WHAT IS CLAIMED IS:

1. A method of processing a wafer along a grid of projected dicing lines thereon, the wafer including a substrate and a functional layer disposed on a face side of the substrate, the functional layer including a plurality of devices disposed in respective areas demarcated by the projected dicing lines, the method comprising:

a first processed groove forming step of applying a laser beam to the wafer from a face side thereof along the projected dicing lines to form first processed grooves in the functional layer;

after the first processed groove forming step, a masking protective film forming step of forming a masking protective film covering the face side of the wafer and filling the first processed grooves;

after the masking protective film forming step, a second processed groove forming step of applying a laser beam to the wafer along the first processed grooves to form second processed grooves that are narrower than the first processed grooves, exposing the substrate through the second processed grooves, wherein the laser beam ablates portions of the masking protective film on bottom surfaces of the first processed grooves, removing said

portions to form the second processed grooves, and wherein the laser beam is applied to transversely central portions of the first processed grooves to form the second processed grooves; and

after the second processed groove forming step, a plasma etching step of carrying out plasma etching on the wafer along the second processed grooves using the masking protective film as a mask,

wherein the laser beam applied in the second processed groove forming step has a smaller output level than the laser beam applied in the first processed groove forming step, and wherein an energy density of one spot of the laser beam applied in the second processed groove forming step is lower than an energy density of one spot of the laser beam applied in the first processed groove forming step.

2. The method of processing a wafer according to claim 1, wherein the plasma etching step includes the step of dividing the wafer into a plurality of device chips including the respective devices.

3. The method of processing a wafer according to claim 1, further comprising:

before the first processed groove forming step, a first protective film forming step of forming a first

protective film on the face side of the wafer; and

after the first processed groove forming step, a first protective film removing step of washing away the first protective film.

4. The method of processing a wafer according to claim 1, wherein the first processed grooves have respective widths that are identical to each other, and the second processed grooves have respective widths that are identical to each other.

5. The method of processing a wafer according to claim 4, wherein the wafer includes metal parts disposed on the face side thereof at the projected dicing lines, the first processed grooves being wider than the metal parts.