

Micross Components Technical Paper

NOTES FOR CHECK LIST FOR DESIGN REVIEW 3.

Design Review 3 is held when the layout is complete, post-layout simulations have been run satisfactorily and layout checks are clean. Approval of this stage is an acceptance by all attendees that the design is satisfactory and the significant costs of masks and fabrication can be taken.

The points in the checklist are not expected to be a complete list of every possible thing which may require to be discussed and agreed. They are intended to promote discussion and to attempt to ensure that problems which have occurred before do not recur. Any significant new problem area which arises in the future should be added in the form of a new check list point. The following notes outline the areas of discussion relevant to each point on the list.

1.0 Progress Report.

This is mainly an introduction and should be presented by the designer and project manager. It is intended to refresh the memories of the other attendees who will have had less contact with the project since the second review and to outline any difficulties and their solutions.

1.1 The designer should cover the design requirement in sufficient detail to form a basis for the rest of the meeting. The application area and environment should be described and any key or particularly difficult areas brought out for discussion.

1.2 The project manager should summarise the project status and any outstanding problems. This should cover all areas, not only design, to ensure that the remainder of the meeting can consider each area in context.

1.3 If this is a redesign has the cause of the original problem been unambiguously identified? Are any other problems likely to have been masked by this? Is the solution clear and what are the risks of another failure? Are any new problems likely to develop as a result of circuit or layout changes?

1.4 Have all DR2 actions required for this review been completed satisfactorily (mandatory).

1.5 is there consensus on any specification, timescale, cost etc. changes since DR2?

2.0 Documentation.

It is important that sufficient documentation exists at this review to confirm the status of project. All of these items are mandatory. Exceptionally, minor, non-critical specification issues can be carried over to the next review provided that the risks and costs are understood and agreed.

2.1 The specification must be firm and agreed for this review to be passed. It is acceptable that non-critical areas of the specification can be left to be defined during the evaluation phase but only provided any associated risks and or costs are well understood and agreed. Check that the version of the specification which the designer has used is current.

2.2 The block diagram must exist and should reflect (or be) the top level of the design. The customer and designer should be happy with it. Has it changed since DR2 and if so are any changes well supported by specification and/or resimulation results?

2.3 A full set of schematics is required. The design should be 'checked in' in the design system so that the issues of the various levels of the hierarchy can be clearly identified. Have any changes been made except to cope with layout parasitics? If so are they supported by simulation results?

2.4 Has the customer agreed that the post-layout simulation results are acceptable. Is the package and pin-out acceptable? This approval is mandatory unless the job description waives it.

2.5 Has a bonding diagram been produced?

3.0 Design Route.

The design points cover all work done to date. All of these points must be agreed before the review is passed.

3.1 The designer should present the simulation and post-layout simulation results and describe clearly what simulations have been done and what if any problem areas there are. Have all simulations been repeated post-layout? If not is it clear that any layout criticality has been covered?

3.2 Have all layout checks reported clean results? If not does QA agree with any flags? Are the DRC and LVS runsets valid and any known shortcomings checked by hand? Has the vendor approved the layout?

3.3 Have components and tracking been checked for current and power capacity and breakdown or parasitic issues? How? Is there evidence that the checks are satisfactory?

3.4 Is the technology susceptible to latch-up? If so have the necessary precautions been taken? If latch-up requirements are specified will they be met? What supporting evidence is there?

3.5 Have adequate precautions been taken to protect against ESD? If there is a specified requirement is there supporting evidence that it will be met? Are there any pins which cannot be/are not protected and is this acceptable to Austin Semiconductor and the customer? Is there protection from any pin to any other?

3.6 Have all layout constraints dictated by reliability considerations been obeyed. Can this be checked (and has it been)? Are there any changes to initial estimates and are any specification requirements met?

3.7 Is progress on schedule? If not is it possible to accelerate delivery of silicon?

4.0 Test

There should be no outstanding test issues at this point apart possibly for timescale problems.

4.1 Are probe requirements clear and will they be addressed by the required date?

4.2 Is the prototype evaluation programme defined? Will any ATE software be ready in time? Will all required hardware be ready in time? Is any special equipment required for hire etc.?

4.3 Will the production test capability be in place as required? Will the required cost of test be met? Can the necessary volumes be handled?

4.4 Has the qualification requirement been established? Will any necessary hardware/software be in place by the time that samples are approved?

5.0 Assembly

All assembly issues must be satisfied before this review is passed.

5.1 Is the die size and pad positions acceptable and can the die be assembled within the normal assembly rules? If not will there be any problems or yield implications?

5.2 Do the pads allow bonding to the required screening level? Is the scribe acceptable?

5.3 Is the bonding diagram clear and acceptable? Are there any unusual bonding requirements e.g. double bonds, non-orthogonal or asymmetric die placement etc?

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