

**DS-7409**

**(ANSI : FR-4) MULTI-FUNCTIONAL**

COPPER CLAD LAMINATES

**FEATURES**

- Multifunctional epoxy resin type
- High Tg (over 170°C)
- Superior performance through multiple thermal excursions
- Excellent chemical & thermal resistance
- Lower CTE
- UV blocking & AOI compatible

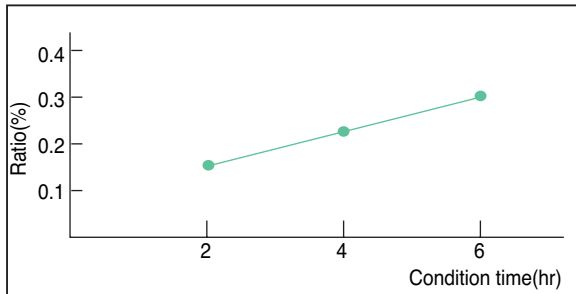
**APPLICATIONS**

Computer, Telecommunications, Instrumentation, Military hardware, etc.,

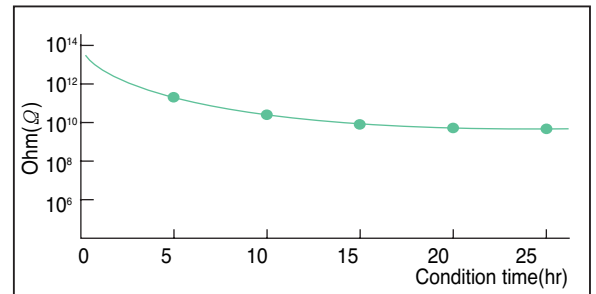
**INTERNATIONAL STANDARD RECOGNITION**

- UL : E103670

■ Water absorption(D-X/100)

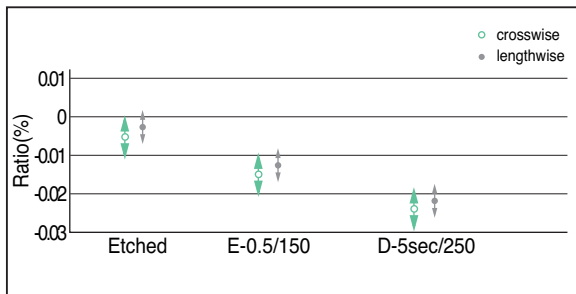


■ Insulation resistance at pressure cooker

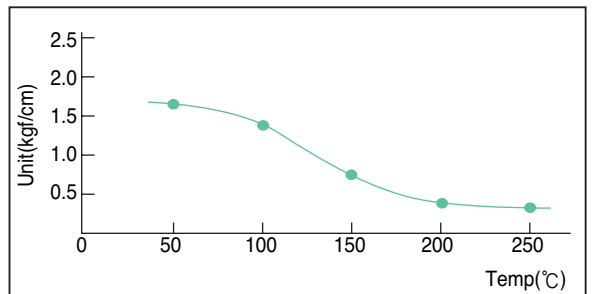


■ Dimensional stability

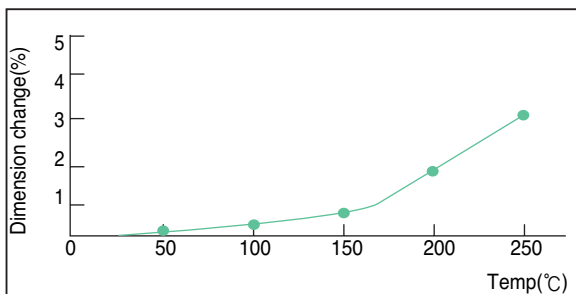
PCB process(size360X310mm span310X254mm)



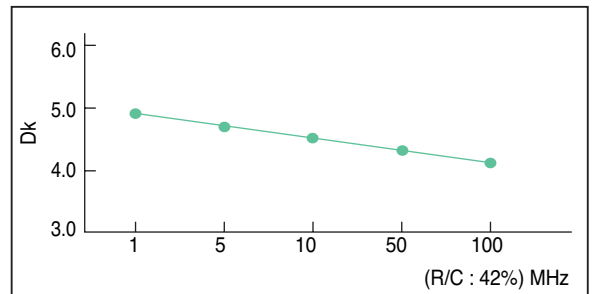
■ Peel strength at elevated temp. (Cu.foil 1 oz)



■ Thermal expansion of Z-direction(Test by TMA)



■ Dielectric constant



# COPPER CLAD LAMINATES

## GENERAL PROPERTIES

Test Item	Unit	Treatment Condition	Designation	DS-7409
			ANSI Grade	FR-4
			Property Data	
			Standard Value	Guaranteed Value
Tg	°C	DSC TMA	170 160	above 160 above 155
CTE x-axis y-axis z-axis	ppm/°C	Ambient to Tg	15 13 45	less than 20 less than 15 less than 60
Flammability	-	UL-94	V-0	V-0
Insulation Resistance	ohm	C-96/20/65 C-96/20/65+D-2/100	$1 \times 10^{12} - 1 \times 10^{13}$ $1 \times 10^{10} - 1 \times 10^{11}$	above $5 \times 10^{11}$ above $1 \times 10^9$
Volume Resistivity	ohm-cm	C-96/20/65 C-96/20/65+C-96/40/90	$1 \times 10^{14} - 1 \times 10^{15}$ $2 \times 10^{13} - 2 \times 10^{14}$	above $1 \times 10^{13}$ above $2 \times 10^{12}$
Surface Resistance	ohm	C-96/20/65 C-96/20/65+C-96/40/90	$1 \times 10^{13} - 1 \times 10^{14}$ $5 \times 10^{12} - 5 \times 10^{13}$	above $1 \times 10^{12}$ above $1 \times 10^{12}$
Arc Resistance	min.seconds		110	above 60
Dielectric Constant (1 MHz)	-	C-96/20/65 C-96/20/65+D-48/50	4.5 - 4.8 4.6 - 5.2	less than 5.5 less than 5.8
Dissipation Factor (1 MHz)	-	C-96/20/65 C-96/20/65+D-48/50	0.015 - 0.020 0.018 - 0.023	less than 0.035 less than 0.045
Comparative Tracking Index	volt	IEC Method	-	-
Solder Float(260°C)	sec	A	above 180	above 120
Peel Strength Cu.foil 1oz (0.035mm)	kgf/cm	A	1.6 - 1.8	above 1.43
Flexural Strength	kgf/mm <sup>2</sup>	A	40 - 50	above 32.7
Water Absorption	%	E-24/50+D-24/23	0.10 - 0.14	less than 0.25

Specimen Thickness : 1.6mm

## PURCHASING INFORMATION

- Copper foil : 0.5 oz/ft<sup>2</sup>(0.018 mm), 1 oz/ft<sup>2</sup>(0.035 mm), 2 oz/ft<sup>2</sup>(0.070 mm) available.
- Thickness : 0.05mm to 1.6mm

Standard Size		Tolerance(mm)
1,020 X 1,220mm (40" X 48")	915 X 1,220mm (36" X 48")	+3
1,070 X 1,220mm (42" X 48")	970 X 1,220mm (38" X 48")	-0
1,020 X 1,020mm (40" X 40")		

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