## CLAIMS

1. A method for preparing a main-gate-free and high-efficiency back-contact solar cell assembly, comprising the following steps:

step 1 of preparing solar cell modules: straightening and tightening a number of parallel leads, and electrically connecting each of the leads to P-electrodes and N-electrodes located on the back of a cell; disposing P-busbar electrodes and N-busbar electrodes on two sides of an electrical connection layer to prepare solar cell modules;

step 2 of preparing a solar cell layer: electrically connecting the solar cell modules prepared in the step 1 by busbar electrodes to prepare a solar cell layer; and

step 3 of successively stacking and laminating fronting material, packaging material, a solar cell layer, packaging material and backing material to obtain a cell assembly;

characterized in that the cell and the lead in the step 1 are electrically connected by coating conductive adhesive on a P-type doping layer and a N-type doping layer on a cell by screen printing; the conductive adhesive, when heated, can be solidified to form the P-electrodes and the N-electrodes; and when heated, the lead and the P-electrodes or the N-electrodes come into Ohm contact by the conductive adhesive; or

characterized in that the cell and the lead in the step 1 are electrically connected by plating low-melting-point material on the lead by a plating process; when heated, the lead and the P-type doping layer or the N-type doping layer are welded by the melting of the low-melting-point material to form the P-electrodes and the N-electrodes, and in this way the lead and the cell are electrically connected; and the low-melting-point material is any one of tin solder, tin-lead alloy, tin-bismuth alloy or tin-lead-silver alloy.

2. The method for preparing a main-gate-free and high-efficiency back-contact solar cell assembly according to claim 1, characterized in that, in the heating process, a heating pad is used on a front side of the cell; and the heating temperature of the heating pad is 40°C to 80°C.

3. The method for preparing a main-gate-free and high-efficiency back-contact solar cell assembly according to claim 1, characterized in that the way of heating is any one or more of infrared radiation, heating by resistance wires or heating by hot wind; and the heating temperature is 150°C to 500°C

4. The method for preparing a main-gate-free and high-efficiency back-contact solar cell assembly according to claim 1, characterized in that the plating process is any one of hot dipping, electroplating or chemical plating.