

Introduction

Conventional LTCC material systems offer three standard metallization schemes, silver, gold and a mixed metal.

For high reliability projects, the gold system is a common choice. When price is a significant issue the mixed metal system becomes attractive. Unfortunately the mixed metal system can exhibit problems including Kirkendall voiding and battery effects between gold and silver, which make the solution less attractive.

Barry LTCC is now able to offer a lower cost more reliable alternative to the gold system. Utilizing the silver system for LTCC construction with subsequent electroless Nickel/gold plating.

This construction allows attachment of die and components using a combination of solder, epoxy and wirebond techniques.

The following table details results from an evaluation of this system.

To use simply specify Silver metallization Nickel Gold plated

Metal types

Electroless Nickel per MILC26074E.
Electroless gold per MILG45204C.

Min conductor feature	150µm
DC resistance	4.5Ω/□
Wire bond pull strength**	>4g 9g typ*
Die lateral shear strength***	>1.8kg 2.5kg typ*
Solder wetting	excellent

* tested through 1000h at 150°C

** tested with 1-mil Au wire , 3-8% elongation, T.S. 6grams min.

*** tested using 0603 SMD with Sn62 solder

