

## RT/duroid® 5880LZ High Frequency Laminates



RT/duroid® 5880LZ filled PTFE composites are designed for exacting stripline and microstrip circuit applications.

The unique filler results in a low density, lightweight material for high performance weight sensitive applications.

The very low dielectric constant of RT/duroid 5880LZ laminates is uniform from panel to panel and is constant over a wide frequency range. Its low dissipation factor extends the usefulness of RT/duroid 5880LZ to Ku-band and above.

RT/duroid 5880LZ laminates are easily cut, sheared and machined to shape. They are resistant to all solvents and reagents, hot or cold, normally used in etching printed circuits or in plating edges and holes.

When ordering RT/duroid 5880LZ laminates, it is important to specify dielectric thickness, tolerance, electrodeposited copper foil, and weight of copper foil required.

### Data Sheet

#### FEATURES:

- Lowest dielectric constant available
- Low Z-axis CTE
- Lightweight / low density
- Uniform electrical properties over a wide frequency range

#### SOME TYPICAL APPLICATIONS:

- Airborne antenna system
- Lightweight feed networks
- Military radar systems
- Missile guidance systems
- Point-to-point digital radio antennas

| Property  | Typical Value [1]<br>RT/duroid® 5880LZ | Direction | Units              | Condition      | Test Method                      |
|---|--|-----------|--------------------|----------------|----------------------------------|
| Dielectric Constant $\epsilon_r$ ,<br>Process               | 1.96 ± 0.04                            | Z         |                    | 10 GHz/23°C    | IPC-TM-650, 2.5.5.5              |
| [2] Dielectric Constant $\epsilon_r$ ,<br>Design            | 1.96                                   | Z         |                    | 8 GHz - 40 GHz | Differential Phase Length Method |
| Dissipation Factor, tan                                     | Typ: 0.0019<br>Max: 0.0027             | Z         |                    | 10GHz/23°C     | IPC-TM-650, 2.5.5.5              |
| Thermal Coefficient of Dielectric<br>Constant, $\epsilon_r$ | +22                                    | Z         | ppm/°C             |                | IPC-TM-650, 2.5.5.5              |
| Volume Resistivity  | 2.1 X 10 <sup>7</sup>                  |           | Mohm•cm            | COND A         | IPC-TM-650, 2.5.17.1             |
| Surface Resistivity   | 2.6 X 10 <sup>6</sup>                  |           | Mohm               | COND A         | IPC-TM-650, 2.5.17.1             |
| Electrical Strength   | 285<br>11.4                            |           | V/mil<br>kV/mil    |                | IPC-TM-650, 2.5.6.2              |
| Dimensional Stability                                       | 2-3                                    | X,Y       | mils/inch          |                | IPC-TM-650, 2.4.39A              |
| Specific Heat   | 0.95                                   |           | J/gm/K             |                | Calculated                       |
| Moisture Absorption   | 0.22                                   |           | %                  |                | ASTM D570                        |
| Thermal Conductivity  | 0.33                                   | Z         | W/m/°K             | 80°C           | ASTM C518                        |
| Coefficient of Thermal Expansion                            | 44,43<br>41.5                          | X,Y<br>Z  | ppm/°C             |                | IPC-TM-650, 2.4.41               |
| Outgassing  |  |           |                    |                |                                  |
|   | TML 0.01                               |           | %                  |                | ASTM E-595                       |
|   | CVCM 0.01                              |           |                    |                |                                  |
|   | WVR 0.02                               |           |                    |                |                                  |
| Density   | 1.4                                    |           | gm/cm <sup>3</sup> |                | ASTM D792                        |
| Copper Peel   | >4.0                                   |           | pli                |                | IPC-TM-650, 2.4.8                |
| Flammability  | V-0                                    |           |                    |                | UL94                             |
| Lead-Free Process Compatible                                | YES                                    |           |                    |                |                                  |

**NOTES:**

- [1] Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.
- [2] The Design DK is an average number from several different tested lots of material and on the most common thickness/s. If more detailed information is required please contact Rogers Corporation or refer to the Design DK technical articles and presentations available at <http://www.rogerscorp.com/acm/technology/index.aspx>, the Rogers Technology Support Hub.

| Standard Thickness      | Standard Panel Size             | Standard Copper Cladding  |
|-------------------------|---------------------------------|---|
| 0.010" (0.254mm) ± 001  | 12"X18" (305mm X 457mm)         | ½ oz (17µm)<br>Electrodeposited copper foil (HH/HH) on both sides |
| 0.020" (0.508mm) ± 001  | 24"X18" (610mm X 457mm)         |   |
| 0.025" (0.635mm) ± 0015 | 24"X54" (610mm X 1.37m)*Non-Std | 1 oz (35µm)<br>Electrodeposited copper foil (H1/H1) on both sides |
| 0.030" (0.762mm) ± 002  |                                 |   |
| 0.040" (1.026mm) ± 002  |                                 | 2 oz (70µm)<br>Electrodeposited copper foil (H2/H2) on both sides |
| 0.050" (1.270mm) ± 002  |                                 |   |
| 0.100" (2.540mm) ± 004  |                                 |   |

Non-Std thicknesses and claddings are available. Contact customer service for more information.

The information in this data sheet is intended to assist you in designing with Rogers' circuit materials. It is not intended to and does not create any warranties express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this data sheet will be achieved by a user for a particular purpose. The user should determine the suitability of Rogers' circuit materials for each application.