

Design rules & specifications ceramic & glass PCB



Last update: May 2021

Aluminum Nitride | AlN

Volume			C-Proto: Prototypes & small volume		C-Production: All volumes (Medium to High)	
			1-5 panels	>5 panels / order	>50 panels / order	
Manufacturing process	DPC		Thick film	DPC	Thick Film	
Tooling & NRE?	No		No	Limited	Yes	
Lead time	Standard	Special	5-15 working days 3 working days (*)	5-15 working days 3 working days (*)	4-6 weeks	6-8 weeks
Dimensions & thickness	Panel Dimensions (a)x(b)					
	Standard	metric	100mmx80mm	100mmx80mm	120mmx120mm up to 175 mm x 125mm	115mmx115mm
	Special	imperial	3.9" x 3.1"	3.9" x 3.1"	4.7" x 4.7" up to 7" x 5"	4.5" x 4.5"
	Standard	metric	0.38 1.0 mm	0.38 0.5 1.0 mm	0.38 0.5 0.63 1.0 mm	0.38 0.5mm 1 mm
	Special	imperial	15 39 mil	15 20 39 mil	15 20 25 39 mil up to 59 mil	15 20 mil 39 mil
Metalization & finish	Conductor					
	Standard		Copper - Cu	Silver - Ag	Copper - Cu	Silver - Ag
	Special			Silver-Palladium - AgPd, Silver-Platinum - AgPt		Silver-Palladium - AgPd, Silver-Platinum - AgPt
	Standard	metric	35um	10-12um	18um-35um-70um up to 350um	12um - 24um
	Special	imperial	Cu 1oz	0.4-0.8 mil	0.5oz-1oz-2oz up to 10oz	0.5oz - 1oz 1.5oz
Surface finish						
Standard		Immersion Tin (Sn), None, ENIG (**), None (Ag or AgPd), ENIG	OSP, Imm. Ag, ENIG, ENEPIG	None (Ag, AgPd)		
Special		ENEG (**), ENEPIG (**)	ENEG (**), ENEPIG (**)	ENIG		
Solder resist						
Standard		Green, White, Black, High reflective white	Blue dielectric (glass based)	Solder resist: green, white, red, blue, black, yellow	Glass coating: translucent, white & black	
Special				other colors	high reflective white	
Solder resist minimum opening						
Standard		0.2mm	0.2mm	0.2mm	0.2mm	
Special		0.1mm	0.1mm	0.1mm	0.1mm	
Solder resist minimum pad overlap						
Standard		0.1mm	0.1mm	0.1mm	0.1mm	
Special		0.05mm	0.05mm	0.05mm	0.1mm	
Silk screen / legend						
Standard		Engraving only	Engraving only	black, white	black, white	
Special				red, blue, yellow		
Layers						
Standard		single or double sided	single, 2 layers (single sided)	single - double sided	single - double sided	
Special			double sided, up to 4 layers			
Spacing & vias	Min. line width (a)					
Standard		0.2mm / 8 mil	0.2mm / 8 mil	0.15mm / 6 mil	0.2mm / 8 mil	
Special		0.1mm / 4 mil	0.1mm / 4 mil	0.08mm / 3 mil	0.08mm / 3 mil	
Min. line spacing (b)						
Standard		0.2mm / 8 mil	0.2mm / 8 mil	0.15mm / 6 mil	0.2mm / 8 mil	
Special		0.1mm / 4 mil	0.1mm / 4 mil	0.12mm / 5 mil	0.1mm / 4 mil	
Line/pad to edge spacing (f)						
Standard		0.2mm / 8 mil	0.2mm / 8 mil	0.2mm / 8 mil	0.15mm / 6 mil	
Special				0.1mm / 4 mil	0.1mm / 4 mil	
Via specifications						
Standard		0.38mm-0.8mm / 15 mil-30 mil	0.38mm-0.8mm / 15 mil-30 mil	0.15mm-0.3mm / 6 mil-12 mil	0.12mm-0.3mm / 5 mil-12 mil	
Special		1mm / 39 mil	1mm / 39 mil	0.3mm / 12 mil	0.3mm / 12 mil	
Standard		3 x via diameter	3 x via diameter	3 x via diameter	0.5mm	
Special		Filled vias	Filled vias	Plated through hole (PTH)	Silver (Ag) Filled vias	
Annular ring specifications						
Standard		via diameter +0.4mm / 8 mil	via diameter +0.4mm / 8 mil	0.2mm / 8 mil	0.2mm / 8 mil	
Special		0.2mm / 8 mil	0.2mm / 8 mil	0.15mm / 6 mil	0.15mm / 6 mil	
Standard		0.2mm / 8 mil	0.2mm / 8 mil	0.15mm / 6 mil	0.15mm / 6 mil	
Special						
Line to hole/via spacing (h)						
Standard		0.2mm / 8 mil	0.2mm / 8 mil	0.2mm / 8 mil	0.15mm / 8 mil	
Special				0.1mm / 4 mil	0.1mm / 4 mil	
Edge metalization						
Standard		no	yes, please enquire	yes, please enquire	yes, please enquire	
Special						
Tolerance						

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Manufacturing process	DPC	Thick film	DPC	Thick Film
Dimensional tolerance				
Standard	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil
Special	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil
Thickness tolerance				
Standard	+/-10%	+/-10%	+/-10%	+/-10%
Special	+/-5%	+/-5%	+/-5%	+/-5%
Hole tolerance				
Standard	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil
Special	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil
Pad to hole/via tolerance				
Standard	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil	+/- 100µm / 4 mil
Special	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/- 50µm / 2 mil
Conductor thickness tolerance				
Standard			+/-10%	+/-20%
Line/Space width tolerance				
Standard	+/- 50µm / 2 mil	+/- 50µm / 2 mil	+/-20% or 25µm @ 1oz	+/- 50µm / 2 mil
Special	+/- 40µm / 1.5 mil	+/- 40µm / 1.5 mil		+/- 40µm / 1.5 mil
Surface roughnes ceramic (Ra)				
Standard			Ra≤0.3µm; Rz≤2µm	≤0.5µm
Special			Ra≤0.3µm; Rz≤2µm	
Misalignment (only for double sided)				
Standard	≤200µm / 8 mil	≤200µm / 8 mil	≤100µm / 4 mil	≤100µm / 4 mil
Special			≤50µm / 2 mil	≤50µm / 2 mil



(*) 3 days only possible when no surface finish or immersion tin is chosen

(**) outsourced process, add +/- 10 working days