

# TELEDYNE HASTINGS

## APPLICATION NOTES

# INSTRUMENTS

**GOAL:** Accurately Control Gases During Dopant Process

**SOLUTION:** Teledyne Hastings Instruments Metaline HFC-302  
Mass Flow Controller



A company that specializes in silicon devices used by the military needed the right mass flow controller to control a critical aspect of its manufacturing process. The technology yields a perfect doping contour by “growing” a specific epi profile. To create the exact profile needed, precise amounts of n-type dopant (in this particular application, phosphine in a hydrogen carrier gas) must be delivered along with other important gases. During the epitaxial run, a computer increases and decreases the dopant concentration over many layers. The wafer is then heated to 1100 degrees centigrade and resides in an above atmospheric pressure epi reactor.

Teledyne Hastings Metaline mass flow controller, the Model HFC-302, provided the ideal solution to ensure the accurately control gases required during the dopant process. The HFC-302 series was chosen both for its precise control and for its all-metal seals, a critical feature when using this level of hazardous gases. The customer also chose Teledyne Hastings for its excellent technical support and service, provided through the company’s local representative IES Technical Sales Division.