A cutting cell is used to increase the voltage to the same area. In this study, we fabricated c-Si cutting cell using picosecond laser and analyzed electrical and structural characteristics. For cell cutting, surface damage is required. The conditions of the picosecond laser were changed. These conditions were wavelength, power, speed and frequency. The laser power was varied from 10-40% and the speed was varied from 100-400 mm/s. The number of times was fixed at 1. In the case of the IR wavelength, there are few surface defects and thermal damage at the laser power of 15%, the speed of 200 mm/s. In the case of green wavelength, we obtained the lowest surface damage at the power of 35% and the speed of 400 mm/s. The output power of 35%, speed of 400mm/s in case of UV wavelength. Cell cutting was not performed for green and UV wavelength conditions despite excellent surface characteristics of damage. Excellent surface characteristics and cell cutting were achieved at over 30% of the wafer thickness. The process was performed by changing the number of lasers from 1-10 at the IR wavelength to optimize the conditions. As a result, 36% of the wafer was cut at the power of 40%, the speed 100mm/s and an IR wavelength of 10 times representing 62.026 μm out of a cell thickness of 170 μm. A cutting cell using a picosecond laser can be applied to PV systems.

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