This Sheet Has Been Replaced

BIASING FOR TUNNEL JUNCTION HEAD

ABSTRACT

A tunnel junction sensor (200) with a track width area which balances a ferromagnetic coupling field (251) with an opposed tunneling sense current field (257) generated by a tunneling sense curent(I_t) to achieve biasing of the magnetic moment (255) of the free layer (220) in a tunnel junction head. The ferromagnetic coupling field (251) is generated in the same direction as the magnetic moment (250) of the pinned layer (210) which is in close proximinity to the free layer (220). To bias the magnetic moment (255) of the free layer (220) in the desired direction, the tunneling sense current (I_t) is directed in the plane of the conductive layer in such a direction parallel to the ABS to create a tunneling sense current field antiparallel to the ferromagnetic coupling field (251). By balancing these two opposed fields, the orientation of the magnetic moment (255) of the free layer (220) may be oriented perpendicular to the orientation of the magnetic moment (250) of the pinned layer (210).

FIG 12