SELF-BIASED DUAL SPIN VALVE SENSOR

ABSTRACT

A dual spin valve (DSV) magnetoresistive (MR) sensor (500) is disclosed having a free magnetic layer (552) disposed between first (540) and second (556) pinned magnetic layers. First pinned layer has two magnetic sublayers separated from each other by an antiparallel spacer (544). The first magnetic sublayer (546) closer to the free layer has a magnetic moment which is smaller than the magnetic moment of the second magnetic sublayer (542). The net moment of the magnetic sublayers is chosen to be equal to the magnetic moment of the second pinned layer thus creating a flux closure and substantially minimizing the effect of the demagnetizing forces. By creating a flux closure and current induced magnetic fields, the first and second pinned layers' magnetization are fixed. This is in contrast with conventional dual spin valve sensors (200) using two antiferromagnetic layers (225, 235) to pin the magnetization of the pinned layers (220, 230).

Fig. 5

This Sheet Has Been Replaced

