

DIFFERENTIAL VOLTAGE-MODE DRIVER FOR MICROWAVE-ASSISTED MAGNETIC RECORDING

ABSTRACT

This disclosure describes an apparatus that enables rapid transitions during microwave-assisted magnetic recording (MAMR) of storage media. In various aspects, the apparatus incorporates a driver circuit configured to provide a controlled bias current through separate source and sink output terminals, which respond to feedback signals. An MAMR sensor connects between the source and sink output terminals and generates microwave fields when receiving the controlled bias current from the driver circuit. A common-mode feedback (CMFB) loop connects to the source and sink output terminals, detects common-mode voltage (CMV), and delivers feedback signals to the driver circuit to maintain CMV regulation of the MAMR sensor. A differential voltage regulation loop connects to the source and sink output terminals, providing feedback signals that maintain the MAMR sensor voltage differential at a reference value. The apparatus controls the magnetic recording process of the MAMR sensor with rapid transition times.

Fig. 1