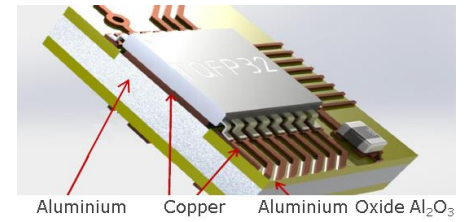


CAD/CAM

- Gerber + aperture list for all kinds of layers
- Gerber RS274X for all kinds of layers
- DPF for all kinds of layers
- ODB++ for all kinds of layers
- HPGL for mechanical drawings
- DXF for mechanical drawings
- DWG for mechanical drawings
- Excellon for all drill and rout files
- Sieb & Meyer for all drill and rout files
- Mentor neutral file for netlist comparison
- IPC356 file for netlist comparison



Mechanical & Thermal Parameters of AL Oxide Material

Item	Unit	Value
Thermal Conductivity of Al ₂ O ₃	W/mK	7 - 121
Thermal Conductivity of Substrate	W/mK	1251
Operating Temperatures	°C	< 350
Thermal Coefficient of Expansion (TCE)	ppm/ °C	8 - 12
Young Modules	GPa	130
Flexural Strength	GPa	60, 000

Electrical Parameters of AL Oxide Material

Item	Conditions	Unit	Value
Withstand Voltage	75µm TIM Thickness	V	<3000
Dielectric Constant	75µm / 1KHz		3,9
Dielectric Constant	75µm / 1MHz		7
Dielectric Loss Tangent	75µm / 1KHz		0,017
Dielectric Loss Tangent	75µm / 1MHz		0,069
Surface resistance	Ohm		2 x 10e11

Design Features for AL Oxide Material

Item	Unit	Value
Max. Dimension	mm	330x490, (500x600 ¹)
Dielectric thickness	µm	65 -75
Aluminum base thickness	mm	1,6 +/- 10 %
Copper thickness	µm	17 - 90
Min. Line Width / Space	mm	1,2 / 0,75
Line width / space alu intern	µm	125 / 125

¹ will be introduced in 2018

Manufacturing according

IPC-A600 Class 2

Testing According

IPC-TM-650



Special products

Fineline QPI always strives to provide its clients with the products and technologies which they require and, should these not already exist, will develop them itself or in cooperation with others. Contact Fineline QPI for further information.

Design rules AL-oxide PCB

Parameters	Recommended value	Limit value ¹
PCB thickness, mm	1,5;1,0; 0,381	
Oxide thickness, (2 μ m cover all the plate's surface)	70 ² μ m	80 \pm 10 ² μ m
Copper thickness	35 ² μ m	5-80 ² μ m
Finish layer	immersion silver, immersion gold ENIG	
Finish layer thickness	solderability ensuring	
The maximum size of the working area of the PCB, mm	290 x 450mm, (460x5604 mm)	
Processing of contour	scribing, milling	
Color marking	oxide (extrication in mask)	white, black, green, tin
Color of solder mask	white (RS2000 or analogue), black, green	
Number of layers	Top and bottom	
Minimum width of the conductor	0,3+0,05 ³ mm	
Minimum guaranteed band of vias	0,35 mm	0,25+teardrop mm
Minimum gap between conductive elements, mm	0,5 mm	0,3 mm
Minimum gap between the circuit board and current elements	1 mm	0,6 mm
Width of the mask exemption by the line of		
	- Scribing	0,8 mm
	- Milling	milling cutter diameter + 0,25 mm
	- Drilling	drill diameter + 0,2 mm
Minimum diameter of the via, (recommend no more than 10 vias on the PCB)	1,5 mm (+) ²⁰⁰ μ m, (-) no requirements	0,8 mm (+) ²⁰⁰ μ m, (-) no req.
Minimum diameter of the holes	0,6 \pm 0,2 mm	
Minimum diameter of metallized vias for components' mounting	1,5 \pm 0,2 mm	0,8 \pm 0,2 mm
Countersink in the vias for wires	0,5x45° mm	
Minimum gap between the pad and the solder mask	0,2 mm	0,1 mm
Minimum size of the separate area of solder mask (e.g. between pads)	0,3 mm	0,15 mm
Marking resolution exposure/ silkscreen	0,3/0,4 mm	0,25/0,3 mm
Minimum height of the font marking (silkscreen)	1,5 mm	1,2 mm
Minimum height of the font marking (exposure)	1 mm	
Minimum size of oxide extrication while marking on the finish surface	0,4 mm	0,3 mm
Minimum gap between the marking and the pad release (exposure/silkscreen)	0,2/1 mm	
Distance between the board edge and marking	0,5 mm	
If the construction of the module does not comprehend using insulating sleeves or washers, it is necessary to perform oxide release in the mounting holes:		
	- in OxidTop	\emptyset screw head (\emptyset of flange rivets) +0,3 mm
	- in OxidBot	\emptyset via + 0,3 mm
	- in MaskTop	\emptyset screw head (\emptyset of flange rivets), line thickness 0,3 mm
Minimum gap between the board edges and oxide elements	0,4 mm	0,3 mm
Minimum size of a separate oxide section	2,5 mm	1 mm
Minimum gap between oxide elements	2 mm	1 mm
Guaranteed size of copper conductors coverage by oxide layer	0,3 mm	0,25 mm
Rounding radius of oxide corner elements	0,8 mm	0,5 mm
Fiducial marks. Diameter Top/PasteTop/MaskTop	1/1/2,5 mm	1/1/2 mm

1 from 2-3Q 2017 wider production values are to be introduced, e.g laser drilling, high precision, smaller via diameters, etc.

2 standard value for the LED industry, can be changed depending on application

3 sampling can be made with high precision upon the request

4 after production expansion in 2018