Tedeschi <Michael.Tedeschi@onsemi.com>

Sent: Friday, December 11, 2020 5:52 PM

To: Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Alexandre Apcher <Alexandre.Apcher@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Edward Zanella <Edward.Zanella@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Dan Hegsted <Dan.Hegsted@onsemi.com>; Dan Mangen <Dan.Mangen@onsemi.com>; Warren Thompson <Warren.Thompson@onsemi.com>; Jonathan Buck <Jonathan.Buck@onsemi.com>; Yves Depret <Yves.Depret@onsemi.com>; Peter Dingenen <Peter.Dingenen@onsemi.com>

Subject: RE: NCV92310 DRC violation

+PDK/CAD reps

Hi Anissa,

In the past when there has been an issue like this (different drc results based on level of hierarchy run) it has turned out to be either:

1. Issue with layers that traverse hierarchy and use of calibre in "hierarchical" or "flat" mode. Certain layers or parts of layers can be "pushed" or promoted to different levels of hierarchy causing different results depending on level of hierarchy run or
2. Issues with Calibre "hierarchy" feature

If you run the drc check in "flat" mode are the results consistent/as expected versus results when running in "hierarchy" mode?

Please let us know if this is the case and then we can dig deeper to help find root cause of different drc results based on level of hierarchy run.

Thanks in Advance,

-mt

From: Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>

Sent: Friday, December 11, 2020 11:43 AM

To: Mark Ward <Mark.Ward@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; Alexandre Apcher <Alexandre.Apcher@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>

Subject: RE: NCV92310 DRC violation

Santosh,

The DRC error is flagged for two type of devices: **nld2s6v_nbl** and **pmos18v5v_pwr**.

Just for information, we had a previous project (NCV92100) in ONC18 HiPo with the same devices and same Layout, but there was no similar DRC error. The PDK of this project was onc18gen2_1_7. So the error could be PDK related?

Best Regards,
Anissa

From: Mark Ward <Mark.Ward@onsemi.com>

Sent: Friday, December 11, 2020 5:26 PM

To: Santosh Menon <Santosh.Menon@onsemi.com>; Alexandre Apcher <Alexandre.Apcher@onsemi.com>; Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; David Price <David.Price@onsemi.com>; Tracy Myers <Tracy.Myers@onsemi.com>; Richard De Souza <Richard.DeSouza@onsemi.com>; David Daniel <David.Daniel@onsemi.com>

Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>; Caroline Rist <Caroline.Rist@onsemi.com>

Subject: RE: NCV92310 DRC violation

Santosh,

Yes, this is an ONC18 HiPo shuttle with SiCr (Maskset JOSF)

Base Flow: ONC18-10102021C1524-L-H-2V5V-5LM-G-30T-PM1 +SiCr resistances
ONC18-10102021C1524-L-H-2V5V-5LM-C2-G-30T-PM1

+6th metal layer
ONC18-10102021C1524-L-H-2V5V-6LM-G-30T-PM1

Technology *

Part Name *

Mark

From: Santosh Menon

Sent: Friday, December 11, 2020 7:45 AM

To: Alexandre Apcher; Robert Muller; John Jensen; David Price; Mark Ward; Tracy Myers; Richard De Souza; David Daniel
Cc: Bertrand Clou; Anissa Karray-Kbaier; Berengere Le Men; Caroline Simon; Catherine Goyon; Michael Tedeschi; Tomas Pecenka; Fabien Foulon; Patrice Delpy
Subject: RE: NCV92310 DRC violation

Hi Alexandre,

I have added Tracy, Richard and David D. We will look into this. I am assuming this is ONC18 HiPo with nld2s. Correct?

Santosh

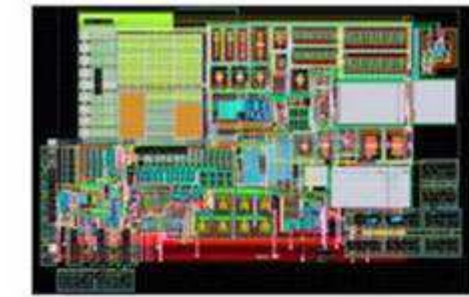
From: Alexandre Apcher <Alexandre.Apcher@onsemi.com>
Sent: Friday, December 11, 2020 6:03 AM
To: Robert Muller <Robert.Muller@onsemi.com>; John Jensen <John.Jensen@onsemi.com>; Santosh Menon <Santosh.Menon@onsemi.com>; David Price <David.Price@onsemi.com>; Mark Ward <Mark.Ward@onsemi.com>
Cc: Bertrand Clou <Bertrand.Clou@onsemi.com>; Anissa Karray-Kbaier <Anissa.Karray-Kbaier@onsemi.com>; Berengere Le Men <Berengere.LeMen@onsemi.com>; Caroline Simon <Caroline.Simon@onsemi.com>; Catherine Goyon <Catherine.Goyon@onsemi.com>; Michael Tedeschi <Michael.Tedeschi@onsemi.com>; Tomas Pecenka <tomas.pecenka@onsemi.com>; Fabien Foulon <fabien.foulon@onsemi.com>; Patrice Delpy <Patrice.Delpy@onsemi.com>
Subject: NCV92310 DRC violation

Hi Gresham team,

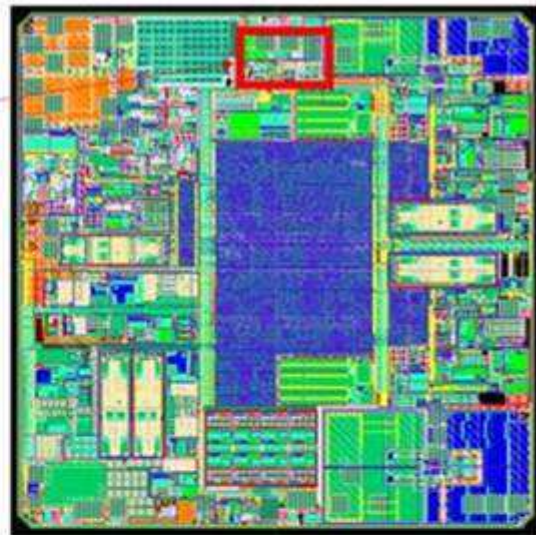
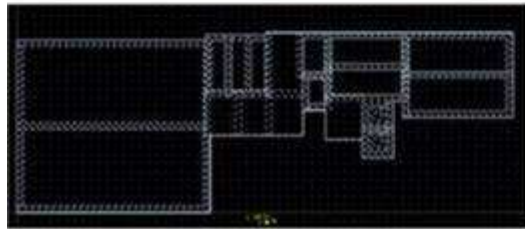
We will plan to tapeout our future product NCV92310 next Wednesday, and we are in the last top cell verifications. (all blocs are DRC and LVS clean)

However we have 1 violation appears just in top cell (with the switch tapeout in Calibre)

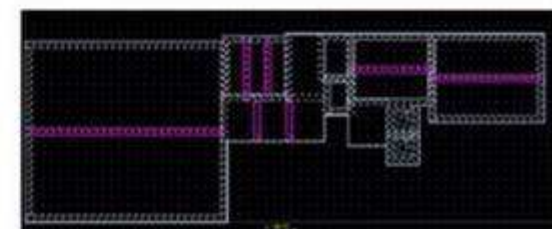
The violation is : Hvpwgb_mw_un_24v this rule impact HVD layer and require a W=3.78um for HVD instead of 3.58um by default in pcell. We corrected everywhere it was easy but there are still 7 violations in 1 cell, and at this project stage we could not correct for Wednesday because we should redo the bloc from scratch.



DRC



DRC



At this project stage we could not correct for Wednesday.

So I have some question :

Why these violations appears just in Top cell ?

Can we waived this violation and what is the impact on our product ?

Thank you for your help.

Best Regards

Alexandre