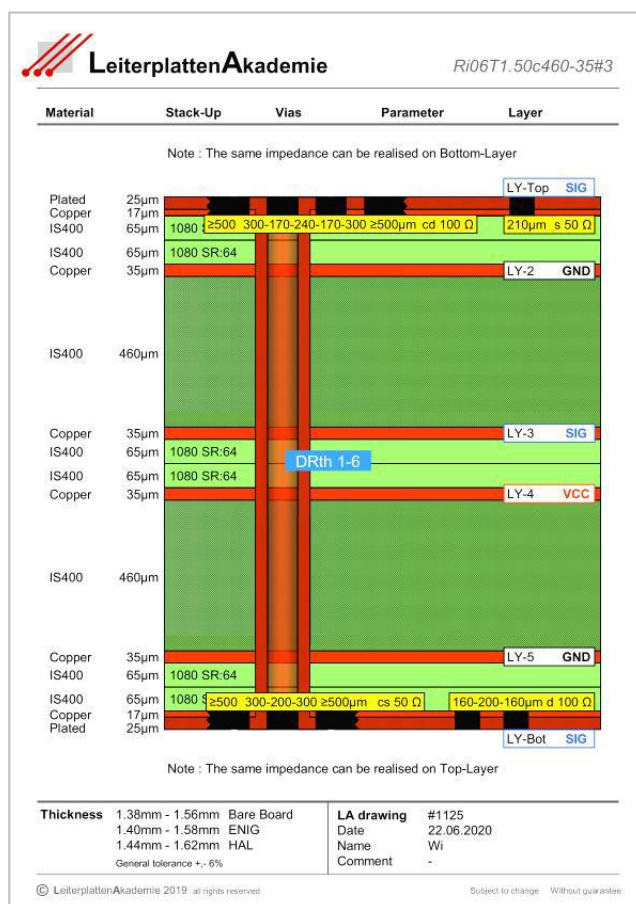


PCB Stack-Up

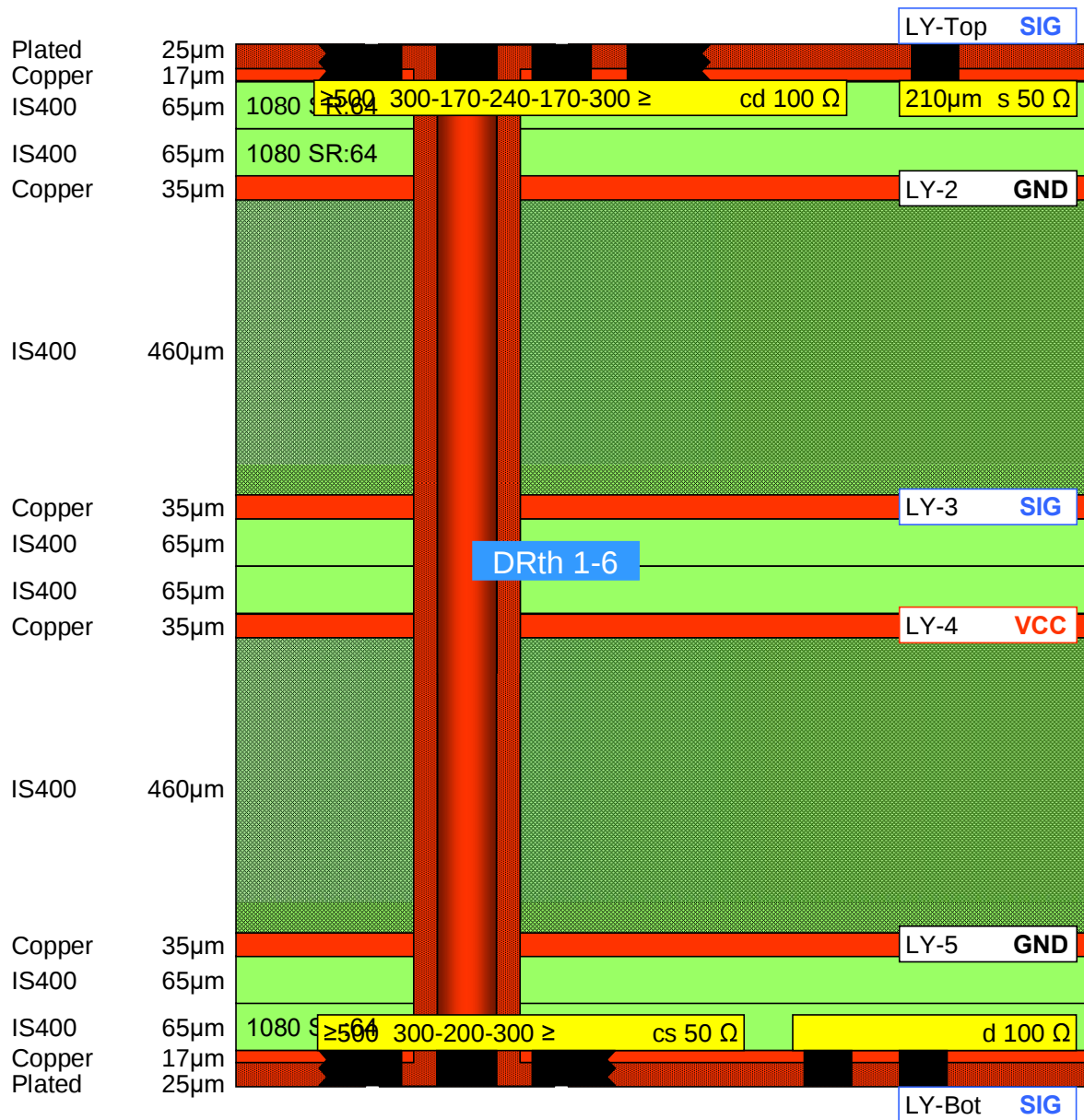
PCB class Rigid
Layer count 6
Material FR4

PCB name Ri06T1.50c460-35#3
LA drawing 1237



Material	Stack-Up	Vias	Parameter	Layer
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Note : The same impedance can be realised on Bottom-Layer

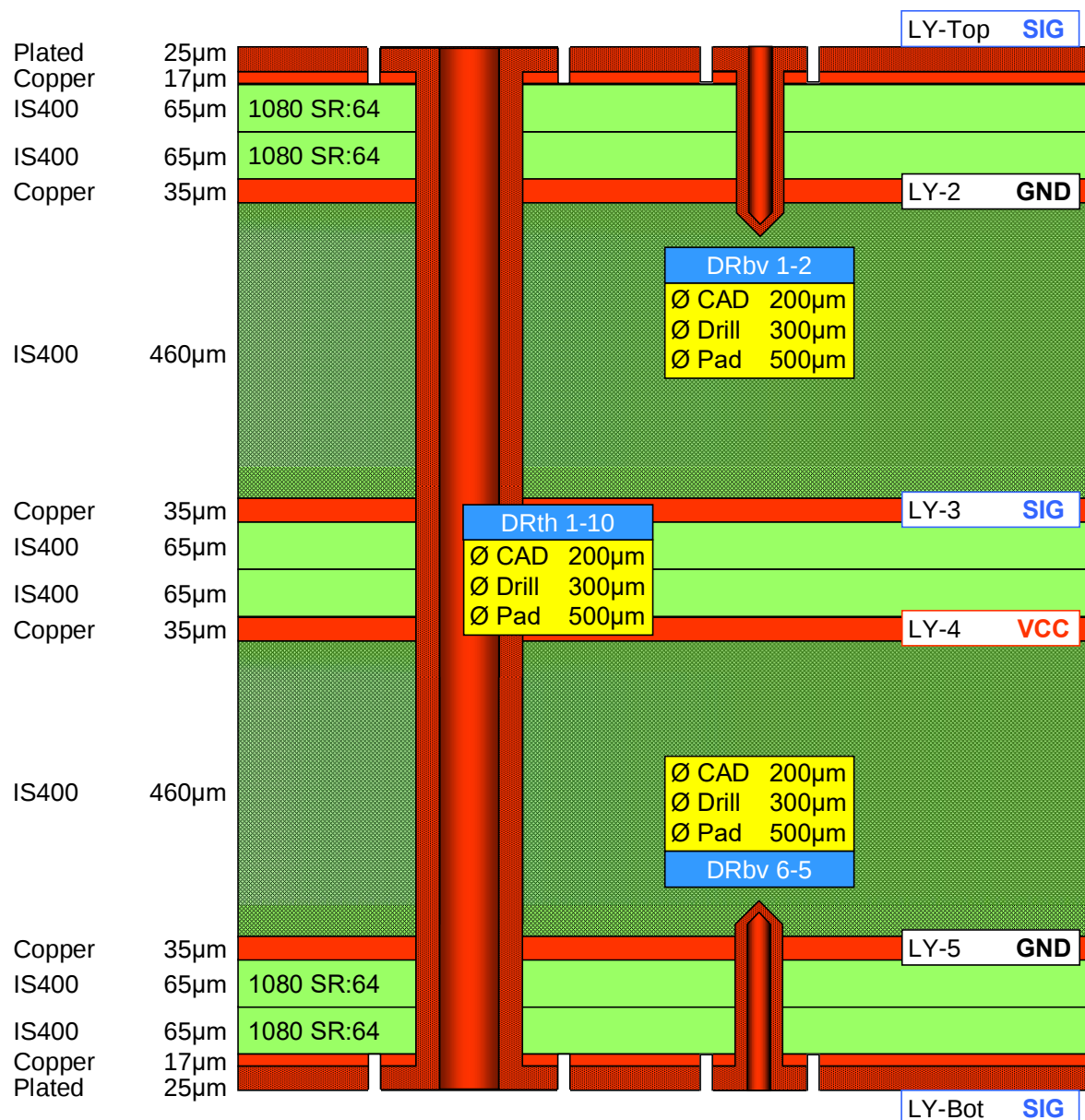


Note : The same impedance can be realised on Top-Layer

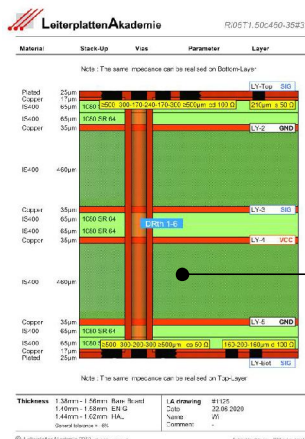
Thickness	1.38mm - 1.56mm	Bare Board	LA drawing	#1237	
	1.40mm - 1.58mm	ENIG		Date	22.06.2020
	1.44mm - 1.62mm	HAL		Name	Wi
	General tolerance +/- 6%			Comment	-



Plating Strategy	From Layer	To Layer	File Extension
Throughholes DK	LY-Top	LY-Bot	DRth 1-6
Throughholes NDK	LY-Top	LY-Bot	DRndk 1-6
BlindVias	LY-Top	LY-2	DRbv 1-2
BlindVias	LY-Bot	LY-5	DRbv 6-5



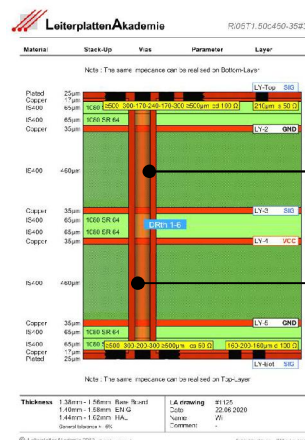
Material per PCB	#	Glass	Resin	Pressed Thickness	Company
Prepreg IS400	6	1080	SR:65%	63µm +/- 8µm	Isola
Core IS400	2	n.a.	n.a.	460µm	Isola



Main Material Properties

IPC specification sheet	IPC-4101C / 97 / 98/ 99 / 101
Epoxy system	FR4
Curing agent	phenolic
Flame retardant mech.	RoHS compliant Bromine
UL certificate	UL94 V-0
Dielectric value	3.9@500MHz
Loss tangent	0.022@500MHz
Tg	150° by DSC
CTE x/y/z	before Tg : 13/13/ maximum 50 ppm after Tg : 13/13/ maximum 250 ppm
Electrical strength	50 kV/mm minimum specified by IPC
Adhesive strength	1.05 N/mm minimum for copper foils >17µm

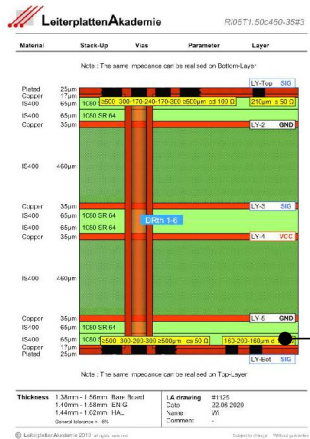
Isola Data sheet April 2020



PCB & CAD-Layout Specification

PCB class	Rigid
Cores mounted	Inside
Copper thickness	25µm for throughhole barrels
Throughhole vias	CAD : 200µm diameter, 500µm pad minimum Drill : 300µm tool diameter minimum
Aspect ratio	1:7 or better is necessary
Buried vias	CAD : 200µm diameter, 500µm pad minimum Drill : 300µm tool diameter minimum
Aspect ratio	1:0.75 or better is necessary
Blind vias	no
Track width	150µm minimum on all signal layers
Track distance	150µm minimum on all signal layers
Solder mask	double sided, fotosensitive, thickness 20µm
Plugging	no
Edge metallization	no
UL	yes

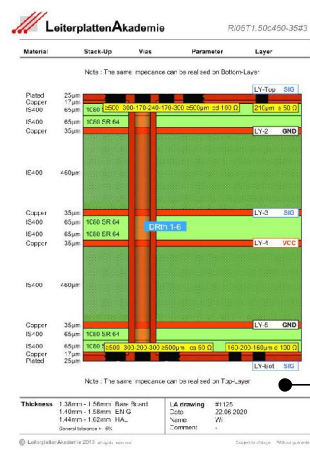




Electromagnetical & Physical Properties

MultiPowerSystem	not defined
Impedance	50 Ω single ended + coplanar 100 Ω differential + coplanar
Decoupling	no additional capacitors calculated
Power integrity	
Signal integrity	
EMI	
Thermal properties	

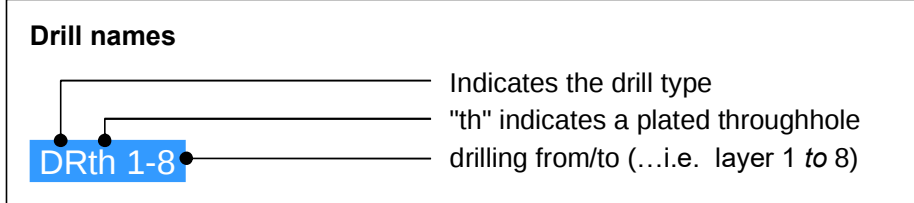
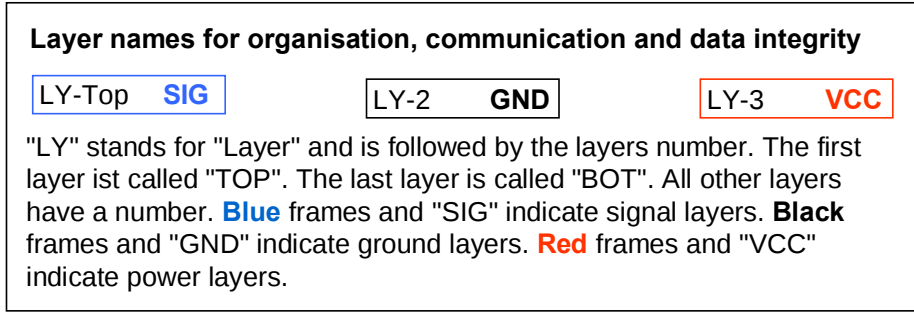
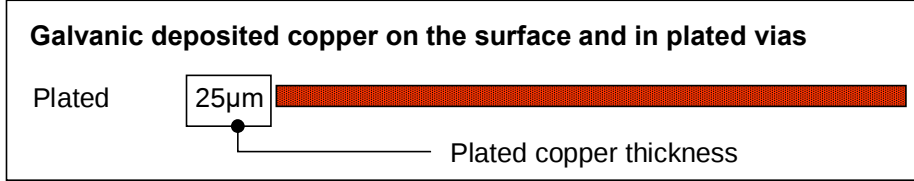
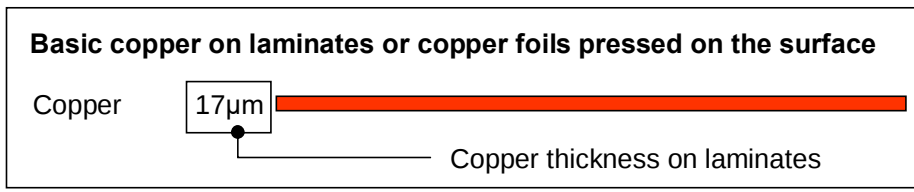
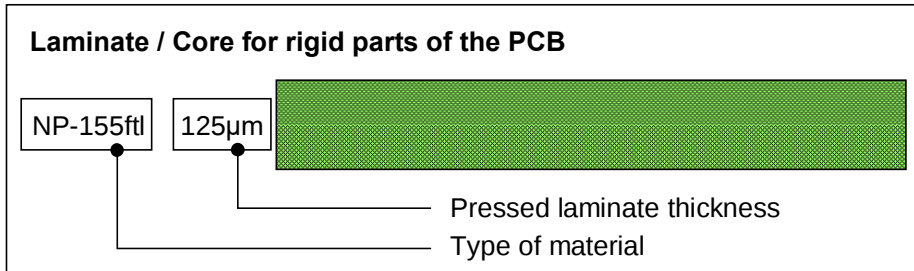
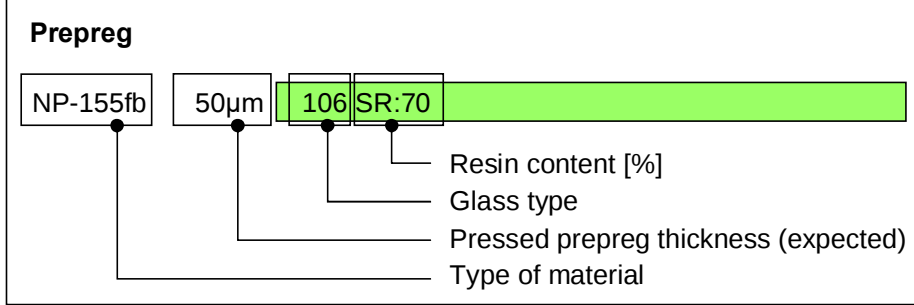
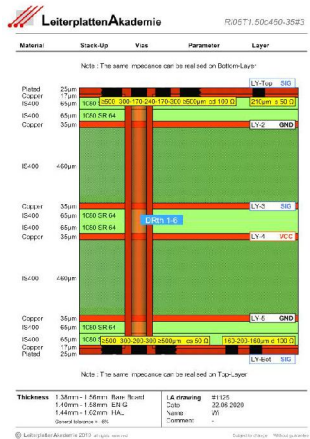
Impedance calculated with POLAR Si8000 V9.02.00
Decoupling capacitors are calculated with DCC Silent V.4.0

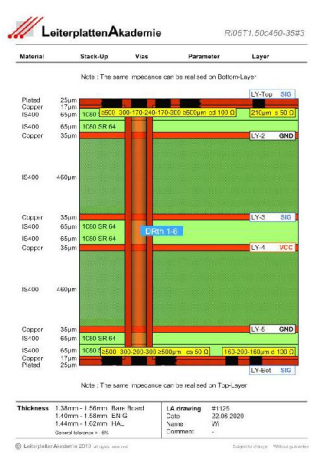


Statistic Values

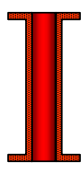
Copper volume + weight	Powerplane	Copper thickness 35 μ m Density 80%
	280 mm ³ /dm ² 2.49 gr/dm ²	
	Signal layer	Copper thickness 42 μ m Density 40%
	168 mm ³ /dm ² 1.50 gr/dm ²	
	Signal layer	Copper thickness 35 μ m Density 40%
	140 mm ³ /dm ² 1.25 gr/dm ²	
Dielectric weight		
	NP-155f 2.0 gr/dm ²	Reference thickness 100 μ m
Summary		
	32.9 gr/dm ²	at 1.50mm PCB thickness
Via copper weight		
	28.2 mgr /100 vias at drill diameter 300 μ m	
Via copper volume		
	3.2 mm ³ /100 vias	
Via copper surface		
	139 mm ² /100 vias	







Via types (plated)



Throughhole or Buried via (drill)



Blind via (drill)

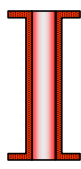


Blind via (laser)



(not plated)

Via types (plugged with silver paste)



Throughhole or Buried via (drill)



Blind via (drill)



Blind via (laser)

Via types (plugged with epoxy resin)



Throughhole or Buried via (drill)

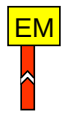


Blind via (drill)



Blind via (laser)

Edge metallization

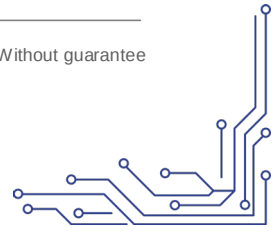


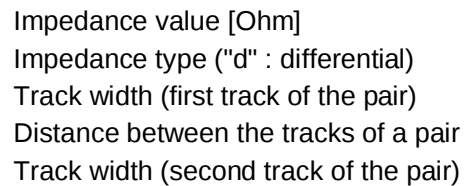
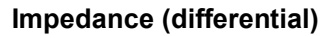
Some layers are connected to the copper at the edge of the PCB as shown in the stackup plan.

Plane capacitance



The capacitance of adjacent power planes is used.





Track on upper layer
Track width
Impedance value [Ohm]
Track on lower layer
Impedance type ("d" : differential)

Impedance value [Ohm]
Impedance type ("s" : single ended)
Track width

Impedance value [Ohm]
Impedance type ("cs" : single ended)
Width of reference plane (right side)
Distance track to reference plane
Track width
Distance track to reference plane
Width of reference plane (left side)

Impedance value [Ohm]	
Impedance type ("cd" : differential)	
Width of reference plane (right side)	
Distance between the tracks of a pair	
Track width	
Distance track to reference plane	

