

DuPont™ Interra® HK04J

All-Polyimide Embedded Capacitor Laminate

Flexible Circuit Materials

Product Description

DuPont™ Interra® HK04J Capacitor Laminate is designed to function as a thinner and more efficient power and ground planes in printed wiring boards (PWBs). This double-sided copper-clad laminate features an adhesive-less, all-polyimide dielectric layer that affords excellent resilience during processing and fabrication. Interra® HK04J is compatible with existing PWB processes, including double-sided processing and its thin design maximizes capacitance density, reduces inductance, and decreases board or package thickness.

Key Features and Benefits

- Cost reduction via reducing surface mounted capacitors
- Reduced inductance for efficient low noise power delivery
- High initiation and propagation tear strengths provide superior handling and facilitate fabrication
- Balanced and unbalanced constructions available
- Certified to IPC-4821/1
- UL 94 V-0, UL File E124294
- RoHS Compliant

Packaging

Interra® HK04J Capacitor Laminate is supplied in sheet form, with standard dimensions of 24 x 36 in (610 x 914 mm), 24 x 18 in (610 x 457 mm), and 12 x 18 in (305 x 457 mm).

Storage

DuPont™ Interra® HK04J Capacitor Laminate should be stored in original packaging at temperatures of 4 - 29 °C (40 - 85 °F) and below 70% relative humidity. The product should not be refrigerated or frozen and should be kept dry, clean, and well-protected. Subject to compliance with the foregoing handling and storage recommendations, DuPont's warranties shall remain in effect for the period provided in the DuPont Standard Conditions of Sale.

Table 1 - Standard Interra® HK04J Offerings

Product Code	Capacitance Density (pF/cm ²)	Copper Thickness μm (oz/ft ²)	Dielectric μm (mil)
HK04J2518E	125	18 (0.5)	25 (1.0)
HK04J2536E	125	36 (1.0)	25 (1.0)
HK04J2572E	125	72 (2.0)	25 (1.0)

Processing

DuPont™ Interra® HK04J Capacitor Laminate is fully compatible with all conventional PWB processes, including double-sided processing. Interra® processing guide available from your DuPont sales representative.

Interra® HK04J Capacitor Laminate Construction Selection

A variety of Interra® HK04J Capacitor Laminate constructions, both balanced and unbalanced, are commercially available. For help beyond the standard offerings in Table 1, please use the Laminate Product Selector at interra.dupont.com to identify the appropriate product code for your copper-clad laminate.



Safe Handling

Prior to handling, DuPont recommends referencing the Interra® Safe Handling Guide available at interra.dupont.com.

Quality and Traceability

DuPont™ Interra® HK04J Capacitor Laminate is manufactured under a certified ISO9001:2015 Quality Management System facility. Complete material and manufacturing records, which include archive samples of finished product, are maintained by DuPont. Each manufactured lot is identified for reference traceability. The packaging label serves as the primary tracking mechanism in the event of customer inquiry and includes the product name, batch number, size, and quantity.

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Product Performance

Table 2 - DuPont™ Interra® HK04J Capacitor Laminate Properties

Property	HK04J2536E Typical Value	Test Method
Capacitance Density, pF/cm ² (nF/in ²)	125 (0.8)	DuPont Method
Dielectric Thickness, μm	25	ASTM D6988
Dielectric Constant (Dk)		
1 MHz	3.5	IPC-TM-650 2.5.5.3
2 GHz	3.5	ASTM D2520
Loss Tangent (Df)		
1 MHz	0.005	IPC-TM-650 2.5.5.3
2 GHz	0.004	ASTM D2520
Peel Strength (Adhesion to Copper)		
As Received, N/mm (lb/in)	1.9 (11)	IPC-TM-650 2.4.9
After Solder, N/mm (lb/in)	1.9 (11)	
Initiation Tear Strength (MD/TD), g	> 2,750 / > 2,600	ASTM D1004
Propagation Tear Strength (MD/TD), g	12.8 / 12.8	ASTM D1922
Coefficient of Thermal Expansion XY-Axis, ppm/°C	21	IPC-TM-650 2.4.41
Solder Float, 288 °C for 10 s	Pass	IPC-TM-650 2.4.13
Moisture Absorption, %	0.8	IPC-TM-650 2.6.2
Temperature and Humidity Bias (THB) 85 °C/85% RH and 50 V _{dc} h	1,000	DuPont Method
Dielectric Strength, V/μm	230 - 275	ASTM D149
Hi-Pot Test Voltage Pass, V _{dc}	500	IPC-TM-650 2.5.7.2
Volume Resistivity, Ω · cm	> 10 ¹⁶	IPC-TM-650 2.5.17
Surface Resistance, Ω	> 10 ¹⁴	IPC-TM-650 2.5.17
Tensile Modulus, GPa	6	IPC-TM-650 2.4.19
Tensile Strength, MPa	> 345	IPC-TM-650 2.4.19
Elongation, %	> 50	IPC-TM-650 2.4.19
Glass Transition Temperature (Tg), °C	225	DuPont Method, TMA

Data within this table are typical values for the listed product. Performance can vary depending on construction and processing.



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For more information on Interra® HK04J Capacitor Laminate or other DuPont products, please visit our website.

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102-5 and "DuPont Policy Regarding Medical Applications" H-50103-5.

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