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Laser Diode for DVD Pickup Head

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Abstract

General requirements of AlGaInP/InGaP laser diode (LD) for digital versatile disk (DVD) optical pick-up head application, such as wavelength, output power, astigmatism, mode profile, and relative intensity noise will be discussed in this paper. Several efforts which have been made to develop AlGaInP/InGaP laser diodes suitable for DVD application will be reviewed. To record or erase signals in a DVD system, an output power of about 30 mW from AlGaInP/InGaP laser diode is required. Several methods which were proposed to increase catastrophic optical damage level will also be reviewed. Several methods which were proposed to increase catastrophic optical damage (COD) level will also be reviewed. A low-power 650-nm-band AlGaInP/InGaP laser diode utilizing double-channel ridge waveguide structure has been developed at OES/ITRI. Good characteristics of this laser diode such as very low operation current, small astigmatism, and stable fundamental transverse mode operation at a power level of more than 10 mW were obtained. A hybrid optical pick-up head utilizing this laser diode was incorporated in a commercial DVD-video player and functioned with a very good quality.