

MAGNETORESISTIVE READ/INDUCTIVE WRITE MAGNETIC HEAD
ASSEMBLY FABRICATED WITH SILICON ON HARD INSULATOR FOR
IMPROVED DURABILITY AND ELECTROSTATIC DISCHARGE PROTECTION
AND METHOD FOR MANUFACTURING SAME

ABSTRACT

A magnetoresistive read/inductive write magnetic head assembly formed on a hard electrically insulating substrate (52) and having electrostatic discharge protection comprises: a hard electrically insulating substrate (52), preferably formed of sapphire or alumina-TiC; multiple alumina layers (54) formed over the substrate (52); a magnetoresistive read/inductive write head (56) positioned between the alumina layers (54); a silicon layer (58) supported by the substrate (52); and a semiconducting circuit (60) integrated into the silicon layer (58) and interconnected with said magnetoresistive read/write inductive write head (56) to provide electrostatic discharge protection to the head (56). The silicon layer (58) may be epitaxially grown on the substrate (52) when implemented as sapphire, or bonded to the substrate (52) when implemented as alumina-TiC. The hard electrically insulating substrate (52) and alumina layers (54) provide the assembly with a hard air bearing surface (62) having generally uniform lapping and etching characteristics, and excellent durability.

Fig. 4

This Sheet Has Been Replaced

