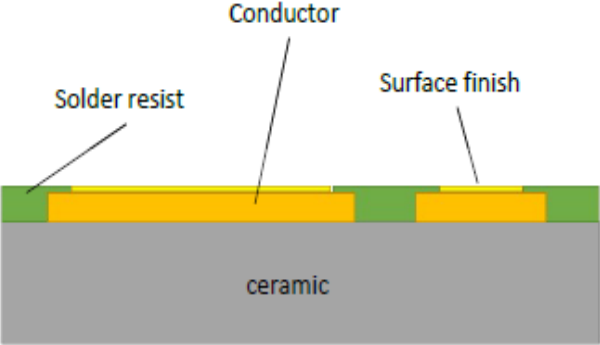


Ceramic Manufacturing Process			Manufacturing Guidelines	Rules and Guidelines
Dimensions & Thickness				
	Panel Dimensions		Panel Dimensions (master)	Panel Dimensions (usable area)
	Standard	metric	115mm x 115mm	105mm x 105mm
	Special		Up to 170mm x 250mm	Up to 160mm x 240mm
	Standard	imperial	4.5" x 4.5"	4.13" x 4.13"
	Special		Up to 6.5" x 9.5"	Up to 6.3" x 9.45"
	Thickness (e)			
Standard	metric	0.25/0.38/0.5/0.635/1.0/1.5mm	Most Common / Widely Used	
Special		Available upon request		
Standard	imperial	10 / 15 / 20 / 25 / 39 / 59 mil		
Special		Available upon request		
Metallisation & Finish				
		Conductor		
Standard		Copper – Cu	Most Common / Widely Used	
Special		Available upon request		
		Surface finish		
Standard	metric	35µm - 140µm	Most Common / Widely Used	
Special		18µm / 175um – 350um	Frequent requirement for – possible via DBC	
Standard	imperial	1oz – 2oz		
Special		0.5oz / 5oz – 10oz		
		Surface finish		
Standard		Immersion Silver, ENIG, ENEPIG	Most Common / Widely Used	
Special		EPIG (no nickel), please enquire	EPIG – non-magnetic finish	
		Solder resist		
Standard		Green, Black, White, Transparent		
Special		Other – please enquire		
		Silk screen / legend		
Standard		Black, White		
		Layers		
Standard		Singe – double sided	Please enquire for Multilayer	

Ceramic Manufacturing Process		Manufacturing Guidelines	Rules and Guidelines
Spacing & Vias			
	Min. line width (a)		
	Standard	0.2mm / 8 mil	0.1mm accepted upon DFM approval
	Special	0.1mm / 4 mil	
	Min. line width (b)		
	Standard	0.2mm / 8 mil	0.1mm accepted upon DFM approval
	Special	0.1mm / 4 mil	
	Line/pad to edge spacing (f)		
	Standard	0.2mm / 8 mil	
	Via Specifications		
	Via diameter (c)	0.08mm / 3 mil	Smallest possible hole / Via size. E.g 1.0mm AIN required – divide by 5 = minimum Via diameter of 0.2mm
Min. via spacing (b)	0.15mm / 6 mil		
Via/hole to edge spacing	3 x via diameter		
Min via diameter (c) (Aspect Ratio)	(Al2O3 thickness/5)		
Through hole metallisation	Plated through hole (PTH)		
Annular ring specifications			
Min. annular ring diameter (d)	Via diameter + 0.20mm / 8 mil	Minimum 0.10mm either side of via	
Min. annular ring spacing (e)	0.20mm / 8 mil		
Annular ring to edge spacing (g)	0.20mm / 8 mil		
Line to hole/via spacing (h)			
Standard	0.2mm / 8 mil	0.1mm accepted upon DFM approval	
Special	0.1mm / 4 mil		
Tolerance			
	Dimensional tolerance		
	Standard	+/- 100µm / 4 mil	
	Thickness tolerance		
	Standard	+/- 10%	
	Hole tolerance		
	Standard	+/- 100µm / 4 mil	
Pad to hole/via tolerance			
Standard	+/- 100µm / 4 mil		