Advanced Materials Solutions for Satellite End-Users on Display at Satellite 2011

Rogers Corporation will be displaying a trio of its top materials for space and satellite communications applications at the upcoming SATELLITE 2011 exhibition. SATELLITE 2011 (www.satellitetoday.com/satellite2011 [1]), celebrating its 30th year of service to satellite end-user professionals in broadcast, commercial, military, enterprise, and telecommunications areas, expects nearly 10,000 attendees to the exhibition scheduled for March 15-17 in the Walter E. Washington Convention Center (Washington, DC). Representatives from Rogers Advanced Circuit Materials Division will be at Booth #358 to discuss RT/duroid® 5880LZ, RT/duroid 6035HTC, and TMM® high-performance circuit materials.

All three of these high frequency circuit materials are ideal for satellite components and systems. RT/duroid 5880LZ circuit laminates are characterized by the industry's lowest dielectric constant ? 1.96 in the z-axis at 10 GHz. They offer extremely low loss, evidenced by a dissipation factor of typically 0.0019 at 10 GHz. Usable at satellite frequencies to Ku-band and beyond, these RoHS-compliant circuit materials feature a low z-axis coefficient of thermal expansion (CTE) of 41.5 ppm/ºC for reliable plated through holes (PTHs) in multilayer circuits. RT/duroid 5880LZ is also light weight, having a specific gravity of 1.3 to 1.4, making it a strong candidate for airborne satellite applications.

RT/duroid 6035HTC is engineered for low loss in high-power circuits. It is a fluoropolymer composite high-thermal-conductivity (HTC) laminate material with thermally stable, reverse-treated and electrodeposited copper foil. The easy-to-process laminate is designed for the highest reliability in high-power applications, such as beam-forming networks, power amplifiers, and power combiners. Its unique filler helps this circuit material achieve superior heat-transfer characteristics compared to other high frequency circuit materials with similar dielectric constant. RT/duroid 6035HTC has a z-axis dielectric constant of 3.5 at 10 GHz and loss tangent of 0.0013 at the same frequency. It exhibits outstanding thermal conductivity of 1.44 W/mK, which translates into circuits with effective heat transfer and extended reliability for high-power active devices, such as traveling-wave tubes and transistors.

TMM microwave materials are available in a broad range of dielectric constants, from 3.27 to 9.80, to cover a variety of applications in satcom systems, from amplifiers to patch antennas. These ceramic thermoset polymer composites boast excellent mechanical properties, to deliver extremely reliable PTHs in high frequency circuits. They combine traits of both ceramic and PTFE substrates, with good mechanical stability and ease of processing. TMM thermoset microwave materials maintain low loss for all dielectric constants, with dissipation factor of 0.0023 or less.

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