

Copper Foil for Fine Patterning

PF-EL

Profile-Free Copper Foil is Suitable for Fine line Patterning with the Surface Roughness 1.0~2.0 μm (adhesive side).

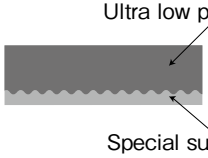
■ Features

- PF-EL is a copper foil that is appropriate for fine line patterning with semi-additive process(SAP) using rough shapes of primer made with the copper profile.
- PF-EL has high peel strength for plating copper.
- High flexural modulus substrates with using prepregs.

■ Applications

- Semiconductor package substrates
- High density multi-layer PWB

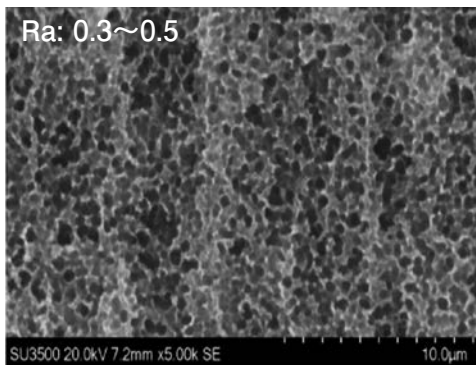
■ Standard Specifications

Part Number	Copper Foil Thickness(μm)	Special Surface Treatment(μm)	Roughness(μm)	Composition	Process
PF-EL-12	12	4	Ra: 0.3~0.4 Rz: 1.5~2.5	 <p>Ultra low profile copper foil Special surface treatment</p>	SAP* ¹
PF-EL-3	3	2, 4	Ra: 0.3~0.5 Rz: 1.5~2.5		SAP* ¹ MSAP* ²
PF-EL-2	2	2, 4	Ra: 0.3~0.5 Rz: 1.5~2.5		
PF-EL-1.5	1.5	2	Ra: 0.3~0.5 Rz: 1.5~2.5		
PF-EL-1.5SP	1.5	2	Ra: 0.2~0.3 Rz: 1.5~2.5		

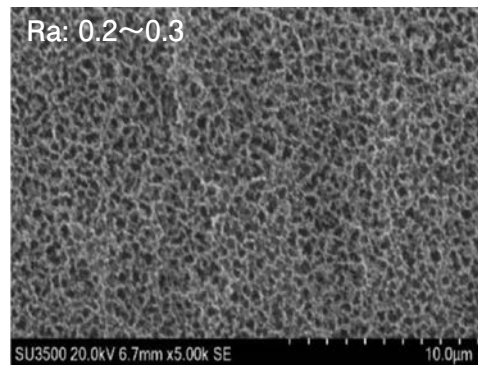
※1:After lamination of the material to the prepreg,the copper foil is etched out,and the special surface treatment with appropriate roughness made by a replica of the copper profile etched out remains on prepreg surface.This process is SAP using this replica.

※2:Semi additive process using thin copper foil as seed layer for having E' less copper +copper on both patterning and via plating purpose.

■ Surface

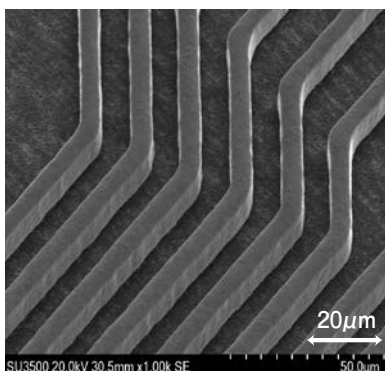


PF-EL

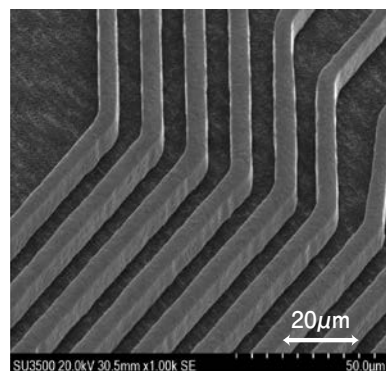


PF-EL SP

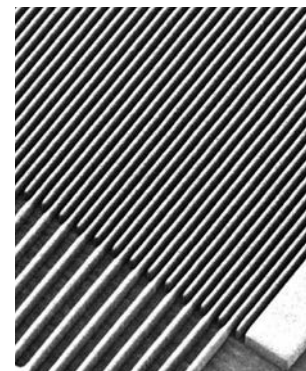
■ Fine patterning with SAP



Design
L/S=10/10 μm with PF-EL
(Exposure LDI)

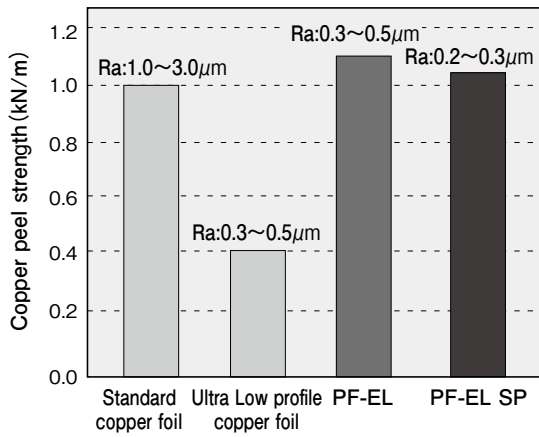


Design
L/S=7/7 μm with PF-EL SP
(Exposure LDI)



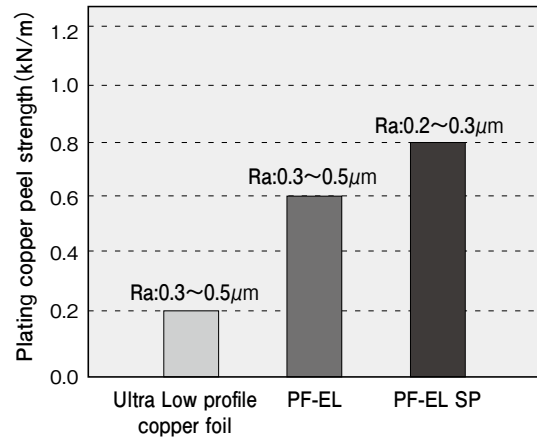
Design
L/S=5/5 μm with PF-EL SP
(Exposure Stepper)

■ Copper peel strength



※MCL-E-770G Type(R), Copper foil 1.5µm with plating copper 20µm

■ Plating copper peel strength



※MCL-E-770G Type(R), plating copper thickness 20µm

■ Fine patterning process

