embodiment of the present disclosure.

[0008] Figure 4A illustrates a plan view from the metallization side of a solar cell that has been diced into four parallel connected sub-cells, in accordance with an embodiment of the present disclosure.

[0009] Figure 4B illustrates a plan view from the metallization side of another solar cell that has been diced into four parallel sub-cells, in accordance with another embodiment of the present disclosure.

[0010] Figure 5A illustrates a plan view from the metallization side of a solar cell that has been diced into two sub-cells in a parallel arrangement, in accordance with an embodiment of the present disclosure.

[0011] Figure 5B illustrates a plan view from the metallization side of a solar cell that has been diced into two sub-cells in an in series arrangement, in accordance with an embodiment of the present disclosure.

[0012] Figure 5C illustrates a plan view from the metallization side of a solar cell that has been diced into six sub-cells in a series arrangement, in accordance with an embodiment of the present disclosure.

[0013] Figure 5D illustrates a plan view from the metallization side of a solar cell that has been diced into ten sub-cells in a series arrangement, in accordance with an embodiment of the present disclosure.

[0014] Figure 6 illustrates a representative example of cell singulation considerations and approaches, in accordance with one or more embodiments of the present disclosure.

[0015] Figure 7 illustrates three possible pathways for laser scribing for singulation of a solar cell to form sub-cells, in accordance with an embodiment of the present disclosure.

[0016] Figure 8 is a flowchart representing operations in a method of fabricating a solar cell using singulation to form sub-cells, in accordance with an embodiment of the present disclosure.

[0017] Figure 9 is a flowchart representing operations in another method of fabricating a solar cell using singulation to form sub-cells, in accordance with another embodiment of the present disclosure.

SUMMARY

[0017a] According to an aspect, a solar cell is provided comprising a plurality of sub-cells, each of the sub-cells comprising a singulated and physically separated semiconductor substrate portion, wherein adjacent ones of the singulated and physically separated semiconductor substrate portions have a groove there between; and

a monolithic metallization structure, wherein a portion of the monolithic metallization structure couples ones of the plurality of sub-cells, wherein the groove between adjacent ones of the singulated and physically separated semiconductor substrate portions exposes a portion of the monolithic metallization structure.

[0017b] According to another aspect, a method of fabricating a solar cell is provided, comprising:

forming a metallization structure on a first surface of a semiconductor substrate; and scribing the semiconductor substrate from a second, opposite, surface of the semiconductor substrate, the scribing stopped by and exposing portions of the metallization structure from the second surface.

[0017c] According to an aspect, a method of fabricating a solar cell including a semiconductor substrate having a first surface, the method comprising:

forming an interconnect between at least two sub-solar cells of the solar cell directly on the first surface of the semiconductor substrate to provide an electrical inter-cell connection there between before dicing the semiconductor substrate up to the first surface to physically isolate the at least two sub-solar cells.

DETAILED DESCRIPTION

[0018] The following detailed description is merely illustrative in nature and is not intended to limit the embodiments of the subject matter or the application and uses of such embodiments. As used herein, the word "exemplary" means "serving as an example, instance, or illustration." Any implementation described herein as exemplary is not necessarily to be construed as preferred or advantageous over other implementations. Furthermore, there is no intention to be bound by any expressed or implied theory presented in the preceding technical field, background, brief summary or the following detailed description.