

Super Engineering Plastic Film for FPC

Low Modulus Heat Resistant Film

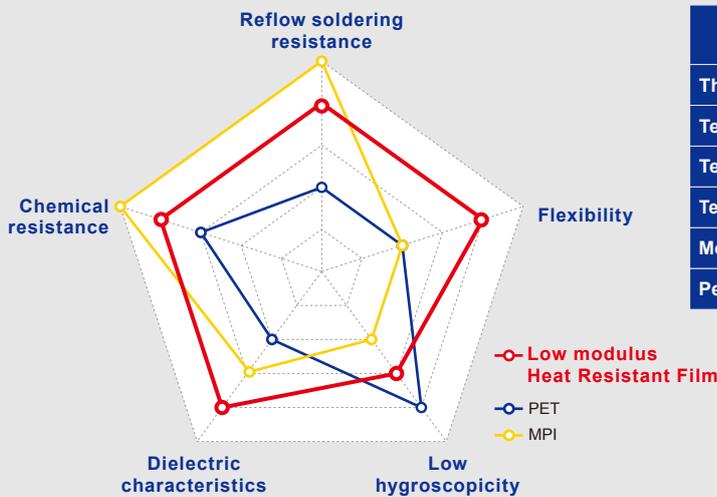
Expands the possibilities of high frequency flexible printed circuits (FPC).

This is a new type of polyamide film that achieves both low modulus and heat resistance, which was previously difficult to combine for films. It shows excellent adhesion with copper foil and this feature makes the lamination process easier. The film can be used in a wide range of applications where conventional low-elasticity films do not fit because of the low heat resistance.

- ▶ **Made from Unitika's unique polyamide resin**
- ▶ **Low modulus and heat resistant functional film**
- ▶ **Excellent in electrical characteristics and bending resistance**
- ▶ **Excellent in adhesion and chemical resistance**

Technical data

■ Performance balance

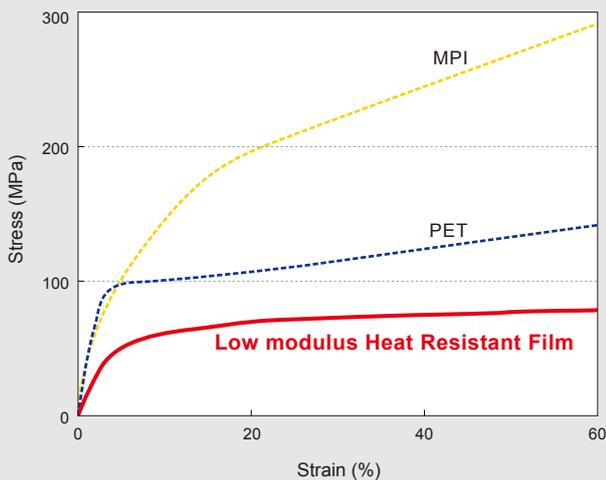


■ Mechanical properties

| Items | Unit | Low Modulus Heat Resistant Film | High elongation type |
|-------------------------|------|---------------------------------|----------------------|
| Thickness | μm | 50 | 100 |
| Tensile strength | MPa | 110 | 60 |
| Tensile elongation | % | 130 | 280 |
| Tensile elastic modulus | GPa | 1.9 | 1.3 |
| Moisture absorption | % | 0.6 | 0.6 |
| Peel strength | N/mm | 0.5 | — |

Moisture absorption: 20°C 65%RH×24hr
 Peel strength: Hot press Lamination with low-roughness copper foil

■ Stress-Strain curve



■ Thermal properties

| | | |
|--------------------------------|-------------|------|
| Reflow soldering compatibility | 260°C×1min | Good |
| Heat shrinkage | 150°C×15min | 0.3 |
| | 200°C×15min | 0.9 |

Reflow soldering compatibility: Internal method *Visual observation of the film after heat treatment

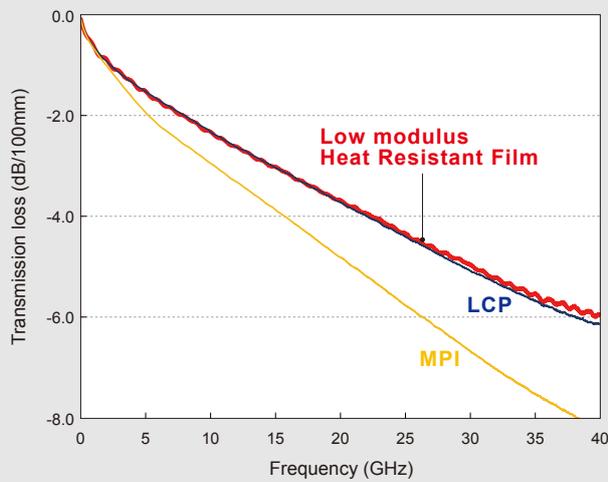
Technical data

Dielectric characteristics

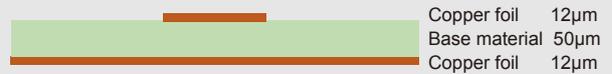
| Items | Low modulus Heat Resistant Film | MPI | LCP |
|-------------------------------|---------------------------------|-------|-------|
| Dielectric constant | 2.7 | 3.7 | 3.3 |
| Dielectric dissipation factor | 0.005 | 0.005 | 0.002 |

Cavity perturbation method; 5.8GHz, 23°C 50%RH

Transmission loss



| | Impedance 50Ω Wiring width (μm) |
|---|------------------------------------|
| Low modulus Heat Resistant Film (In-house CCL, Low roughness copper foil) | 125 |
| LCP (Company A's CCL) | 115 |
| Low Dielectric MPI (Company B's CCL) | 110 |



Applications

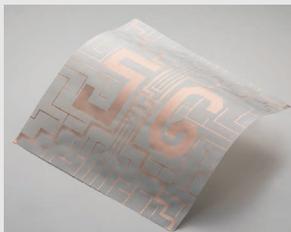
High frequency flexible printed circuit board

<FPC and related substrates>

- High speed FPC
- Low modulus FPC
- Flexible flat cable
- High speed antenna FPC
- Flexible coverlay

<Others>

- Heat resistant tape
- Sealing film
- etc.



(Notice) This product is under development. The information in this document is presented without guarantee and warranty.