CLAIMS:

1. A method for growing a single crystal silicon ingot in a continuous Czochralski process, the method comprising:

forming a melt of silicon in a crucible assembly;

adding a batch of buffer members to the melt, the buffer members being made of quartz, the batch having a mass M;

contacting a surface of the melt with a seed crystal;

withdrawing a single crystal silicon ingot from the melt, the single crystal silicon ingot comprising a main body, there being a time T between adding the batch of buffer members to the melt and start of growth of the main body;

controlling the ratio of M/T to be greater than 40 grams per hour to reduce void counts in wafers sliced from the single crystal silicon ingot; and

adding solid polycrystalline silicon feedstock to the crucible assembly while withdrawing the single crystal silicon ingot to replenish the melt.

2. The method as set forth in claim 1 wherein the ratio of M/T is controlled to be greater than 50 grams per hour or greater than 55 grams per hour.

3. The method as set forth in claim 1 wherein the ratio of M/T is controlled to be greater than 60 grams per hour.

4. The method as set forth in any one of claims 1 to 3 wherein the ratio of M/T is controlled to be less than 250 grams per hour.

5. The method as set forth in any one of claims 1 to 4 wherein the buffer members are quartz cullets.

6. The method as set forth in any one of claims 1 to 5 wherein the batch of buffer members is a first batch and the single crystal silicon ingot is a first crystal silicon ingot, the method comprising:

terminating growth of the first single crystal silicon ingot;

adding a second batch of buffer members to the melt, the second batch having a mass M_2;

contacting a surface of the melt with a seed crystal; and

withdrawing a second single crystal silicon ingot from the melt, the second single crystal silicon ingot comprising a main body, there being a time T_2 between adding the second batch of buffer members to the melt and start of growth of the main body, wherein the ratio of M_2/T_2 is controlled to be greater than 40 grams per hour to reduce void counts in wafers sliced from the second single crystal silicon ingot.

7. The method as set forth in any one of claims 1 to 6 wherein the crucible assembly comprises a weir and a sidewall that define an outer melt zone between the weir and the sidewall, the batch of buffer members being added to the outer melt zone.

8. The method as set forth in any one of claims 1 to 7 wherein the melt of silicon in the crucible assembly

is formed by adding an initial charge of solid polycrystalline silicon to the crucible assembly, the method comprising:

adding a batch of buffer members to the initial charge of solid polycrystalline silicon; and

melting the initial charge of solid polycrystalline silicon with the buffer members being disposed therein.

9. The method as set forth in any one of claims 1 to 8 wherein the buffer members are less dense than the melt of silicon such that the buffer members float within the melt.

10. A method for determining a threshold ratio of M/T for growing a single crystal silicon ingot in a continuous Czochralski process that includes forming a melt of silicon in a crucible assembly, adding a batch of buffer members to the melt with the batch having a mass M, the buffer members being made of quartz, contacting a surface of the melt with a seed crystal, withdrawing a single crystal silicon ingot from the melt, the single crystal silicon ingot comprising a main body, there being a time T between adding the batch of buffer members to the melt and start of growth of the main body, and adding solid polycrystalline silicon feedstock to the crucible assembly while withdrawing the single crystal silicon ingot to replenish the melt, the method comprising:

growing a plurality of single crystal silicon ingots with at least two of the ingots being grown with different ratios of M/T;

measuring a defect count in one or more wafers sliced from the plurality of single crystal silicon ingots; and

determining the ratio of M/T for single crystal silicon ingots from which wafers were sliced having a defect count below a threshold defect count.