MRA Laboratories, Inc.

TECHNICAL DATA SHEET
"K"-100 COG dielectric
"VLF-101"

VLF-101 is a newly developed, environmentally friendly, very low fire COG dielectric with dielectric constant of about 100. This dielectric is not formulated with cadmium or lead compounds. VLF-101 exhibits an excellent combination of improved dielectric properties, 95%Ag / 5%Pd electrode compatibility, and enhanced resistivity to plating chemical attack. VLF-101 is an excellent choice for range extension of COG product lines.

Key Features

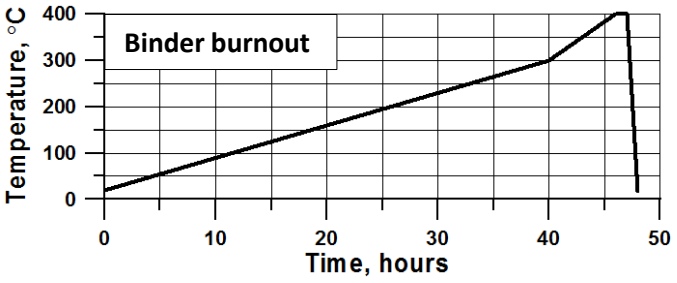
- Environmentally friendly (RoHS compliant)
- Dielectric constant around 100
- Compatible with 95% Ag / 5% Pd electrode systems
- Excellent resistance to chemical attack during plating
- Excellent lot to lot uniformity

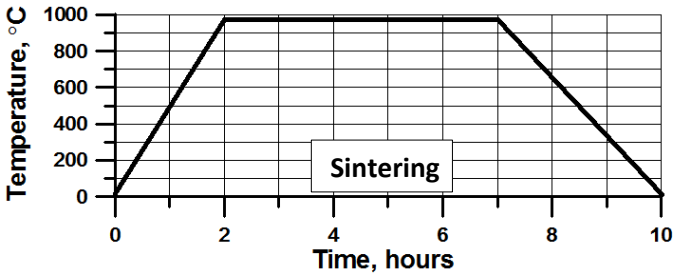
Typical powder properties

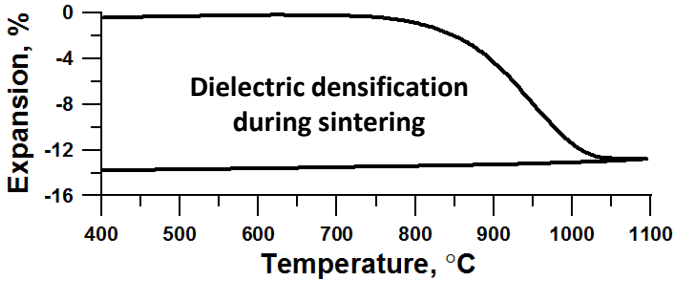
- Powder density, g/cm³ ≥ 5.40
- Surface area, m²/g 6.00 ± 1.00
- Particle size, µm
  - D_{90} ≤ 1.50
  - D_{50} 0.50 ± 0.10
  - D_{10} 0.30 ± 0.10
- LOI (650°C, 6 hours), % ≤ 1.00

Sintering conditions

- Binder burnout up to 400°C in air
- Sintering 970°C ± 10°C/5 hours in air
- Heating rate 10°C/min
- Open ZrO_2 setter
- Fired density ≥ 5.50 g/cm³



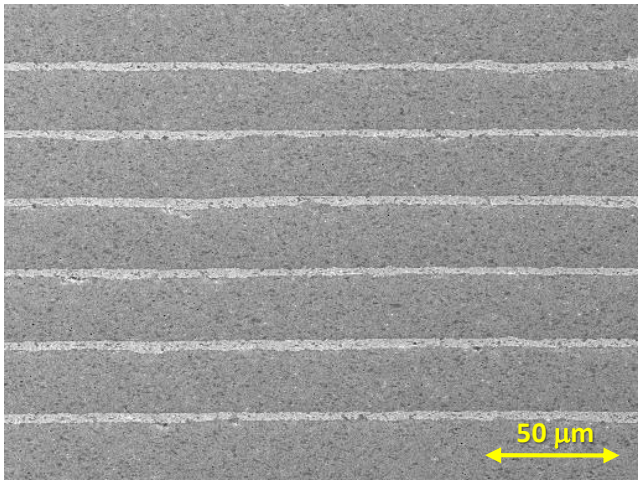


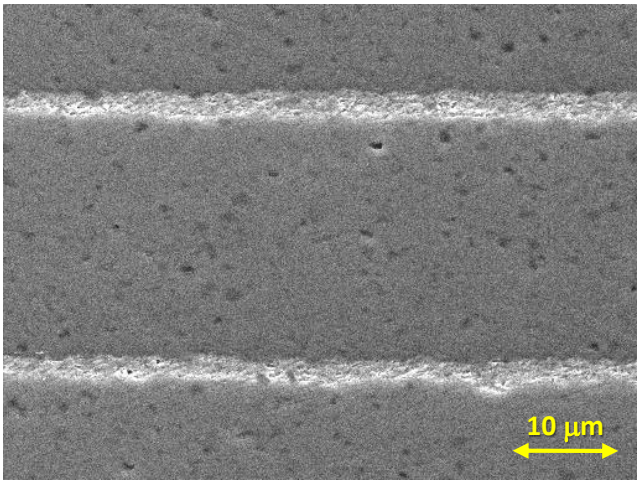


MRA - committed to excellence in multi-layer ceramic device technology.

ISO 9001:2008 BUREAU VERITAS Certification

Typical cross-sectional microstructure of sintered MLCC chip





Mechanical properties of the dielectric

▪ Coefficient of thermal expansion from 200°C to 600°C, µm/m*K	9.08

Typical MLCC characteristics

▪ Chip size	0805
▪ Active layers	10.5
▪ Electrode: 95% Ag / 5% Pd	
▪ Dielectric thickness, µm	~23
▪ Dielectric constant	100 ± 5
▪ Dissipation factor, %	≤ 0.04 @ 1kHz, 1Vrms ≤ 0.08 @ 1MHz,1Vrms
▪ Insulation resistance (IR), MΩ*µF :	
- 25°C (50Vdc)	> 2500
- 125°C (50Vdc)	> 1000
▪ HALT (180°C/200Vdc/100hours)	Passes (No degradation)
▪ Dielectric withstanding voltage, V/µm	≥ 60

Temperature variation of capacitance

TCC COG (±30ppm/°C from -55°C to +125°C)

The data presented is based on our research and is considered to be fair representation of this product.
MRA makes no warranties, expressed or implied, as to its accuracy and assumes no liability out of its use by others.

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