WHAT IS CLAIMED IS:

1. A wafer processing method of dividing a wafer into individual device chips, the wafer having a device layer being stacked on a front surface of a semiconductor substrate, the device layer having a plurality of devices individually formed in a plurality of regions partitioned by a plurality of crossing division lines on a front surface of the wafer, the wafer processing method comprising:

a cut groove forming step of positioning a cutting blade on the front surface of the wafer, and cutting the device layer along each of the division lines to form a cut groove of a depth that is less than a thickness of the device layer such that a portion of the device layer remains between a base of the cut groove and the front surface of the semiconductor substrate, wherein a thickness of the portion of the device layer that remains between the base of the cut groove and the front surface of the semiconductor substrate is approximately 10 μm;

a modified layer forming step of positioning a focal point of a laser beam having a transmission wavelength to the semiconductor substrate inside an area of the semiconductor substrate corresponding to a predetermined one of the division lines and applying the

laser beam to the wafer from a back surface of the wafer, thereby forming a plurality of modified layers inside the wafer along all of the division lines;

a protective member providing step of providing a protective member on the front surface of the wafer before or after the modified layer forming step is carried out; and

a dividing step of holding the wafer on a chuck table in a condition in which a front surface side of the wafer provided with the protective member is placed on the chuck table, grinding the back surface of the wafer to be thinned, wherein the grinding causes a crack to grow from each of the modified layers formed inside the area of the semiconductor substrate corresponding to the predetermined one of the division lines to the front surface side of the wafer, thereby dividing the wafer into individual device chips, wherein the grinding of the dividing step is performed after performing the modified layer forming step.

2. The wafer processing method according to claim 1, further comprising:

a frame supporting step of attaching a dicing tape on the back surface of the wafer, supporting the wafer through the dicing tape with an annular frame having an

opening for accommodating the wafer therein, and peeling off the protective member from the front surface of the wafer, after the dividing step is carried out.

3. The wafer processing method according to claim 2, further comprising:

a pickup step of expanding the dicing tape to increase each interval between any adjacent ones of the individual device chips, and picking up each of the device chips after the frame supporting step is carried out.