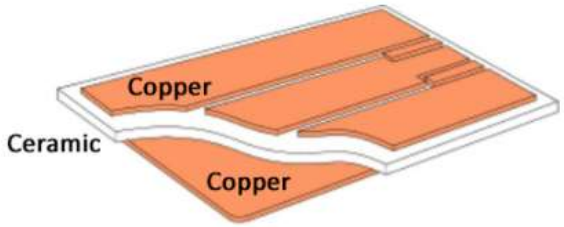
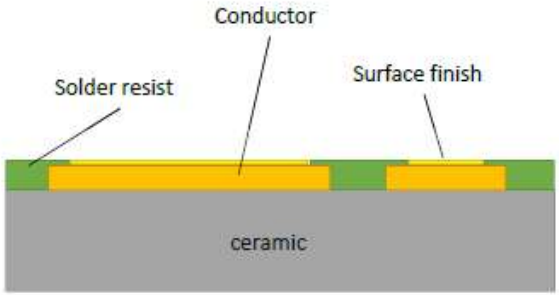
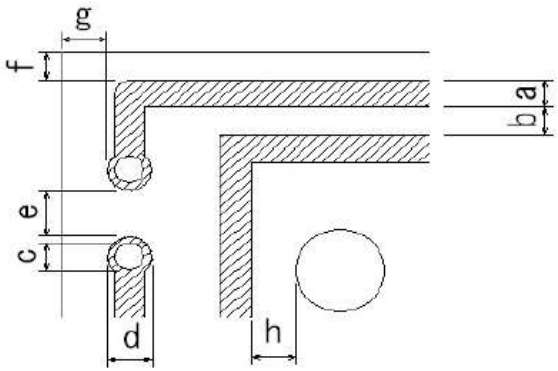
CERAMIC MANUFACTURING PROCESS

Ceramic Manufacturing Process		Manufacturing Guidelines	Rules and Guidelines
Dimensions & Thickness	Panel Dimensions	Panel Dimensions (master)	Panel Dimensions (usable)
	Standard Special	115mm x 115mm Up to 170mm x 250mm AlN: 220mmx220mm (T:1.0mm) Aluminia: 150mmx200mm (T:0.63/1.0mm)	105mm x 105mm 160mm x 240mm 210mm x 210mm 140mm x 190mm
	Thickness		
	Standard Special	0.25/0.38/0.5/0.635/1.0/1.5mm Available upon request Minimum: 0.1mm (sapphire/ZrO2) Maximum:3.0mm(aluminia/ZrO2	Most Common/Widely used
Metallisation & Finish			
	Conductor		
	Standard Special Standard metric Special	Copper – Cu Available upon request 35µm - 140µm 18µm / 175um – 350um Maximum: 2000µm(DPC) Multi-thickness: from 5 to 2000um on one side	Most Common/Widely Used 0.3/0.4/0.5/0.8mm copper AMB
	Surface finish		
	Standard Special	OSP, Immersion Silver, Immersion Tin, ENIG, ENEPIG and EPAG (no nickel)	Most Common/Widely Used EPAG (non-magnetic finish)

		Manufacturing Guidelines	Rules and Guidelines
	Solder resist		
	Standard Special	Green, Black, White, Transparent Other – please enquire SR height: >15-20µm as std (150µm max) Min SR width 0.15mm Std (0.1mm Special) Min SR-SR gap (SR bridge) standard 0.15mm (0.1mm Special) Min SR-Copper (SR clearance) Standard 0.1mm (min 0.05mm) Min SR-Board edge standard 0.2mm Positional accuracy = +/- 0.05mm	Solder Resist - 130°C is max long term exposure for any SR. As a minimum, all Solder Resists used pass IPC thermal stress test; 3 times, 288°, 10 seconds.
	Silk screen / legend		
	Standard	Black, white	
	Layers		
	Standard	Single, double sided	
Spacing and Vias  	Min. line width / gap (a) and (b)		
	Standard Special	0.1mm 0.05mm	0.1mm accepted upon DFM approval
	Line/pad to edge spacing (f)		
	Standard	0.1mm (laser) 0mm (diamond blade cutting)	
	Via specifications		
	Via diameter (c) Min. via spacing (b) Via/hole to edge spacing Min via diameter (c) (Aspect Ratio) Through hole metallisation	0.08mm 0.15mm 3 x via diameter (Al2O3 thickness/6) Plated through hole (PTH)	 PTH not available for DBC or AMB

		Manufacturing Guidelines	Rules and Guidelines
	Annular ring specifications		
	Min. annular ring diameter (d) Min. annular ring spacing (e) Annular ring to edge spacing (g)	Via diameter + 0.20mm 0.20mm 0.20mm	Minimum 0.10mm either side of via
	Line to hole/via spacing (h)		
	Standard Special	0.2mm 0.1mm	0.1mm accepted upon DFM approval
Tolerance +/-	Dimensional tolerance		
	Standard	+/- 100µm (laser) +/- 60µm (diamond blade)	
	Thickness tolerance		
	Standard	+/- 10%	
	Hole tolerance		
	Standard	+/- 100µm	
	Pad to hole/via tolerance		
	Standard	+/- 100µm	