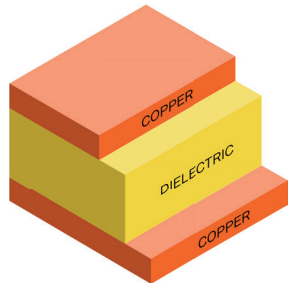


FR4 FR95 ML HTR 0,05-1,2mm

Data Sheet DS_30 1/2

STANDARD CONSTRUCTIONS

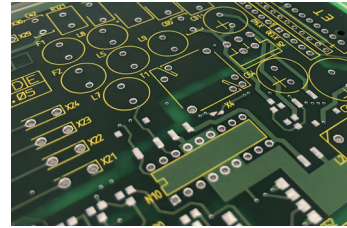
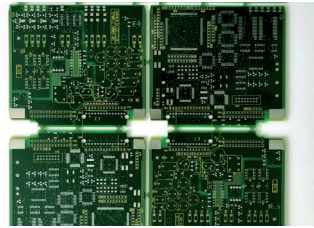
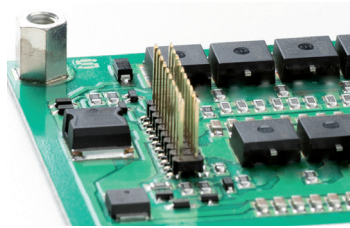


ED copper
thickness μm (in)
35 (1oz) / 70 (2oz)

Dielectric
thickness mm
0.05-1.2

ED copper
thickness μm (in)
35 (1oz) / 70 (2oz)

*Other constructions
available upon request



UL Approved QMST2 File: E47820
ANSI Grade FR-4 (type L121)
IPC 4101



RoHS 3 / REACH
Last updated compliance directive



PROPERTIES	IPC 4101 Paragraph	IPC TM-650 Method	Laminate Specification	0.50mm Typical values	Laminate Specification	50mm Typical values
SURFACE QUALITY ⁽¹⁾	3.8.3	2.1.5	GRADE A	GRADE A	GRADE A	GRADE A
THICKNESS ⁽¹⁾	3.8.4.2	2.2.18	CLASS B	CLASS B	CLASS B	CLASS B
PEEL STRENGTH (std Cu foil) After thermal stress, 10" 288°C At 125°C After process solutions	3.9.1.1.1 3.9.1.1.2 3.9.1.1.3	2.4.8 2.4.8 / 2 / 3 2.4.8	1,5 N/mm 1,3 N/mm 1,3 N/mm	1,7 N/m 1,5 N/m 1,7 N/m	1,5 N/mm 1,3 N/mm 1,3 N/mm	1,7 N/m 1,5 N/m 1,7 N/m
VOLUME RESISTIVITY 90% HR / 35 / 96h After moisture At elevated temp (E24h/125°C)	3.11.1.3	2.5.17.1	10 ⁷ M Ω ·cm n/a 10 ⁷ M Ω ·cm	10 ⁸ M Ω ·cm n/a 2·10 ⁷ M Ω ·cm	n/a 10 ⁴ M Ω ·cm 10 ⁷ M Ω ·cm	n/a 9·10 ⁷ M Ω ·cm 3·10 ⁷ M Ω ·cm
SURFACE RESISTIVITY 90% HR / 35 / 96h After moisture At elevated temp (E 24h/125°C)	3.11.1.4	2.5.17.1	10 ⁶ M Ω n/a 10 ⁵ M Ω	2·10 ⁷ M Ω n/a 5·10 ⁵ M Ω	n/a 10 ⁴ M Ω 10 ⁵ M Ω	n/a 3·10 ⁶ M Ω 10 ⁶ M Ω
MOISTURE ABSORPTION	3.12.1.1	2.6.2.1	n/a	n/a	0,35%	0.14 %
DIELECTRIC BREAKDOWN	3.11.1.6	2.5.6	n/a	n/a	40 kV	42 kV
PERMITIVITY at 1MHz ⁽²⁾	3.11.1.1	2.5.5	4.8	4.55	4.8	4.45
LOSS TANGENT at 1MHz	3.11.1.2	2.5.5	0,035	0,015	0.035	0.014
FLEXURAL STRENGTH Length direction Cross direction	3.9.1.3	2.4.4	n/a n/a	n/a n/a	415 N/mm ² 345 N/mm ²	550 N/mm ² 410 N/mm ²
ARC RESISTANCE	3.11.1.5	2.5.1	60 sec	120sec	60 sec	120 sec
THERMAL STRESS (10" at 288°C)	3.10.1.2	2.4.13.1	Pass visual	>100sec	Pass visual	>100 sec
ELECTRIC STRENGTH ⁽²⁾	3.11.1.7	2.5.6.2	32kV/mm	36kV/mm	n/a	n/a
FLAMMABILITY	3.10.1.1	UL 94	V-0	V-0	V - 0	V - 0
GLASS TRANSITION TEMP (Tg)	3.10.1.6	2.4.25 DSC	n/a	n/a	150°C	155°C
DECOMPOSITION TEMPERATURE (Td)	3.10.1.10	2.4.24.6	n/a	n/a	330°C	335°C
Z-AXIS EXPANSION, CTE a1, (below Tg) a2, (above Tg) total expansion (50-260°C)	3.10.1.11	2.4.24	n/a n/a n/a	n/a n/a n/a	60 ppm/°C 300 ppm/°C 4,0 %	55 ppm/°C 280 ppm/°C 3,7 %
THERMAL RESISTANCE at 260°C (t260) at 288°C (t288)	3.10.1.12	2.4.24.1	n/a n/a	n/a n/a	30 min 5 min	60 min 13 min

FR4 FR95 ML HTR 0,05-1,2mm

Data Sheet DS_30 2/2

AVAILABILITY	
STANDARD SHEET SIZES	927 x 1232 mm and 1082 x 1232 mm Also available in cut panels to requirement.
Squareness	3 mm max., as differential between diagonal measurement
Copper thickness	35 and 70 mic (other copper thickness upon request)
Tolerance	+13/-0mm NO LOGO

Specification column corresponds to guaranteed values. Typical values are average values of current production and are based on reliable analytical methods, they have to be used only as guideline and not give rise to any rights under warranty terms. Aismalibar reserves the right to future changes.

Notes:

- (1) Other level upon agreement
- (2) Influenced by build-up (% of resin)
- (3) As agreed upon between user and supplied.

IEC Specifications (IEC 61249-2-7) and Test Methods (IEC 61189-2): IEC specifications and test methods are in most of cases equivalent to IPC standards. They can be used as reference upon specific agreement between customer and supplied.