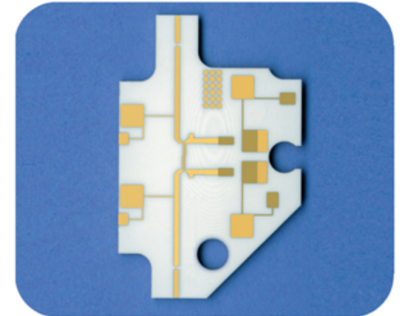
LEW TECHNIQUES

Thin Film Microcircuits

LEW Techniques' dedicated thin film manufacturing capability offers a build-to-print service for high performance microcircuits on a wide range of materials. From simple single layer interconnects to multilayer, double-sided circuits with fine lines, integrated resistors, inductors, metallised vias and complex substrate profiles, our manufacturing know-how and dedicated in-house facilities allow us to offer a comprehensive and versatile service for demanding applications.

Capability Outline



- Various substrate materials including alumina, AlN and quartz
- Metallisation schemes suitable for soldering, wire-bonding and epoxy attach
- Deposition by sputtering, evaporation and electroplating
- Laser profiling and drilling
- Fine line circuit definition by photolithography
- Circuit realisation by selective plating and wet chemical and plasma etching
- Metallised thru holes and filled vias
- Resistor trimming to tight tolerances
- Solder dams, air bridges and protective coatings
- Pre-deposited gold/tin solder (AuSn)
- Diamond sawing for superior edge quality
- Comprehensive testing facilities to ensure product quality

Substrates

Standard substrate materials include:

- As-fired or polished alumina (Al_2O_3)
- High thermal conductivity aluminium nitride (AlN)
- Fused quartz for very high frequency applications
- Ferrite
- Glass
- Silicon

Metallisation

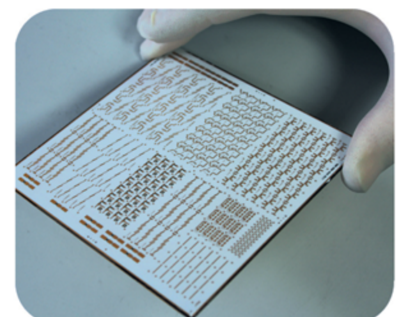
Typical metallisation schemes include:

TiW/Au	For epoxy assembly and AuSn soldering
TiW/Pd/Au	For SnPb, SnAg soldering
TiW/Pd/Au/Ni/Au	For additional soldering leach resistance
Ti/Pt/Au	Best soldering performance but more costly
NiCr or TaN	For integrated resistors

Patterning

Utilising wet or dry film, positive and negative photo resists and high accuracy mask alignment, fine high density lines and features are resolved to create the desired circuit.

Line widths	Typical	High spec.
Minimum line width	25 µm	10 µm
Minimum gap width	25 µm	10 µm
Line/gap tolerance	±10 µm	±3 µm
Line to feature (e.g. hole)	±50 µm	±25 µm



Images are not to scale

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