LTCC Substrates

HIGHLIGHTS

- Multilayer technology
- 3-dimensional design
- Fine line patterning
- Embedded passive components
- High frequency low loss packages
- Sensor packages
- Multi-chip modules
- High reliability substrates
LTCC (Low Temperature Co-fired Ceramic) is a multilayer capable substrate technology offering excellent RF and microwave performance characteristics. Its low sintering temperature (approximately 900°C) allows co-firing with highly conductive metals such as silver and gold. The excellent mechanical and electrical properties of LTCC substrates, combined with the ability to embed passive components, offer superior RF performance and device miniaturization for high frequency applications.

LTCC Technology

Features
- Multilayer technology up to more than 20 layers
- Gold and silver based metallisation systems
- Fine line patterning (< 50 μm in selected areas)
- Trimmable thick film resistors on outer surface
- Embedded resistors, capacitors, inductors and strip lines
- Radio frequency performance up to 120 GHz by use of low loss ceramic

Packages

Substrate characteristics
- Maximum substrate size: 4” x 4”
- Tape thickness: 98 μm, 135 μm, 204 μm
- Flexural strength: 320 MPa
- Thermal coefficient of expansion: 5.8 ppm/K
- Thermal conductivity: >3 W/mK
- Dielectric constant @10 GHz: 7.5
- Dielectric loss @10 GHz: < 0.0015
- Breakdown voltage: > 1000 VDC / 25 μm
- Insulation resistance @100 VDC: > 10^12 Ω
- Substrate flatness: < 0.002 mm/mm

Micro Systems Engineering GmbH (MSE) specializes in customized solutions for advanced microelectronics. MSE has experienced continuous growth since 1984, and today the company is among Europe’s leading suppliers of complex LTCC substrates as well as board assembly and semiconductor packaging technologies for both ceramic and organic substrates.

MSE is ISO 13485, ISO 9001 and ISO 50001 certified.

Micro Systems Engineering GmbH is a company of the MST group.

* Depends on number of vias and vias per row
# Smaller sizes on request
For the complete DESIGN GUIDELINES please contact MSE.

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