ABSTRACT

ANTIPARALLEL (AP) PINNED SPIN VALVE SENSOR WITH GIANT MAGNETORESISTIVE (GMR) ENHANCING LAYER

The present invention is an external field stabilized, and near zero magnetoresistive double spin valve sensor (800) with giant magnetoresistive (GMR) enhancing (852, 854) antiparallel pinned (802) and sense current field pinned (842) layers. In order to enhance the spin dependent scattering, first and second GMR enhancing layers (852, 854) are employed. Further, in order to double the spin valve effect, a sense current field (SCF) pinned layer (842) is employed which is pinned in the same direction as the second film (810) of the AP pinned layer (802). In the preferred embodiment all of the magnetic layers are constructed of cobalt iron ($Co_{90}Fe_{10}$) so that their magnetic moments are returned to their original positions after the occurrence of an external field. Further, the cobalt iron ($Co_{90}Fe_{10}$) has near zero magnetostriction so that stress induced anisotropy does not alter the magnetic properties of these layers.

Fig.17