



S1165

(ANSI:FR-4) High Performance Halogen-Free Copper Clad Laminate

特点

- 不含卤素、锑、红磷等成分。
- 燃烧时，不产生有毒气体和残留有毒成分。
- 高Tg 170°C (DSC)。
- 优异的耐热性，热分解温度更高，T260>30min，适合于无铅焊工艺。
- 从环境温度到260°C，板材具备较低的膨胀系数。
- 优良的电性能，Df<0.01。
- 加工性能及其他性能与普通FR-4相同。

FEATURES

- Free of constituents such as halogen, antimony, red phosphorous, etc..
- No toxic gas emission and no hazardous residue during waste combustion.
- High Tg 170°C.
- High thermal performance, higher decomposition temperature, T260>30min, suitable for lead-free process.
- Lower CTE from ambient to 260°C.
- Excellent electricity performance, Df<0.01.
- PCB processing and other properties similar to

GENERAL PROPERTIES

应用领域

电脑、仪器仪表、摄像机、电视机、电子游戏机、通讯设备等。

APPLICATIONS

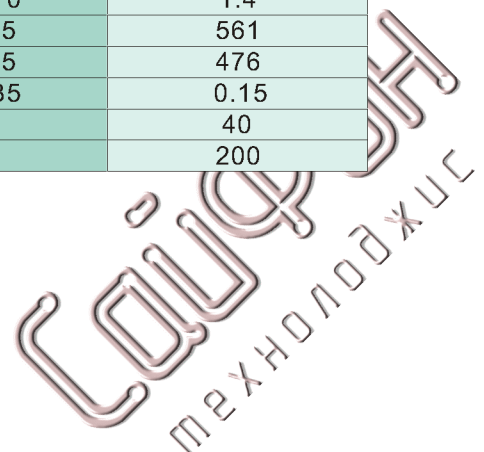
Computer, Instrumentation, VCR, TV, electronic game machine, communication equipment, etc.

Test Item	Treatment Condition	Unit	Property Data		
			SPEC	Typical Value	
Tg	DSC	°C	≥ 165	170	
Flammability	C-48/23/50	-	V-0	V-0	
	E-24/125				
Volume Resistivity	After moisture resistance	MΩ-cm	≥ 10 ⁶	2×10 ¹⁰	
	E-24/125		≥ 10 ³	2×10 ⁸	
Surface Resistivity	After moisture resistance	MΩ	≥ 10 ⁴	1×10 ⁷	
	E-24/125		≥ 10 ³	4×10 ⁹	
Arc Resistance	D-48/50+D-0.5/23	S	≥ 60	127	
Dielectric Breakdown	D-48/50+D-0.5/23	KV	≥ 40	55	
Dielectric Constant (1MHz)	C-24/23/50	-	≤ 5.4	4.8	
Dissipation Factor (1MHz)	C-24/23/50	-	≤ 0.035	0.007	
Thermal Stress	Unetched Etched	288°C, 20s	-	No delamination	
					No delamination
Peel Strength	1oz Cu. Foil	288°C, 10s	N/mm	≥ 1.05	1.5
		125°C		≥ 0.70	1.4
Flexural Strength	LW	A	MPa	≥ 415	561
	CW			≥ 345	476
Water Absorption	D-24/23	%	≤ 0.35	0.15	
CTE z-axis	Before Tg After Tg	TMA	μm/m°C	-	40
			μm/m°C	-	200

Specimen Thickness: 1.6mm

Explanations: C = Humidity conditioning;
D = Immersion conditioning in distilled water;
E = Temperature conditioning.

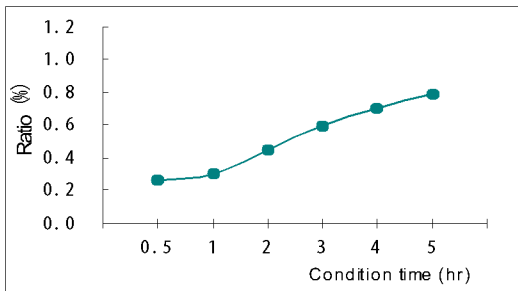
The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in °C and with the third digit the relative humidity.



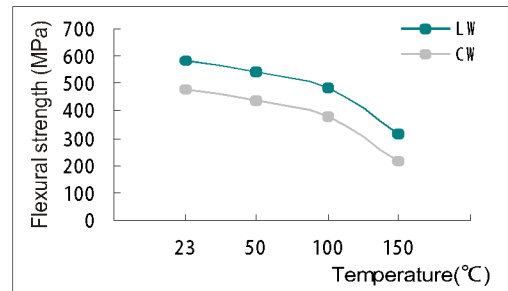
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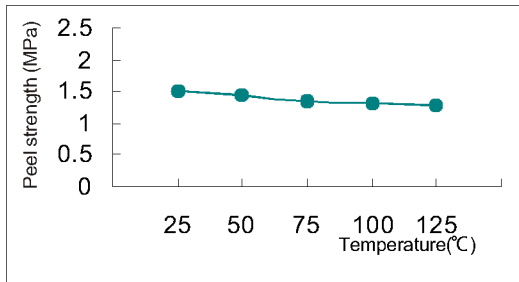
Water absorption at pressure cooker



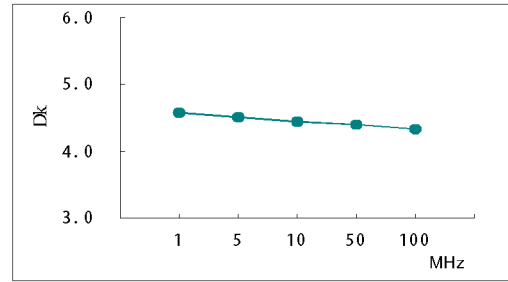
Flexural strength



Peel strength



Dielectric constant



PURCHASING INFORMATION

Thickness	Surface Finish	Standard Size	Alternative Size
0.05mm to 3.2mm	12 μ m to 105 μ m	1,020 × 1,220mm (40" × 48") 1,070 × 1,220mm (42" × 48")	915 × 1,220mm (36" × 48")

※ Other sheet size and thickness could be available upon request.

HALOGEN CONTENT TEST

※ JPCA-ES-01-1999 Standard "Test method of halogen-free materials"

Halogen	JPCA Standard	S1165
Cl	≤ 0.09%	0.05%
Br	≤ 0.09%	0.00%