INFORMATION NOTE

N° 046/13

Close Dambar and Test Pad Change of TLE7368x-Family

Subject of Change: Change of leadframe design to close dambar leadframe design and change of testpad size

Products affected:

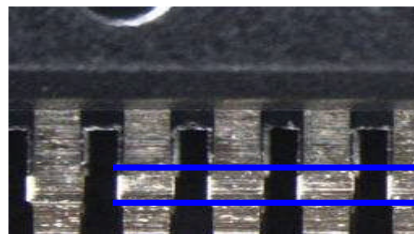
SalesName	SP	OPN	Package
TLE7368-2E	SP000768086	TLE73682EXUMA1	PG-DSO-36-51
TLE7368-3E	SP000794336	TLE73683EXUMA1	PG-DSO-36-51
TLE7368E	SP000307244	TLE7368EXUMA1	PG-DSO-36-24

Reason of Change: Harmonization of lead frames. Improve FE testing needle alignment.

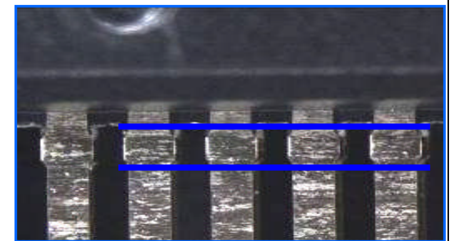
Description of change:

close dambar (TLE7368-2E and TLE7368-3E):

Old

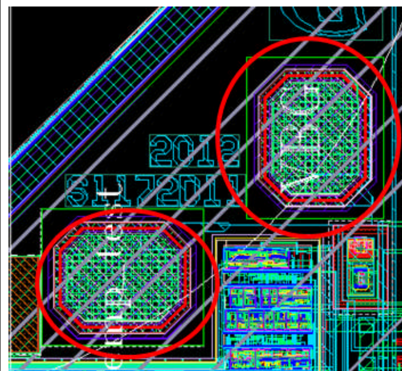


New

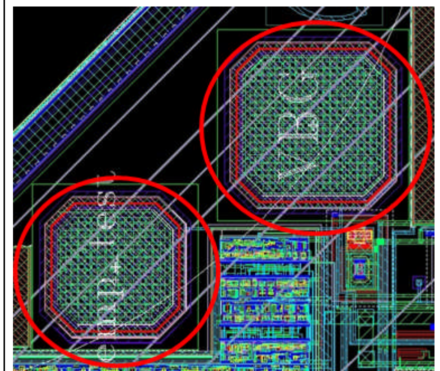


Testpad size (for all products):

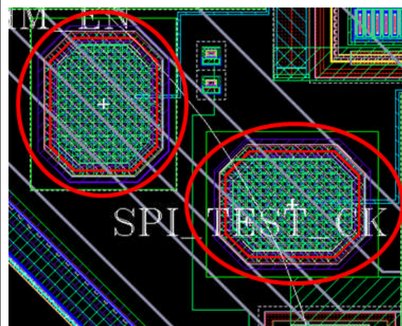
Old



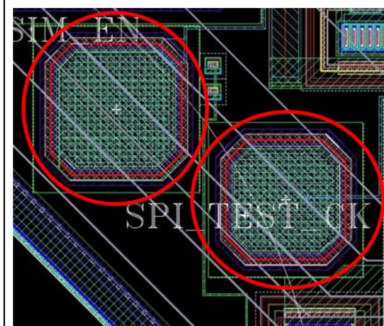
New



Old



New



INFORMATION NOTE

N° 046/13

Assessment:

No impact on electrical parameters.
No impact for pick and place at board assembly expected

Time schedule:

Implementation of change: 15-09-2013

Documentation:

2_cip04613	qualification plan
3_cip04613	customer general information close dambar
4_cip04613	customer general information test pad change

Remark:

The change "close dambar" for TLE7368E was mentioned in the Infonote: 063/11

If you have any questions, please do not hesitate to contact your local Sales office.

Project	Info Note 2013- 046 close dambar	Date:	2013-07-18
Part for family qualification	TLE7368E / -2E / -3E	Department:	IFAG ATV QM STD
Chip for family qualification	S1172	Provided by:	M. Breunig
Device family	DC / DC converter	Reviewed by:	J. Lin

Part Operating Temperature Grade -40°C to 150°C "GRADE 1"

Family qualification (generic data) with structual similar (representative) types

	Part	Chip	Chip size	Wafer diameter	Wafer fab	Wafer technology	Package	Assembly line	Assessment
Part to be Qualified:	TLE7368E /-2E / -3E	S1172	4.7 x 3.48 mm²	200 mm	Regensburg	SPT_5_8	PG-DSO-36-24	BAT	pass
Reference Part	TLE7263E	S1166	3,5 x 4,1 mm²	200 mm	Kulim	SPT_5_8	PG-DSO-36-24	BAT	pass

Explanation:

Mechanical representative type:
- Same or bigger chip size, Differences max. 1,5x and 1,5y
- Same package
- Same die bond method (glue or solder die bond)
- Same wire bond method (Au nail head or Al wedge)
- Same chip passivation (Nitride, Imide, ...)

Electrical representative type:
- Same wafer technology / wafer process
- Same wafer fab
- Same wafer diameter

Infineon Technologies AG	Component Qualification Test Plan for Packaged Integrated Circuits according to AEC Q100	IFAG ATV QM STD

Project	Info Note 2013- 046 close dambar	Date:	2013-07-18
Part for family qualification	TLE7368E / -2E / -3E	Department:	IFAG ATV QM STD
Chip for family qualification	S1172	Provided by:	M. Breunig
Device family	DC / DC converter	Reviewed by:	J. Lin

TEST #	STRESS TEST according AEC Q100 Rev.F		Test conditions		TLE7368E / -2E / -3E			TLE7263E		Remarks
				# LOTS	No. of tested devices	No. of failed devices	# LOTS	No. of tested devices	No. of failed devices	
A1	Preconditioning	**Precon**	MSL: **3** peak temp.: **260°C**				1	200	0	
A3	Autoclave or Unbiased HAST	**AC**	T: 121°C P: 100 Kpa RH: 100 %	on reference product			1	100	0	acc. to Table 2A, AEC Q100 Rev.F
A4	Temperature Cycling	**TC**	T min: -55°C T max: +150°C	on reference product			1	100	0	acc. to Table 2A, AEC Q100 Rev.F
C0	Internal Physical Inspection						1	5	pass	
C1	Wire Bond Shear						1	part of IPI		after TC for gold nailhead bonds
C2	Wire Bond Pull						1			after TC
C3	Solderability						1			only throughhole devices
C4	Physical Dimensions						1			generic data
C5	Solder Ball Shear						1			generic data
C6	Lead Integrity						1			generic data

Approved by:

Supplier:

Close Dambar for products in DSO-36 package

Production Site: Batam, Indonesia

Close Dambar in DSO-36 package

- Scope of the change:
  - Close dambar leadframe design for package DSO-36

- Reason for the change:
  - Process harmonization

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Close dambar for PG-DSO-36

- New PG-DSO-36 close dambar have the same material as old PG-DSO-36
- PG-DSO-36 close dambar are running with identical assembly equipment and process which is already qualified and in mass production
- Shifting the dambar does not affect the assembly processes, the reliability can be referenced to the close dambar leadframe qualification report of PG-DSO-36-34 as follows

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Comparison
Standard vs. Close Dambar Leadframe

Infineon

Overview: example from DSO-36

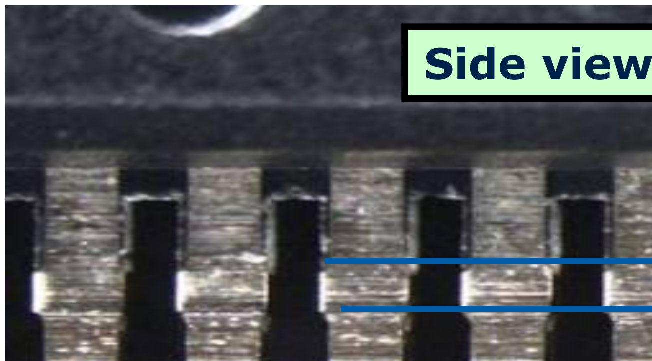
Zoom in area → see detailed view below

Side view

Standard Dambar LF

Close Dambar LF

Side view of the zoom in area



Dambar line

Dambar line

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Qualification results summary for PG-DSO

Test / Inspection	Sample Size	Result (Rej/samples)		Remarks
		Far Dambar	Close Dambar	
SAT Top/Bottom before Dambar Cut	60 units	0/60	0/60	Pass
SAT Top/Bottom after Dambar Cut	60 units	0/60	0/60	
Solderability Test	11 units per temp (215/245/260/280°C)	0/44	0/44	Pass
Tape Test after Singulation	50 units	0/50	0/50	Pass
SAT Before Precon	90 units	0/90	0/90	Pass
SAT After Precon + 500 TC	90 units	0/90	0/90	
El. Test after Precon + 500 TC	90 units	0/90	0/90	Pass

Result : Qualification PASS

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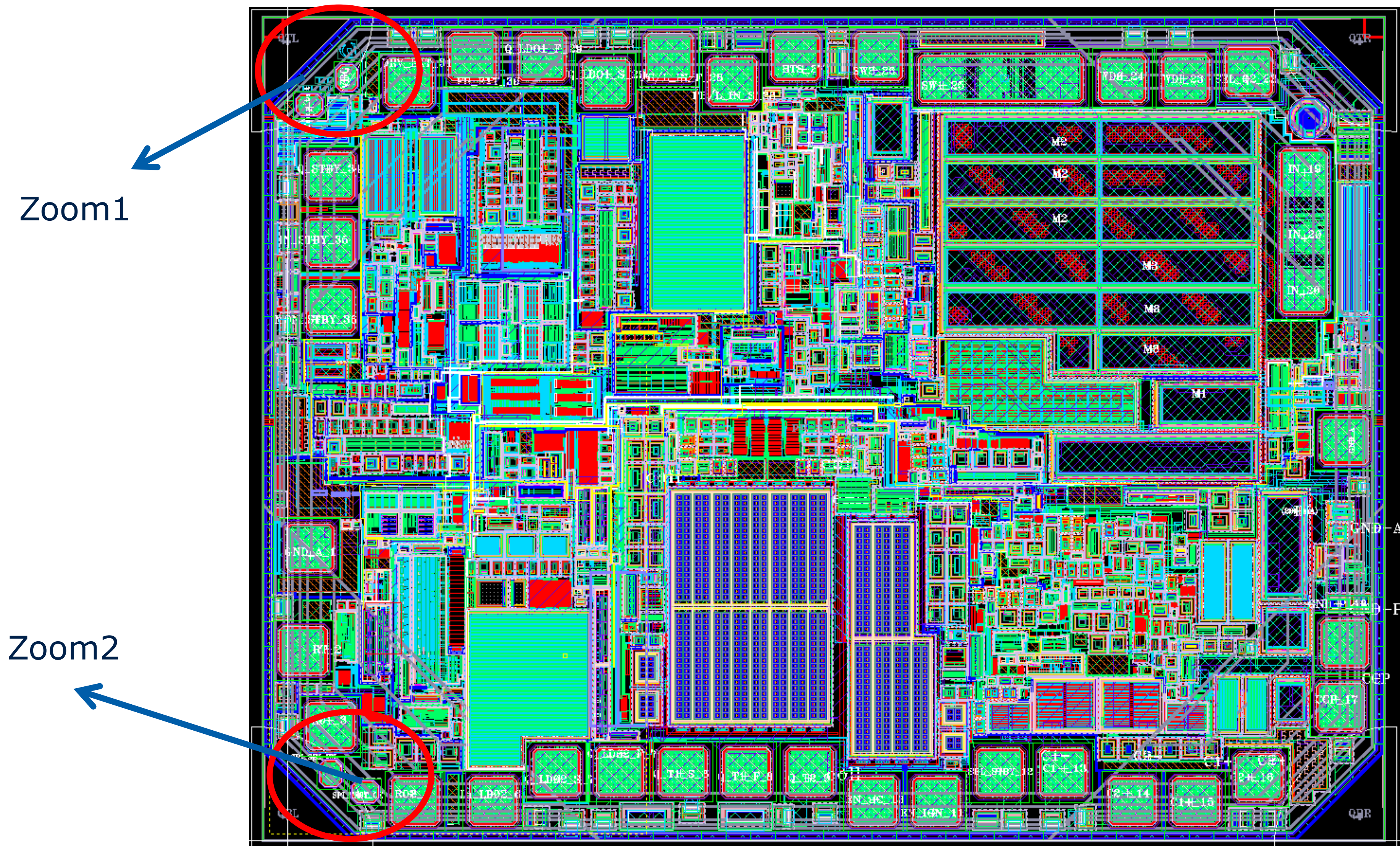
TLE7368E, -2E, -3E new test pads size

Original Design (eg. TLE7368xxx)



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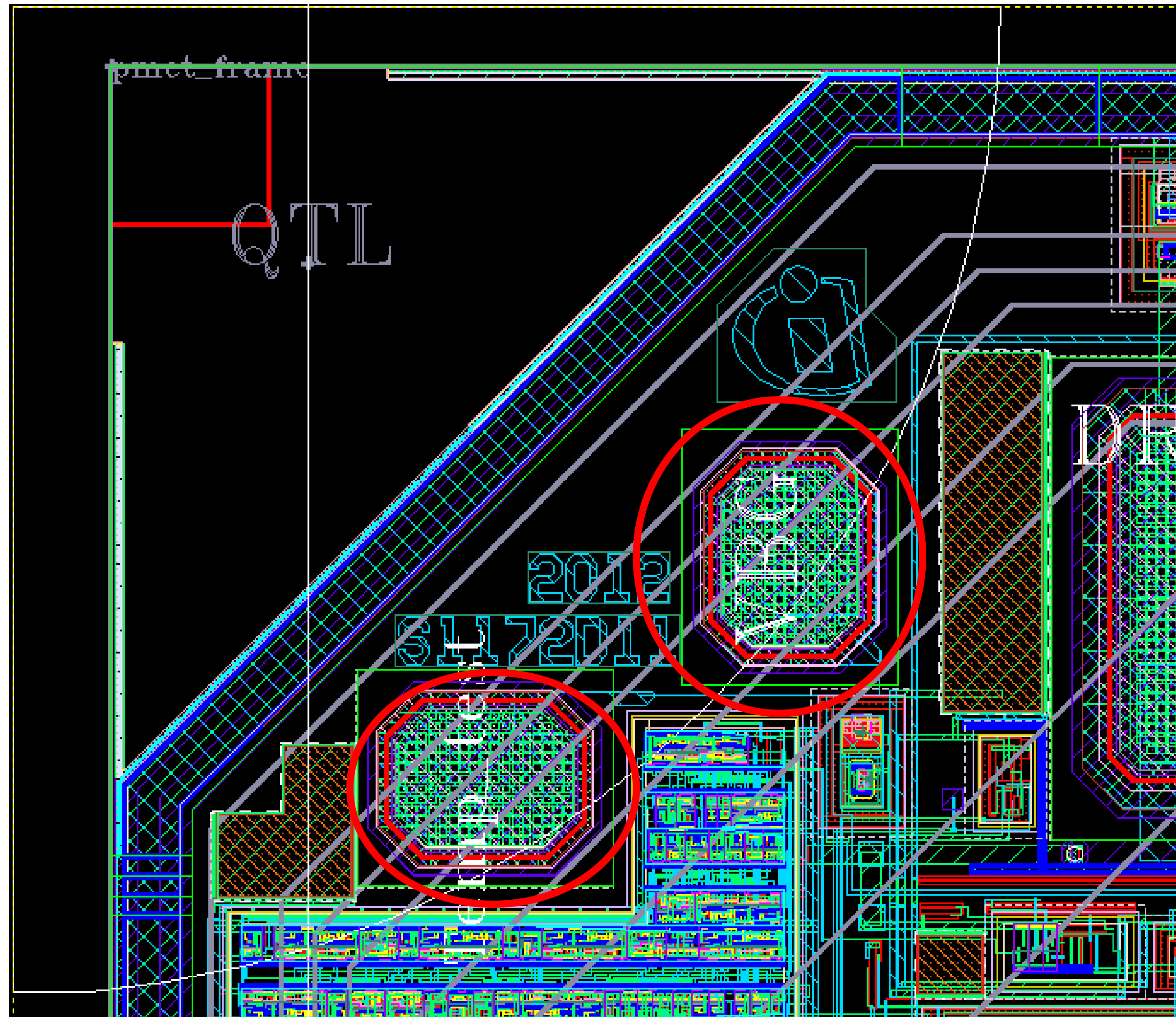
Original Design (eg. TLE7368xxx) – Zoom1

VBG: 80x100 µm imide opening

Temp_test: 80x100 µm imide opening



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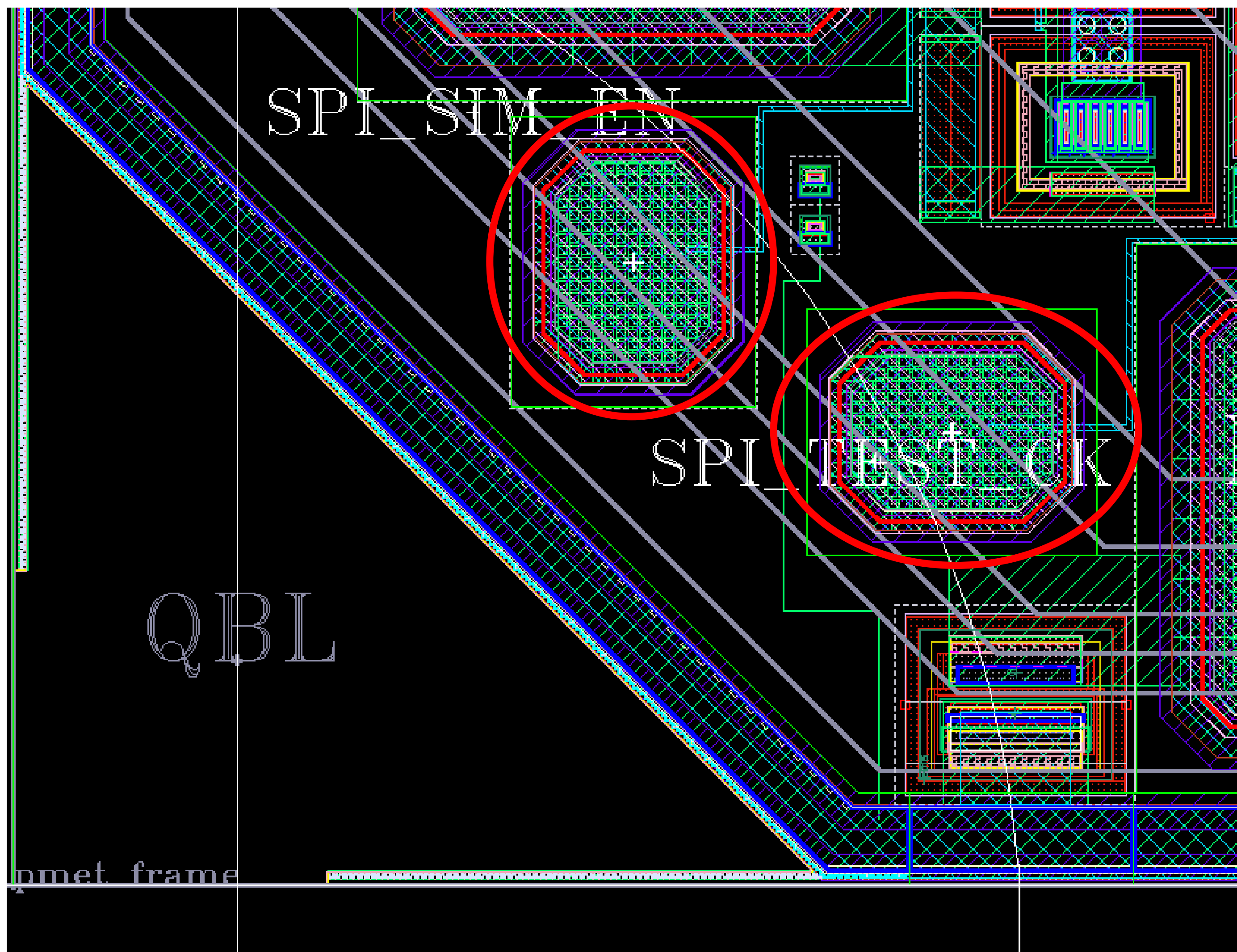
Original Design (eg. TLE7368xxx) – Zoom 2

SPI_SM_EN: 80x100 µm imide opening

SPI_TEST_CK: 80x100 µm imide opening



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New layout with modified test pads (TLE7368xxx)

Zoom 3

Zoom 4

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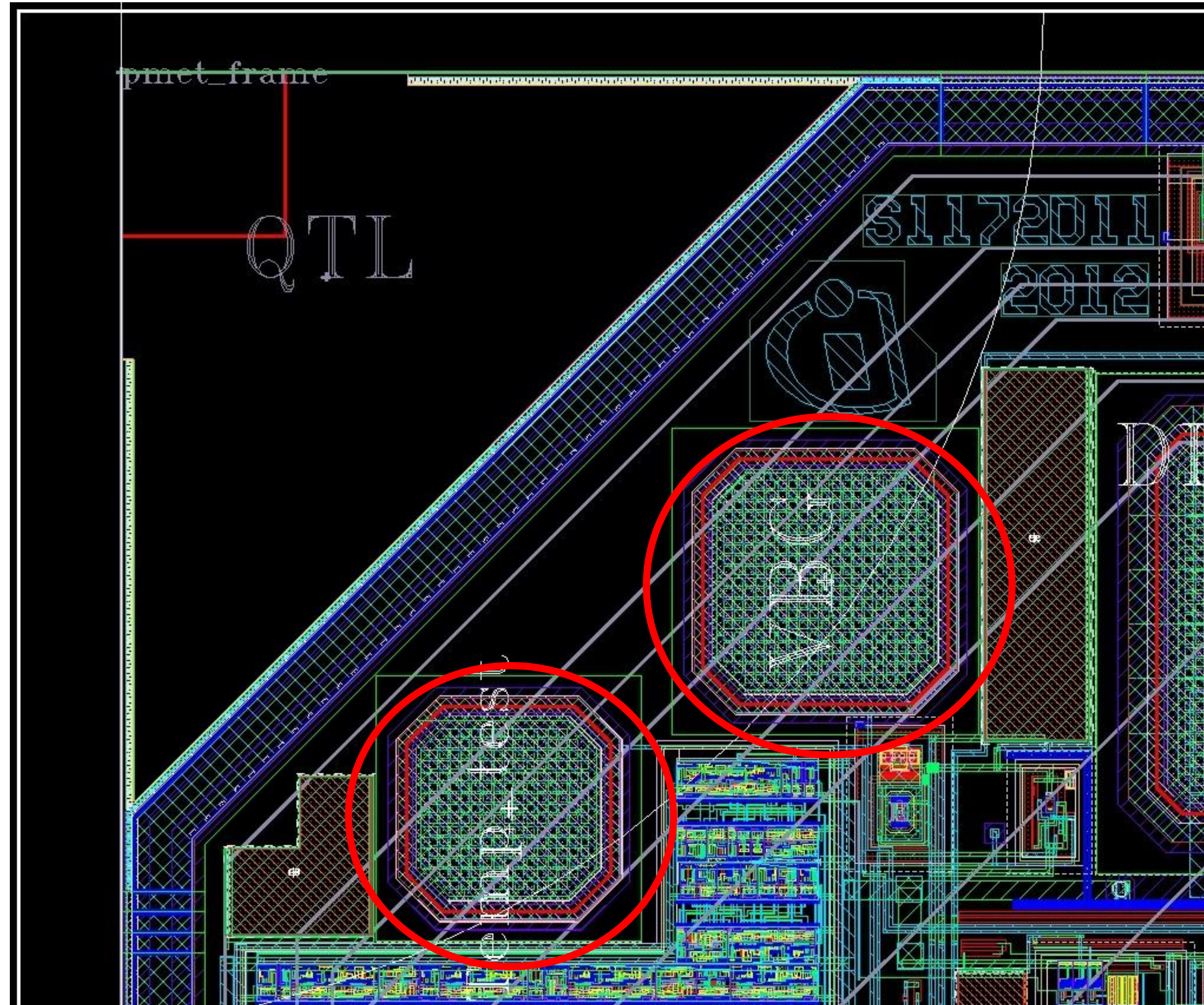
New Design (TLE7368xxx) – Zoom 1

VBG:now 120x120 µm imide opening instead of 80x100 µm.

Pad position not changed

Temp_test:now 100x100 µm imide opening instead of 80x100 µm.

Pad shifted 1.2µm in Y direction



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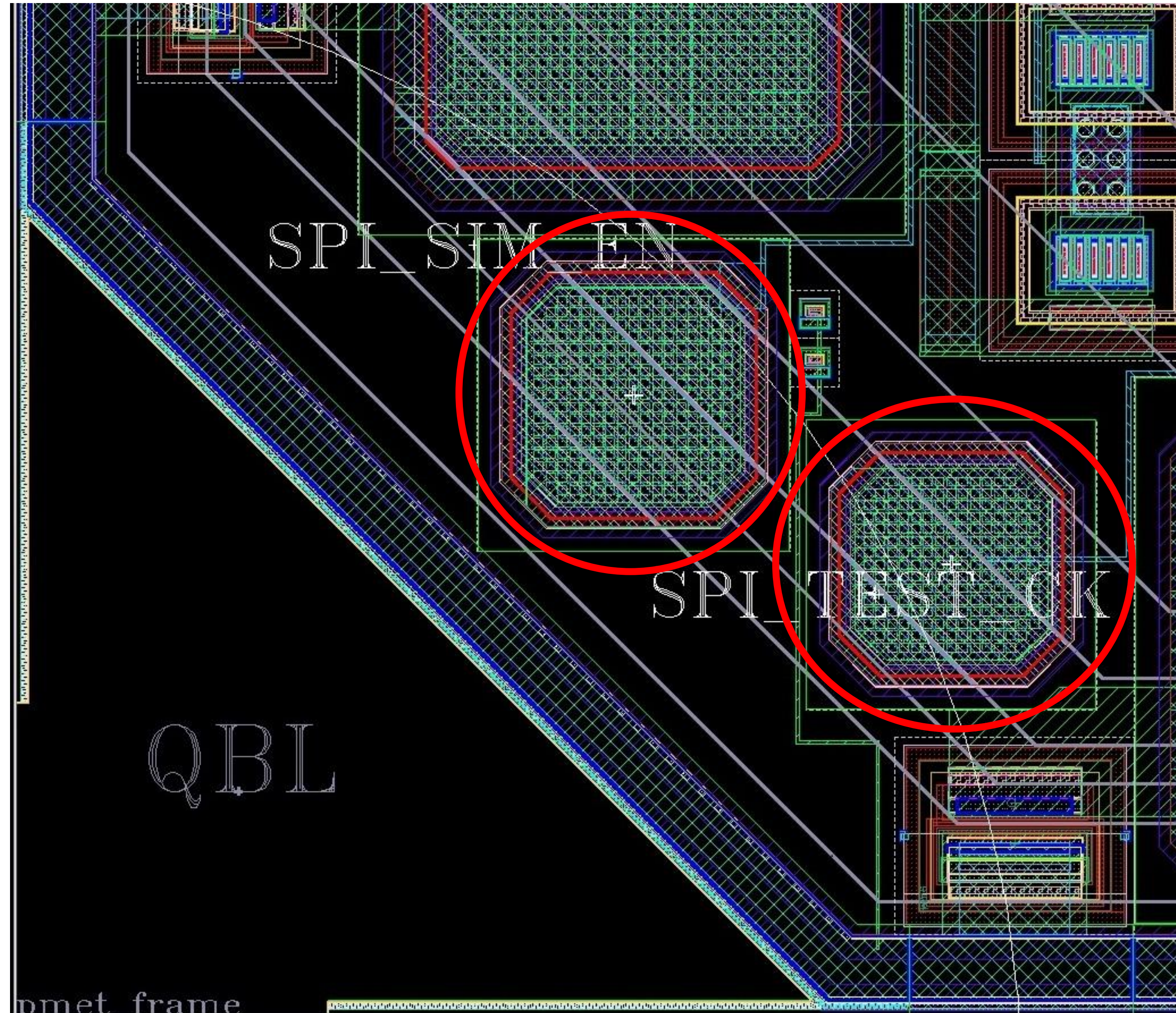
New Design (TLE7368xxx) – Zoom 2

SPI_SM_EN:now 110x110 µm imide opening instead of 80x100 µm.

Pad position not changed

SPI_TEST_CK:now 100x100 µm imide opening instead of 80x100 µm.

Pad position not changed



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