Silicon Projects
Your R&D Outsource
About Silicon Projects

Silicon Projects is a consulting company services, based in Heitersheim, in southern Germany. The company is composed of professionals associated with years of experience in the semiconductor industry.

The combination of experts in the semiconductors industry and in various technological sectors annexes, make Silicon Project a strategic R&D department in outsource, able to meet the demands of research and development for very complex projects with contents costs in line with the customers budget.
Primary Areas of R&D Activities

Technologies Development

- Existing customer technologies development with integration of new active or passive structures
- New technologies development in the existing customers R&D departments with new or existing processes

Process Integration of New Technologies

- Identify and resolve technical issues associated with the integration of key technology modules into existing process flows, or to resolve global integration issues with entirely new processes

Electrical Characterization and Applications

- Dynamic and static characterizations for Mos and Bipolar devices with model extraction
- RF application study and parametric characterizations
Primary Areas of R&D Activities

Technical Advisory Boards

- Provide guidance and advice on new product development
- Identify new product opportunities based on current technical trends
- Provide silicon processing expertise

Advising High-Tech Start-Ups

- Integration of new products into the fab environment
- Managing new product qualification experiments
- Researching related technologies and patent histories and writing report summaries of these technologies
- Writing detailed marketing reports that define the targeted market segment for new products
Primary Areas of R&D Activities

Pre-Qualification of Semiconductor Fabrication Facilities

- World-wide on-site inspections of foundry fabrication facilities to determine their suitability for client processes
- Client qualification of foundry procedures, documentation, training and maintenance practices

Technology Transfers

- Management of key technology process transfers from R&D into high volume in-house production, or into offshore foundry production
- Coordinate and manage the technology transfer team to ensure effective communication between the principle players, and to ensure that a successful and timely technology transfer occurs
Primary Areas of R&D Activities

Yields Improvement and Processes Consolidation

- Improvement and consolidation of production yields of existing customer technologies and products
- Process trend analysis and process stability improvement
- Solve Reliability issues
The "System Access Gates" is the evaluation system used in Silicon Projects to determine, classify and plan the level and type of R&D activities required by the customers projects. The use of "System Access Gates" identify the level of maturity of the research and development project and all activities necessary in the course of the project, including investments and related costs, also its allows the management to plan all activities related to the project with milestones and time line, and give the clear view of the time needed to achieve the results and a schedule of all related activities.
The System Access Gates Steps

1. Customer Request → Evaluation and Proposal
2. Evaluation and Proposal → Project Start
3. Project Start → Access Gate A
4. Access Gate A → Gate A Activities
5. Gate A Activities → Deliverables Gate A
6. Deliverables Gate A → Customer Decision go Gate B
7. Customer Decision go Gate B → Project Start
8. Project Start → Access Gate B
9. Access Gate B → Gate B Activities
10. Gate B Activities → Deliverables Gate B
11. Deliverables Gate B → Customer Decision go Gate C
12. Customer Decision go Gate C → Project Start
13. Project Start → Access Gate C
14. Access Gate C → Gate C Activities
15. Gate C Activities → Deliverables Gate C
16. Deliverables Gate C → Customer Decision go Gate D
17. Customer Decision go Gate D → Project Start
18. Project Start → Access Gate D
19. Access Gate D → Gate D Activities
20. Gate D Activities → Deliverables Gate D
21. Deliverables Gate D → Customer Decision go Gate E
22. Customer Decision go Gate E → Project Start
23. Project Start → Access Gate E
24. Access Gate E → Gate E Activities
25. Gate E Activities → Deliverables Gate E
26. Deliverables Gate E → Project Review
27. Project Review → Customer Final Evaluation
28. Customer Final Evaluation → Project End
Gates Levels

1) Gate A Project Proposal "Customer Approach"

2) Gate B Feasibility Study "Customer Technology Evaluation"

3) Gate C Process/Design Development "Customer 1st Demo/Engineering Samples"

4) Gate D Process/Design Consolidation "Reliability Test and Yield improvement"

5) Gate E Production Yields Improvement "Process Route Integration"
R&D Outsourcing System Access Gates

Gate A Access

Project Proposal

Stage N.1) Customer Contact and Request Analysis
Stage N.2) Gate A Access Agreement
Stage N.3) Patents Infringement and Known Art Analysis
Stage N.4) Project Proposal Analysis Report
Stage N.5) Gate A Report
Gate B Access

Feasibility Study

Stage N.1) Target Definition
Stage N.2) Customer Technology/Design Review
Stage N.3) Customer Equipments/Processes Review
Stage N.4) PFMEA and DFMEA Analysis
Stage N.5) Risks Assessment
Stage N.6) Proposal Solution
Stage N.7) Gate B Report
R&D Outsourcing System Access Gates

Gate C Access

Process/Design Development

Stage N.1) Project Plan Release
Stage N.2) Process/Structures Simulations
Stage N.3) Process Setup
Stage N.4) Silicon Trials
Stage N.5) Processes Fine Tuning
Stage N.6) Demo/Engineering Samples Availables
Stage N.7) Gate C Report
R&D Outsourcing System Access Gates

Gate D Access

Process/Design Consolidation

Stage N.1) Process Route and Design Review
Stage N.2) PFMEA and DFMEA Analysis and Implementation
Stage N.3) Design Consolidation
Stage N.4) Silicon Trials
Stage N.5) Reliability Tests and Electrical Characterization
Stage N.6) Qualification Samples Availables
Stage N.7) Gate D Report
R&D Outsourcing System Access Gates

Gate E Access
Production Yields Improvement

Stage N.1) Yields Analysis
Stage N.2) Design and Process Route Analysis
Stage N.3) PFMEA and DFMEA Review
Stage N.4) Yields Prediction / Estimation
Stage N.5) Silicon Trials
Stage N.6) Final Yields Analysis
Stage N.7) Gate E Report and Final Project Review
Silicon Technologies

Power MosFet Technologies / Processes

- Planar DMos
- Cool MOS
- Trench MOSFET
- Shielded Gate Trench -MOSFET
- High Voltage
- Medium Voltage
- Low Voltage
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IGBT Technologies / Processes

- Planar PT
- Planar NPT
- Planar FS (Soft Punch-Through)
- Trench FS (Soft Punch-Through)
- IEGT (Injection Enhancement Gate Transistor)
- Voltage Classes from 400V to 3500V
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Schottky Diodes Technologies / Processes

- Low Leakage Barriers
- Low Vf Barriers
- Hot Leakage
- High ESD Capability
- High Surge Current Capability
- SiC JBS Diodes
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Diodes Technologies / Processes

- Standard 50 – 2500V
- Fast <500ns trr
- Ultrafast <200ns trr
- Ultrafast Soft Recovery <50ns trr
- Superfast Soft Recovery <15ns trr
- Zener 2 - 400V
- TVS Unidirectional 2 - 400V
- TVS Bidirectional 2 – 400V
- Current Limited Diode
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Bipolar Power Transistor & Thyristor Technologies / Processes

- Planar BJT
- Mesa BJT
- Epitaxial BJT
- Triple Diffused BJT
- Deep Base BJT
- ESBT (Emitter Switching Bipolar Transistor)
- MOS-GTO (Monolithic Cascode between a L.V. N-Ch MosFet and HV GTO)
- MCT (Mos Controlled Thyristor)
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ICs Technologies / Processes

- CMOS 90nm FEOL – BEOL 9M
- CMOS 120nm FEOL – BEOL 9M
- BCD FEOL – BEOL 5M
- HSB FEOL – BEOL 5M
- CMOS Metal Gate 3M
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Bumping Technologies / Processes

- WLP with RDL 50 – 500um Bumping
- IBM C4 with RDL 300 – 500um Bumping
- TSV 3D Packaging Technology
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Packages Technologies / Processes

- SOT223
- SC-70 Family
- SC-59 Family
- TO220
- TO247
- D2Pack
- SO8
- SOT457
For more information about our activities and services contact us, we'll be happy to give you more detailed information for a possible future cooperation.

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