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(54) **PERPENDICULAR SHAPE ANISOTROPY
DESIGN WITH REDUCED AEX**

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ABSTRACT

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A perpendicular shape anisotropy magnetic tunnel junction structure includes a reference layer, a non-magnetic layer, and a free layer. The reference layer includes a first side and a second side that is opposite the first side of the reference layer. The non-magnetic spacer includes a first side and a second side in which the first side of the non-magnetic spacer is on the second side of the first reference layer. The free layer includes a first side and a second side in which the first side of the free layer is on the second side of the non-magnetic spacer and in which the free layer further includes an exchange energy A_{ex} having a range of 0.5 to 1.0 $\mu\text{erg}/\text{cm}^2$.

