

A customer onboarding guide for MOSIS 2.0's wire-bond packaging service.

Pre-filled by MOSIS

Confirm these with your MOSIS point of contact before starting.

1 | Overview

MOSIS 2.0 provides wire-bond packaging support for integrated circuit designs fabricated in our partner foundries. Our team handles packaging design, assembly DRC review, OSAT coordination, and final assembly scheduling.

This guide gives designers a six-step pre-tapeout checklist, a flow diagram tying those steps together, and an appendix describing what happens after the intake form is submitted. The specific DRC rules are maintained by MOSIS; this guide highlights the ones most likely to affect a design decision.

2 | Estimated Turnaround

For general planning, allocate a 6 to 7 week timeline in your project schedule for securing wire-bond packaging. The table below gives a step-by-step breakdown. Actual turnaround time may vary depending on the completeness of the submission, required revisions, OSAT review cycles, and PO processing.

Step	What Happens	Typical Duration
1	Customer submits the intake form and finalized GDS details	Start of timeline
2	MOSIS prepares diagrams and completes the assembly DRC review	1 week
3	MOSIS submits the request to the OSAT for evaluation and approval	2 weeks
4	Any OSAT-requested updates are completed and resubmitted by MOSIS	2 business days
5	A formal quote is issued	1 week
6	OSAT schedules the assembly date after PO receipt	2 weeks after PO receipt

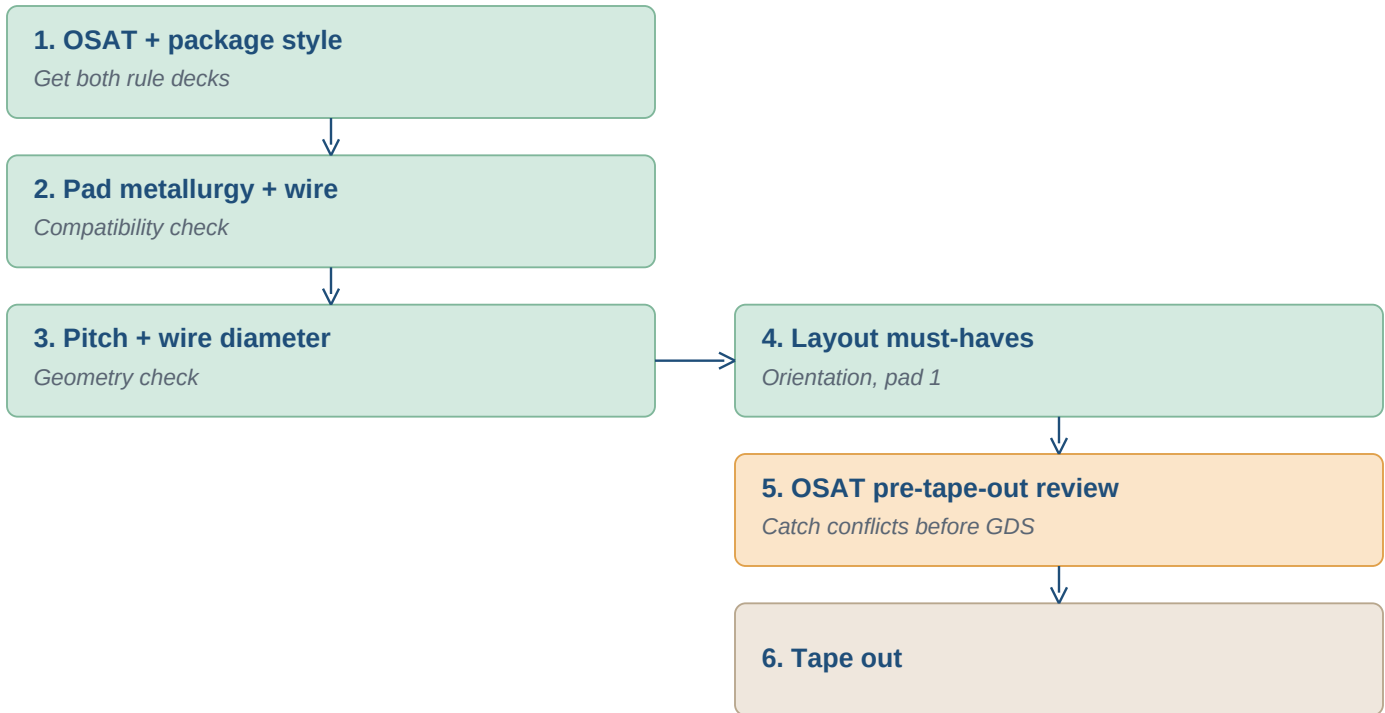
3 | Design Flow

Six steps from package selection to tape-out. Boxes 1–3 are the design phase; boxes 4–6 are the assembly-readiness phase. Each box maps to a checklist in Section 4.



Design phase

Assembly phase



4 | Pre-tapeout Checklist

Each item points to the section of the intake form ([wire-bond-intake.pdf](#)) it feeds. Walk the steps in order. Loop back if a downstream check forces an upstream change.

4.1 OSAT + package style

Decide the OSAT and package family first. The package choice constrains every later step.

- ☐ Identify part number of package you need

Feeds: MASTER \$7 Package Detail

4.2 Pad metallurgy + wire — Compatibility check

Pad finish and wire material must be metallurgically compatible. Au wire on Al pads requires a barrier (Au barrier or Ni/Au UBM).

- ☐ Pad finish (bare Al / UBM / OPM)
- ☐ Wire material (Au / Cu / Al)
- ☐ OSAT compatibility confirmed in writing

Feeds: MASTER \$4 Pad termination

4.3 Pitch + wire diameter — Geometry check

Bond pad opening (BPO) and bond pad pitch (BPP) must fall within the OSAT envelope for the chosen wire. See Appendix A, Step 5 for representative BPO values.

- ☐ Wire diameter pass assembly rule
- ☐ BPO pass assembly rule
- ☐ BPP pass assembly rule

Feeds: MASTER \$5 GDS submission

4.4 Layout must-haves

Two markers MOSIS uses to orient the GDS for diagram generation.

- ☐ Die orientation marker (assembly equipment uses image recognition automation to align the die)
- ☐ Die bonding pad 1 marker

Feeds: MASTER \$4 Die pad 1 convention

4.5 OSAT pre-tape-out review

MOSIS 2.0 review gets the design 99% there. Final OSAT sign-off is required for 100% confidence in the build before tape-out, because the OSAT performs the actual assembly.

- ☐ Layout package sent to MOSIS (date)
- ☐ MOSIS feedback received (date)
- ☐ OSAT feedback received (date)
- ☐ Conflicts resolved (loop back to step 2 or 3 if needed)
- ☐ Written sign-off

Feeds: ahead of MASTER submission

4.6 Tape out

Final deliverables that go into the MASTER intake form.

- ☐ Final GDS
- ☐ Package layout
- ☐ Wire bond diagram
- ☐ MOSIS 2.0 Assembly DRC passes with requested configuration
- ☐ Intake form submitted

Feeds: MASTER (full submission)

5 | Submit Your Request

Next step: fill out the intake form (wire-bond-intake.pdf)

1. Download the intake form from: <https://mosis.com/wire-bond-intake>
2. Open in Adobe Acrobat Reader or Foxit Reader. Any fields pre-filled by MOSIS can be modified if your records differ.
3. Save the completed PDF and reply to your MOSIS email with the file attached.

Questions? Contact your MOSIS point of contact (listed at the top of this guide).

6 | Glossary

GDS	GDSII layout database. The geometric layout of your IC, including pad openings and die perimeter.
PDK	Process Design Kit. The foundry's technology specification: layer definitions, design rules, and device models.
MPW	Multi-Project Wafer. A shared wafer fabrication run where multiple customers' designs share the same mask set.
OSAT	Outsourced Semiconductor Assembly and Test. The external facility that performs packaging and final test.
DRC	Design Rule Check. Verification that a layout satisfies a foundry or assembly facility's geometric constraints.
BPO	Bond Pad Opening. The exposed metal area of a bond pad where a wire bond is attached.
BPP	Bond Pad Pitch. The center-to-center distance between adjacent bond pads.

UBM	Under Bump Metallurgy. A multilayer metal stack deposited on top of a pad to improve bond or solder adhesion (e.g., Ni/Au, Ti/Pt/Au).
ITAR	International Traffic in Arms Regulations. A US export-control framework that may restrict who can handle a design.
CLCC	Ceramic Leadless Chip Carrier. A common ceramic package type (e.g., CLCC68 = 68-pin, CLCC44 = 44-pin).

APPENDIX A**How packaging works after you submit**

A seven-step walkthrough of what happens between a fabricated die and a packaged part. This is the work MOSIS and the OSAT execute after receiving your intake form.

Step 1 — Understand your die build shipped from the foundry

What happens: Foundries can ship full wafers or individual die. The form of delivery dictates what MOSIS must do before assembly can begin.

What matters for design: If the foundry ships wafers, wafer grinding and dicing must be added to the plan. If the foundry ships die and they are too thick for the package cavity, die-level grinding must be added to the plan.

Step 2 — Understand your package requirements

What happens: The chosen package (CLCC, QFN, BGA, bare die, etc.) defines the cavity size, pin count, bond-pad locations, and lid options. Each row of the intake form's Die Split Table is one die-to-package pairing.

What matters for design: Every downstream step is constrained by the chosen package: whether the die fits, how many wires can route, which lid types are available, how many units can be assembled. If sub-dicing is involved, geometric saw constraints also apply — for example, a 400 μm silicon wafer needs at least a 40 μm saw street; for GaAs, at least 80 μm . Production minimum die edge is 0.5 mm.

Step 3 — Verify die-to-package compatibility

What happens: MOSIS runs the assembly DRC against each die-package pairing and confirms the die fits the package cavity and every die pad can be assigned to a package bond-pad.

Gated by: (1) Assembly DRC for die-cavity clearance — the die footprint must clear the cavity walls (for example, at least 0.5 mm for epoxy attach, 1.0 mm for eutectic), and the die must fit under the package seal ring. (2) Die-pad to package bond-pad assignment — every die pad must map to a valid package bond-pad with a valid wire route.

What matters for design: If the die is too thick for the cavity, die-level grinding is added to the plan. If too few package pins are available for the required connections, a different (larger) package must be chosen. Both outcomes are returned to the customer as part of the approved plan.

Step 4 — Attach the die to the package cavity

What happens: The die is bonded to the floor of the package cavity with an adhesive (conductive or non-conductive epoxy).

What matters for design: The die attach sets the mechanical and thermal foundation for assembly, and determines whether the die back side is electrically connected to the package cavity floor. Choice of epoxy (conductive vs. non-conductive) is specified in the intake form and executed at the OSAT.

Step 5 — Select wire material and size

What happens: MOSIS runs the wire-bond DRC against the proposed die-package pairing. The DRC selects a wire material (Al wedge or Au ball) and diameter that are compatible with the die's pad termination and the geometry of both the die and package bond-pads.

Gated by: Assembly DRC for wire-bond rules — bond-pad opening (BPO), pad-to-pad pitch, wire length, and substrate lead pitch must all fall within the envelope of the chosen material and diameter.

What matters for design: Pad material dictates wire options. Al pads accept Al wedge bonds directly. Au wires on Al pads require a barrier layer (Au barrier or Ni/Au UBM). The most common design-time gotcha is BPO — if the bond-pad opening is too small, the chosen material-and-diameter combination will fail DRC, and the pad must be opened up at tapeout or a different wire chosen.

Minimum bond-pad opening (BPO) — representative values

Configuration	Minimum BPO
Al wedge bond, 0.7 mil wire	55 μm
Al wedge bond, 1.0 mil wire	70 μm
Au ball bond, 0.7 mil wire	40 μm
Au ball bond, 1.0 mil wire	50 μm

Representative values only. Contact your MOSIS point of contact for the full DRC table.

Step 6 — Wire bond the die pads to the package bond pads

What happens: The OSAT performs the physical wire bonding using the material, diameter, and routing selected at step 5.

What matters for design: This step is the mechanical execution of the decisions made in steps 1-5. If all upstream DRCs have passed and the approved plan is in hand, this step proceeds on schedule. The wire-bond diagram delivered in the approved plan is what the OSAT will follow.

Step 7 — Attach the cover to the package

What happens: The package is sealed with a lid (ceramic with epoxy, combo, ceramic with glass, taped, or left open). A plasma clean is typically performed before lid attach.

What matters for design: Lid choice affects future access — a ceramic-with-glass lid allows optical inspection; a sealed lid does not. If a glass lid is selected, the glass type must also be specified. The plasma clean default is 3 min Ar plasma.