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LTCC QUICK REFERENCE DESIGN GUIDE

Green Tape	RoHS Compliant	Color	Available fired thickness*	Dielectric Constant
CS551	YES	WHITE	5.0, 10.0 mil	7.4 (1 MHz)
CS552	NO	BLUE	5.0, 10.0 mil	7.8 (1MHz)

***custom thickness for high volume jobs.**

MINIMUM THICKNESS OF ANY PORTION OF LTCC 0.010" (~ 10 MILS)

TYPICAL CAMBER 0.002" /IN /IN (2 MILS)

(LESS CAMBER MAY BE QUOTED AT INCREASED COST) – CATCH PAD SPACING VIOLATION

CONDUCTOR LINE WIDTH AND SPACING – PREFERRED 6 TO 10 (4 MIL RF lines)

Conductor to edge of 10 mils (low vol), 15 ml (high vol) for surface, buried, RF grounds.

Substrate/cavity clearance Minimum dimensions – 5 mils (conductor to edge)

Ground and power planes Large exposed planes may be solid. Buried planes should be gridded whenever possible. Gridded planes have 10 mil lines with 15 to 20 mil openings (10 mil min). Areas on ground planes may be solid to provide shielding. Feed through vias / pads on buried plane layers should have 15- 20 mil (8 min) isolation clearance between feed through and the plane

Via 4 to 10 mils

Catch pad 1 to 4 mil bigger on all four sides. Catch pads may be excluded from RF transition vias.

Via to via spacing 2.5 to 3X the via size (thermal and RF via excluded from this criteria

RF Vias designs requiring high frequency lines and controlled impedance lines may require buried coaxial type shielding which is accomplished by placing vias

	parallel to the controlled lines throughout the shielded cross sectional area. RF vias may be placed as close as 2 mils apart as long as they are electrically common to each other. RF vias may also be stacked if they maintain 2 via dia pitch minimum.
Themal via	10 mil via with 10 mil spacing
Plating	Electrolytic nickel / gold. Electroless gold for RF circuits where all surfaces cannot be tied to a buss bar.
Brazing	Brazing Technique is similar to LTCC where 80/20 Au/SN solder is used. GPO, GPPO, G3PO or G4PO connectors can be attached.
Hardware	Heat sinks made with Cu-Mo, Cu-Mo-Cu, AlSiC may be used.

LTCC ELECTRICAL AND MECHANICAL PROPERTIES

PROPERTY	CS551	CS552
Dielectric constant	**7.4**	**7.8**
Loss Tangent	**<.4%**	**<.6%**
Flexural Strength	**250 Mpa**	**220 Mpa**
Fired density	**3.2 g/cc**	**3.1 g/cc**
Surface roughness	**<10 µ inches**	**<10 µ inches**
Shrinkage (approximate)		
X,Y	**13% ±.3%**	**14%±.3%**
Z	**15.5%±.5%**	**16.3%±.5%**