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Shou

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(54) **POLARIZATION-MAINTAINING OPTICAL ISOLATOR**

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359/497

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,727,109 A * 3/1998 Pan et al. 385/140

6,178,044 B1 * 1/2001 Li et al. 359/484
6,587,266 B1 * 7/2003 Tai et al. 359/484
2003/0090796 A1 * 5/2003 Tai et al. 359/484
2004/0184148 A1 * 9/2004 Chang et al. 359/497

* cited by examiner

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(57) **ABSTRACT**

The application discloses an optical isolator having an input and an output, the optical isolator comprising a phase retardation plate positioned at the input, and an optical rotator positioned between the phase-retardation plate and the output, the isolator comprising a Faraday rotator positioned between a first polarizer and a second polarizer. The application also discloses a process comprising rotating a polarization of an optical signal using a phase retardation plate, and following the rotation of the polarization of the optical signal using a phase retardation plate, further rotating the polarization of the optical signal using an optical rotator.

22 Claims, 4 Drawing Sheets

