Technology - Rigid Aluminium-IMS-Printed Circuits

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Options and Characteristics - Aluminium-IMS-Printed Circuits - PCBs	Online calculation/Standard	on explicit enquiry
Quantity	1 piece up to 1,0m² total area	from 1 piece to mass production
Layer quantity	1 layer	up to 6 layers
Material thickness (1-layer)	1,0mm; 1,55mm; and 2,0mm	0,30mm to 4,0mm
Material thickness (2-layers)	1,55mm	0,30mm to 4,0mm
Material thickness (4- to 6-layers)	not possible	1,6mm
Copper thickness (1- and 2-layers)	35µm and 70µm	35µm, 70µm, 105µm
Copper thickness (4- to 6-layers)	not possible	35µm
Material colour	beige / fawn epoxy / grey aluminium	beige / fawn epoxy / grey aluminium
Base material type	Aluminium 5052 alloy / Isolation: FR4 Tg 130° C	copper, AL1060, AL3003
Maximum operating temperature	ca. 110° C	ca. 110° C
Minimum operating temperature	ca. -40° C	down to ca. -40° C
Silk print layer	none, top	none, top, bottom, double sided
Solder mask colour	green, white, black, blue and red	green, white, black, blue, red and transparent (individual colours on exact colour value - RAL scale)
Silk print colour	white, black respectively on white solder mask	black, blue, yellow, red
Via-Filling (no copper lid)	not possible	possible
Electric test	possible (flying probe)	possible, also adapter
Plugging (with copper lid, e.g. for "via-in-pad technology"	not possible	possible
Peelable mask	not possible	top, bottom or double sided
Beveling	not possible	possible
Surface finish	HAL lead free	HAL lead free, immersion gold (ENIG), OSP
Finger gold	not possible	not possible
Long term tempering	not possible	possible
Maximum aluminium-IMS-printed circuit board size 1 and 2 layers IMS-Aluminium PCB	280 x 420mm	420 x 580 mm²
Maximum aluminium-IMS-printed circuit board size for aluminium-IMS multilayer PCBs	not possible	230 x 360mm²
Minimum aluminium-IMS singulated circuit board size	3cm², smaller can be calculated but will be panelized	>1cm² <3cm² on enquiry
Minimum aluminium-IMS circuit boar size in v-cut panels	not possible	<10x10mm² on enquiry

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Minimum aluminium-IMS circuit boar size in routing panels	10x10mm^2 / 1cm^2	<5x5mm^2 on enquiry
Minimum aluminium-MS printed circuit board width	5mm	<5mm on enquiry
Lead time options 1 layer aluminium-IMS printed circuits	4WD, 5WD, 7WD, 10WD	In-day-service and over-night-service
Lead time options 2-ayers aluminium-IMS multilayer printed circuits	not possible	starting at 10WD
Lead time options 4- to 6 layers multilayer printed circuits	not possible	starting at 20WD
Routing	always	always, except punching
V-cut	not possible	possible
Jump-v-cut	not possible	possible
Punching	not possible	possible
Counter-sink-holes	not possible	possible
Z-axis milling	not possible	possible
Aluminium-IMS special stack-up	not possible	possible

Panel Production - Aluminium-IMS Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
V-cut panel	possible	possible
V-Cut - ALU routing panel (combination)	possible	possible
Multi panels (more than one layout per panel)	possible	possible
Panel setup (chosen by Leiton)	possible	possible
Panel setup (according to drawing)	possible	possible

PTH-drills (plated drills) - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Smallest drill 35µm (final diameter)	0,30mm	0,10mm
Smallest drill 70µm (final diameter)	0,30mm	0,30mm
Smallest drill 105µm (final diameter)	not possible	0,30mm
Smallest drill 140µm (final diameter)	not possible	not possible
Smallest drill 210µm (final diameter)	not possible	not possible
Smallest drill 280µm (final diameter)	not possible	nicht möglich
Smallest drill 400µm (final diameter)	not possible	nicht möglich
Smallest annular ring 35µm	0,20mm	0,20mm

Smallest annular ring 70µm	0,20mm	0,20mm
Smallest annular ring 105µm	not possible	0,20mm
Smallest annular ring 140µm	not possible	not possible
Smallest annular ring 210µm	not possible	not possible
Smallest annular ring 280µm	not possible	not possible
Smallest annular ring 400µm	not possible	not possible
Possibel drill diameters	0,30mm to 1,6mm in 0,05mm steps	0,10mm to 2,2mm in 0,05mm steps
Drills >5,5mm	not possible	routed
Smallest drill distance 1-layer aluminium-IMS-circuits (drill edge to drill edge)	0,40mm	0,40mm
Smallest drill distance 2-layers aluminium-IMS-circuits (drill edge to drill edge)	0,80mm	0,80mm
Intersecting drills	not possible	not possible, will be routed
Half-open PTH on PCB edge	not possible	not possible

NPTH-drills (non-plated drills) - Aluminium-IMS-Printed Circuit Boards - PCBs	**Online calculation/Standard**	**on explicit enquiry**
Smalles drill size (final diameter)	1,0mm	0,30mm
Possible drill sizes	1,0mm to 5,5mm in 0,05mm steps	0,30mm to 5,5mm in 0,05mm steps
Copper clearance / distance to copper	0,20mm	0,20mm
Drills >5,5mm	routed	routed
Minimum drill-to-edge distance	0,50mm	0,50mm
Smallest drill distance 1-layer aluminium-IMS-circuits (drill edge to drill edge)	0,40mm	0,40mm
Smallest drill distance 2-layers aluminium-IMS-circuits (drill edge to drill edge)	not possible	0,70mm
Intersecting drills	not possible, will be routed	not possible, will be routed
NPTH drills in copper area (without clearance)	not possible (will be cleared from copper by min. 0,2mm)	on explicit requirement only

Blind Vias - Rigid Printed Circuit Boards - PCBs	**Online calculation/Standard**	**on explicit enquiry**
Smallest blind via (final diameter)	not possible	not possible
Smallest Aspect-Ratio	not possible	not possible
Smallest annular ring	not possible	not possible

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Buried Vias - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Smallest buried via (final diameter)	not possible	not possible

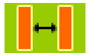
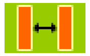
Routing (non-plated) - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Inner routing NPTH	possible	possible
Smallest inner routing NPTH	2,0mm	1,0mm
Available routing diameters NPTH	2,0mm	1,0 up to 2,2mm in 0,10mm steps
Smallest radius (inner corners) NPTH	1,0mm	0,5mm

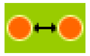
Routing (plated) - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Inner routing PTH	not possible	possible
Smallest PTH inner routing (final diameter)	not possible	0,90mm
Edge plating (outer edge)	not possible	not possible
Special routing paths with plating (inner)	not possible	possible
Available routing diameters PTH (final diameter)	not possible	0,90mm up to 1,9mm in 0,10mm steps
Smallest radius (inner corner, final) PTH	not possible	0,45mm
Smallest annular ring	not possible	0,25mm

Copper Layers (outer) - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Smallest trace 18µm	not possible	0,09mm
Smallest trace 35µm	0,15mm	0,10mm
Smallest trace 70µm	0,20mm	0,15mm
Smallest trace 105µm	not possible	0,40mm
Smallest trace 140µm	not possible	not possible
Smallest trace 210µm	not possible	not possible
Smallest trace 280µm	not possible	not possible
Smallest trace 400µm	not possible	not possible
Smallest trace-to-trace distance 18µm	not possible	0,10mm
Smallest trace-to-trace distance 35µm	0,15mm	0,10mm

Smallest trace-to-trace distance 70µm	0,20mm	0,15mm
Smallest trace-to-trace distance 105µm	not possible	0,40mm
Smallest trace-to-trace distance 140µm	not possible	not possible
Smallest trace-to-trace distance 210µm	not possible	not possible
Smallest trace-to-trace distance 280µm	not possible	not possible
Smallest trace-to-trace distance 400µm	not possible	not possible
Smallest drill pad	drill siez +0,30mm	drill size +0,20mm
Smallest copper clearance to inner routing	0,30mm	0,25mm
Smallest copper clearance to board edge (routing)	0,30mm	0,25mm
Smallest copper clearance to board edge (v-cut)	0,50mm	0,50mm

Copper Layers (inner) - Aluminium-IMS-Multilayer Printed Circuit Boards - PCBs	**Online calculation/Standard**	**on explicit enquiry**
Smallest trace 18µm	not possible	0,09mm
Smallest trace 35µm	not possible	0,10mm
Smallest trace 70µm	not possible	0,15mm
Smallest trace 105µm	not possible	not possible
Smallest trace-to-trace distance 18µm	not possible	0,10mm
Smallest trace-to-trace distance 35µm	not possible	0,10mm
Smallest trace-to-trace distance 70µm	not possible	0,20mm
Smallest trace-to-trace distance 105µm	not possible	not possible
Smallest drill-pad diameter	not possible	0,60mm
Smallest copper clearance to outer edges (routed)	not possible	0,30mm
Smallest copper clearance to inner edges (routed)	not possible	0,30mm
Smallest copper clearance to drills	not possible	0,30mm

Solder Mask - Aluminium-IMS-Multilayer Printed Circuit Boards - PCBs		**Online calculation/Standard**	**on explicit enquiry**
Smallest solder mask web (straight)		0,12mm	0,10mm
Smallest solder mask web (straight)		0,15mm	0,15mm

Smallest solder mask web (round)		0,075mm	0,05mm
smallest solder maks size around copper		0,075mm	<0mm
Smallest text lines		0,25mm	0,20mm

Silk Print - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Smallest lines	0,20mm	0,15mm
Smallest distance between lines	0,20mm	0,15mm
Minimum clearance to copper pads	0,20mm	0,15mm

Carbon Print - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Smallest pad-to-pad distance	not possible	0,30mm

Tolerances, Values, Marks & Norms - Aluminium-IMS-Printed Circuit Boards - PCBs	Online calculation/Standard	on explicit enquiry
Max. offset drill centre to centre of reference	0,10mm	0,05mm
Max. offset soldermask / copper structures	0,15mm	0,075mm
Finished drill sizes PTH (<=0,50mm)	not possible	-0/+0,10
Finished drill sizes PTH (0,55 to 3mm)	not possible	-0/+0,10mm
Finished drill sizes PTH (>3mm)	not possible	-0/+0,10mm
Finished drill sizes NPTH (up to 6mm)	-0,05/+0,20mm	-0/+0,10mm
Finished drill sizes NPTH (>6mm)	-0,05/+0,20mm	-0/+0,10mm
Outline	+/-0,20mm	+/-0,10mm
Max. offset outline/copper structures	+/-0,20mm	+/-0,10mm
V-cut depth	not possible	+/-0,20mm
Z-axis milling	not possible	+/-0,20mm
V-Cut position to copper structures	not possible	+/-0,15mm
Etch tolerance copper thickness 18µm	not possible	+0/-0,02mm
Etch tolerance copper thickness 35µm	+0/-0,03mm	+0/-0,03mm
Etch tolerance copper thickness 70µm	+0/-0,05mm	+0/-0,05mm

Etch tolerance copper thickness 105µm	not possible	+0/-0,08mm
Etch tolerance copper thickness 140µm	not possible	not possible
Etch tolerance copper thickness 210µm	not possible	not possible
Etch tolerance copper thickness 280µm	not possible	not possible
Etch tolerance copper thickness 400µm	not possible	not possible
Material thickness tolerances	+/-10%	differs, please enquire
Copper thickness tolerances	+20% / -15%	+/-10%
Immersion tin thickness	not possible	not possible
HAL lead free thickness	>= 8- bis 10µm, edges >0,5µm	>= 8- bis 10µm, edges >0,5µm
HAL lead thickness	not possible	not possible
Immersion gold for soldering (nickel thickness	not possible	3µm to 6µm
Immersion gold for soldering (gold thickness)	not possible	0,07µm to 0,12 µm
Immersion gold for gold-wire bonding (nickel thickness)	not possible	not possible
Immersion gold for gold-wire bonding (gold thickness)	not possible	not possible
Immersion gold for aluminum-wire bonding (nickel thickness)	not possible	3µm to 6µm
Immersion gold for aluminum-wire bonding (gold thickness)	not possible	0,07µm to 0,12 µm
Electrolytic connector gold - soft, bonding possible (nickel thickness)	not possible	not possible
Electrolytic connector gold - soft, bonding possible (gold thickness)	not possible	not possible
Electrolytic connector gold - hard, bonding NOT possible (nickel thickness)	not possible	not possible
Electrolytic connector gold - hard, bonding NOT possible (gold thickness)	not possible	not possible
Wet solder laquer thickness	>15µm	>15µm
Copper thickness in plated hole, traces 35µm	minimum 18µm	minimum 20µm
Copper thickness in plated hole, traces 70µm	minimum 18µm	minimum 20µm
Copper thickness in plated hole, traces 105 to 210µm	not possible	minimum 20µm
hickness in plated hole, traces 280 to 400µm	not possible	minimum 20µm
Winding	max. 1%	max. 0,5%
Warping	max. 1%	max. 0,5%
Beveling angle	not possible	not possible
Base materials RoHS-compliance	yes, always	yes, always

Surface finish RoHS-compiance	yes, always	always, unless "HAL lead" is explicitly required
IPC-norm	IPC-A-600 - Class 2, if applicable	IPC-A-600 - Class 1, 2 or 3, if applicable
UL-approval of printed circuits (UL number, logo, date code)	not possible	UL94V0 possible
UL-approved base material	yes, always	possible
Insertion of date code	possible, please mention in enquiry	possible, please mention in enquiry
Insertion of supplier logo (Leiton)	possible, please mention in enquiry	possible, please mention in enquiry
DIN EN ISO 9001 certification work preparation, CAM and order management over Leiton	yes	yes
DIN EN ISO 9001 certification of printed circuit board production	no	possible
DIN EN ISO 14001 certification of printed circuit board production	no	possible
DIN EN ISO 16949 certification of printed circuit board production	no	possible