Panasonic

Flexible Circuit Board Materials
LCP (Liquid Crystal Polymer) FCCL

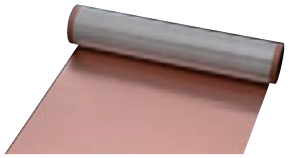
FELIOS LCP R-F705T

Double copper clad

Excels in high frequency characteristics and has also realized low transmission loss after moisture absorption

Features

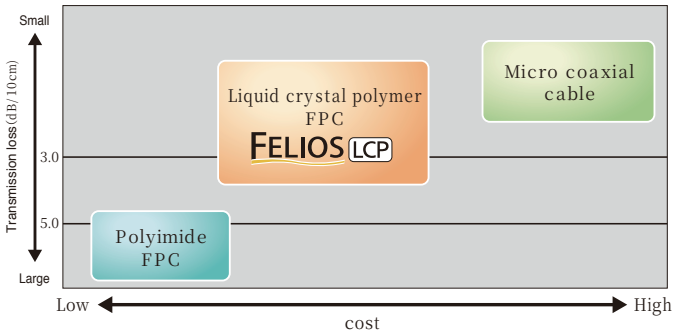
1. Excellent high frequency characteristics
2. Excellent dimensional stability
3. Excellent Peel strength
4. UL94VTM-0 flame resistance



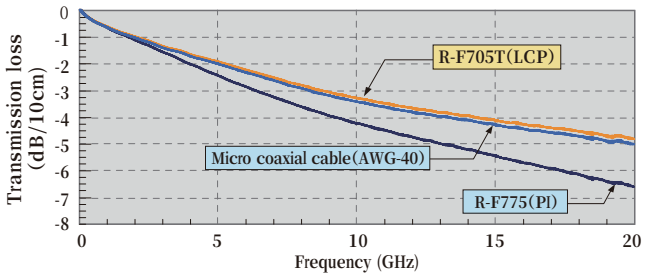
Applications

Smartphone, (FPC Antenna (LTE,WiFi), LCD module), Note PC･Tablet PC, (High-speed FPC Cable), Networking equipment

Concept

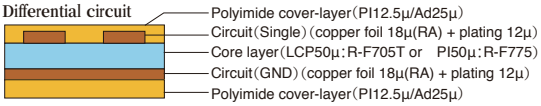


Frequency dependence of transmission loss



※ Dk, Df value stabilization during moisture absorption based on water absorption coefficient LCP substrate specifications
※ Fine pattern handling based on ultra-thin copper foil (9 micrometers) specifications
※ Low transmission loss substrate based on low profile copper foil LCP substrate

Differential circuit



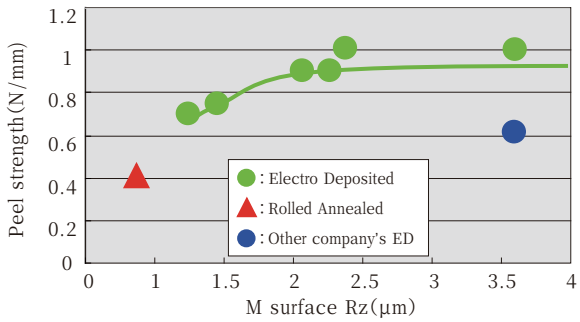
General Properties

Property	Test condition	Unit	Test method	R-F705T
Insulation resistance of the surface layer	A	Ω	JIS C6471	4.9×10^{14}
Dk	A 2GHz	—	IPC-TM650 Method 2.5.5.5	3.0
	A 10GHz			3.0
Df	A 2GHz	—	IPC-TM650 Method 2.5.5.5	0.0008
	A 10GHz			0.0016
Tensile Modulus	A	GPa	ASTMD882	3.4
Water Absorption	25℃ 50h immersion	%	—	0.04
Peel strength	A	N/mm	IPC-TM650	1.0
	260℃ solder float for 5sec			
Flammability	A and E-168/70	—	—	94VTM-0
Chemical resistance	HCl 2mol/l 23℃ 5min	—	JIS C6471	No abnormality
	Na OH 2mol/l 23℃ 5min			
	IPA 23℃ 5min			
Solder heat Resistance	288℃ solder float for 1min	—	IPC-TM650	No abnormality
Moisture Absorption Solder Heat Resistance	C-96/40/90 260℃ solder float for 1min	—	Internal Method	No abnormality
Heat Resistance	340℃ solder iron 10sec	—	Internal Method	No abnormality
Dimensional stability	After etching MD direction	%	IPC-TM650	0.001
	After etching TD direction			−0.005
	After E-0.5/150 MD direction			0.014
	After E-0.5/150 TD direction			0.019

ED 12-50-12

The above data is actual values and not guaranteed values.

Peel strength



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Line-up

Film

Type / Grade / Film thickness		12.5 1/2mil	15 3/5mil	20 4/5mil	25 1mil	38	50 2mil	75 3mil	100 4mil	125 5mil	150 6mil
LCP	R-F775 Double side	—	—	—	○	—	○	○	○	○*	—

*:Under development

Copper Foil

SPEC. / Copper Foil thickness		9 1/4OZ	12 1/3OZ	18 1/2OZ	35 1OZ
ED	Special	○	○	○	○*
RA	Standard	○	○	○	—

*:Under development

*Copper foil : Special type is superior in Flexibility to Standard type.
We can produce uneven types of the copper foil thickness of the front and back.
*ex)Copper35-Pl25-Copper70

Size

Type	TD(Width)
Roll	250mm 500mm 510mm
Sheet	Max.510mm