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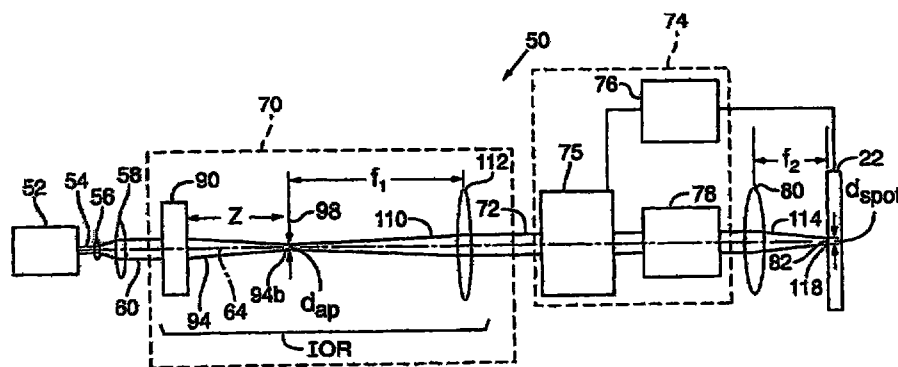
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(54) Title: BEAM SHAPING AND PROJECTION IMAGING WITH SOLID STATE UV GAUSSIAN BEAM TO FORM VIAS



(57) Abstract: A diode-pumped, solid-state laser (52) of a laser system (50) provides ultraviolet Gaussian output (54) that is converted by a diffractive optical element (90) into shaped output (94) having a uniform irradiance profile. A high percentage of the shaped output (94) is focused through an aperture of a mask (98) to provide imaged shaped output (118). The laser system (50) facilitates a method for increasing the throughput of a via drilling process over that available with an analogous clipped Gaussian laser system. This method is particularly advantageous for drilling blind vias (20b) that have better edge, bottom, and taper qualities than those produced by a clipped Gaussian laser system. An alternative laser system (150) employs a pair of beam diverting galvanometer mirrors (152, 154) that directs the Gaussian output around a shaped imaging system (70) that includes a diffractive optical element (90) and a mask (98). Laser system (150) provides a user with the option of using either a Gaussian output or an imaged shaped output (118).

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