LTCC Design Guideline

1. Features of Material

Item	Material	Dielectric Constant	Tangent delta	Color	Poisson's ratio	Density [kg/m³]
YDM71	Glass Ceramic (Pb free)	7.3 @8GHz	0.005 @8GHz	White *1	0.24	2810
YDM74		7.4 @8GHz			—	2950
YDM79		7.9 @1MHz	0.003@1MHz		—	3100

Item	Coefficient of Thermal Expansion [ppm/K]	Thermal Conductivity [W/(m K)]	Specific Heat [J/kg K]	Young's modulus [GPa]	Flexural Strength [MPa]
YDM71	5.5	2.2	690	114	250
YDM74	5.8	2.8	710	133	350
YDM79	4.9	2.2	—	—	200

*1: Light Shield Dark Brown Available *2: This data is typical value, but not guaranteed

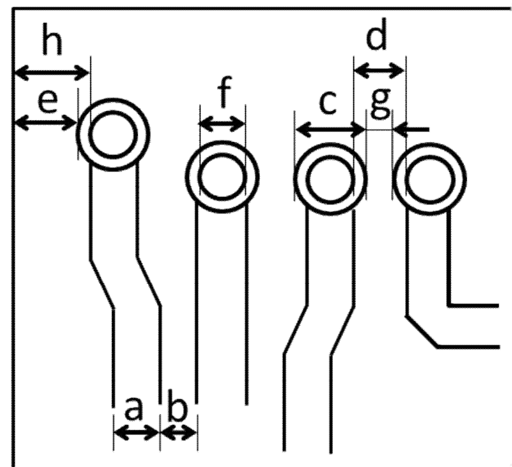
2. Circuit Board Specifications

Item		Unit	Specification
Dimension		mm	Max. 325x325x6
Stacking Number		Layer	60
Layer Thickness		um	Min. 25
Tolerances	X,Y plane		0.2% or 100um
	Thickness	%	10
Warp		mm	0.1/100
Conductor	Thickness	um	5 – 20 (depends on line width)
	Resistivity	Ohm-cm	Line : 2.5×10^{6} , Via : 3.0×10^{6}
	Outer/Inner	—	Ag/ Ag (Ag/Pd, Ag/Pt are available)
	Adhesion Strength	kg/mm²	cofire : 0.5 , post fire : 0.2
Plating			Ni/Au, Ni/Pd/Au, etc

3. Design Rules (Tolerance of line width, space or via-hole dia. is ±10 %)

Item	Symbol	Rules Max.	Rules Min.	Unit
Line/ Space	a/b	-	50/50	um
Land/ Space	c/d	-	50/50	um
Distance from edge	e	-	75	um
Via-Hole Diameter*3	f	Dia. 150	Dia. 50	um
Via/ Via Space	g	-	65	um
Distance from edge	h	-	100	um

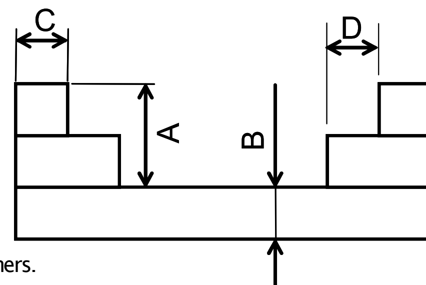
*3 Max./min. via-hole diameter will be constrained by the layer thickness (thickness of the using sheet).



4. Cavity Structure*4

Item	Mark	Specification	Unit
Depth	A	Max. 600	um
Thickness of Bottom	B	Min. 100	um
Side Wall Thickness	C	Min. 200	um
Width of Inner Step	D	Min. 150	um

*4 Each specification of cavity structure may be constrained by outside dimensions or others.



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