

# ETL-XPC-204 (H TYPE)

(For FR-1, High Heat Resistance Laminate)

## ■特性

- 極佳的耐熱性
- 優越之電氣火災安全性
- IEC 60112 耐漏電破壞試驗可達 600V 以上
- 符合 UL 746E 規範及 RoHS 法規要求

## ■CHARACTERS

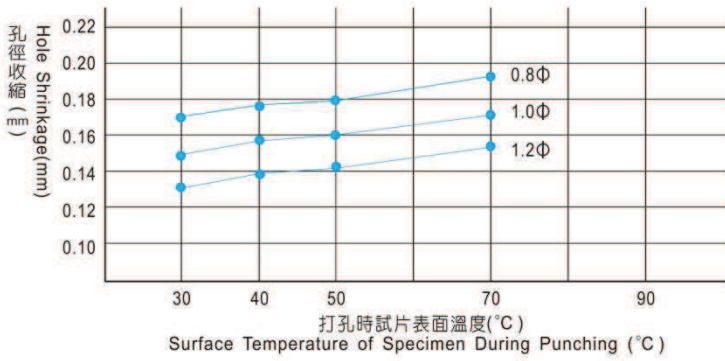
- Excellent Heat Resistance
- Electrical fire safety is excellent.
- IEC 60112 Comparative Tracking Index 600+ Volts
- Meet UL 746E and conform to the request of RoHS

## ■一般物性 GENERAL PROPERTIES

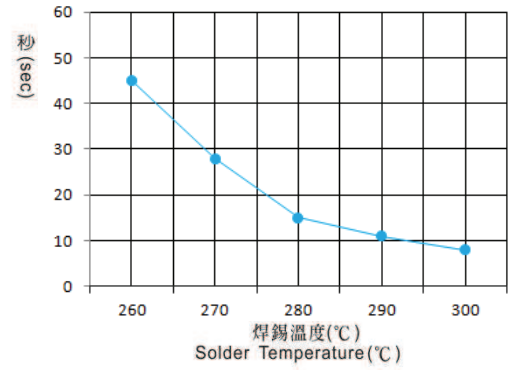
試驗項目 Test Item		單位 Unit	處理條件 Condition	品管規格值 Guarantee Value	實測標準值 Standard Value
體積阻抗 Volume Resistivity		Ω·cm	C-96/20/65	Above $5 \times 10^{12}$	$5 \times 10^{13} \sim 5 \times 10^{14}$
			C-96/20/65+C-96/40/90	Above $5 \times 10^{11}$	$1 \times 10^{13} \sim 1 \times 10^{14}$
表面阻抗 Surface Resistance	接著劑面 Adhesive Surface	Ω	C-96/20/65	Above $1 \times 10^{11}$	$1 \times 10^{12} \sim 1 \times 10^{13}$
	積層板面 Laminate Surface		C-96/20/65+C-96/40/90	Above $1 \times 10^{10}$	$5 \times 10^{11} \sim 5 \times 10^{12}$
			C-96/20/65	Above $1 \times 10^{10}$	$5 \times 10^{10} \sim 5 \times 10^{12}$
	C-96/20/65+C-96/40/90		Above $1 \times 10^8$	$5 \times 10^8 \sim 5 \times 10^9$	
絕緣阻抗 Insulation Resistance		Ω	C-96/20/65	Above $1 \times 10^{11}$	$5 \times 10^{12} \sim 5 \times 10^{13}$
			C-96/20/65+D-2/100	Above $1 \times 10^8$	$1 \times 10^{10} \sim 1 \times 10^{11}$
介電常數(1 MHz) Dielectric Constant		—	C-96/20/65	Less than 5.3	3.8~4.4
			C-96/20/65 + D-24/23	Less than 5.6	4.5~4.9
散發因子(1 MHz) Dissipation Factor		—	C-96/20/65	Less than 0.045	0.025~0.035
			C-96/20/65+D-24/23	Less than 0.055	0.033~0.043
焊錫耐熱性(260°C) Solder Heat Resistance		sec	A	Above 10	40~60
銅箔剝離強度 Peel Strength	銅箔(35μm) Copper Foil	kgf/cm	A	Above 1.5	1.90~2.40
			S (260°C, 10 sec)	Above 1.5	1.90~2.40
彎曲強度 Flexural Strength		kgf/mm <sup>2</sup>	A	Above 10	18~21
吸水率 Water Absorption		%	E-24/50+D-24/23	Less than 1.2	0.60~0.80
耐熱性 Heat Resistance		—	A	190°C 30 min no blistering	205°C 30 min no blistering
難燃性 Flame Resistance (UL 94 method)		sec	A& E-168/70	Less than $\pi=5$ Max=10	94 V-0
耐藥品性 Alkali Resistance		—	Immersion in 3% NaOH 40°C (3 mins)	無異常 No abnormality	無異常 No abnormality
加工沖孔性 Punchability		—	A	Suitable temp. 70~90 °C	GOOD
耐漏電破壞性 CTI (IEC 60112)		Volt	A	≥600	≥600

◎以上數據試片厚度 1.6mm (Note : Test specimen thickness is 1.6mm )

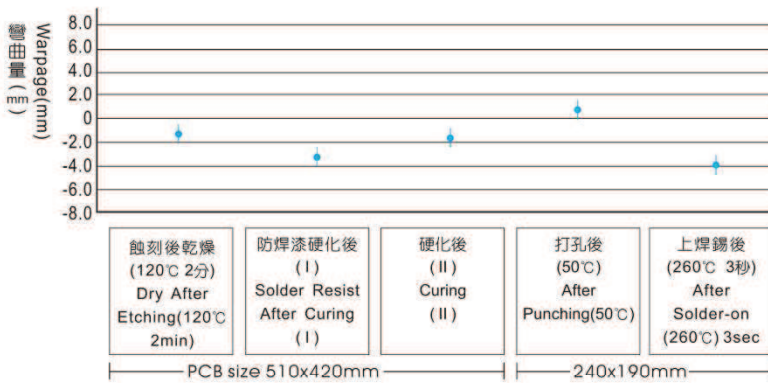
■ 打孔後孔徑收縮  
Hole Shrinkage after Punching



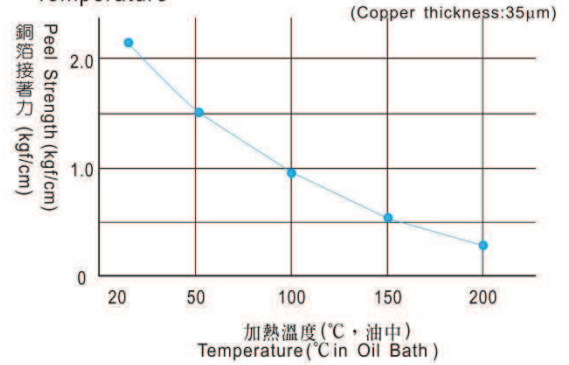
■ 焊錫中的耐熱之溫度特性  
Characteristics of Solder Heat Resistance



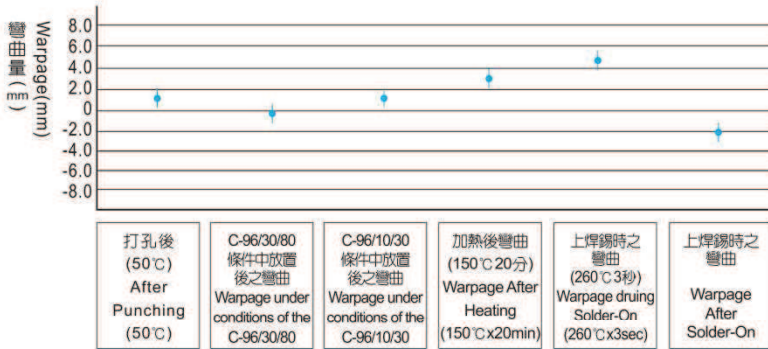
■ 印刷電路板加工時之彎曲(板厚1.6mm單面銅箔)  
Warpage During Process(thickness 1.6mm, single side)



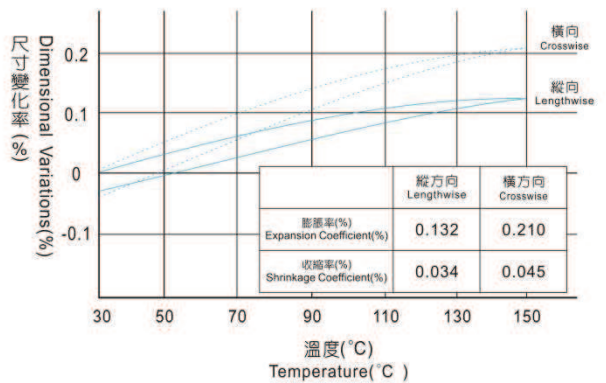
■ 銅箔接著力之溫度特性  
Characteristics of Peel Strength vs. Temperature



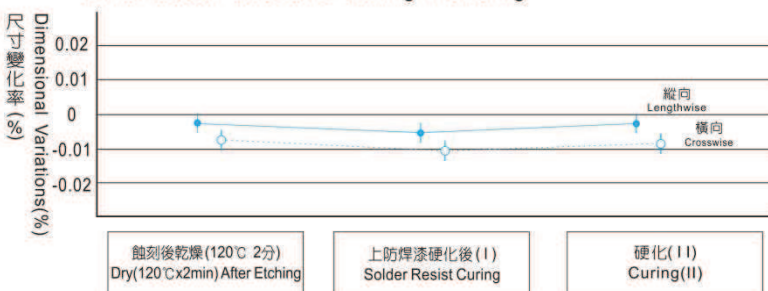
■ 彎曲隨時間之變化，加熱後及上焊錫後之彎曲  
Warpage vs. Time and Warpage after Heating and Solder-On



■ 熱脹冷縮特性  
Heat Expansion and Cooling Shrinkage



■ 在印刷工程中之尺寸變化  
Dimensional Variations During Punching



■ 打孔特性(打孔溫度25°C)  
Punch Character(Punching Temperature 25°C)

最大剪斷應力 Max. Shearing Resistance (kgf/mm <sup>2</sup> )	最大拔起應力 Max. Plucking Resistance (kgf/mm <sup>2</sup> )
8.6	2.5