Ohmega-Ply® ORBIT™

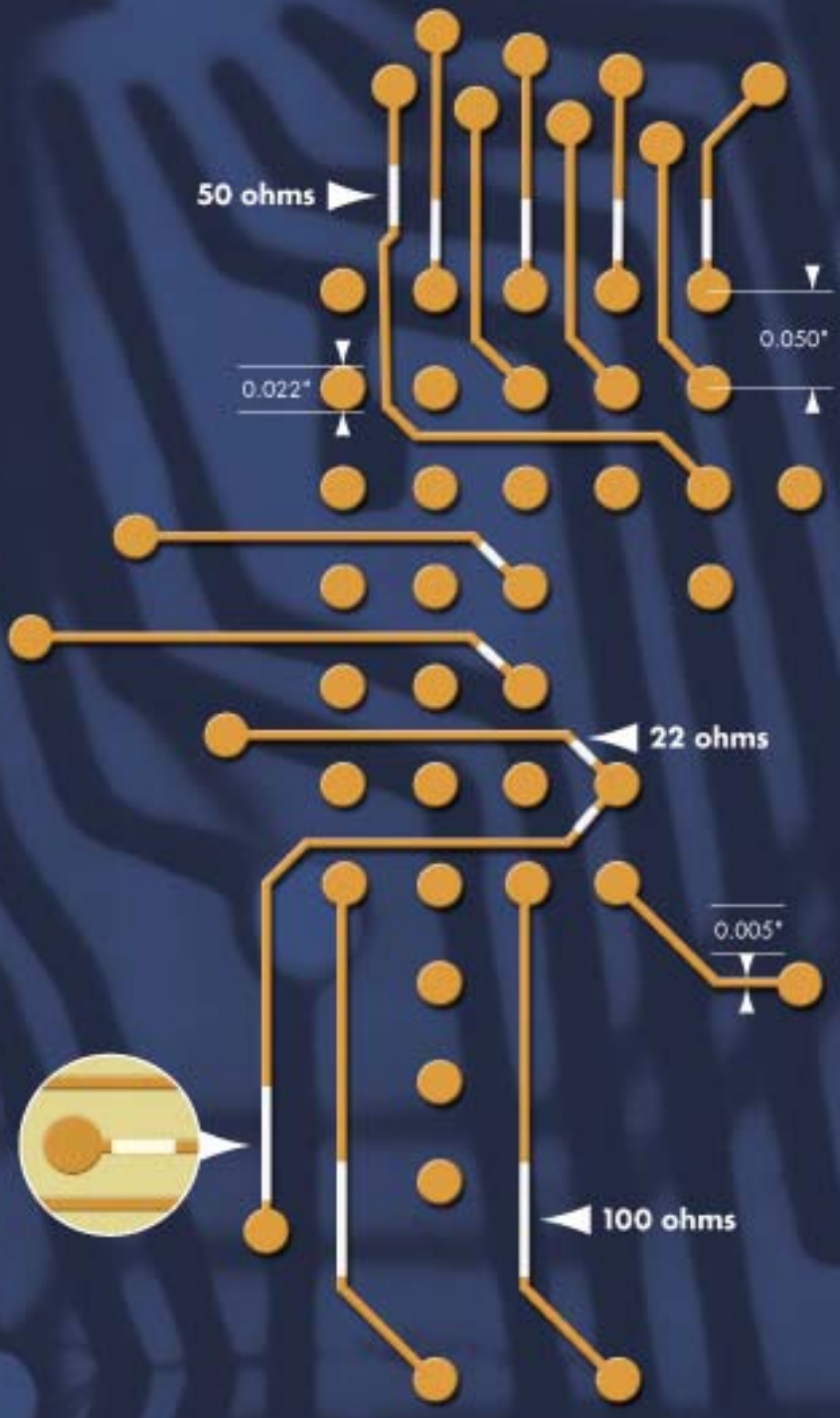
Ohmega Technologies, Inc. is pleased to introduce Ohmega Resistor Built In Trace (ORBIT) technology. Orbit expands the lower end of available sheet resistivities with a 10 ohm per square product.

ORBIT uses the path itself for the resistor and, therefore, requires no additional board area, thereby enabling higher I/O and component densities and reduced form factors.

With resistors built in the trace, the CAD layout is simplified by the elimination of the resistor terminations. Manufacturing processes capable of producing controlled impedance PCBs will be capable of producing the built-in-trace resistors.

Orbit Highlights

- 3% material tolerance
- Ease of resistor design
- High density resistor placement
- NiP proven stability and long term reliability
- Excellent physical and electrical characteristics



Series Termination Resistors
Ohmega-Ply® 10Ω/☐ Sheet Resistivity

Ohmega
Ohmega Technologies, Inc.

4031 Blenda St. Culver City, CA 90232-3799 phone310-559-4400 fax310-837-5268 www.ohmega.com

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Ohmega ORBIT™ Properties and Specifications

Sheet Resistivity (ohms/sq.)	10	Remarks and Conditions
Material Tolerance (%)	+/-3	Based on 36" Width Ohmega-Ply RCM
Load Life Cycling Test % change after 1000 hrs. Loaded Unloaded	 0.3 0.2	MIL-STD-202-108I Ambient Temp: 70 °C On Cycle: 1.5 hrs Off Cycle: 0.5 hrs Loaded: 6 W/in^2
Current Noise Index in dB	< -16	MIL-STD-202-308 Voltage Applied: 10 ohm/sq.: 3.2 V, 25 ohm/sq.: 5.6 V
Resistance Temperature Characteristic(RTC) PPM/°C	15	MIL-STD-202-304 Hot Cycle: 25°, 50°,75° 125°C Cold Cycle: 25°, 0°,-25°, -55°C
TCR Tracking of 32 Resistors PPM/°C	+/- 5	MIL-STD-202-304 Hot Cycle: 25°, 50°,75° 125°C Cold Cycle: 25°, 0°,-25°, -55°C
Humidity Test % change	< 0.25	MIL-STD-202-103A Temp: 40°C Relative Humidity: 95% Length Of Test: After 240 hrs.
Thermal Shock % change	< 0.1	MIL-STD-202-107B No of Cycles: 25 Hot Cycle Temp: 125°C Cold Cycle Temp: -65°C
Power Density (W/in^2)	150	Step-up Power Test Ambient Temp: 25 C Time Applied Power: 2 min. Resistor Size: 0.05" x 0.5"
Solder Float % change	-0.02	MIL-STD-202-210 Temp: 260°C Immersion: 20 Sec

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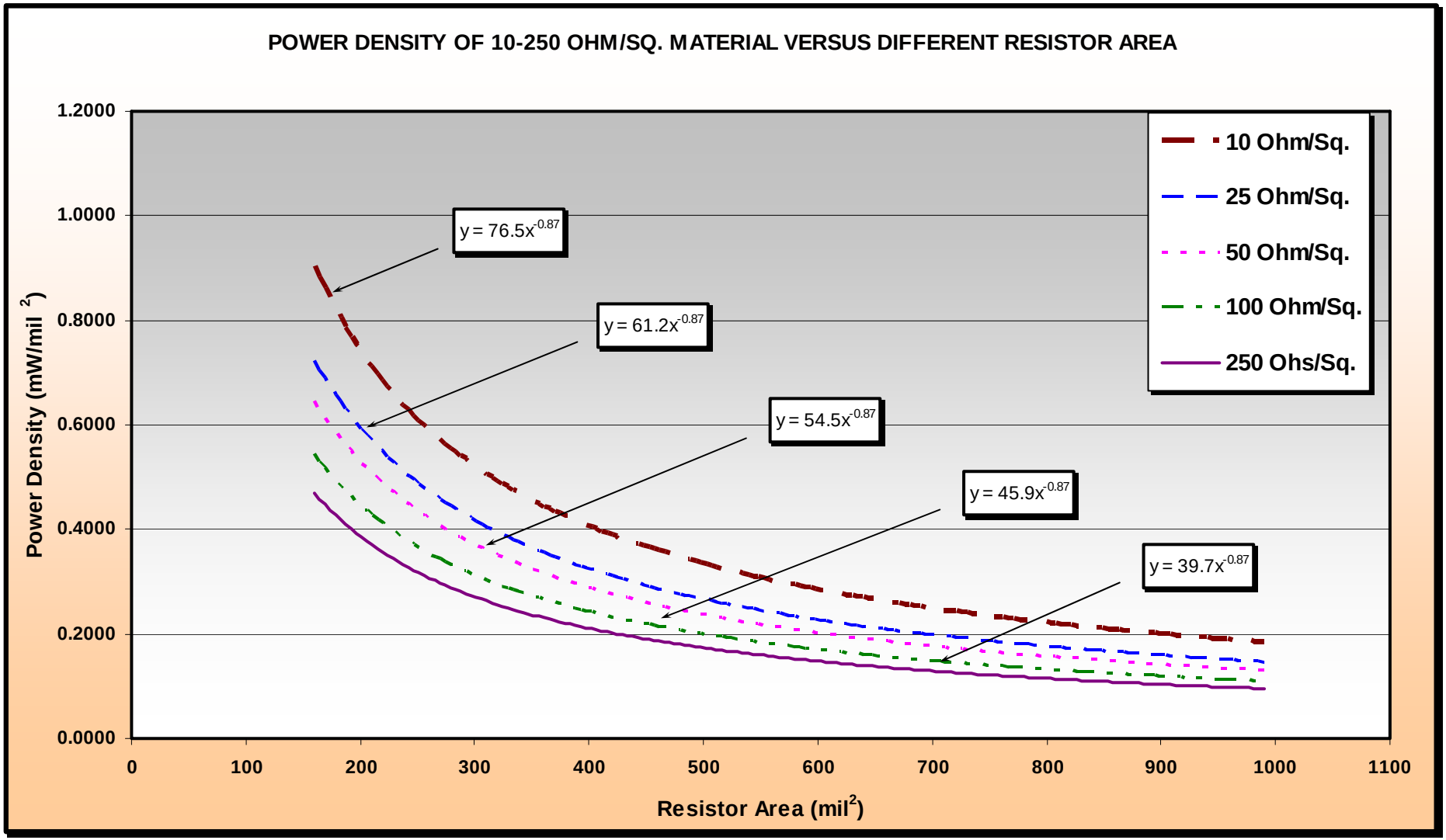

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ORBIT™ RESISTOR-IN-TRACE TECHNOLOGY

Ohmega Technologies is pleased to introduce its latest innovative product: Ohmega-Ply® ORBIT ™, a 10 ohm per square sheet resistivity thin film material. ORBIT allows termination resistors to be built within traces and eliminates the requirement for designing a resistor footprint and placing them within the circuit layout. ORBIT resistors can be placed on any circuit layer of a multilayer printed circuit board, but is especially suited for internal circuit layers. ORBIT provides smaller resistor footprints and tighter finished resistor tolerances.

ORBIT is processed like the other Ohmega-Ply products using conventional subtractive printed circuit equipment and techniques. Since the resistors are built within the trace, any board shop with the capability of building controlled impedance traces can build ORBIT resistors.

ORBIT is offered at a 3% material tolerance. This allows finished resistor tolerances of 5-10%. This is critical since the ability to trim resistor elements of 5 mils and smaller widths becomes problematic. ORBIT also has higher power dissipation than higher sheet resistivity products with power dissipation over 25% greater than Ohmega-Ply 25 ohm per square product. This is also crucial for the formation of very small resistor elements that can handle the rated power requirements.

Other advantages are:

- Ease of design. The circuit designer can now route the board using traditional design tools to create trace connections for I/O within the BGA package area.
- High-density resistor placement. Resistor footprints are not required. The density of copper trace lines and spaces would be the resistor density limit: i.e., a 5/5 or 4/4 line/space density could create resistors within the same line/space density.
- Elimination of the resistor footprints of larger resistors frees up more routing area, providing the designer with more real estate to use conventional printed circuit board technologies. This provides significant cost savings to the finished circuit board.
- Cost savings. In high-density packages, Ohmega-Ply® ORBIT eliminates the need for discrete resistor assembly. Elimination of the discrete resistors also opens up valuable board real estate, allowing the designer to optimize the circuit design (fewer layers of circuits, smaller board size, more conventional printed circuit board technologies, etc.

For further information on Ohmega-Ply® ORBIT or other Ohmega Technologies products please contact:
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