



# IT-170GT

## High Tg / Halogen Free/Mid Loss Laminate & Prepreg

- Halogen free, High-Tg (185°C by DSC)
- Lower Dk (3.9 @ 10GHz) and low Df (0.0095 @ 10GHz)
- Compatible with High Tg standard FR-4 processes
- Maximum Operating Temperature : 150°C
- Low CTE & High thermal/CAF resistance reliability / ANSI Type : FR-15.1

### Laminate properties

| Items                                            | IPC TM-650         | Typical Value                  | Unit              |
|--------------------------------------------------|--------------------|--------------------------------|-------------------|
| Peel Strength<br>Low profile copper foil         | 2.4.8              | 4.0                            | lb/inch           |
| Volume Resistivity                               | 2.5.17.1           | 1x10 <sup>10</sup>             | MΩ-cm             |
| Surface Resistivity                              | 2.5.17.1           | 1x10 <sup>10</sup>             | MΩ                |
| Moisture Absorption                              | 2.6.2.1            | 0.10                           | %                 |
| Permittivity (Dk, 55% resin content)             |                    |                                |                   |
| A. 1GHz                                          | 2.5.5.9            | 4.0                            | --                |
| B. 2GHz                                          | 2.5.5.13           | 4.0                            |                   |
| C. 5GHz                                          | 2.5.5.13           | 3.9                            |                   |
| D. 10GHz                                         | 2.5.5.13           | 3.9                            |                   |
| Loss Tangent (Df, 55% resin content)             |                    |                                |                   |
| A. 1GHz                                          | 2.5.5.9            | 0.0085                         | --                |
| B. 2GHz                                          | 2.5.5.13           | 0.0085                         |                   |
| C. 5GHz                                          | 2.5.5.13           | 0.0085                         |                   |
| D. 10GHz                                         | 2.5.5.13           | 0.0095                         |                   |
| Flexural Strength                                |                    |                                |                   |
| A. Warp direction                                | 2.4.4              | 480-510                        | N/mm <sup>2</sup> |
| B. Fill direction                                |                    | 400-430                        |                   |
| Thermal Stress 10 s at 288°C                     |                    |                                |                   |
| A. Unetched                                      | 2.4.13.1           | Pass                           | Rating            |
| B. Etched                                        |                    | Pass                           |                   |
| Flammability                                     | UL94               | V-0                            | Rating            |
| Comparative Tracking Index (CTI)                 | IEC 60112 / UL 746 | CTI 2 (250-399)                | Class (Volts)     |
| Maximum Operating Temperature (MOT)<br>(≥0.63mm) | UL 746B            | 150                            | °C                |
| Glass Transition Temperature (DSC)               | 2.4.25             | 185                            | °C                |
| Decomposition Temperature (@5%wt)                | 2.4.24.6           | 380                            | °C                |
| X/Y Axis CTE(40°C to 125°C)                      | 2.4.41             | 11/13                          | ppm/°C            |
| Z-Axis CTE                                       |                    |                                |                   |
| A. Alpha 1                                       | 2.4.24             | 45 / 40                        | ppm/°C            |
| B. Alpha 2                                       |                    | 183 / 180                      | ppm/°C            |
| C. 50°C to 260°C                                 |                    | 2.2 / 1.7<br>(RC58%) / (RC48%) | %                 |
| Thermal Resistance                               |                    |                                |                   |
| A. T260                                          | 2.4.24.1           | >60                            | Minutes           |
| B. T288                                          |                    | >60                            | Minutes           |