DuPont™ CooLam™

THERMAL SUBSTRATES FOR METAL CORE PRINTED CIRCUIT BOARDS (MCPCBS)

Circuit Design Guide

Circuit Design: Electrical safety and or testing are the determining factors in selection of circuit trace and space. Careful consideration of end use application and a complete review of agency compliance should be part of any design checklist.

Minimum Circuit Width

Minimum Circuit Trace Width	Copper			Width	Tolerance	Width	Tolerance
	um	inch	oz./Sqft	mm	+/-mm	inch	+/-inch
	18	0.0007	0.5	0.064	0.00635	0.0025	0.0003
	35	0.0014	1.0	0.127	0.0127	0.005	0.0005
	70	0.0027	2.0	0.152	0.01524	0.006	0.0006
	105	0.0041	3.0	0.178	0.01778	0.007	0.0007
	140	0.0054	4.0	0.203	0.02032	0.008	0.0008

Minimum Circuit Space Width - Non-Plated	Copper			Width	Tolerance	Width	Tolerance
	um	inch	oz./Sqft	mm	+/-mm	inch	+/-inch
	18	0.0007	0.5	0.076	0.008	0.003	0.0003
	35	0.0014	1.0	0.178	0.018	0.007	0.0007
	70	0.0027	2.0	0.229	0.023	0.009	0.0009
	105	0.0041	3.0	0.305	0.030	0.012	0.0012
	140	0.0054	4.0	0.356	0.036	0.014	0.0014

Minimum Circuit Space Width - Plated	Copper			Width	Tolerance	Width	Tolerance
	um	inch	oz./Sqft	mm	+/-mm	inch	+/-inch
	18	0.0007	0.5	0.127	0.013	0.005	0.0005
	35	0.0014	1.0	0.229	0.023	0.009	0.0009
	70	0.0027	2.0	0.279	0.028	0.011	0.0011
	105	0.0041	3.0	0.356	0.036	0.014	0.0014
	140	0.0054	4.0	0.406	0.041	0.016	0.0016

Circuit - Panel Layout

Minimum Part or Array Singulation Circuit to Edge	Material Thickness		Dimension	
Method/Dimensions	mm	inch	mm	inch
Punched	1.02	0.040	1.52	0.060
	1.57	0.062	2.08	0.082
	2.03	0.080	2.54	0.100
V-Scored, Milled, or Routed	1.02	0.040	0.66	0.026
	1.57	0.062	0.74	0.029
	2.03	0.080	0.79	0.031

Minimum Part or Array Circuit to Hole Edge	Material Thickness		Dimension	
Method/Dimensions	mm	inch	mm	inch
	1.02	0.040	1.02	0.040
	1.57	0.062	1.57	0.062
	2.03	0.080	2.03	0.080

Circuit - Panel Layout - cont'd

Minimum Annular Ring	Type	Dimension	
	P or D/NP or P	mm	inch
	Punched - Non-plated	0.76	0.030
	Drilled -Plated	0.25	0.010

Minimum Character Height for Etched Nomenclature	Dimension	
	mm	inch
	1.52	0.060

Minimum Hole to Board Edge	Material Thickness		Dimension	
	mm	inch	mm	inch
Drilled, Routed, or Punched	1.02	0.040	1.02	0.040
	1.57	0.062	1.57	0.062
	2.03	0.080	2.03	0.080

Minimum Punched Hole Size	Material Thickness		Dimension	
	mm	inch	mm	inch
	1.02	0.040	1.52	0.060
	1.57	0.062	2.36	0.093
	2.03	0.080	3.05	0.120

Minimum Copper Base Plate Hole Size	Material Thickness		Dimension	
	mm	inch	mm	inch
Drilled	1.02	0.040	1.02	0.040
	1.57	0.062	1.57	0.062
	2.03	0.080	2.03	0.080

Minimum Aluminum Base Plate Hole Size	Material Thickness		Dimension	
	mm	inch	mm	inch
Drilled	1.02	0.040	0.76	0.030
	1.57	0.062	0.81	0.032
	2.03	0.080	12.19	0.480

Minimum Via Hole Size	Material Thickness		Dimension	
	mm	inch	mm	inch
Drilled	All	All	0.36	0.014

Minimum Edge Radius	Material Thickness		Dimension	
	mm	inch	mm	inch
Drilled	1.02	0.040	1.02	0.040
	1.57	0.062	1.57	0.062
	2.03	0.080	2.03	0.080

Minimum Edge "Picture Frame"	Material Thickness		Dimension	
	mm	inch	mm	inch
	1.02	0.040	0.00	0.000
	1.57	0.062	0.00	0.000
	2.03	0.080	0.00	0.000

Solder Mask

Minimum Solder Mask Width	Width	Tolerance	Width	Tolerance
	mm	+/-mm	inch	+/-inch
	1.52	0.15	0.06	0.006

Solder Mask cont'd

Solder Mask Pad Aperture	Length/Width	Tolerance	Length/Width	Tolerance
	mm	+/-mm	inch	+/-inch
Overlap	0.25	0.03	0.01	0.001
Length/Width	0.20	0.02	0.008	0.0008

Nomenclature	Length/Width	Tolerance	Length/Width	Tolerance
	mm	+/-mm	inch	+/-inch
Height	0.20	0.02	0.008	0.0008
Length/Width	0.20	0.02	0.008	0.0008

Silk Screen

Minimum Silk Screen Feature to Pad	Width	Tolerance	Width	Tolerance
	mm	+/-mm	inch	+/-inch
	0.38	0.04	0.015	0.0015

Minimum Silk Screen Bridging	Copper			Tolerance
	um	inch	oz.Sqft	Yes/No
	18	0.00068	0.5	Yes
	35	0.00135	1.0	Yes
	70	0.00270	2.0	Yes
	105	0.00405	>/=3.0	No

Silk Screen Feature to Board Edge	Material Thickness		Dimension	
	mm	inch	mm	inch
Length/Width	1.02	0.040	1.02	0.040
	1.57	0.062	1.57	0.062
	2.03	0.080	2.03	0.080

Nomenclature	Length/Width	Tolerance	Length/Width	Tolerance
	mm	+/-mm	inch	+/-inch
Height	1.52	0.15	0.06	0.006
Line Width	0.25	0.03	0.01	0.001

For more information on DuPont™ CooLam™, please visit:

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