ETL-XPC-207

(S TYPE)

(For FR-1, Silver/Copper Through Hole, Green TYPE Laminate)

ETL-XPC-207(S TYPE)銀/銅通孔用紙基材酚醛樹脂銅箔積層板是針對印刷電路板高密度配線化的需求，通孔間隔從 2.0mm 到 1.5mm 狹窄間隔而研發，具耐銀移性、高耐濕性、高絕緣阻抗性等特性。ETL-XPC-207(S TYPE), silver migration resistance, high humidity endurance and good insulation characteristics, is a newly developed paper based phenolic resin copper clad laminate for silver/copper through hole. It responds to the requirement of high-density wiring printed circuit board made by through-hole pitch narrow from 2.0mm to 1.5mm.

■特性

- 適用於銀/銅貫孔製程
- 尺寸變化、彎曲度小
- 優越之電氣火災安全性
- 優越之耐熱性、優越耐銀移性
- 符合 UL 746E 規範及 RoHS 法規
- 不含鹵素(Br、Cl...)及銻(Sb)化合物

■CHARACTERS

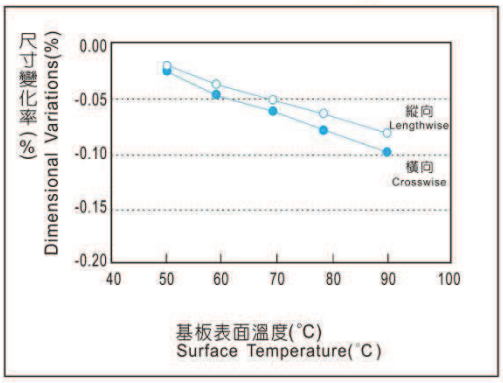
- Silver/Copper Paste through Hole PCB.
- Warpage behavior has been suppressed to a low level.
- Electrical fire safety is excellent.
- Excellent heat resistance and excellent resistance to silver migration.
- Meet UL 746E and conform to the request of RoHS.
- It includes neither halongen nor antimony.

■一般物性 GENERAL PROPERTIES

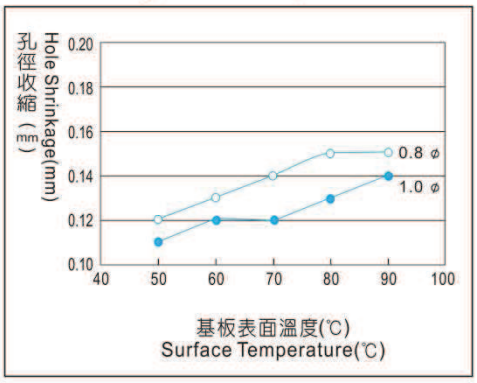
試驗項目 Test Item		單位 Unit	處理條件 Condition	品管規格值 Guarantee Value	實測標準值 Standard Value
體積阻抗 Volume Resistivity		Ω-cm	C-96/20/65	Above 5 X 10^{12}	3 X 10^{13}~8 X 10^{13}
			C-96/20/65+C-96/40/90	Above 5 X 10^{11}	1 X 10^{13}~5 X 10^{13}
表面阻抗 Surface Resistance	接著劑面 Adhesive Surface	Ω	C-96/20/65	Above 1 X 10^{11}	4 X 10^{13}~9 X 10^{13}
			C-96/20/65+C-96/40/90	Above 1 X 10^{10}	3 X 10^{12}~8 X 10^{12}
	積層板面 Laminate Surface		C-96/20/65	Above 1 X 10^{12}	-
			C-96/20/65+C-96/40/90	Above 1 X 10^{10}	-
絕緣阻抗 Insulation Resistance		Ω	C-96/20/65	Above 1 X 10^{8}	3 X 10^{12}~8 X 10^{12}
			C-96/20/65+D-2/100	Above 1 X 10^{8}	2 X 10^{10}~6 X 10^{10}
介電常數(1 MHz) Dielectric Constant		—	C-96/20/65	Less than 5.3	4.3~4.8
			C-96/20/65 +D-24/23	Less than 5.6	4.6~5.1
散發因子(1 MHz) Dissipation Factor		—	C-96/20/65	Less than 0.045	0.040~0.045
			C-96/20/65+D-24/23	Less than 0.055	0.050~0.055
焊錫耐熱性(260℃) 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℃, 10 sec)	Above 1.5	1.90~2.40
彎曲強度 Flexural Strength		kgf/mm^2	A	Above 10	14~17
吸水率 Water Absorption		%	E-24/50+D-24/23	Less than 0.8	0.50~0.70
			E-1/80+PCT 8hr(121℃)	Less than 4.0	3.40~3.90
耐熱性 Heat Resistance		—	A	190℃ 30 min no blistering	200℃ 30 min no blistering
難燃性 Flame Resistance (UL 94 method)		sec	A& E-168/70	Less than $\bar{x}$=5 Max=10	94 V-0
耐藥品性 Alkali Resistance		—	Immersion in 3% NaOH 40℃ (3 mins)	無異常 No abnormality	無異常 No abnormality
加工沖孔性 Punchability		—	A	Suitable temp. 90~110 ℃	GOOD
耐漏電破壞性 CTI (IEC 60112)		Volt	A	≧600	≧600
熱膨脹係數(TMA 法) E-15/150	X	X10^{-5}/℃	30~150℃	-	1.3~1.4
	Y			-	1.5~1.7
	Z			-	22.7~23.3

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

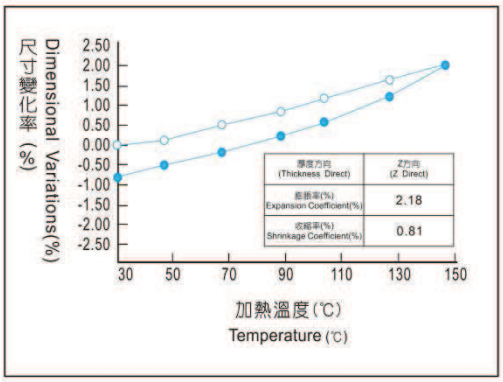
■ 沖孔後尺寸變化率
Dimensional Variation after Punching



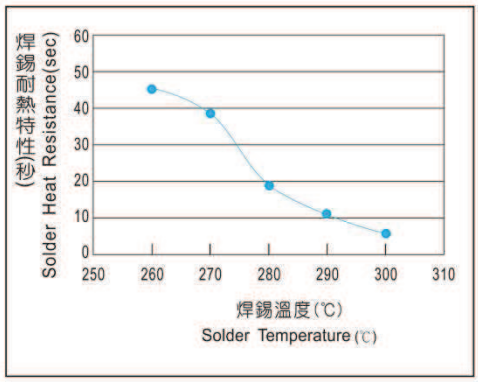
■ 沖孔後孔徑收縮
Hole Shrinkage after Punching



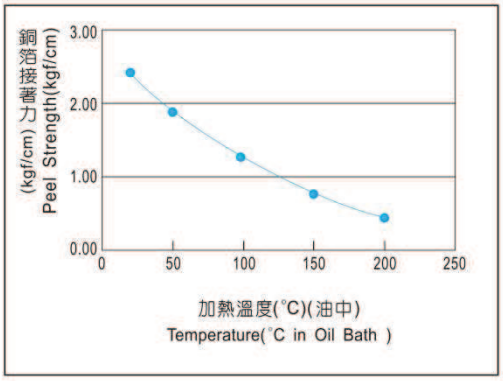
■ 加熱膨脹收縮率(TMA法)
Heat Expansion and Cooling Shrinkage (TMA method)



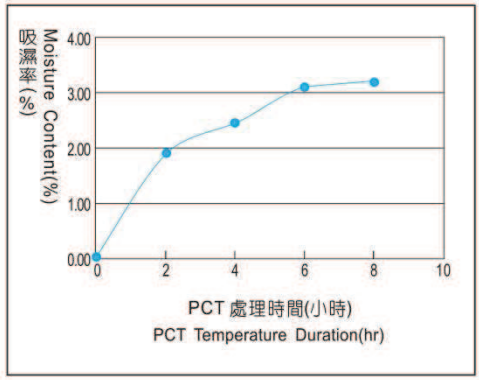
■ 焊錫耐熱特性
Characteristics of Solder Heat Resistance



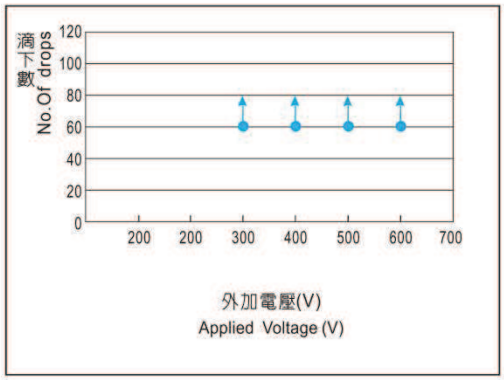
■ 銅箔接著力之溫度特性
Characteristics of Peel Strength vs. Temperature



■ 高壓煮沸吸濕性
Moisture Absorption of Pressure Cooker Test



■ 耐漏電試驗(IEC 112法，0.1%NH_4Cl)
Anti-tracking Performance (IEC112 method，0.1%NH_4Cl)



■ 耐銀移性
Silver Migration Resistance