



ThinFlex

ThinFlex Corporation

No. 38-1, Ke-Yi Rd., Chunan, Miaoli 350, Taiwan, R.O.C.
 (Kuan Yuan Technology Park)
 Tel: +886-37-581686 Fax: +886-37-580571
<http://www.thinflex.com.tw>
 e-mail: service@thinflex.com.tw

ThinFlex-A

Adhesiveless Double Sided Copper Clad Laminate

(Halogen Free)

ThinFlex-A is an adhesiveless double sided (D/S) metal clad polyimide film, furnished in the form of roll laminate with RA or ED copper on both sides. ThinFlex-A adhesiveless D/S composites are designed for a wide variety of flexible circuit applications which require advanced material performance, temperature resistance, fine pitch, and high reliability.

1. Product Characteristics:

- * Excellent dimensional stability
- * Excellent flexibility
- * Finer line etch ability
- * Low moisture absorption
- * Excellent flammability (Flame class UL 94V-0; UL File No. E219724)
- * Excellent chemical resistance
- * Excellent thermal, mechanical, and electrical properties

2. Specifications:

Product	Thickness of PI	Thickness of Cu	Cu Type	Structure
A : D/S FCCL	10 : 1.0 mil 20 : 2.0 mil	02 : 1/4 oz 03 : 1/3 oz 05 : 1/2 oz 10 : 1.0 oz	R : RA E : ED	Double-sided
Supply Size	W: 250/500 ± 2mm; L: 400~700 ± 2mm (sheet type) W: 250/500 ± 2mm; L: 50 +2/-0m (roll type)			

***Other thicknesses and dimensions are available on customers' demand.**



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3. Construction:

Copper foil
Polyimide film
Copper foil

4. Properties:

Test item		Units	A-1003RD A-1005RD	A-1002ED A-1003ED A-1010ED	A-1005ED A-1010RD	Test Method	
Mechanical Properties	Peel Strength	As Received	Kgf/cm	≥ 0.80	≥ 1.00	≥ 1.20	IPC-TM650 2.4.9
		Solder Float		≥ 0.80	≥ 1.00	≥ 1.20	
		After Temp. Cycling		≥ 0.80	≥ 1.00	≥ 1.20	
		Chemical Resistance		≥ 0.80	≥ 1.00	≥ 1.20	IPC-TM650 2.3.2
	Flexural Endurance	M.D.	Times	≥ 300	≥ 300	≥ 300	JIS-C 6471 0.8mmR, 0.5kg
T.D.		≥ 300		≥ 300	≥ 300		
Electrical Properties	Surface Resistance		Ω	≥ 1.0×10 ¹¹	≥ 1.0×10 ¹¹	≥ 1.0×10 ¹¹	IPC-TM650 2.5.17
	Volume Resistance		Ω-cm	≥ 1.0×10 ¹²	≥ 1.0×10 ¹²	≥ 1.0×10 ¹²	
	Insulation Resistance		Ω	≥ 1.0×10 ⁹	≥ 1.0×10 ⁹	≥ 1.0×10 ⁹	IPC-TM650 2.6.3.2
Physical and Thermal Properties	Dimensional Stability	M.D.	%	-0.1~0.1	-0.1~0.1	-0.1~0.1	IPC-TM650 2.2.4C
		T.D.					
	Solder Float 10sec at 288°C (550°F)		--	Pass	Pass	Pass	IPC-TM650 2.4.13
	Thickness Tolerance		%	±10%	±10%	±10%	ThinFlex
	Ion Migration (1000hr/85%/85°C/50VDC)		--	Pass	Pass	Pass	--
UL Flame Class		--	94V-0	94V-0	94V-0	UL	

* Above data are typical values, and are not guaranteed values.



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Test item		Units	A-2002ED A-2003RD A-2005RD	A-2010RD A-2010ED	Test Method	
Mechanical Properties	Peel Strength	As Received	Kgf/cm	≥ 0.80	≥ 1.00	IPC-TM650 2.4.9
		Solder Float		≥ 0.80	≥ 1.00	
		After Temp. Cycling		≥ 0.80	≥ 1.00	
		Chemical Resistance		≥ 0.80	≥ 1.00	IPC-TM650 2.3.2
	Flexural Endurance	M.D.	Times	N/A	N/A	JIS-C 6471 0.8mmR, 0.5kg
		T.D.		N/A	N/A	
Electrical Properties	Surface Resistance		Ω	$\geq 1.0 \times 10^{11}$	$\geq 1.0 \times 10^{11}$	IPC-TM650 2.5.17
	Volume Resistance		Ω -cm	$\geq 1.0 \times 10^{12}$	$\geq 1.0 \times 10^{12}$	
	Insulation Resistance		Ω	$\geq 1.0 \times 10^9$	$\geq 1.0 \times 10^9$	IPC-TM650 2.6.3.2
Physical and Thermal Properties	Dimensional Stability	M.D.	%	-0.1~0.1	-0.1~0.1	IPC-TM650 2.2.4C
		T.D.				
	Solder Float 10sec at 288°C (550°F)		--	Pass	Pass	IPC-TM650 2.4.13
	Thickness Tolerance		%	$\pm 10\%$	$\pm 10\%$	ThinFlex
	Ion Migration (1000hr/85%/85°C/50VDC)		--	Pass	Pass	--
UL Flame Class		--	94V-0	94V-0	UL	

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Test item		Units	A-2003ED A-2005ED	A-2020RD A-2020ED	Test Method	
Mechanical Properties	Peel Strength	As Received	Kgf/cm	≥ 1.20	≥ 2.00	IPC-TM650 2.4.9
		Solder Float		≥ 1.20	≥ 2.00	
		After Temp. Cycling		≥ 1.20	≥ 2.00	
		Chemical Resistance		≥ 1.20	≥ 2.00	IPC-TM650 2.3.2
	Flexural Endurance	M.D.	Times	N/A	N/A	JIS-C 6471 0.8mmR, 0.5kg
		T.D.		N/A	N/A	
Electrical Properties	Surface Resistance		Ω	$\geq 1.0 \times 10^1_1$	$\geq 1.0 \times 10^1_1$	IPC-TM650 2.5.17
	Volume Resistance		Ω -cm	$\geq 1.0 \times 10^1_2$	$\geq 1.0 \times 10^1_2$	
	Insulation Resistance		Ω	$\geq 1.0 \times 10^9$	$\geq 1.0 \times 10^9$	IPC-TM650 2.6.3.2
Physical and Thermal Properties	Dimensional Stability	M.D.	%	-0.1~0.1	-0.1~0.1	IPC-TM650 2.2.4C
		T.D.				
	Solder Float 10sec at 288°C (550°F)		--	Pass	Pass	IPC-TM650 2.4.13
	Thickness Tolerance		%	$\pm 10\%$	$\pm 10\%$	ThinFlex
	Ion Migration (1000hr/85%/85°C/50VDC)		--	Pass	Pass	--
UL Flame Class		--	94V-0	94V-0	UL	

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5. Storage:

ThinFlex-A will meet its shelf-life for at least 12 months after arrival at the user's factory when stored in the original packaging at temperatures of below 25°C and below 70% humidity. The products do not need refrigeration and should not be frozen.

Note: The information and data contained in this technical literature is believed to be accurate and is offered in good faith for the benefit of the user. The user should make his own tests to verify the suitability of this product for any application before its use. All data are typical values only and subject to change without notice.

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