2012-05-15

Product Information (English and Chinese)

SCHMID's Silver-Free Backside affords great Cost Reductions for Mass Production

- Industrial application of the SCHOTT patented system saves 6 US cent/wafer and increases efficiency by 0.2%.
- Problem-free integration in cell or module production lines
- Sales launch: May 2012

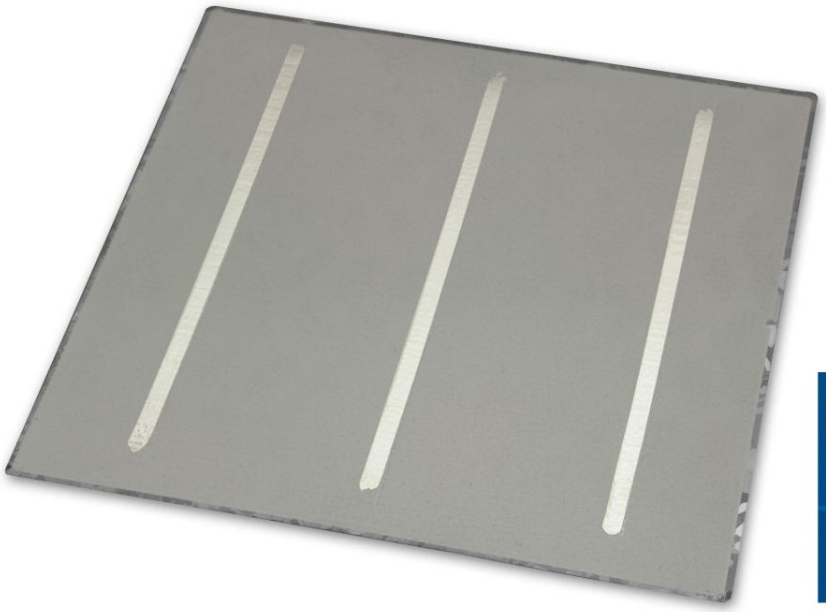

Abbildung 1: Silver-free backside with all-over aluminum backside and three tin busbars

The SCHMID Group announces their sales launch of a production-ready system for the industrial application of tin busbars on 6" cells. Delivery of the first TinPad systems is planned for September.

Silver is a critical cost factor in cell production. Tests to replace this material on the backside by tin which is comparatively much cheaper, have up till now been unsuccessful due to its insufficient adhesion to aluminum. Using the SCHOTT patented technology it is now possible to produce completely silver-free backside contacts with a peel-off strength which is twice as high as required. By using tin instead of the conventional silver/aluminum paste, savings of 6 US cent per wafer are achieved, which makes amortization of the investment possible in 7-9 months.

At the same time this new backside architecture increases the cell efficiency by approx. 0.2%, because openings of the aluminum backside are no longer required for the

busbars. The all-over back surface field thus increases the open circuit voltage which in turn boosts efficiency.

The first version of the TinPad system realizes a throughput of up to 2,880 wafers with an uptime of over 95% and is easy to integrate in existing cell production lines. Module manufacturers can also use this technology and thus increase their value chain.

About the SCHMID Group

The SCHMID Group provides highly efficient system and process solutions for the entire solar wafers, cells and modules supply chain. Starting with the single machine right up to the turnkey factory, including guaranteed performance parameters, such as production capacity and degree of efficiency. Innovative process technologies are developed at their own technology centers in partnership with universities and research facilities and are made ready for the market.

SCHMID welcomes you to the SNEC: 16th- 18th May 2012 in the E5 halls, Stand 560.

Further Information for Press Representatives

SCHMID will provide detailed information on the tin pad system at the IPVEA press conference during the SNEC in Shanghai: Wednesday, May 16 2012 at 14 h in the Kerry Hotel Pudong, Function Room 1, 1388 Hua Mu Road, Pudong, Shanghai 201204, China.

The tin pad system has been nominated for the Intersolar Award in the category of PV production technologies.

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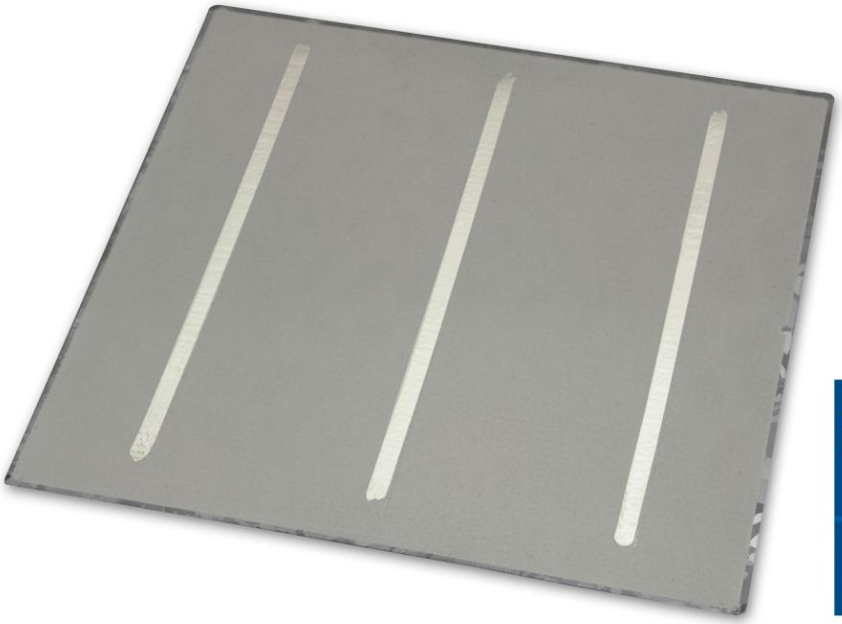
施密德无银后盖可降低大批量生产成本

将SCHOTT专门系统应用于工业生产，可节省6美分/片，且提高0.2%的性能。

元件和模块生产线无障碍整合。

开始销售日期：2012年5月



图一：全铝三锡母线无银后盖

施密德集团宣布开始销售适用于六英寸太阳能电池片的锡母线工业应用的已生产就绪的系统。计划于9月开始第一批锡板系统的运送。

在元件生产中银占有较大成本。相比而言锡则便宜得多。由于锡在铝表面附着力不够强，用锡替代银作为后盖的试验到目前为止还没有取得成功。现在应用SCHOTT专利技术，则可生产出完全不含银的、两倍于所要求的剥离强度的后盖。不再采用传统的银/铝粉浆，而转用锡，每生产一片产品则可节省6美分，这使得投资摊销周期缩减到7-9个月。

此外，这种新型后盖结构可提升0.2%的元件性能，因为不需再为汇流排打开铝制后盖。因此，后近面电场提高了开路电压，这样就可提高性能。

锡版系统的第一个版本产量为2880个元件，正常运行时间超过95%，且容易与现有元件生产线整合。模块生产商也可应用该技术以提高其价值链。

关于施密德集团

施密德集团为整条太阳能晶片、元件和模块供应链提供高效能系统和解决方案。服务从单个机器到全包工厂，提供包括所以性能参数，如产能和效能等级。本集团有自己的技术中心，并与高校和研究机构合作，研发创新性程序技术，为打开市场做好准备。

SCHMID欢迎您前往SNEC：2012年5月16-18日，E5展厅，560号展位。

为新闻界代表提供更多信息：

施密德集团将于上海SNEC展会期间在IPVEA新闻会议厅详细介绍锡板系统的详细信息：周三，2012年5月16日，14：00， 中国上海浦东，花木路1388号凯利酒店1号多功能室

该锡板系统被提名Intersolar Award PV产品奖项。

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