

A SELF-SELECTIVE MULTI-TERMINAL MEMTRANSISTOR FOR CROSSBAR ARRAY CIRCUITS

Field of the Invention

This disclosure describes a self-selective multi-terminal memtransistor suitable for use in crossbar array circuits. In particular, the memtransistor comprises a sapphire substrate that has a single-layer of polycrystalline molybdenum disulphide (MoS₂) thin film formed on the surface of the substrate, wherein the MoS₂ thin film comprise MoS₂ grains that are oriented along terraces provided on the surface of the substrate. The memtransistor has a drain electrode and a source electrode that is formed on the MoS₂ thin film such that a channel is defined in the MoS₂ thin film between the drain and source electrodes, and a gate electrode formed above the channel, whereby the gate electrode is isolated from the channel by a gate dielectric layer.

FIGURE 1