

## TECHNICAL INFORMATION 技術資料

## KB-2150 G

KB-2150G 是針對環境保護而開發的環保型不含鹵素、不含銻的紙基酚醛樹脂銅面積層板。可以避免因燃燒板材含有鹵素和銻時所產生的有毒物質及氣體。KB-2150G不但保持FR-2的良好性能，而且耐濕、熱性優異。

KB-2150G is a non-halogen, antimony-free paper based phenolic resin copper clad laminate. No toxic residue or exhaust gas generated during combustion. KB-2150G not only keeps all characteristics of FR-2, but also has a superior heat and humidity resistance.

Type 型號	Grade 級別	Construction 組成
KB-2150G	ANSI (NEMA) FR-2 JIS PP3F	紙、酚醛樹脂、銅箔 Paper, Phenolic resin, Copper foil

*Features* 特點

- 氣味少  
Less odor
- 優異的耐濕、熱性  
Superior heat and humidity resistance
- 有利於環境保護  
Friendly to the environment
- 適合之沖孔溫度為室溫~70℃  
Suitable for punching at ambient ~70℃
- 彎曲度、扭曲度小且穩定  
Warp and twist are small and stable

*Standard Configuration* 標準數據

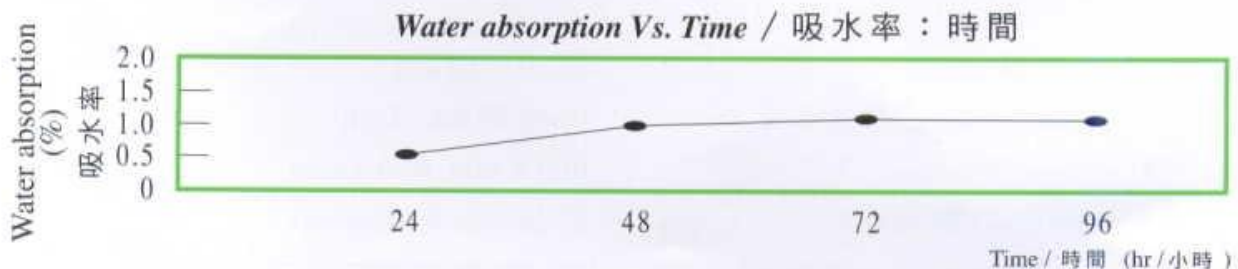
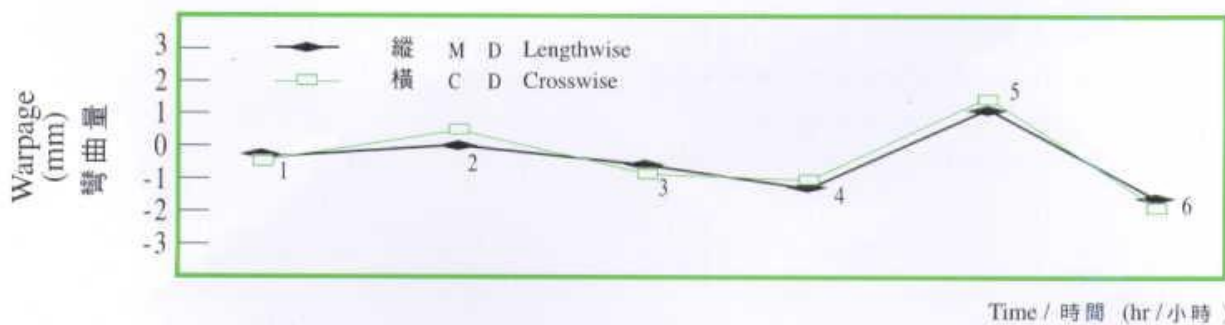
- Thickness 厚度 : 0.8 mm - 1.6 mm
- Copper Cladding 銅箔厚度 : 18 μm, 35 μm, 70 μm
- Regular Size (mm) 常規尺寸 : 1020 X 1020, 1020 X 1220
- Other Size 其他尺寸 : As specified by customers

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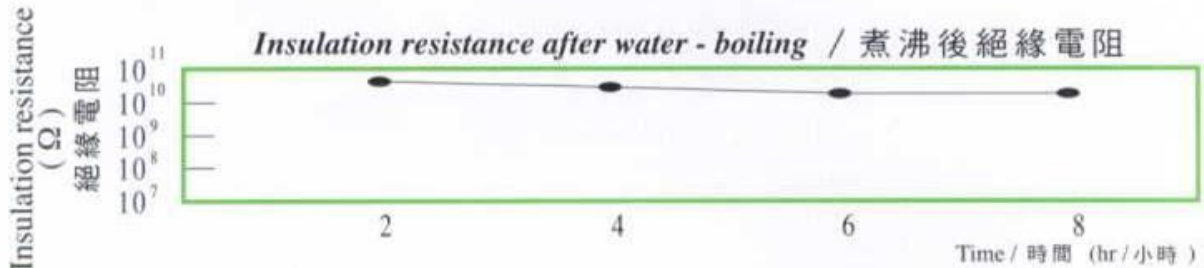
#### Warpage of PCB during processing / 印製電路板加工時彎曲度 ( Thickness 1.6 mm single side / 1.6 mm 厚度單面 )

Type 型號	PCB 工藝 Processes	序號 NO.	Warpage 彎曲量 (mm)	
			Lengthwise 縱向	Crosswise 橫向
KB-2150G (400 X 320 X 1.6mm)	Feeding 投入	1	- 0.3	- 0.4
	于 130°C 加熱 90 秒 Heating at 130°C for 90 sec	2	- 0.1	0.4
	蝕刻、洗滌、乾燥 Etching, Rinsing, Drying	3	- 0.7	- 0.9
	于 200°C 加熱 30 秒 Heating at 200°C for 30 sec	4	- 1.2	- 1.0
	于 50°C 沖孔 Punching at 50°C	5	1.1	1.4
	于 260°C 焊錫 5 秒 Soldering at 260°C for 5 sec	6	- 1.6	- 1.9



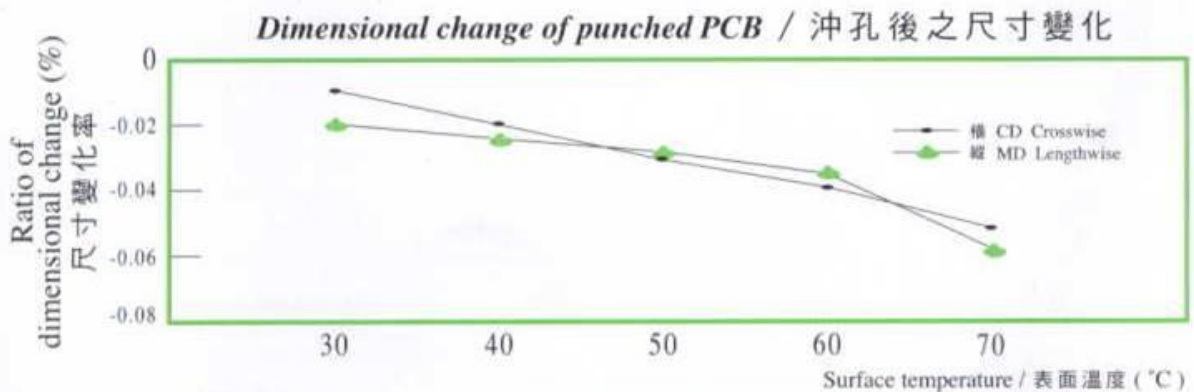
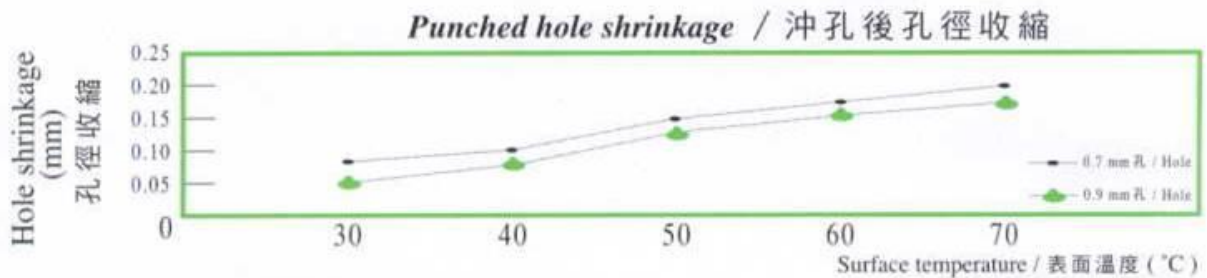
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**Temperature range for punching / 適合沖孔溫度範圍**

KB-2150G	Surface temperature 沖孔時基板表面溫度				
	30°C	40°C	50°C	60°C	70°C
	<div style="display: flex; justify-content: center; align-items: center;"> <div style="width: 20px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); margin-right: 5px;"></div> <span>Optimum temperature 最適宜溫度</span> <div style="width: 20px; height: 10px; background: repeating-linear-gradient(-45deg, transparent, transparent 2px, black 2px, black 4px); margin-left: 5px;"></div> </div>				





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#### General Properties 一般特性

Test Item 測試項目	Unit 單位	Condition 處理條件	Testing Method 測試方法	Typical Value 典型值
Solder Resistance (260°C) 耐浸焊性	Sec/秒	A	JIS C 6481	25 ~ 40
Heat Resistance 耐熱性	—	150°C 30 min	JIS C 6481	No Change 無異常
Peel Strength (Copper Foil 35 μm) 銅箔剝離強度 (35 μm 銅箔)	Kgf/cm	A 260°C 10 Sec	JIS C 6481	1.8 ~ 2.0 1.8 ~ 2.0
Flexural Strength 屈曲強度	Lengthwise 縱向	A	JIS C 6481	14 ~ 16
	Crosswise 橫向			12 ~ 13
Volume Resistivity 體積阻抗系數	Ω.cm	C-96/20/65 C-96/20/65+C-96/40/90	JIS C 6481	$1 \times 10^{13} \sim 10^{14}$ $1 \times 10^{12} \sim 10^{13}$
Surface Resistance 表面抗阻	Adhesive Side 黏接剖面	C-96/20/65 C-96/20/65+C-96/40/90	JIS C 6481	$1 \times 10^{12} \sim 10^{13}$ $1 \times 10^{11} \sim 10^{12}$
	Laminate Side 積層板面	C-96/20/65 C-96/20/65+C-96/40/90		$1 \times 10^{11} \sim 10^{12}$ $1 \times 10^{10} \sim 10^{11}$
Insulation Resistance 絕緣抗阻	Ω	C-96/20/65 C-96/20/65+D-2/100	JIS C 6481	$1 \times 10^{11} \sim 10^{12}$ $1 \times 10^9 \sim 10^{10}$
Chemical Resistance 耐化學性	—	3%NaOH 40°C 3 min 在 40°C 的氫氧化鈉內浸 3 分鐘	JIS C 6481	No Change 無異常
		Boiled in trichloroethylene for 3 min 三氯乙烷中煮沸 3 分鐘		No Change 無異常
Water Absorption 吸水率	%	E-24/50+D-24/23	JIS C 6481	0.6 ~ 0.8
Flammability 阻燃性	Sec/秒	A	UL94	Avg./平均 3.0 Max./最大 8.0
Dielectric Constant (1 MHz) 介電常數 (1 MHz)	—	C-96/20/65 C-96/20/65+D-48/50	JIS C 6481	4.0 ~ 5.0 4.5 ~ 5.5
Dissipation Factor 介質損耗因數	—	C-96/20/65 C-96/20/65+D-48/50	JIS C 6481	0.025 ~ 0.035 0.035 ~ 0.045
CTI Value CTI 值	V/伏	0.1%NH <sub>4</sub> Cl	UL746A	200
Punching Temperature 沖孔溫度	°C	A	KB-QA-007	Ambient - 70 室溫 - 70

Remarks: Typical values for reference only 註：典型值只作參考