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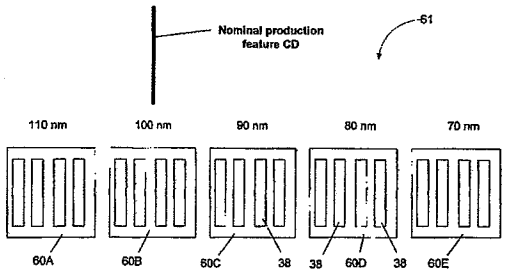
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(54) Title: METHOD AND STRUCTURE FOR CALIBRATING SCATTEROMETRY-BASED METROLOGY TOOL USED TO MEASURE DIMENSIONS OF FEATURES ON A SEMICONDUCTOR DEVICE




(57) Abstract: The present invention is generally directed to a method and a structure for calibrating a scatterometry-based metrology tool (74) used to measure dimensions of features on a semiconductor device. In one illustrative embodiment, the method comprises measuring a critical dimension of at least one production feature formed above a wafer (31) using a scatterometry tool (74), measuring at least one of a plurality of grating structures (60) formed above the wafer (31) using the scatterometry tool (74), each of the grating structures (60) having a different critical dimension, and correcting the measured critical dimension of the at least one production features based upon the measurement of the at least one grating structure (60). In further embodiments, the method comprises forming a plurality of production features above a wafer (31), forming a plurality of grating structures (60) above the wafer (31), each of the grating structures (60) comprised of a plurality of features (38A) each having a target critical dimension that thereby defines a critical dimension of the grating structure (60), each of the grating structures (60) having a different critical dimension, measuring a critical dimension of at least one of the production features using a scatterometry tool (74), measuring at least one of the grating structures (60) using the scatterometry tool (74) to determine a measured critical dimension of at least one feature of the at least one grating structure (60), and correcting the measured critical dimension of the at least one production features based upon a comparison between the measured critical dimension of the at least one feature (38A) on the at least one grating structure (60) and the target critical dimension of the feature (38A) on the at least one grating structure (60).

WO 03/081662 A1