

**SPIN VALVE SENSOR WITH PINNED LAYER AND
ANTIPARALLEL (AP) PINNED LAYER STRUCTURE
PINNED BY A SINGLE PINNING LAYER**

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ABSTRACT OF THE DISCLOSURE

A spin valve sensor includes an antiferromagnetic pinning layer which is located between and is exchange coupled to a single pinned layer and an antiparallel (AP) pinned layer structure and a nonmagnetic electrically conductive spacer layer which is located between and interfaces the single pinned layer as well as a free layer structure. With this arrangement an antiparallel coupling layer, which is typically ruthenium, and a second AP pinned layer in the AP pinned layer structure are remotely located from the spacer layer so that the antiparallel coupling layer and the second AP pinned layer do not degrade the magnetoresistive coefficient dr/R of the spin valve sensor.

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