

Design rules & specifications ceramic & glass PCB



Last update: May 2021

Transparent Ceramics

Glass

(Sapphire)

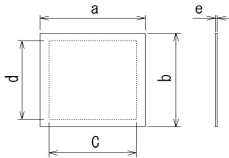
(Borosilicate , quartz, float & low iron glass)

Volume	High volumes only > 50 panels / order	All volumes >20 panels / order	All volumes >20 panels / order
Manufacturing process	Thick Film (silver)	DPC	DPC

Tooling & NRE?	Yes	Limited	Limited
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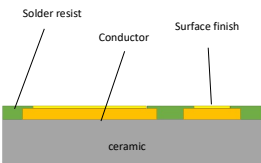
Lead time	Standard Special	6-8 weeks	6-8 weeks	6-8 weeks
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Dimensions & thickness



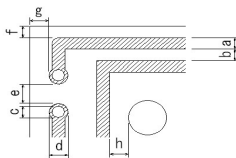
Panel Dimensions (a)x(b)				
Standard	metric	100mmx100mm	100mmx100mm	130mmx140mm
Special		115mmx115mm		600mmx1200mm
Standard	imperial	3.9" x 3.9"	3.9" x 3.9"	5.1" x 5.5"
Special		4.5" x 4.5"		23.6" x 47.2"
Thickness (e)				
Standard	metric	0.38mm	0.5mm 1.3mm	0.5mm 1.0mm 2.0mm
Special		0.5mm 1mm (high volume only)		Up to 5mm
Standard	imperial	15 mil	20 mil 51 mil	20 mil 39 mil 79 mil
Special		20 mil 39 mil (high volume only)		up to 197 mil

Metalization & finish



Conductor				
Standard		Silver - Ag	Copper - Cu	Copper - Cu
Special		Silver-Palladium - AgPd		
Conductor thickness				
Standard	metric	15um - 20um	18um-35um-70um	18um-35um-70um
Special			up to 350um	up to 350um
Standard	imperial	0.5oz	0.5oz-1oz-2oz	0.5oz-1oz-2oz
Special			up to 10oz	up to 10oz
Surface finish				
Standard		None (Ag, AgPd)	ENIG, immersion silver, OSP	OSP, immersion silver
Special		ENIG	ENEPIG, EPIG	ENIG, ENEPIG, EPIG
Solder resist				
Standard		Glass coating: white (translucent)	Solder resist: green, white, red, blue, black, yellow	Solder resist: translucent , green, white, red, blue, black, yellow
Special				
Solder resist minimum opening				
Standard		0.2mm	0.2mm	0.2mm
Special		0.1mm	0.1mm	0.1mm
Solder resist minimum pad overlap				
Standard		0.1mm	0.1mm	0.1mm
Special		0.1mm	0.1mm	0.1mm
Silk screen / legend				
Standard		black	black	black
Special			red, blue, yellow	red, blue, yellow
Layers				
Standard		single - double sided	single - double sided	single layer
Special				Double-sided

Spacing & vias



Min. line width (a)				
Standard		0.2mm / 8 mil	0.10mm / 4 mil	0.10mm / 4 mil
Special		0.08mm / 3 mil	0.08mm / 3 mil	
Min. line spacing (b)				
Standard		0.2mm / 8 mil	0.10mm / 4 mil	0.10mm / 4 mil
Special		0.1mm / 4 mil	0.08mm / 3 mil	
Line/pad to edge spacing (f)				
Standard		0.2mm / 8 mil	0.2mm / 8 mil	0.2mm / 8 mil
Special		0.15mm / 6 mil	0.12mm / 5 mil	0.12mm / 5 mil
Via specifications				
Via diameter (c)		0.12mm-0.3mm / 5 mil-12 mil	0.12mm-0.3mm / 5 mil-12 mil	>=2mm holes size
Min. via spacing (b)		0.3mm / 12 mil	0.3mm / 12 mil	
Via/hole to edge spacing		0.5mm	0.5mm	please enquire for PTH / vias
Through hole metallisation		Silver (Ag) Filled vias	Plated through hole (PTH)	
Annular ring specifications				
Min. annular ring diameter (d)		0.2mm / 8 mil	0.2mm / 8 mil	0.2mm / 8 mil
Min. annular ring spacing (e)		0.15mm / 6 mil	0.15mm / 6 mil	0.15mm / 6 mil
Annular ring to edge spacing (g)		0.15mm / 6 mil	0.15mm / 6 mil	0.15mm / 6 mil
Line to hole/via spacing (h)				
Standard		0.15mm / 8 mil	0.15mm / 8 mil	0.15mm / 8 mil
Special		0.1mm / 4 mil	0.12mm / 5 mil	0.12mm / 5 mil
Edge metalization				
Special		no	no	no

Tolerance

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Manufacturing process	Thick Film (silver)	DPC	DPC
Dimensional tolerance			
Standard	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil
Special	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil
Thickness tolerance			
Standard	+/-10%	+/-10%	+/-10%
Special	+/-5%	+/-5%	+/-5%
Hole tolerance			
Standard	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil
Special	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil
Pad to hole/via tolerance			
Standard	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil
Special	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil
Conductor thickness tolerance			
Standard	+/-20%	+/-20%	+/-20%
Line/Space width tolerance			
Standard	+/- 50µm / 2 mil	+/-20% or 25µm @ 1oz	+/-20% or 25µm @ 1oz
Special	+/- 40µm / 1.5 mil		
Surface roughnes ceramic (Ra)			
Standard	≤0.5µm	≤0.5µm	≤0.5µm
Special			
Misalignment (only for double sided)			
Standard	±100µm / 4 mil	±100µm / 4 mil	±100µm / 4 mil
Special	±50µm / 2 mil	±50µm / 2 mil	±50µm / 2 mil

+/-