

PTFE/Woven Fiberglass/Ceramic Filled Laminate for Microwave Printed Circuit Boards

Description

Arlon's AD5 is a woven fiberglass reinforced, ceramic filled, PTFE-based composite material for use as a printed circuit board substrate.

Its higher dielectric constant permits various degrees of circuit miniaturization, especially for power amplifiers, filters, couplers and other components that use low impedance lines.

AD5 is a "soft substrate" and is relatively insensitive to stress from vibration. This allows miniaturized circuitry without requiring complicated processing or fragile handling associated with brittle, pure ceramic materials.

AD5 is compatible with the processing used for standard PTFE based printed circuit board substrates. In addition, the low Z-axis thermal expansion provided by the ceramic loading will improve plated through hole reliability compared to typical PTFE based laminates.

Features

Ceramic Filled High Er
High Thermal Conductivity
Large Panel Size

Benefits

Circuit Miniaturization
Heat Dissipation and Management
Replace Ceramic in Some Applications

Availability:

AD5 laminate is supplied with 1/2, 1 or 2 ounce electrodeposited copper on both sides. Other copper weights and rolled copper foil are available. AD5 is available bonded to heavy metal ground planes. Aluminum, brass or copper plates also provide an integral heat sink and mechanical support to the substrate.

When ordering AD5 product, please specify thickness, cladding, panel size, and any other special considerations. Available master sheet sizes include 36" x 48" and 36" x 72".

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Typical Properties: Commercial Part Number Not Assigned

Property	Test Method	Condition	Result
Thickness	Digital Micrometer	A, 23°C	0.0028"
Dielectric Constant @1 MHz	IPC TM-650 2.5.5.3	C23/50	5.1
Dissipation Factor @1 MHz	IPC TM-650 2.5.5.3	C23/50	0.003
Thermal Coefficient of Er (ppm/.C)	IPC TM-650 2.5.5.5 Adapted	-10°C to +140°C	-300
Volume Resistivity (M? -cm)	IPC TM-650 2.5.17.1	C96/35/90	> 10 ¹²
Surface Resistivity (M?)	IPC TM-650 2.5.17.1	C96/35/90	> 10 ⁹
Arc Resistance (seconds)	ASTM D-495	D48/50	>180
Tensile Modulus (kpsi)	ASTM D-638	A, 23°C	> 350
Tensile Strength (kpsi)	ASTM D-882	A, 23°C	> 5.0
Compressive Modulus (kpsi)	ASTM D-695	A, 23°C	> 160
Flexural Modulus (kpsi)	ASTM D-790	A, 23°C	> 250
Dielectric Breakdown (kv)	ASTM D-149	D48/50	> 45
Specific Gravity (g/cm3)	ASTM D-792 Method A	A, 23°C	2.45
Water Absorption (%)	IPC TM-650 2.6.2.2	E1/105 + D24/23	0.05 est
Coefficient of Thermal Expansion (ppm/.C) X Axis Y Axis Z Axis	IPC TM-650 2.4.24 TMA	0°C to 100°C	15 15 45
Thermal Conductivity (W/mK)	ASTM E-1225	100°C	0.46
Flammability	UL 94 Vertical Burn IPC TM-650 2.3.10	C48/23/50, E24/125	Meets requirements of UL94-V0

Results listed above are typical properties; they are not to be used as specification limits. The above information creates no expressed or implied warranties. Properties of AD5 laminates may vary depending on the application.

The information and data contained herein are believed reliable, but all recommendations or suggestions are made without guarantee. You should thoroughly and independently test materials for any planned applications and determine satisfactory performance before commercialization. No suggestion for use or material supplied shall be construed as a recommendation or inducement to violate any law or infringe any patent.

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