Adhesive-less Copper Clad Laminate

ESPANEX® M series

Standard Type / Low Modulus Type

ESPANEX®M series is adhesive-less copper clad laminate that is suitable for the flexural use, which applies NSCC original polyimide.

By the original polyimide and casting method, we realize thin polyimide CCL which is superior in consecutive flexibility.

We have started manutacturing the low modulus type newly. This supports a field such as bend parts of narrow housing needing low repulsion than the conventional M series.

Features

- Wide copper foil selectivity
- Wide polyimide thickness selectivity
- Excellent dimensional stability in circuit manufacturing process
- Excellent folding endurance and flexibility
- Excellent thermal stability
- Support lead-free solder
- Excellent chemical resistance
- Excellent electrical properties

Applications

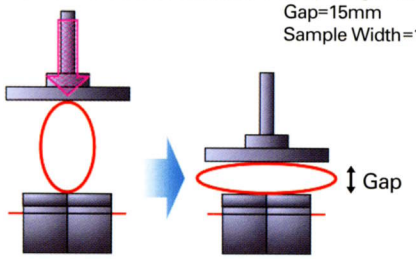
● Connecting FPC for LCD	: Cell phone, Car navigation system
● Connecting FPC for Dynamic applications	: Cell phone(slide, hinge), R/W cable, Optical pickup
● Connecting FPC for Static applications	: Key board, Touch panel, Camera module
● FPC for High Frequency Devises	: Optical Link PWB, High Frequency Antenna PWB
● FPC for Automotive applications	: Car navigation system, ECU

Line up

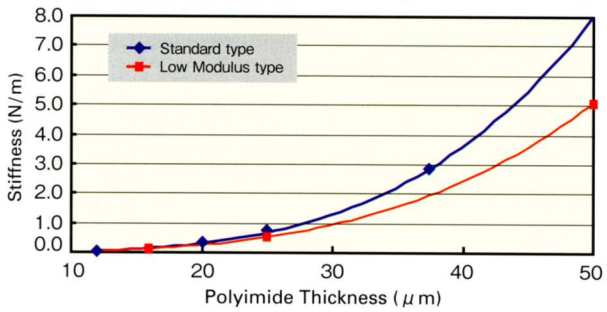
● Cu Foil Type	: ED, RA
● Cu Foil Thickness	: 9μm～35μm
● PI Type	: M series(Standard / Low modulus)
● PI Thickness	: 12μm～50μm
● CCL Structure	: Single-sided CCL, Double-sided CCL

Stiffness Property

Measurement condition : Loop Length=60mm
Gap=15mm
Sample Width=12.7mm

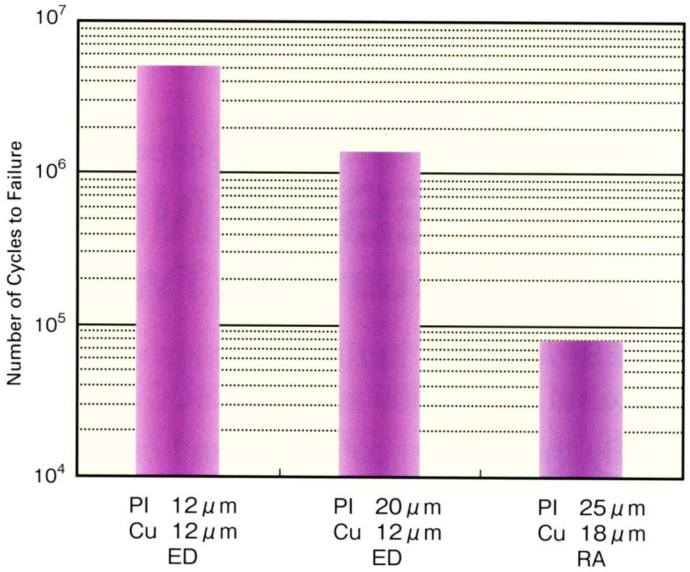


Stiffness Dependence on Polyimide Thickness



Bending Property

IPC Flexural Endurance R=1.25mm



Properties

Items			MB12-12-12REG	MB12-20-12REG	MB18-25-18FRG	MB12-50-12REQ	
Polyimide Type			Standard	Standard	Standard	Low Modulus	
Polyimide Thickness			12	20	25	50	
Copper Foil Type			ED	ED	RA	ED	
Copper Foil Thickness			12	12	18	12	
Test Item		unit					Test method
Film Loop Stiffness		N/m	0.03	0.30	0.70	5.20	Gap : 15mm, Loop Length : 60mm
Moisture Absorption(PI)		wt%	0.8	0.8	0.8	1.3	23℃, 50%RH, 24hrs
Peel Strength		kN/m	1.1	1.2	1.3	1.2	JIS C-5016B
Dimensional Stability after Etching	MD	%	0.01	0.02	0.04	0.06	IPC-TM-650 2.2.4 (B)
	TD	%	−0.03	−0.01	0.02	0.01	
MIT	Cast side	cycle	533	341	184	61	JIS C6471 (r=0.38mm, without C/L)
	Laminate side	cycle	535	342	184	68	
Insulation Resistance		MΩ	10^7	10^7	10^7	10^7	IPC-TM-650 2.6.3.2
Solder Resistance		℃	380	380	380	380	
Flammability		—	VTM-0	VTM-0	VTM-0	V-0	UL94

The information and data on this leaflet have been measured by reliable test method. But confirm the property of the products according to your actual process condition or test method before use. We are not able to guarantee that the method or usage on this leaflet won't conflict with all the patent. The contents of this leaflet can be changed according to our reasons.

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Nippon Steel Chemical Co., Ltd. Functional Materials Bureau

PWB & Package Materials Division
ESPANEX Sales Department
14-1, Sotokanda 4-Chome, Chiyoda-ku, Tokyo 101-0021, Japan
TEL:81-3-5207-7617／FAX:81-3-5207-7655

Functional Materials Laboratories
PWB & Package Materials Center
1 Tsukiji Kisarazu Chiba 292-0835,Japan
TEL:81-438-30-7103／FAX:81-438-30-7129

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