

Technical Data Sheet

Low Temperature Co-Fired Ceramic Systems A6M/A6M-E High Frequency LTCC Tape System

Application

Ferro's A6M LTCC Tape system combines stable dielectric constant and unique low loss over a wide frequency range making it ideal for Hi-reliability packaging applications.

A6M-E tape is an enhanced version of A6M with improved handling, lamination and green cutting properties while maintaining the same properties and performance of A6M.

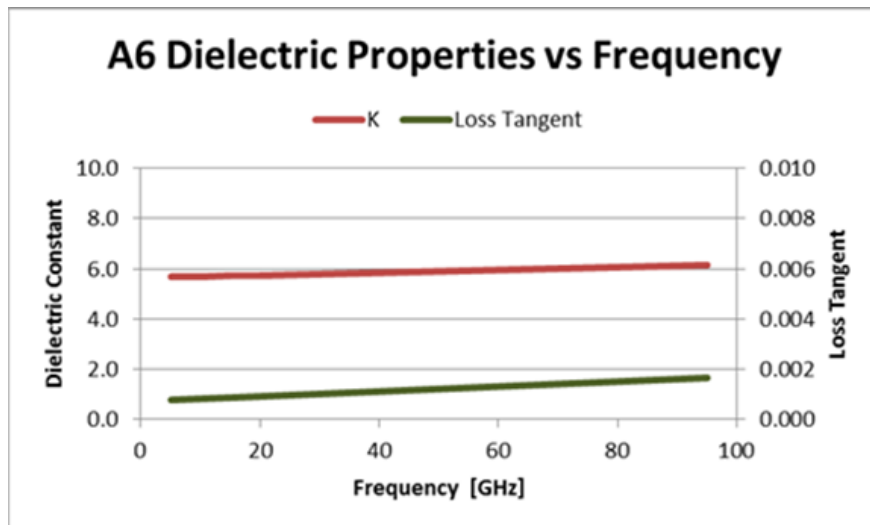
A6M/A6M-E is available in standard tape thicknesses of 2, 5, and 10 mil and in roll and blank forms.

A complete set of highly engineered Gold based conductors make A6 the material system ideal for high frequency modules and components up to 110 GHz.

A6M/A6M-E and associated metallizations are formulated and processed to be RoHS compliant.

Typical Fired Properties

Thermal Coefficient of Expansion	7.0	ppm/°C
Tape Shrinkage	15.8 ± 0.3	% X,Y
	26.0	% Z
Fired Density	> 2.4	gm/cc
Flexural Strength	170	MPa
Young's Modulus	92	Gpa
Thermal Conductivity	2	W/mK
Dielectric Constant	5.7 ± 0.2	@10 GHz
Loss Tangent	< 0.1	@10 GHz
Insulation resistance	> 10 ¹⁰	Ω
Breakdown Voltage	> 750	V/mil
Electrolytic Leakage Current	< 1	µA/cm ²



Electrical Test Methods:

- Split-Post Resonator (1-10 GHz)
- Split-Cylinder Resonator (5-30 GHz)
- Fabry-Perot Resonator (30-100 GHz)

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Typical Process Parameters¹

Metallization:

- Au-based System
 - CN30-025H Au Inner Conductor
 - CN30-078 Au Via Fill
 - CN30-080M Au Surface Wirebondable
 - CN36-020 AuPtPd Surface Solderable
 - FX87 Series Resistors
- Mixed-Metal Based System
 - CN33-398 Ag Inner Conductor
 - CN33-407 Ag Via Fill
 - CN39-005 AuPtAg Transition Via Fill
 - CN30-080M Au Surface Wirebondable
 - CN36-020 AuPtPd Surface Solderable
 - FX87 Series Resistors
- Ag-based System
 - CN33-398 Ag Inner Conductor
 - CN33-407 Ag Via Fill
 - CN33-393 Ag Surface Conductor
- Post Fireable System
 - CN30-025JH Brazeable Au Base Layer
 - CN4007 Brazeable Au Top Layer
 - CN31-014/17 Solderable AuPt Conductor
 - CN3066 Wirebondable Au Conductor

Lamination: Iso-static 3000 psi (21Mpa) @ 70°C for 10 minutes

Setters: Fused quartz for typical applications; Zirconia felt for hi-metallization parts

Binder Burn-out: Room temperature to 450°C at $\leq 2^\circ\text{C}/\text{min}$, with 2 hour hold at peak in box (preferred) or belt furnace with 100 scfm air-flow.

Firing: 450 to 850°C @ 6-8°C/min, with 10-15 minute hold at peak in box (preferred) or belt furnace with controlled with 100 scfm air-flow.

¹ Refer to Ferro's LTCC Design Guide for specific process parameters and specifications

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