ROGERS CORPORATION

Data Sheet

# RO4360G2™
## High Frequency Laminates

RO4360G2™ laminates are 6.15 Dk, low loss, glass-reinforced, hydrocarbon ceramic-filled thermoset materials that provide the ideal balance of performance and processing ease. RO4360G2 laminates extend Rogers' portfolio of high performance materials by providing customers with a product that is lead-free process capable and offers better rigidity for improved processability in multi-layer board constructions, while reducing material and fabrication costs.

RO4360G2 laminates process similar to FR-4 and are automated assembly compatible. They have a low Z-axis CTE for design flexibility and have the same high Tg as all of the RO4000 product line. RO4360G2 laminates can be paired with RO4400™ prepreg and lower-Dk RO4000 laminate in multi-layer designs.

RO4360G2 laminates, with a Dk of 6.15 (Design Dk 6.4), allow designers to reduce circuit dimensions in applications where size and cost are critical. They are the best value choice for engineers working on designs including power amplifiers, patch antennas, ground-based radar, and other general RF applications.

### Features and benefits:

RO4000® thermoset resin system specially formulated to meet 6.15 Dk

- Ease of fabrication / processes similar to FR-4
- RO4000 material repeatability
- Low loss
- High thermal conductivity
- Lower total PCB cost solution than competing PTFE products

Low Z-axis CTE / High Tg

- Design flexibility
- Plated through-hole reliability
- Automated assembly compatible

Environmentally friendly

- Lead free process compatible

Regional finished goods inventory

- Short lead times / quick inventory turns
- Efficient supply chain

CAF resistant

### Some Typical Applications:

- Base Station Power Amplifiers
- Small Cell Transceivers

Advanced Connectivity Solutions
100 S. Roosevelt Avenue, Chandler, AZ 85226
Tel: 480-961-1382 Fax: 480-961-4533 www.rogerscorp.com

| Property | Typical Value RO4360G2 [1] | Direction | Units | Condition | Test Method |
|---|---|---|---|---|---|
| Dielectric Constant, $e_r$ (Process Specification) | 6.15 ± 0.15 | Z | | 10 GHz/23°C<br>2.5 GHz/23°C | IPC-TM-650 2.5.5.5 (2) Clamped Stripline |
| Dissipation Factor | 0.0038 | Z | | 10 GHz/23°C | IPC-TM-650, 2.5.5.5 |
| Thermal Conductivity | 0.75 | | W/m/K | 50°C | ASTM D-5470 |
| Volume Resistivity | $4.0 \times 10^{13}$ | | Ω•cm | Elevated T | IPC-TM-650, 2.5.17.1 |
| Surface Resistivity | $9.0 \times 10^{12}$ | | Ω | Elevated T | IPC-TM-650, 2.5.17.1 |
| Electrical Strength | 784 | Z | V/mil | | IPC-TM-650, 2.5.6.2 |
| Tensile Strength | 131 (19)<br>97 (14) | X<br>Y | MPa (kpsi) | 40 hrs 50%RH/23°C | ASTM D638 |
| Flexural Strength | 213 (31)<br>145 (21) | X<br>Y | MPa (kpsi) | 40 hrs 50%RH/23°C | IPC-TM-650, 2.4.4 |
| Coefficient of Thermal Expansion | 13<br>14<br>28 | X<br>Y<br>Z | ppm/°C | -50°C to 288°C After Replicated Heat Cycle | IPC-TM-650, 2.1.41 |
| Tg | >280 | | °C TMA | N/A | IPC-TM-650 2.4.24.3 |
| Td | 407°C | | °C | N/A | ASTM D3850 using TGA |
| T288 | >30 | Z | min | 30 min / 125°C Prebake | IPC-TM-650 2.4.24.1 |
| Moisture Absorption | 0.08 | | % | 50°C/48hr | IPC-TM-650 2.6.2.1 ASTM D570 |
| Thermal Coefficient of $e_r$ | -131 @ 10 GHz | Z | ppm/°C | -50°C to 150°C | IPC-TM-650, 2.5.5.5 |
| Density | 2.16 | | gm/cm3 | RT | ASTM D792 |
| [4] Copper Peel Strength | 5.2 (0.91) | | pli (N/mm) | Condition B | IPC-TM-650 2.4.8 |
| Flammability | V-0 | | | | UL94 File QMTS2.E102763 |

(1) Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.
(2) Clamped stripline method can potentially lower the actual dielectric constant due to presence of airgap. Dielectric constant in practice may be higher than the value listed.
(3) 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. Refer to Rogers technical article "The Influence of Test Method, Conductor Profile, and Substrate Anisotropy on the Permittivity Values Required for Accurate Modeling of High Frequency Planar Circuits" available on our website at www.rogerscorp.com.
(4) Results based on 1oz data

Prolonged exposure in an oxidative environment may cause changes to the dielectric properties of hydrocarbon based materials. The rate of change increases at higher temperatures and is highly dependent on the circuit design. Although Rogers' high frequency materials have been used successfully in innumerable applications and reports of oxidation resulting in performance problems are extremely rare, Rogers recommends that the customer evaluate each material and design combination to determine fitness for use over the entire life of the end product.

| Standard Thickness | Standard Panel Size | Standard Copper Cladding |
|---|---|---|
| 0.008" (0.203mm), 0.012" (0.305mm)<br>0.016"( 0.406mm), 0.020" (0.508mm)<br>0.024" (0.610mm), 0.032" (0.813mm),<br>0.060" (1.524mm) | 12" X 18" (305 X457 mm)<br>24" X 18" (610 X 457 mm)<br>48" X 36" (1.224 m X 915 mm) | ½ oz. (18µm), 1 oz. (35µm) and<br>2 oz. (70mm) electrodeposited copper foil |



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