Silvertech HS

High speed Ag plating

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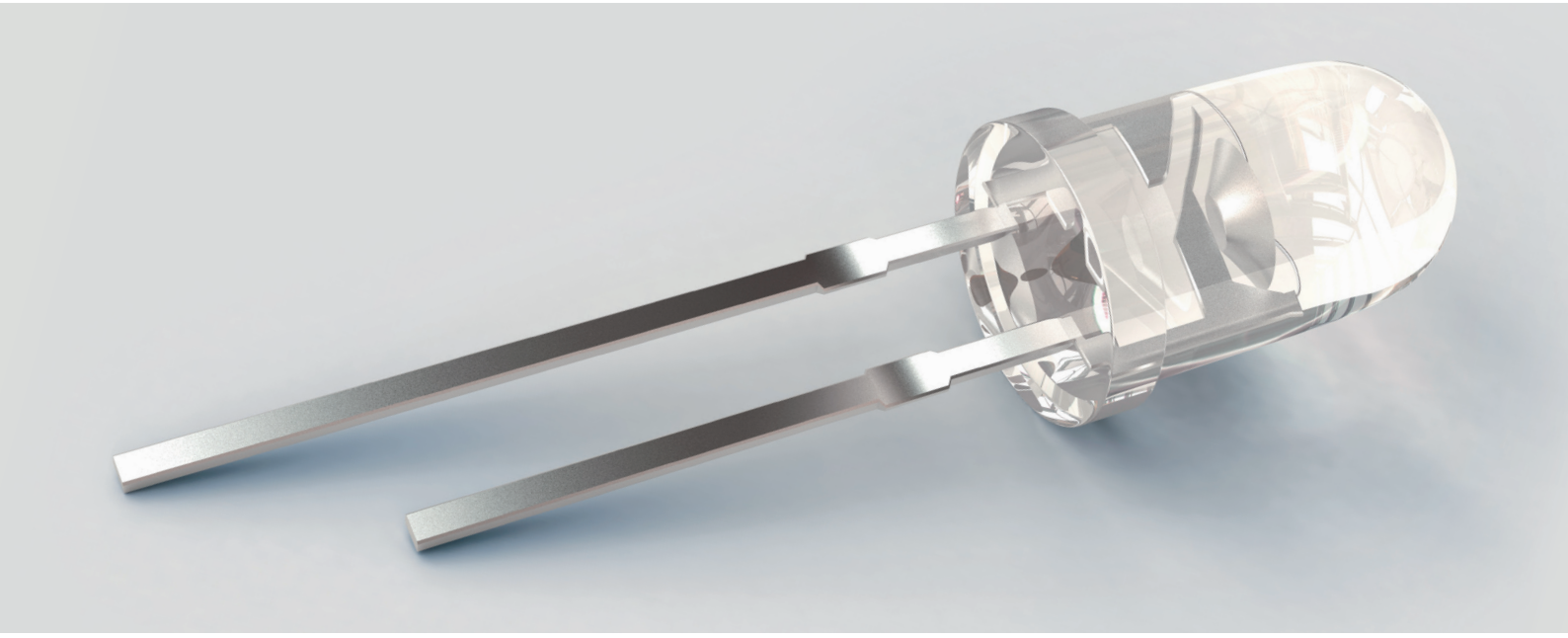

Silvertech HS
Brilliance and speed

Silvertech HS process family

The Silvertech HS process family offers high speed plating solutions for bright and matt Ag deposits. The additive system allows to adjust the surface appearance. It is suitable for the brightest deposits with high GAM factors for LED leadframes as well as for matt and semi bright deposits for lead frames and connectors. Silvertech HS can be plated on Cu alloys and NI substrates and delivers a perfect surface finish for wire bonding.

Features and benefits

- High speed process > 1 µm/s
- Hardness 70-120 Hv
- Resistivity of 1.7 µΩ/cm
- Low level of free cyanide
- For glossy Ag: GAM values > 2
- For Cu and Au wire bonding

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Silvertech HS – Speed and performance

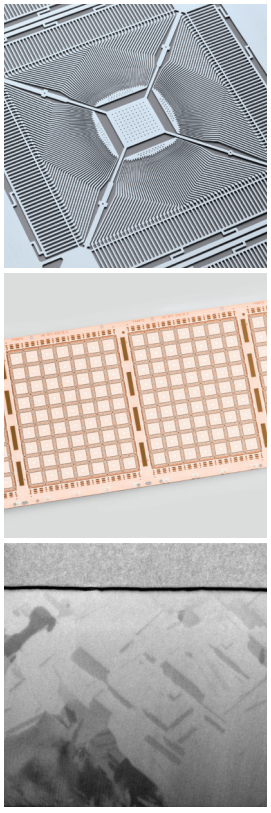

Figure 1-3:
Silvertech HS for lead frames and FIB cut through a bright Ag deposit with GAM 1.6

Deposit properties

The brightness and roughness of the deposit can be controlled by the content of the brightener system and the crystal sizes can be varied according to the specific needs. A high brightener content results in large crystal grains of 1µm and a polygonal structure (see bottom figure). Constant and reproducible GAM values between 0 and >2 are tuneable and the hardness of the deposit ranges between 70 and 120Hv but can be increased with specific hardeners up to 180Hv.

Process properties

Silvertech HS is a process family designed for high speed deposition processes typically used in reel to reel lines. Current densities of 20-300 ASD in selective plating mode can be achieved. The formulation is optimized for a long bath life by minimizing the typical carbonate build-up and runs with insoluble anodes. The free cyanide content is below 5 g/l to reduce waste water cost. Silvertech HS consists of two additives which can be easily analysed.

Typical process flow for plating on LED lead frame

- **Puronon RTR** Cleaner
- **Electroglow** Cathodic cleaner
- **Cupracid LED** High levelling Cu
- **Silvertech™ HS** Ag strike
- **Silvertech HS LED** High GAM Ag
- **Argalin K8** GAM conservation
- **Argalin IM** Anti-tarnish

Process flow

A typical process flow for a high GAM deposit contains different soak and electrolytical cleaners. This is followed by a specific copper plating process and the plating of silver in a two step process to avoid cementation.
To achieve a smooth and bright Ag layer, a layer of usually 3 µm or more Ag is applied afterwards. Specific post-treatments with our Argalin products GAM (brightness) conservation are also required in order to avoid brightness degradation over time.

Applicable

- LED lead frames with high GAM > 2
- Lead frames
- Connectors
- Wires