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Chapter 3

MEMS

Different methods of determining parameter ranges for silicon wafer batches in manufacturing settings include LSE (least-squares estimation, end-point method). LSE uses a lot of different data points, but end-point just uses three points; zero, mid-scale, and full-scale. This lends itself better to high-volume testing because it yields results that are approximately double LSE. Thus, when you use end-point values for error budget calculations the results will not be as conservative, and output a broader range of output values.

Hall effect sensors produce an output that is directly proportional to the strength of a measured magnetic field. Consider a current that is applied to a thin strip of metal – when exposed to a magnetic field perpendicular to the flow of current, the charge carriers are deflected. This creates a difference in electric potential (we can also call this a voltage drop). This voltage drop is called the Hall voltage, and in a Hall effect sensor it is proportional to the strength of the magnetic field. Externally mounted cylinder limit switches are hall sensors.

Piezoresistive versus Piezoelectric? Piezoelectric sensors produce a change in electrical charge when force is applied across the face of a crystal, ceramic, or piezoelectric film. Piezoresistive (TODO)