APPLICATION

A6-S is a lower cost, microwave grade, Low Temperature Co-Fire Ceramic (LTCC) alternative to A6-M. A6-S features the excellent dielectric properties of our A6-M formulated with Ferro's patented Calcium Boro-Silicate glass and is designed to be used for wireless frequency applications between 2.45 and 100GHz. A6-S is compatible with our all silver and mixed metal conductors.

A6-S polymer binder formula produces A6-S tape that can be easily laminated and cut in the green state. Ferro’s Silver matched metallization systems combines a low cost metallization with the lowest resistance known. The low resistance results in unequal performance in your high frequency application at a cost that you can afford. This matched system provides excellent solderability, leach resistance and both initial and aged adhesion.

TYPICAL FIRED PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Coefficient of Expansion (25-300°C):</td>
<td>&gt; 8 ppm/°C</td>
</tr>
<tr>
<td>Typical Tape Shrinkage:</td>
<td></td>
</tr>
<tr>
<td>X,Y</td>
<td>15.7%</td>
</tr>
<tr>
<td>Z (Green Sheet to fired)</td>
<td>26 %</td>
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<tr>
<td>Fired Density:</td>
<td>2.45 g/cm³</td>
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<tr>
<td>Flexural Strength (3 pt bend):</td>
<td>&gt; 160 MPa</td>
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<tr>
<td>Thermal Conductivity:</td>
<td>2 W/mK</td>
</tr>
<tr>
<td>Dielectric Constant (1-100GHz):</td>
<td>5.9 ± 0.2</td>
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<tr>
<td>Dissipation Factor (1-100GHz):</td>
<td>&lt; 0.2 %</td>
</tr>
<tr>
<td>Insertion Loss (10GHz):</td>
<td>&lt; 0.18 dB/in</td>
</tr>
<tr>
<td>Bulk Resistivity:</td>
<td>&gt; 10¹⁵ Ω/cm</td>
</tr>
</tbody>
</table>

This data represents typical properties and is not intended to be used as specification limits.

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Low Temperature Co-fired Ceramic System

A6-S
High Frequency LTCC System

ALL SILVER BASED SYSTEM

Inner Conductor: CN33-398 (co-fireable)
Resistor Termination: CN33-391 (co-fireable)
Via Fill: CN33-407 (co-fireable)
Surface Conductors:
  Standard: CN33-391 (co-fireable)
  Pure Silver: 3309 (post-fireable)
  Pure Silver Solderable: 3350 (post-fireable)
Resistor: FX87 series (co-fireable)

Solderable: CN36-020 (co-fireable)
Aluminum Wire Bondable: 3068 (post-fireable)
Brazeable High Temp:
  Co-Fireable Adhesion Layer: CN30-025
  Post-Fireable Layer for Au/Ge Solder: 4007
Brazeable Low Temp:
  Co-Fireable Adhesion Layer: CN30-065
  Post-Fireable for Bi/Sn Solder: CN30-079
Resistor Termination: CN33-391 (co-fireable)
Resistor: FX87 series (co-fireable)

MIXED METAL MATERIALS SYSTEM

Transition Via Fill: CN39-005 (co-fireable)
Inner Conductor: CN33-398 (co-fireable)
Via Fill: CN33-343 (co-fireable)
Surface Conductors:
  Wire Bondable: CN30-080M (co-fireable)
  Solderable: CN36-020 (co-fireable)
  Aluminum Wire Bondable: 3068 (post-fireable)
  Brazeable High Temp:
    Co-Fireable Adhesion Layer: CN30-025
    Post-Fireable Layer for Au/Ge Solder: 4007
  Brazeable Low Temp:
    Co-Fireable Adhesion Layer: CN30-065
    Post-Fireable for Bi/Sn Solder: CN30-079
  Resistor Termination: CN33-391 (co-fireable)
  Resistor: FX87 series (co-fireable)

TYPICAL PROCESSING GUIDELINES

Lamination: 3000psi (21MPa) @70°C, 5-10 minutes
Burnout: 450°C for 2hrs ≤ 2°C/min, ramp to 450°C
Firing: 850°C peak for 10 mins, Ramp to peak temperature 6-8°C/min
Setters: Fused quartz; Bare alumina setters should not be use

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