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Product Development Tips

As an experienced MEMS manufacturer, Micralyne is aware of the many challenges and drawbacks that appear during the early stages of product development. Over the years, project managers at Micralyne have learned a variety of lessons to minimize these risks. Listed below are several tips Micralyne would like to share.

- Each MEMS foundry has its own technologies and processes that make up its core competencies. Find a foundry that has a rich history in producing the type of device and features desired. You will shorten your time-to-market and increase quality of both initial prototypes and products in manufacturing.
- Design for test and packaging. Testing, QA (Quality Assurance) and packaging issues can be a large portion of the fabrication expense and are often ignored during the early stages of product development. Addressing these issues up front will reduce both development and ongoing fabrication costs.
- Run tolerance tests to find out what specifications are absolutely paramount and what specifications can be relaxed. An over specified device will be needlessly expensive to produce.
- Bring the foundry into the design process as early as possible. The earlier you involve the foundry, the easier it is to create a manufacturable design.
- Be clear and specific about requirements. Keep the engineering as simple as possible and do not be afraid to ask for what you want. If you do not ask, you may not get it.
- Do not underestimate the time and expense required to develop a stable design and process. Unlike cases in the fabless semiconductor industry, it may take more than a single run to get a product to meet specifications. Usually a foundry runs a combination of short loop experiments, prototyping, and engineering runs before transferring products to manufacturing.
- Plan to succeed. In consultation with your foundry, set achievable goals in terms of price, delivery time, or quality. Getting input early from a foundry will allow you to prepare more realistic budgets and timelines that you will need to secure financing commitments.
- As much as possible, use standard known microfabrication process steps with achievable tolerances. If the foundry needs to develop several new process steps, you will have higher development costs and lower yields during initial manufacturing. At the same time, the onus is on your foundry to supply you with repeatable and reliable processes that you can design to.

- Design for manufacturability. Sometimes designers force a process beyond its capabilities to achieve results. If fundamental process limits are being tested in several areas of the product, yields and repeatability will be lower. The design will most likely need to be modified in order for the product to meet required specifications.
- Think about whether the device can be transferred into commercial production. A complex MEMS device that represents a novel technical solution may be very difficult to manufacture at a high volume or at a reasonable cost.

By taking these suggestions into account, you can improve the efficiency and effectiveness of MEMS product development. Ensure that both the developer and foundry are working together with the same level of expectations. This will decrease your product time-to-market and ease the process of getting a design successfully transferred to a manufacturing environment.